

J. Martin Maldonado-Duran
Andres Jimenez-Gomez
Kirti Saxena *Editors*

Handbook of Mind-Body Integration in Child and Adolescent Development

Handbook of Mind-Body Integration in Child and Adolescent Development

J. Martin Maldonado-Duran
Andres Jimenez-Gomez • Kirti Saxena
Editors

Handbook of Mind-Body Integration in Child and Adolescent Development

 Springer

Editors

J. Martin Maldonado-Duran
Menninger Department of Psychiatry
Baylor College of Medicine
Houston, TX, USA

Andres Jimenez-Gomez
Pediatric Neurology
Joe DiMaggio Children's Hospital
Hollywood, FL, USA

Kirti Saxena
Childrens Hospital, Psychiatry
Baylor College of Medicine, Texas
Houston, TX, USA

ISBN 978-3-031-18376-8 ISBN 978-3-031-18377-5 (eBook)
<https://doi.org/10.1007/978-3-031-18377-5>

© The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Switzerland AG 2023

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed. The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors, and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

*In memory of my beloved teachers from the Menninger clinic
Marianne-Ault Riche, LSCSW, Kay Kent LSCW, Jerome Katz
MD & William Nathan MD*

*To Anto and Sofi whose joyful spontaneity teaches me
something new about childhood every day.*

*I dedicate my contribution to this book to my parents, spouse,
and children. To my parents, Drs. Jayanti and Rajendra Nigam
who are both a true inspiration as physicians and parents. To
my partner and spouse, Sailesh Saxena who consistently
supported me as I pursued my academic endeavors. To my
children, Aarushi and Krish, for always understanding when
mom had to work nights and weekends to complete this work.
This labor of love has been accomplished through the
dedication and patience of my family. Thank you to the families
and children I have the honor and privilege to work with as
because of them I explored the field of mind-body medicine to
provide an integrated approach to mental health.*

Foreword

When reading the book “Mind-Body Problems in Pediatrics and Child,” the well-known passage by Sigmund Freud from his 1923 essay “The Ego and the Id,” in which he states that “The ego is first and foremost a bodily ego; it is not simply a surface entity” cannot help but come to mind. But the scholar who studied the relationship between psyche and soma most thoroughly was Donald Winnicott who, being both a psychoanalyst and a pediatrician, was able to take on a double perspective. According to his perspective, psyche and soma are indistinguishable, especially in the typical development of the infant’s first months, in which the sense of self is rooted in the body. And it is the soma that in the course of evolution plays a decisive role and from which the psyche develops.

In recent years, embodied cognition has further studied the role of bodily intentions, starting with the fetal period and then after birth, when they increase on the sensory, perceptual, and motor levels, contributing to the construction of the infant’s self.

This is the cultural and scientific background of the book, which focuses on defining the complex relationship between body and mind in the first years of life, in the preschool and school period, and then during adolescence, when the body undergoes a profound transformation, also thanks to pubertal hormones, which have important repercussions on the psychic level as well. We must add that the body has an implicit code of expression and communication that intervenes from the first months of life and plays a fundamental role in relationships and intersubjective exchanges.

After the initial chapters, the book methodically develops other relevant areas, such as the consequences of trauma and abuse on the body, which often maintains traces of these adverse events which covertly continue to affect psychic functioning. This is followed by the great chapter on psychosomatic and somatoform disorders in childhood and adolescence, which explores the various areas and systems in which these can occur. It is an extremely thorough and up-to-date review, very useful for child neuro-psychiatrists, pediatricians, and psychotherapists who face these symptoms and syndromes, that can significantly interfere with child and adolescent development.

The book ends with an overview of the most effective therapeutic interventions, ranging from psychotherapy to yoga and mindfulness. It is a book with a complex and articulated architecture that will be well received by professionals working in the field of childhood and adolescence, to better

orientate themselves and intervene in a sector of clinical practice that is sometimes not adequately valued.

Honorary Professor of Developmental Psychopathology Massimo Ammaniti
La Sapienza University of Rome,
Rome, Italy

Book Content Description

This book examines issues relating to the body-mind connection in the development of children and adolescents, addressing problems with clinical implications, including somatization, psychosomatic conditions, and the effects of life experiences. It discusses the interactions of emotions, experiences, and thoughts in the mind – and their manifestations in the body – of children and youth. The book describes the effects of bodily conditions on the emotional state and mental functioning of children, such as cerebral palsy, major medical conditions, and other chronic health problems. It also explores the effects of chronic stress as well as child neglect and abuse on bodily manifestations.

Key areas of coverage include:

- Developmental issues in the embodiment of self and body image in children and adolescents
- Trauma and mind/body consequences in children and adolescents.
- Munchausen syndrome by proxy
- Unexplained medical conditions, somatoform disorders, and conversion disorders during childhood and adolescence
- Body/mind conditions in youth with physical and intellectual disabilities
- Complementary and alternative treatment approaches to mind-body issues in children and adolescents

This book is an essential resource for researchers, clinicians, related professionals, and graduate students in infancy and early child development, child and adolescent psychiatry, social work, pediatrics, and nursing.

Preface

This book attempts to be a compilation of available knowledge and clinical experience of a large cadre of clinicians from several disciplines (child psychotherapy, social work, family therapy, psychology, child psychiatry, and pediatrics in its various specialties) on issues that pertain to the body and the mind of the child and adolescent. This scope comprehends normal development as well as the complex interactions between emotions, thoughts, and body manifestations.

The book attempts a combination of the information obtained from the available scientific literature on the various topics, with the “real world experience” of clinicians who deal with children and families in their everyday clinical endeavors. It is not merely a review of the scientific literature, which has been reviewed extensively in the various chapters (including scientific literature in English, Spanish, German, French, Italian, and Portuguese mainly) but also an attempt to convey the “translation” of this information into the actual clinical practice of clinicians who deal with children of different ages, their families, and the multiple issues that they can face. Its perspective attempts to be as comprehensive as possible, including problems which occur in many countries and not only in the USA. We have invited colleagues from different parts of the world in order to share their perspectives on the various issues covered.

We live in an era in which, in the USA and other countries, medical practice in general, and psychiatry in particular, has been “standardized” into a set of algorithms that attempt to address the human experience into fairly straightforward decision paths and certainties that we do not find so useful in the reality of children, adolescents, and families’ experiences.

For example, most child psychiatrists in the USA are expected to arrive at a “diagnosis” applied to the child or adolescent after just one hour of consultation. This seems to be an arbitrary decision mostly related to the demands of insurance companies and actuarial needs than to the needs of the child and family. The current diagnostic system currently in use in the USA for “mental disorders” lends itself to this approach, assigning readily to a child a certain diagnosis, which often leads to a feeling of certainty by the clinician (or parents) and quite often to a prescription of a psychotropic medication.

This approach seems very constrained, reductionistic, and not very helpful to include all the complexities of a child’s life so far, his or her development, their emotional life, difficult experiences, desires, wishes, and hopes. Also, that approach often neglects to consider the importance of interpersonal

context on the emotions and behavior of a child, particularly family relationships, school interactions, and other similar factors.

Unfortunately, pediatric practice in outpatient settings has similarly been curtailed to a few minutes of consultation, limiting the observation and exploration to one “presenting problem” to the exclusion of other factors that may impact that condition, the child, and what should be done to remedy the problems found. This approach also ties the hands of the pediatrician to become more involved in the actual life of the child and family due to time constraints and demands for productivity.

Even though those approaches are considered more “efficient” as the clinician may see a higher number of children per unit of time, they often are counterproductive. What could be ascertained from the beginning, particularly in a mental health evaluation of a child or adolescent, may be completely overlooked in order to arrive at a “third person” diagnosis of a child (the child being the third person).

Our suggested approach is different. The clinician should not have to think he or she “knows everything” about the life of a child or adolescent after the first session, but should embrace uncertainty and attempt to arrive, in further sessions, to a complex understanding of the patient in his or her circumstances in the broadest sense. Only then, the possibility of treatment interventions seems more promising, as the clinician would know more about what needs to be addressed or treated, which may be family interactions, school difficulties, relationship problems, etc. Such an exploratory approach of course will take more time, but it may well lead to discoveries that will make a difference in the life of those under the pediatric clinicians’ care.

This book does not focus on “what to do” with the various conditions described but offers more a “way of thinking” or approaching the various situations described and approximating realities, and testing possibilities about what is affecting the child in the family and social context.

Our chapters are “translational” not only in the usual sense of translating research findings into clinical applications. It is translational in the sense that it attempts to convey to various pediatric clinicians (pediatricians, subspecialists, nurse practitioners, nurses) how to think about the thoughts and emotions of children who are of a certain age, or who experience a particular set of difficulties or symptoms. Not only do we attempt to convey how to understand the child but how a pediatric clinician might approach exploring the emotions, thoughts, and behavior of the children in their care, as well as their caregivers.

The other translational attempt is for mental health professionals in their various disciplines. As a “mind-body book,” we attempt to describe a number of medical conditions which have an impact on the mind of the child or adolescent, such as handicaps, chronic illnesses, early medically traumatic experiences, etc. Also, we describe symptoms in most organ systems, dermatological, and gastroenterological, which may be useful for the mental health professional to keep in mind when treating a given individual who presents some of those symptoms.

When we refer to the “thoughts, emotions and behavior” of children/adolescents we are not referring only to the conscious thoughts and

direct statements of the child, but to what is communicated in different ways, perhaps with silence, tone of voice, body movements, facial expression, or behaviors. We clearly suggest an “in depth” approach to understanding the life of the child and his or her family. We offer a perspective that could be broadly defined as psychodynamic. In the current clinical environment, there are great pressures to limit one’s treatment only to “evidence-based approaches.” The research on many of the psychodynamic interventions is lacking. It is far easier to research a cognitive and behavioral approach, which is only focused on the conscious statements from the child and the cognitions, and then measure the effects of this approach in reducing specific symptoms.

Our approach aims not only to reduce certain undesirable symptoms, eliminate temper tantrums or “oppositional behavior”, but to understand the possible meanings of those behaviors or emotions and attempt to improve the child’s life in general, development, and emotional well-being overall. Perhaps this is a more ambitious goal.

The new information that has become available with studies in neurophysiology, and the possibility of performing functional MRIs, as well as multiple research paradigms in neurosciences, have lent considerable support to theories that previously were considered as “not concrete enough”. For instance, attachment relationships, empathy, feeling understood, and experiencing trust and compassion are now “visible” through neurophysiological and biochemical explorations. The existence of unconscious reactions and feelings to the effects of therapeutic relationships, feeling understood, and sharing one’s emotional pain, are now also demonstrable through those techniques. Previously, they were thought to be mere speculations.

We also recommend that the clinician dealing with children and families be as aware as possible of his or her own reactions to the patient/family in order to explore the meaning and implications of those reactions: in understanding the child and the family or in avoiding impulsive actions such as dismissing a family or a child based on the clinician’s own life experiences. As clinicians, exploring our own emotions and reactions to those under our care guides us in understanding others and in empathizing with the child or family in front of us. The reactions of the clinician can be useful guides in understanding how a child might feel given his or her circumstances: feeling pressured, powerless, dominated, scared, trapped, etc. often these feelings are manifested through physical symptoms.

The book is divided into four sections. In Part I, we describe the embodiment of the self at different ages, infancy, preschool years, school years, and adolescence. These divisions are artificial but useful to focus the mind on the most salient issues of different ages. The chapters attempt to present the normal development of the mind and body of the child in their interplay, in order to understand the issues described later on. Also a developmental perspective can help clinicians understand the obstacles and challenges that the child may face as he gets older whether he or she is healthy or not.

Part II focuses on issues of trauma, maltreatment, and other phenomena that have an enormous impact on the life of children. They include antipathy, neglect, physical, and sexual abuse, as well as other forms of traumatic

experiences. These can also consist of traumatic losses, frightening experiences, and early difficulties such as premature birth and prolonged medical interventions. We also describe the important phenomenon of “medical child abuse,” more commonly known as Munchausen syndrome by proxy, an increasing problem in a highly “medicalized” culture like the USA and other industrialized countries. All of these events or life-long circumstances may have a long-lasting impact in the mind and body of the child and of the caregivers as well. The chapters describe in detail the negative experiences. We illustrate phenomenology and particularly how to understand the behaviors and emotions that these children manifest after those events. We endeavor to describe how to promote resilience in the child and parents as well as how to address those problems as they become apparent.

Part III addresses the various manifestations of problematic mind-body interactions. These include difficulties like alexithymia, “medicalizing” families, hypochondria, and then the enormous field of psychosomatics. First, various chapters describe the most common “functional” (somatoform, conversion, somatic symptom, or somatic dissociation symptoms) problems seen in the various pediatric specialties, like dermatology, gastroenterology, pulmonology, urology and gynecology, ears/nose/throat, cardiovascular, and ophthalmology. This section also explores various conditions such as chronic fatigue, fibromyalgia, and similar disorders, as well as some common chronic diseases that are strongly impacted by emotional factors (migraine, asthma, etc.). There is a chapter devoted to pain and its multiple manifestations.

Then we turn our focus to the consultation-liaison service which is a quintessential mind-body service in any pediatric hospital. We describe the emotional world of the child and family in children with developmental disabilities, complex pediatric care needs, and those in palliative and end-of-life situations. These chapters cover not only the issues involving the child and family but also the health-care system in various settings and the impact on the medical personnel dealing with these situations.

Part IV describes a number of approaches that can be useful in dealing with mind-body problems in children and families. These include multimodal psychotherapies, hypnosis, biofeedback, relaxation strategies, eye movement desensitization, and reprocessing. We also describe less researched strategies such as ayurvedic medicine, yoga, meditation, and mindfulness, all promising strategies to deal with issues of anxiety, stress, chronic tension, and conflict in general.

We wish to thank first of all the children and families in which this book is based, and to whom we owe our interest in alleviating these problems. They deposit their trust in us and allow us to be a part of their lives. A masterful veteran pediatrician, Penelope Louis, who for many years worked at the Texas Children’s Hospital in the areas of complex care and child abuse and medical child abuse, was the inspiration for our book.

We also thank the chapter authors who shared their expertise and shared with us their experiences and clinical wisdom. We appreciate their patience and enthusiasm with the project.

We also thank Judy Jones from Springer Nature for their support, guidance, and patience.

Houston, TX, USA
Hollywood, FL, USA
Houston, TX, USA

J. Martin Maldonado-Duran
Andres Jimenez-Gomez
Kirti Saxena

Contents

Part I Developmental Issues in the Embodiment of the Self in Children and Adolescents

- 1 The Body and Mind of the Infant 3**
Juan Augusto Laplacette, Ana Lia Ruiz,
and Nora Woscoboinik
- 2 The Body and the Mind of the Preschool-Age Child 21**
Clara Aisenstein and Kulsoom Kazmi
- 3 The Body and Mind of the School-Age Child 35**
Andres Jimenez-Gomez and Simone Higgins
- 4 The Body and Mind of the Adolescent 49**
Mayela Moreno, Celia Atri, and Teresa Lartigue
- 5 Mindless Child Psychiatry and Psychosomatics 63**
Manuel Morales-Monsalve, J. Martin Maldonado-Duran,
and Prakash Chandra

Part II Trauma and Mind Body Consequences in Children and Adolescents

- 6 Embodiment of the Self in Conditions of Neglect
and Antipathy During Childhood and Adolescence. 79**
Juan Manuel Saucedo-Garcia and J. Martin Maldonado-Duran
- 7 Embodiment of the Self in Traumatic Situations:
Unresolved and Traumatic Losses. 99**
Stephanie Yudovich and Maria Ximena Maldonado-Morales
- 8 Embodiment of the Self in Physical and Sexual Abuse
During Childhood and Adolescence 115**
Maria Ximena Maldonado-Morales and Stephanie Yudovich
- 9 Short-and Long-Term Effects of Adverse and Painful
Experiences During Very Early Childhood 129**
Henry Marquez-Castro, J. Martin Maldonado-Duran,
Muhammad Ishaq Farhan, and Cheru Sehgal

10	Medical Child Abuse or Munchausen Syndrome by Proxy	141
	Amanda Scully, Amanda Small, Anna West, and Angela Bachim	
Part III	Mind-Body Issues in Psychosomatic and Somatoform Disturbances in Children and Adolescents	
11	Alexithymia in Children/Adolescents and Psychosomatic Families	157
	Patrick O'Malley	
12	Generalized Chronic Health Conditions with Mind Body Representations. Neurasthenia. Chronic Fatigue Syndrome & General Distress Syndrome	167
	Gage Rodriguez	
13	Hypochondria in Children and Adolescents	181
	Solaine Perez Polanco	
14	Functional or "Psychogenic" Neurological Symptoms in Children and Adolescents	193
	Andres Jimenez-Gomez and Kristen S. Fisher	
15	Functional Ophthalmological Symptoms in Children and Adolescents	205
	Vinh-Son Nguyen and Shankar Nandakumar	
16	Functional Ear, Nose, and Throat Disturbances in Children and Adolescents	217
	Karthik Cherukupally	
17	Functional Respiratory Conditions in Children and Adolescents	229
	Luis F. Pérez-Martini and J. Martin Maldonado-Duran	
18	Functional Gastrointestinal Conditions in Children and Adolescents (Gut-Brain Interaction Disturbances)	243
	Kenia L. Gomez and Jessica DiCarlo	
19	Functional Dermatological Conditions in Children and Adolescents	259
	Matthew Koller	
20	Psychosocial Factors in Cardiovascular Conditions in Children and Adolescents	273
	Antonio Gabriel Cabrera and J. Martin Maldonado-Duran	
21	Functional Symptoms in the Genitourinary System in Children and Adolescents	283
	Matthew Koller	

22	Pain in Children and Adolescents. Evaluation and Treatment	293
	Muhammad Ishaq Farhan, Hirsch K. Srivastava, and Muhammad A. Kamran	
23	Chronic Medical Conditions Strongly Influenced by Emotional States: Eczema, Asthma, Headaches and Gut Inflammation	305
	Gage Rodriguez	
24	Mind–Body Issues in the Consultation-Liaison Service in Pediatric Hospitals	317
	Shankar Nandakumar, J. Martin Maldonado-Duran, Juan Manuel Saucedo-Garcia, Sohail Nibras, Ashok Yerramsetti, and Vinh-Son Nguyen	
25	Mind–Body Issues in Children and Adolescents with Developmental Disabilities	331
	Steven M. Lazar	
26	Mind–Body Issues in Children with Complex Medical Conditions and Complex Care Needs: Effects and Manifestations in the Child	349
	Jennifer Benjamin, Heather Moore, and Sutapa Khatua	
27	Mind–Body Issues in the Treatment of Children with Complex Care Needs: Issues for the Family and the Health Care System. Intervention Strategies	363
	Jennifer Benjamin, Heather Moore, and Sutapa Khatua	
28	Mind–Body Issues for Children in Palliative and End-of-Life Care	377
	Amanda Padilla, Rachel A. Kentor, and Jared Rubenstein	
Part IV Complementary and Alternative Medical Interventions and Strategies		
29	Multimodal Psychological Interventions for Children and Families with Mind–Body Problems	391
	J. Martin Maldonado-Duran, Patrick O’Malley, Kulsoom Kazmi, and Teresa Lartigue	
30	Yoga and its Use in Children and Adolescents with Mind Body Problems	405
	Kirti Saxena, Sherin Kurian, Soujanya Koduri, Suni Jani, Lauren Woods, and Aroteem Choudhury	
31	Meditation and Its Applications in Mind–Body Problems in Children and Adolescents	425
	Kirkland Polk and Srinivasa Gokarakonda	

32	Mindfulness and its Application for Mind–Body Challenges in Children and Adolescents	435
	Aproteem Choudhury, Christina Clare, Soujanya Koduri, and Kirti Saxena	
33	Hypnosis with Children and Adolescents with Mind-Body Problems	449
	J. Martin Maldonado-Duran	
34	Eye Movement, Desensitization, and Reprocessing for Children and Adolescents	463
	J. Martin Maldonado-Duran	
35	Ayurvedic Medicine in Children and Adolescents	473
	Nihit Kumar and MariAlison Bowling	
36	Acupuncture. Its Uses for Mind-Body Problems in Children and Adolescents	487
	Caroline Nardi, Toby Belknap, and Nihit Kumar	
37	Biofeedback and its Uses in Mind Body Problems in Children and Adolescents	501
	Aproteem Choudhury, Christina Clare, Snigdha Srivastava, Samuel Tullman, Lance Westendarp, Sana Younus, and Kirti Saxena	
	Index	515

Contributors

Clara Aisenstein La Jolla, CA, USA

Celia Atri Clinical Masters at Centro Eleia, Mexico City, Mexico

Angela Bachim Child Abuse Pediatrics. Section of Public Health Pediatrics,
Baylor College of Medicine & Texas Children's Hospital, Houston, TX, USA

Toby Belknap University of Arkansas for Medical Sciences, Little Rock,
AR, USA

Jennifer Benjamin Complex Care Clinic, Houston, TX, USA
Baylor College of Medicine, Houston, USA

MariAlison Bowling University of Utah Health, Salt Lake City, UT, USA

Antonio Gabriel Cabrera University of Utah Health, Salt Lake City, UT,
USA

Prakash Chandra University of Missouri Kansas City School of Medicine,
Kansas City, MO, USA

Karthik Cherukupally Baylor College of Medicine, Houston, TX, USA

Aproteem Choudhury Texas Children's Hospital, Houston, TX, USA
Division of Child/Adolescent Psychiatry, Texas Children's Hospital, Houston,
TX, USA

Christina Clare Division of Child/Adolescent Psychiatry, Texas Children's
Hospital, Houston, TX, USA

Jessica DiCarlo Psychiatry and Behavioral Sciences, The University of
Texas Health Science Center at Houston (UTHealth), Houston, TX, USA

Muhammad Ishaq Farhan Department of Psychiatry, University of
Missouri Kansas City, Kansas City, MO, USA

Kristen S. Fisher Department of Pediatrics, Baylor College of Medicine,
Houston, TX, USA

Srinivasa Gokarakonda Medical Student Clerkship Director of Child &
Adolescent Psychiatry, University of Arkansas for Medical Sciences, Little
Rock, AR, USA

Kenia L. Gomez Department of Pediatric Newborn Medicine, Brigham and Women Hospital/Massachusetts General Brigham, Boston, MA, USA

Simone Higgins University of Washington-Seattle Children's Hospital, Seattle, WA, USA

Suni Jani University of Maryland, College Park, MD, USA

Andres Jimenez-Gomez Joe DiMaggio Children's Hospital, Hollywood, FL, USA

Stiles-Nicholson Brain Institute, Florida Atlantic University, Jupiter, FL, USA

Sutapa Khatua Complex Care Clinic, Houston, TX, USA

Baylor College of Medicine, Houston, USA

Muhammad A. Kamran Department of Pedodontics and Orthodontics, King Khalid University, Abha, Saudi Arabia

Liaquat College of Medicine and Dentistry, Karachi, Pakistan

Kulsoom Kazmi Child and Adolescent Psychiatrist, Baylor College of Medicine, Staff Child Psychiatrist Legacy Community Health, Baytown, TX, USA

Rachel A. Kentor Department of Pediatrics, Baylor College of Medicine, Houston, TX, USA

Sutapa Khatua Baylor College of Medicine, Houston, USA

Soujanya Koduri John Peter Smith Hospital, Fort Worth, TX, USA

Division of Child/Adolescent Psychiatry, Texas Children's Hospital, Houston, TX, USA

Matthew Koller San Antonio, TX, USA

Private Practice of Psychiatry and Work at Talkiatry, Inc., Dallas, TX, USA

Nihit Kumar University of Arkansas for Medical Sciences (UAMS), Little Rock, AR, USA

Psychiatric Research Institute, University of Arkansas for Medical Sciences, Little Rock, AR, USA

Sherin Kurian Baylor College of Medicine, Houston, TX, USA

Texas Children's Hospital, Houston, TX, USA

Juan Augusto Laplacette Universidad de Buenos Aires, Ciudad Autónoma de Buenos Aires, Buenos Aires, CP, Argentina

Teresa Lartigue Mexican Psychoanalytical Association, Mexico City, Mexico

Steven M. Lazar Division of Pediatric Neurology and Developmental Neuroscience, Texas Children's Hospital, Houston, TX, USA

J. Martin Maldonado-Duran Menninger Department of Psychiatry, Baylor College of Medicine, Houston, TX, USA

Complex Care Service, Texas Childrens Hospital, Houston, TX, USA

Texas Children's Hospital, Houston, TX, USA

Maria Ximena Maldonado-Morales Baylor College of Medicine, Texas Children's Hospital, Houston, TX, USA

Henry Marquez-Castro Imperial County Behavioral Health Services, El Centro, CA, USA

Heather Moore Complex Care Clinic, Houston, TX, USA

Baylor College of Medicine, Houston, USA

Manuel Morales-Monsalve Faculty of Psychoanalytic, Center for Greater Kansas City, Kansas City, MO, USA

General, Child and Adolescent Psychiatry, Truman Medical Center, Kansas City, MO, USA

University of Missouri Kansas City School of Medicine, Kansas City, MO, USA

Mayela Moreno Mentalizar México and Anna Freud Center, London, UK

Shankar Nandakumar Menninger Department of Psychiatry and Behavioral Sciences, Baylor College of Medicine, Houston, TX, USA

Caroline Nardi Division of Child and Adolescent Psychiatry, Medical University of South Carolina, Charleston, SC, USA

Vinh-Son Nguyen Menninger Department of Psychiatry and Behavioral Sciences, Baylor College of Medicine, Houston, TX, USA

Sohail Nibras Department of Psychiatry Baylor College of Medicine, Saint Louis University, St. Louis, MO, USA

Patrick O'Malley Child and Adolescent Psychiatrist. Baylor College of Medicine, Houston, TX, USA

Child and Adolescent Psychiatry Service, Baylor College of Medicine, Houston, TX, USA

Amanda Padilla Department of Pediatrics, Baylor College of Medicine, Houston, TX, USA

Solaine Perez Polanco Psychiatrist, Texas Children's Hospital Pediatrics Outpatient Clinic, Houston, TX, USA

Luis F. Pérez-Martini Edificio Centro Médico, Ciudad de Guatemala, Guatemala

Kirkland Polk Department of Pediatrics, University of Cincinnati, Cincinnati, OH, USA

Gage Rodriguez Ochsner Health System, New Orleans, LA, USA

Jared Rubenstein Department of Pediatrics, Baylor College of Medicine, Houston, TX, USA

Ana Lia Ruiz Universidad de Buenos Aires, Ciudad Autónoma de Buenos Aires, Buenos Aires, CP, Argentina

Juan Manuel Saucedo-Garcia Universidad Nacional Autónoma de México, Mexico City, Mexico

National Autonomous University of Mexico, Mexico City, Mexico

Kirti Saxena Baylor College of Medicine, Houston, TX, USA

Texas Children's Hospital, Houston, TX, USA

Division of Child/Adolescent Psychiatry, Texas Children's Hospital, Houston, TX, USA

Amanda Scully Baylor College of Medicine, Texas Children's Hospital, Houston, TX, USA

Cheru Sehgal Menninger Department of Psychiatry, Baylor College of Medicine, Houston, TX, USA

Amanda Small Baylor College of Medicine, Houston, TX, USA

Hirsch K. Srivastava Department of Psychiatry, University of Missouri Kansas City, Kansas City, MO, USA

Snigdha Srivastava Division of Child/Adolescent Psychiatry, Texas Children's Hospital, Houston, TX, USA

Samuel Tullman Division of Child/Adolescent Psychiatry, Texas Children's Hospital, Houston, TX, USA

Anna West Complex Care Clinic at Texas Children's Hospital, Baylor College of Medicine, Texas Tech University School of Nursing, Houston, TX, USA

Lance Westendarp Division of Child/Adolescent Psychiatry, Texas Children's Hospital, Houston, TX, USA

Lauren Woods Embark Counseling LLC, Kansas City, KS, USA

Nora Woscoboinik Universidad de Buenos Aires, Ciudad Autónoma de Buenos Aires, Buenos Aires, CP, Argentina

Ashok Yerramsetti Department of Psychiatry Baylor College of Medicine, Saint Louis University, St. Louis, MO, USA

Sana Younus Division of Child/Adolescent Psychiatry, Texas Children's Hospital, Houston, TX, USA

Stephanie Yudovich Yudovich Counseling and Consulting, PLLC, Houston, TX, USA

Part I

**Developmental Issues in the Embodiment
of the Self in Children and Adolescents**



The Body and Mind of the Infant

1

Juan Augusto Laplacette, Ana Lia Ruiz,
and Nora Woscoboinik

The universe is made of stories, not of atoms

Rukeyser (1968)

The ego is first and foremost a body ego

Freud (1923)

Introduction

The human infant is born with a relatively well-developed perceptual system, programmed to maximize the possibility of detecting other people, of “triggering” responses in the caregivers, so they would want to take care of the baby. The newborn is highly “altricial” (i.e. highly dependent on caregivers) and the relatively well-developed perceptual capacities (vision, hearing, touch, taste, and smell) are accompanied by a relatively less-developed motor system. The newborn is highly dependent on the care of adults to gain access to food, to keep his or her temperature regulated, and to have different experiences. The newborn cannot walk or run like other, precocial, animals do shortly after birth. As a result of these features, there will be a relatively prolonged period of nearly total dependency on the mother and father, plus other caregivers.

Bowlby (MacDonald, 2001) emphasized the importance of real-world life experiences in shaping the mind, emotions, and other aspects of the internal world of the child. These experiences

will determine the infant’s perception of others and also of him or herself, and the capacity to trust.

One of the important issues for the experience of the infant is the responsiveness or sensitivity of caregivers to the signals and other bodily communications of the child, such as crying, movement, smiling, etc. Only in the day-to-day interactions, contingent responses from caregivers (mother, father, others), the child can construct a sense of agency (Fonagy and Target, 2007). This consists of a feeling of making a difference in the world and of being significant or important. The relationship with the primary caregivers provides the foundation for the development of multiple functions, such as language, thought, and symbolization, as well as fostering the capacity for empathy (Fonagy and Target, 2007).

For decades, it was thought that the motor repertoire of the newborn up till around 3 months consisted primarily of reflexes, such as the plantar or palmar reflex, the stepping reflex, the rooting reflex, etc. These reflexes are triggered by specific stimuli, are involuntary, and constitute part of an evolutionary inheritance to promote the growth and survival of the infant. Many of these reflexes tend to diminish or disappear around the

J. A. Laplacette (✉) · A. L. Ruiz · N. Woscoboinik
Universidad de Buenos Aires, Ciudad Autónoma de
Buenos Aires, Buenos Aires, CP, Argentina

third month of life. However, there is much more to the behavioral repertoire of the baby.

The interest that young infants show in caregiver's faces, the movement of their caregiver's eyes and mouth have been recognized more recently as part of this repertoire. They constitute a "social preparedness" to detect fine facial features and to elicit social responses. At around the first month of extrauterine life, the baby starts manifesting a social smile. This is a powerful reinforcer for caregivers, who are "rewarded" by their infant with a greeting response and at the same time with a feeling of tenderness and warmth toward the baby. The infant quickly becomes, as Freud called it, "his majesty, the baby" (Blumenberg, 2006). The baby at around the third month will start vocalizing and making sounds of a guttural nature to engage in "proto-conversations" with his/her regular caregivers, "taking turns," and maintaining a social interaction in this way. These responses, which may well be "innate" need to be fostered or reinforced by caregivers who respond to the signals of the baby and provide a nascent sense of "agency." As the baby smiles and the mother or father smile too, or respond with vocalizations, looking, or picking up the infant, this will reinforce this "communicational loop" and make it develop further. In situations in which the mother, father, or other caregiver is not responsive, these infant behaviors may become rudimentary or not develop.

The baby who experiences distress or discomfort will start moving the body in characteristic patterns and will "elicit a response" from the devoted caregiver. This is so particularly if the movements of "asking to be picked up" are accompanied by crying. The tactile contact with the infant will produce a number of responses that will help the baby become calm and feel soothed, contained, or held. They also help the adult to feel reassured and calmer.

It is likely that the ritualized experiences of many cultures, like massages, or the simple touch of the mother while she holds the baby in different situations (feeding, bathing, soothing) will

help the infant develop a sense of his or her body in space and "how it feels" to be protected, held, and contained. This may contribute to the unconscious expectation that something positive will happen when the infant is in distress. Also, it may give an idea of the feeling of "being with another" in the bodily sense. A pleasurable association may develop between human contact, warmth, and a feeling of contentment and calm. These experiences are "preverbal" and merely create, by their repetition, memory patterns or "somatic memories" of being with and of being calmed and "mattering."

From this starting point, there is a great asymmetry between the newborn and the adult caregiver. There is a discordance between the biological birth and the subjective birth. In this space of time occur a number of processes: first there will be an emotional investment on the fetus, its "prematurity," and then a "bath of affects" after birth (Lebovici, 1988), which will determine much of the future of the subject.

Those who surround the baby, the people and the physical space, regulate the level of stimulation of the infant, both sensorially and with an "avalanche" or fantasies and hopes from the parents and others. The regulation of all these affects and stimuli is necessary so that the baby is not inundated in a sort of "secondary violence," a term proposed by Aulagnier (1975), i.e., an assault of stimulation, hopes, projections, and expectation from caregivers. When these expectations are rigid or too intense and fixed, they may lead to what Lebovici called "pathology of destiny" (Lebovici et al. 2002). For example, the arrival of the baby may be anticipated to "save a marriage" or to "fulfill the father's hopes the son would become a great sportsman."

For Winnicott (1965), the primary mother-infant bond is the first stage for the construction of intersubjectivity. Subjectivity can be construed as the intimacy of minds, the baby is attuned to the caregiver and the latter is attuned to the infant, in "synchrony". This is accomplished through actions like "holding"; at first, this holding is pri-

marily sensory and corporeal. The baby, being held and handled by the caregiver, develops a somato-sensory continuity. Intersubjectivity is the capacity for minds to compenetrates one another, to be able to feel with the other, in a reciprocal way.

In the first stages of extrauterine life, the mother–baby interaction is essentially through the bodies. It could be said that an adequate manipulation of the baby’s body allows the development of a psychosomatic association between the baby’s body and its environment. Thus, the baby experiences the sensation of habituating his or her own body, in the way to an integration between soma and psyche (Schejtman, 2008).

For B. Golse (2013a, b), one of the irreducible needs and rights of infants is the experience of having a “psychic envelope” through the gestures, gazes, and the voice, all of which are part of the maternal holding (Winnicott, 1971). In this way, the good-enough containment by the adult caregiver allows the baby to feel its skin as a container.

Since the first moments of extrauterine life, the body of the infant is the main means of expression of its relationship with the surrounding world; this is through preverbal actions. This occurs in a sort of continuum of interactions from the somatic to the symbolic. It is precisely in psychosomatic conditions where one finds a rupture in this symbolic chain (Nasio, 1996): in these situations, the patient (older child or adolescent) expresses him or herself in a preverbal form, through the body. Historically, from the origins of psychoanalysis, the topic of “the body” was central, of crucial importance as the scenario where hysteria was expressed, in the form of functional paralyses, pseudo-seizures, and functional anesthetics. The treatment of these conditions led to propositions like an “unconscious anatomy” and the psychic representation of the body, which can be very different of the “anatomical reality.”

From a psychoanalytic perspective, Jacques Lacan uses the term “matter” (not referring to organic matter) as the main component of the

corporeal mass. He refers to a matter made of “meanings” (Homer, 2005; Gorali, 2012). In this sense, the body of the baby “has a meaning” or is “a significant.” Whether the baby is beautiful, short, has black or green eyes, all of these are part of such meanings. In his theoretical–clinical formulations, Tendlarz (2010) studying children’s suffering, and based on Lacan’s ideas, expressed the notion that to have a sense of being in a body and to use it, the child has to develop the capacities for symbolization, and imagination. If the young child is not able to operate symbolically, and to achieve the acquisition of boundaries in space and time, the child may experience himself as “without body” (Tendlarz, 2010).

Nevertheless, even though the infant as subject, as a signifier, is immersed in a symbolic system, one cannot reduce the baby only to a symbol. The child is a symbolic being of course, but at the same time, a living being (Canteros, 2007). Any approach to a deep understanding of children has to take into account the human complexity and the “real body” of the child. It is different to be born premature or at term, with normal perceptions and the ability to move, than not having some of those abilities.

Canteros (2007) highlighted the fact that in the body of the child, one can find the marks of his or her culture, the influences of history, as well as his or her uniqueness. There is a need to understand the child as unique and at the same time as a cultural and historic being. It may mean something different to parents and other relatives to have a boy or girl, a blonde baby or a dark-skinned one, a “strong baby” or a baby who needs to stay for a time in the neonatal intensive care unit.

In the interactions between the psychic and the somatic, one can approach a psychoanalytic understanding of psychosomatics: as a discipline that studies psychological factors, conscious and unconscious, which operate in the causation, progression or treatment of psychosomatic conditions. In order to understand psychosomatics, one has to take into account the function of unconscious thoughts or feelings on the normal and pathological functioning of the body (Ulnik, 2009).

As Ulnik explains, the delimitation between the somatic and the psychic is not a well-defined boundary, but a diffuse area, and this is the zone of interplay between different forces in the subjective self, which may be manifested through diverse bodily signs or symptoms.

In the following sections, we attempt to consider different dimensions of the constitution of the embodied mind, starting with an approach to intersubjectivity. At the center of intersubjectivity, we find the early infant–adult attachment. Here, we describe some ways in which the adult helps the infant to arrive at a primordial concept of the subjective self. We illustrate these phenomena with a clinical vignette, which will allow us to explore the meeting of theory and clinical practice.

We also discuss some challenging situations, such as the birth of a blind infant, due to bilateral agenesis of the ocular globes and atrophy of the optic nerves. Then we focus on the importance of play in the development of the infant and the parent–infant interactions. Play helps the child to acquire his or her body image. Finally, we explore these processes in terms of the role of parents and their use of electronic devices for themselves and for the infant.

The Body of the Infant from an Intersubjective Perspective

Psychoanalytic views propose that humans are not born with a concept of their body. The body image is constructed in the first years of life. If we ask ourselves what is a body, for a human being, the answer cannot be just biological and physiological elements. Of course, all of us expect to have a body, but it would be horrifying and extremely difficult to “only be a body” (Deleuze, 1995).

In order to “acquire a body” (or the sense of the realization “I have a body”), the child has to go through what Lacan (1949) called the “mirror stage” (or specular stage). This is considered a “drama which moves forward” from a feeling of insufficiency to a state of “anticipation of

being seen.” The young child goes from a fragmented perception of the body to an image of the self as an entity, as a unity and perceived by the child as “myself”; this occurs even before all the motor abilities have been completely developed.

Many authors see the acquisition of the concept “my own body” as completely linked to the development of subjectivity and eventually the capacity to see inside ourselves, which is only possible if one has achieved the capacity for intersubjectivity.

Intersubjectivity consists of discovering another person in the external reality; it is a profound experience which allows us to notice the “I” and “the other” (“you”) as two distinct entities (Golse, 2013a, b). This occurs in the arena of interactions between child and caregiver. The intrapsychic is achieved as a process of subjectivation (feeling myself as a subject, as an agent). The transit from intersubjectivity to introspection is only possible by internalizing, into one’s mind, what occurs in the interactions between the baby and his or her caregivers.

This very concept of internalizing interactions is what Bowlby (1998) called “working models of relationships” in the attachment theory. Another way of speaking of these working models is as a generalized psychic representation of interactions (Stern, 1985). This is accomplished by affective attunement between the caregiver and the baby, who reads the child’s internal states and reflects them to the infant: “you are tired” or “you are smiling,” etc. A corollary of this is that when the caregiver does not reflect these feelings and interactions with the baby, the subjectivation of the mind (I am myself, I am an agent) is endangered.

Taking these concepts even further, one could say that the passage from the interpersonal to the intrapsychic (from intersubjectivity to subjectivation) is what we call “mirroring.” This is an action by the adult *vis-a-vis* the infant, like “being seen” or “being noticed.” In order to feel that one is a subject (able to think and do), the child has to experience himself as an agent that matters. A parallel development is not only to realize that another person “exists” but also to be able to

internalize the other as an object (a person) and at the same time another agent (a person with a mind and intentions, a subject) (Roussillon, 2010).

The developmental acquisition of intersubjectivity consists also of a work of “differentiation” (myself different from the other), and at the same time, it consists of “creating links” or connections. Golse illustrates this with the apt metaphor of the spider. In this image, the spider represents how to become separate and not to be torn apart or abandoned: when the spider is on the ceiling and wants to go to the floor, it does not “jump down,” but creates a thread. In his way, when the spider is on the floor, it is separated from the ceiling, but still connected to it. It is on the floor of course, but still it can go up to the ceiling with the thread.

The conclusion is that at the same time that a child creates distance and separates from others, he or she does it only by creating (psychic) links. The primary links, the most “primitive,” are the early interactions, at the emotional, behavioral level, but also at the level of fantasy, through attachment, emotional attunement, empathy, and imitation. That is, the sharing of emotions, of the same tone.

In psychoanalytic terms, one would say that intersubjectivity is also achieved through the normal two-way “projective identifications” that occur between the adult and the baby. Projective identifications consist of one member of the couple accepting the projections of the other (the mother saying for instance “you are my beautiful baby” and the baby receiving that connotation). Conversely, the mother accepts the projection from the baby – “you are my savior and support.”

What enables the baby to arrive at intersubjectivity? There is currently a debate between theoreticians: there is a group that conceives this process as gradual, and another that considers it is achieved at a given time and quickly. There is a theory of a “primary intersubjectivity” which is an inherent human tendency, genetically programmed (Trevarthen, 2003. Stern, 1985), but the

thinking about what other people think or want is achieved later on, in the early years of life.

Stern highlighted the fact that even the newborn is ready immediately to perceive, to make mental representations, to memorize, and to feel as an agent of its own actions (the process of becoming an agent, as cognitive psychologists describe it). This discards the previous “dogma” that the infant was a psychologically undifferentiated physical being at first.

Maiello (1993) posits that the first “object” of the fetus is the voice of the mother, which is a primary sound stimulus which the baby in utero perceives, both from the interior of the mother’s body and as an outside sound. When the mother speaks, the voice is externalized and returns to the ears of the fetus traversing the abdominal wall. This author suggests that in utero, there is a sort of preparation for the future work of perceiving the difference between the presence and the absence of the love object (e.g., the mother). The voice of the mother appears and disappears, it is there and it is not there. This maternal stimulus, her voice, which is discontinuous and unpredictable for the baby in utero, could be thought of as a form of primary intersubjectivity.

Many psychoanalytic practitioners, on the contrary, think that there is really a progressive dynamic development toward “differentiation,” which is a slow process, of distinguishing between the inside of the body and the outside. Perhaps this view is anchored in their clinical experience with children who are unable to progress from the first stages of this ontogenetic differentiation, with severe psychopathologies, who have what is called “archaic psychopathology” such as autism or “infantile psychosis.”

There is a third school of thought, a dialectical way of thinking about self-other differentiation. In this approach, the achievement of intersubjectivity is not an “all-or-nothing phenomenon,” but a dynamic process: there are moments of primary intersubjectivity, moments of disruption, and moments of undefined connection. All of this is a challenge for the baby in learning how to interact with the surroundings. The infant will attempt to

gradually stabilize those very first attempts at intersubjectivity, and gradually triumph over the state of primitive nondifferentiation (Golse, 2013a, b).

Meltzer (Bick et al., 1986) conceptualizes the moment of breastfeeding as one of “maximum consensual attraction.” According to Meltzer, while the baby is being breastfed, he or she acquires multiple perceptions at the same time, then the baby stops, the baby is calm, and then resumes breastfeeding. The baby has to work and will have to continue working on this oscillatory process, experiencing alternatively attunement and disconnection, and finally will manage to maintain a sense of connection with the other, accessing the experience of intersubjectivity, in the future in a more stable way.

Once achieved, the capacity for intersubjectivity is not like a stable state. It is like a conquest that has to be preserved and fought for by all of us throughout our life. The person will have to try to connect with others in circumstances like loving someone, being part of a group or even when one thinks about dying, but “not alone,” rather with those with whom one has connected emotionally.

It is clear that multisensory perception of the other (the object) is a *sine qua non* condition to perceive another person as exterior to oneself.

The available cognitive data show that in order to feel that an object is external to the self, one has to perceive it through various sensory channels at the same time. Also, there is a co-regulation between the infant and the caregiver, for example, the mother. It is not possible to arrive at this co-regulation without the voice of the mother, her face, and the holding of the infant, which become organizers of this affective co-regulation. In this context, it is important to underline that no child can fully become a subject if he or she was not anticipated or thought to be so by the adult who looks after him or her.

These notions, whose nucleus is intersubjectivity, let us now think and deepen our understanding of the primary role of the caregiver in the early developmental process of the embodiment of the baby.

The Role of the Caregiver in the Embodiment of the Infant

One of the main psychic functions of the caregiver, regarding the embodiment of the baby, in psychoanalytic terms, is called “libidinization.” This means the investment of vital energy (libido) in the body of the child: a “bath of affects,” admiration, physical closeness, containment, and tenderness, among others. In technical terms, this is conceived as the erotization (Eros being libidinal energy) of the body of the baby with “enigmatic messages” (Laplanche, 1989). Laplanche proposes the mother or other caregivers make a “libidinal investment” in the baby, which in turn is perceived by the infant as tenderness, warmth, and containment and makes him or her want to be together with the caregiver, if possible in skin-to-skin contact. All of this is further reinforced by other “libidinizing actions” involved in maternal care: feeding, bathing, carrying in her arms, etc. This implies a parental conscious affective investment in the child, but also it implies unconscious fantasies which may be transmitted to the infant as “enigmatic significant”: These are enigmas because the child is not only unable to translate them, but also because those significant are tinted of fantasies, conscious and unconscious, by the adults. For the infant, the repository of these fantasies and libidinal investments, those enigmatic significant, is untranslatable. As the child grows, they may become more evident and may determine to a considerable degree the emotional life of the child.

Bleichmar (2012) refers to these interactions mentioned above as a process she calls “transferring of narcissism.” This concept implies that the mother or another primary caregiver through her emotional investment in the child, creates physical responses in the baby, such as excitement, happiness, contentment, or a state of calm at different times. The “transference of narcissism” allows the parent to identify with the child and for the child, to see the caregiver as belonging to him or her. There is a sort of “narcissistic unification,” which could be translated as “you belong with me, and I belong with you” or “you are like me and I am like you” at this stage of development.

The baby identifies with his or her mother, a narcissistic unification, so to speak. Later on this, “unified narcissism” will be frustrated by the unavoidable frustration of the wishes of the child for immediate comfort, being held, fed, etc. At that time, the baby may have to develop strategies to calm himself, to content himself. The oscillations between being held and contained by the mother, and attempting to calm oneself, lead to a process which is like a metabolism of the mind. In the end, psychic reality in the mind of the child will be a “mixed product” of the external realities and the internal wishes of the child, the outside and the inside.

This is then, the process through which, there is an awakening of the internal drives of the baby, so to speak. The satisfaction of these drives or wishes is initially achieved only with the participation of “the other” (mother, father, other caregiver). At the same time, the baby is a satisfying participant (becomes an “object”) for the other (the caregiver).

This is a process that Lacan (1964) called the “third phase of the drive circle.” Lacan’s views are different from the traditional conceptions, regarding this concept of “circuit of drives.” In Freud’s formulation (1915), the circle of drives occurs in three phases. For example, with the issue of the oral drive, this would be the circle: First phase, active, the baby goes toward the breast or the milk bottle that will feed him(her): i.e., time to eat. Second phase: a reflexive phase: the baby satisfies itself with the thumb or with a pacifier (“time to eat oneself”). This phase eventually becomes “auto-erotic”. The third phase is considered by Freud as a passive one. The satisfaction of the oral drive is complete when the baby offers itself as an object for the mother’s pleasure, and the baby is satisfied by the pleasure he or she causes in the other person. This is, observing the pleasure that the infant’s action and response cause on the other. In our metaphor of eating, this would be the equivalent of the infant saying: “time to make oneself be eaten” by the other, so to speak. This metaphor means being bathed in the love of the parents.

In Lacan’s view, this “third stage” is instead also an active process, as the baby actively looks for the chance to make himself the object of pleasure of the other, and likes to elicit such pleasure, e.g., in the mother. The arrival at this “third active stage” by the infant is an indication that the baby has achieved intersubjectivity, so now there is a sort of differentiation in intersubjectivity.

Golse presents an alternative way to understand these processes: agency and intersubjectivity. Golse suggests there is a mental passage from the “feeling of being” to a “feeling of existing.” Perhaps all animals may feel they “are,” they have the experience of being alive and living. To feel these, one does not need to have experience oneself in connection with another person, i.e. an external object. By contrast, in the human infant, the feeling of existing (“ex-isting”) by definition refers to an external referent, the objects around oneself. Existing presupposes having experienced intersubjectivity and feeling one’s own subjectivity.

The passage from “being” to “existing” can be a traumatic one; therefore, in the perinatal stage, one must emphasize caring for the mother and caring for the infant so that this passage can be a gradual one. But what happens when at birth things do not follow the expectable developmental pathways in the embodiment of the baby?

The Birth of a Baby Who Is Different from the Expected

As we have indicated, the body of the baby is surrounded by a “fantasmatic envelope.” That is all the *reveries*, fantasies, imaginings of how the baby will be, which are formed by the future mother, the future father and other relatives. All have unconscious and conscious expectations of “how the baby will be,” look like, behave, and act after birth. This is the “fantasmatic envelope.”

Fantasmatic means unconscious and conscious fantasies about the baby. The mother may expect the baby to “be a hero” or “a great doctor;” the father may hope his son or daughter would be “a savior of the marriage” or “fulfill the father’s

dreams.” The same applies to other relatives. These fantasmatic expectations are determined by the developmental history of the parents, the “family romance” (the images that each parent have of “what is a family”), and, at the same time, there is a set of cultural expectations as a part of such fantasies surrounding the baby: e.g., “boys will take care of their parents when they are old,” or “a girl will get married to a nice young man,” etc. All of these cultural expectations dictate “how a baby is perceived” (or should be).

Gutton (1983) considers the birth of a baby as a momentous “happening”: at that moment, the fantasies and reality confront each other. Sometimes in line one with the other, and sometimes in sharp contradiction. At birth, there is an encounter between the “ideal baby” (internal object, the baby during the pregnancy) and the “real baby,” the newborn who one can see, hear, and touch. The delivery and the time immediately after birth is the “moment of truth.” The mother has “lost something from inside” and at the same time “gained something in the outside.” One could say that the body of the baby, as an erogenous and biological entity, who encounters the maternal desire for a baby. In a very real way, the baby “makes the mother a mother” (Lebovici). This author said, “when the baby is born, the mother is also born” (Lebovici, 1983).

An open question is what happens when at the moment of birth, the infant is not only different from the fantasied and imagined baby, but the child might have very different physical characteristics. For instance, the child might have a congenital malformation. The challenge is to identify the baby as “ours” despite obvious differences, and not to perceive the baby as a stranger or an alien.

The experience of “estrangement” (*entfremdung* in German) was described by Golse (2019) as a reaction toward a child, who appears as a stranger, someone one does not recognize. The child will “adopt” us and we will adopt the child, in the sense of mutual belonging to each other, a reciprocity that will continue in a long-lasting relationship. Eventually, this “mutual adoption” between caregiver and child will lead to a “filia-

tion” of the child within the family, as a child of this father and mother, or other possible combinations of primary caregivers.

The concept of “estrangement toward the child” is interesting when one explores the psychic processes that might take place in the parents when a child is born with a congenital malformation.

In order to explore these processes, we will accompany Mariano, a baby who was born blind due to agenesis of the ocular globes and atrophy of both optic nerves. Mariano is the third and youngest child of a couple; there are two older sisters, who are 5 and 3 years old.

The First Encounter with Mariano and His Parents

Our first encounter with this family took place in the maternity ward of a hospital in Buenos Aires, Argentina (the Italian hospital). The newborn is rooming-in with his mother. He was born 48 hours ago. The neonatologist introduces the psychotherapist to both parents. The physician says to them that here is the psychologist in the neonatology service and that besides, she is a teacher for blind children.

The father is sitting at the bed's edge, he is carrying Mariano in his arms, a little tilted and on his left side, supporting part of his body on his lap. Mother is sitting next to them.

I introduce myself to them and ask them how they feel. They start asking me questions as a person who specializes in blind children. I answer their questions and I inquire how they are feeling, particularly the mother after the delivery. I ask this in order to gain a sense of their internal experiences.

Mariano, who had been calm until now, starts flexing and extending his limbs and moves his head from one side to the other. One can observe the “sunken eyes.”

The father talks to Mario and tries to give him a pacifier, but the newborn does not open his mouth and he moves his head to both sides. The father then takes the baby's right hand and starts caressing his fingers. Then Mariano gradually calms and stops moving.

The mother says that she notices that Mariano looks for her breast and latches on to the nipple, and that she does not notice any difference with her previous children.

The father remains supporting Mariano's hand.

Maldavsky (1994) describes what happens when a baby with malformations is born into a family. In most cases, one could describe a sort of “family traumatic state” (or traumatic neurosis). This represents a significant alteration in the libidinal investment of the family. This investment mostly is set in motion by the mother.

In this first encounter, we listen to how the mother, faced with the impact of her son who was “born without eyes,” overcomes the impact of her emotional pain by saying there are no differences between this child and the older ones.

Our intervention would aim to try to link her affects with mental representations or words as a strategy to process what could be experienced as traumatic.

In this first encounter, we can observe the way the father supports the baby and think that the infant can find in the family someone who could “put the bits together,” to use Winnicott’s expression (1965). As the baby becomes slightly agitated, the father caresses Mariano’s hand until he can become calm. In this sense, this is an “empathetic regression” (Spitz, 1958) of the whole family due to the birth of the baby. We observe in action how the surrounding and comforting gestures, gazes, and voices would gradually exert an “enveloping” or protective psychic membrane, so to say, that constitute a containing function for the baby. This is originated from another person, in this case the father, who helps the baby to start feeling his own skin as a containment system.

Getting to Know Mariano

In a subsequent session, Mariano is brought by both of his parents and with the sisters to a family session, whose purpose is orienting and accompanying them in their reactions. The father brings Mariano in his arms, the latter remains asleep. The father sits and the baby molds to the arms and the father’s movements.

The mother says she is feeling quite tired, as Mariano “is a mamma’s boy” and does not want to sleep in his little crib. The father, trying to help, put next to the baby the mother’s brazier so the baby would smell it and would not cry, but that did not work.

The father spontaneously brings up the topic of Mariano’s hands. He says that the baby moves his

hands more than his daughters did. They ask me why he cries a lot. He already recognizes his mother’s voice. When he hears her voice, he moves his head in the right direction, he pays attention and stops moving, when he detects his mother is around.

They continue talking about the baby’s sleep, saying he cries a lot and he only calms down when he is in the bed with his parents, but not in his crib. “The girls were calmer; they got us used to sleep well, through the night.”

I tell them it seems that Mariano is quite different, they agree. They say they try to watch him closely so the he guides them in the future.

In this session, as well as in further ones, a question arises, one that marks our way of listening to them “how is the life of a blind child?”

While I was listening to the family, during sessions, I at times would remain silent, observing Mariano and maintaining a “hovering attention” or free floating stance, as advised by Bion (1970) in his work “Attention and interpretation”: “It is due to this free floating attention to one’s psyche, that elements that appear disperse, can regroup in a common entity, link each other and we arrive at a meaning.” This function allowed us to “listen to what could be the lived experience of the baby, in depth”.... “He is conveying messages we try to receive, through his body and his emotional tone” (Winnicott, 1958). Thus, we can say that we are “paying attention to the baby and to his parents. At the same time, the parents are paying attention to their baby.” Let us remember in this context, for instance, the father’s comments regarding the hands.

Mariano remains in the arms of his father, He starts crying and we can see his body, flexing and extending his limbs. He was originally asleep and now he is irritated.

His father attempts to give him the pacifier but he rejects it with head movements from side to side. His mother says Mariano might be hungry and unbuttons her blouse toward the waist. She takes Mariano in her arms and places him on the right breast. The baby moves his head a little and opens his mouth until he finds the nipple. His mother helps Mariano in this search, and guides his head with her hand.

When Mariano starts sucking, his body relaxes. The mother further supports Mariano with her right arm, and maintains the baby over her breast. Part of her body is in skin to skin contact with her son. She leans back to make it easier for Mariano

to continue feeding with his body over hers. The baby, with his right hand, touches the breast.

After some minutes, Mariano withdraws his mouth, stops suctioning. His mother encourages him to continue and the baby turns his head away and starts to make irritated sounds and begins moving his limbs. The mother stands, she starts rocking him and as she does not manage to calm him, she gives the baby to her husband, and she buttons her blouse partially.

Mariano is now crying intensely in his father's arms. He gives the baby to her again. She places the baby over her shoulder, in skin to skin contact, and she starts talking to him softly, in his ears and says "he is so little," and Mariano starts to become calm.

In her book on the child with developmental delays and the mother, Maud Mannoni (1964) discusses the question "what is for the mother the birth of her child?" She has desired a baby through the course of the pregnancy, in a sort of compensation for her perceived deficits. In her view, the baby is a reparation of the perception that she was missing something all her life as a child. The birth of the baby is a reparation of that. The infant is the fulfillment of fantasies and dreams, a fulfillment of what was empty in her own past. This is a fantasized image that is superimposed on the "real person" of the actual baby. Often the child has a mission to repair, to re-establish what in the childhood of the mother was deficient. Now, what happens if the baby who has all these "missions" on his birth, is born with an illness? What will become of the child? The reality of a "sick body" may cause in the mother a feeling of shock. Among all the mother's imaginations, an actual reality arises. The child's disease may re-awaken previous traumatic or unsatisfactory experiences. It may interfere with the feeling of "overcoming the past difficulties" or a feeling of lacking something or not having achieved what she wanted.

We could think that the psychic pain that the mother feels encountering her baby, so different to the desired child, may cause difficulty in the function of a "protective envelope" of the maternal function (Winnicott, 1958). This "real baby"

makes her a vulnerable mother, who needs "the help of strangers" to assist her baby and to find her own internal peace or balance.

The sequence described above, in which Mariano's mother gives him to the father as the baby starts becoming irritated, and then back to her, is repeated several times in the clinical sessions during the first months in Mariano's life. It is the mother who manages to calm him, but she also needs the support of the father, who holds Mariano at times, while she reorganizes herself (perhaps also psychically), and then she can calm the baby.

While we observe the breastfeeding situation, one can see in action these maternal maneuvers and the responses of the baby. We observe skin-to-skin contact that the mother makes available to Mariano, a state of equilibrium is re-established through skin contact, proprioceptive stimuli, her smell, and her voice. It seems that in order to exert this function of "protective envelope," she requires the support and aide of her partner.

We observe how both, mother and father, giving the baby support and containment (and giving it also to each other), facilitate the baby reaching a homeostatic balance, regulating the outside stimulation and also the "fantasmatic stimuli" (the dreams and hopes). This function of containment and buffering protects the baby from being overwhelmed. If this avalanche of stimuli and rigid fantasies were to "rain" on the baby, it would constitute what Aulagnier (1975) called "secondary violence" as we noted before.

Therefore, during our observation of the body of our patients, and exploring the maternal and paternal fantasies, we are able to approach the possible objective experience of a baby like Mariano, a child who "does not see." We encounter a child who literally cannot see, but at the same time is a unique being who is working on the spiral of "becoming an interactive being" in whatever way he can (Golse, 2019). This is achieved partially through play interactions between the parents and the baby, a foundational pillar in the early stages of life.

Embodiment Through Play

Several researchers (Silver et al. 2008) conceive the pleasurable mother–infant interaction as a playful one; of course, this occurs with other primary caregivers. Play becomes a primal space for exchange and psychic structuring at this stage of development. The mother or other primary carer is the first play (ludic or playful) partner, offering a meaning to the spontaneous experience of the baby. These games include functions like regulation of affects, pleasure, and mutual interpretation of messages between the baby and his or her caregiver. The mother from her own mind, helps the infant to construct meanings (Aulagnier, 1975).

During infancy, play is a privileged means of communication, a creative and expressive discourse which allows the baby to explore the external world, and at the same time the internal world. Winnicott (1971) describes play as an entity in itself, which has a structuring function for the psyche.

From a cognitive point of view, the developmental progression of play starts with physical exercise or is “functional,” which occurs during the period described as sensory-motor by Piaget (1947), which consists of activities of exercise that repeat themselves out of sheer pleasure.

The play interactions evolve in various different forms in the mother–infant dyad, one of them is “games of supporting,” in which the baby is held by the body of the other, thus building a sense of trust (Calmels, 2004). In recent researches (Schejtman, 2008), it was observed that among 6-month-old infants, the “supporting games” predominate. Then there is a gradual transition from corporal support to a relational support through gaze and through the voice, as there is more space between the infant and the mother.

From his clinical practice, Ricardo Rodolfo (1989) described further functions to the game described by Freud (in *Beyond the Pleasure Principle*) as “fort-da.” This is a game with an object in which the object disappears (fort, in child’s language in German would mean “gone”) and da (“there it is,” in German child speak). So

the game is “it is here, it is not here.” Rodolfo suggests that in this game, which traditionally has been conceived as a game representing the mother being gone and then coming back, there are other meanings. Rodolfo suggests that in the first year of life, the game is related to the libidinal investment in the body. He observes that the infant, when he/she plays the game, is extracting significant elements from the body of “the other” to construct his or her own body: “it could be said that through this play, the child gives himself a body, as a gift” as the infant is the agent of the comings and goings of the toy (Rodolfo, 1989). In this game, we observe the activity of the baby as well as spontaneity. The infant is active and plays at its own rhythm. Rodolfo underlines that even though the baby is highly dependent, it does not mean he is just a passive being, on the contrary, in constructing his own psychic structure. The infant searches for materials among a collage of surrounding objects, heterogeneous objects, and even contradictory ones that form part of the family’s milieu.

From birth, the child uses eyes and mouth as organs of “incorporation” with which he or she starts the work of taking from the surroundings, and builds his or her own boundaries, the skin, for example (Anzieu, 1988). In Anzieu’s view, the infant starts by being “a natural grabber, a piercer” of multiple objects, with which he or she produces little things, little toys, things that often are discarded (in appearance). What does the baby make of these insignificant objects/materials he takes? Infant observation confirms the universal regularity of some sequences: grab small objects, make surfaces, add-ons, fabricated continuously if allowed to do so.

Rodolfo proposes that at first infant play is a combination of two maneuvers: piercing objects, and making surfaces, repeatedly (Rodolfo, 1989).

As a corollary of this play, the body becomes constructed in the mind through play. In play, there is no clear demarcation between the inside and outside of the body, nor of volumes. The play is like a continuous band, or Möbius band. This “band” includes the mother and other incorporated objects, as there is no interruption in these sequences. Failures in this continuity can mani-

fest as a lack of boundaries in the body image or surface, or to narcissistic states.

There are numerous everyday activities that allow one to observe the phenomena described above, many of them can be described as ludic activities too. For instance, a baby laughing and being happy can pinch or scratch the body of the caregiver, from joy. An infant can swipe the grandparent's glasses and hold on to them strongly. As Rodulfo suggests (1989), not only the hands are used for these "extractions" from the surroundings and for play. There are also games that involve gazes, appearing and disappearing, and other games involve hearing.

We can also observe that a baby who is being fed, plays. During the meal time, the child can smear his face or other body parts, as if building a layer over the body. The baby will often be angry or irritated when this activity is interrupted by worried parents. These can interrupt this sequence, cleaning the baby avidly and taking the puree away from their son or daughter. Of course, in different forms, these same games from infancy can be seen among adolescents. Many clinicians see adolescence as a "second avalanche of drives." For instance, some adolescents insist on wearing the same shirt everyday as though it were a second skin.

These activities are what we refer to as "construction of surfaces." Rodulfo observes that there are also "piercings" or disruptions in these constructive sequences, which one can observe in clinical situations. One of them, for instance, is addiction to viewing television (the lack of internal images could be at the root of the attraction to watch television, something outside oneself). At times, one sees the appearance of intense anxiety reaching quasi-psychotic intensity (this may relate to disruptions in the ability to feel reciprocal interactions and fearing being all alone in the world). We treated a girl, who had progressed in the treatment of her anxieties. We had theorized that she had experienced an early failure in the ability to "construct surfaces," she literally verbalizes her fantasy of painting her whole body with tempera.

In the first months of life, we have dealt with children who have suffered numerous medical conditions, some severe, such as chronic diarrhea, or a great vulnerability to infections. Rodulfo (1989) affirms that the baby responds with his or her body, he has no other available instrument.

In some cases, those bodily responses are transitory. There are other situations of "corporal piercing" (or failures in the development of a psychic surface) which may become fixated and be repetitive. This author suggests that sometimes the failure in establishing this "body continuity" leads to a basic psychosomatic tendency in the child. In those states, it seems that the body is a sort of battlefield, where internal conflicts are manifested as medical conditions, which may be unusual in young children, such as a stomach ulcer. The child responds to tensions and conflicts turning toward his or her body. At times with further development, or treatment, the child can acquire other arenas where to express conflicts and developmental changes.

In connection with these ideas, it is worth mentioning some of the characteristics highlighted by Ulnik (2009) in psychosomatic patients, based on clinical observations: difficulties in the capacity for symbolization.

For instance, older children may have difficulty to construct a mental image of "absence" of someone, which would help them to process separations and losses. There may be difficulty in the use of verbal language, problems to symbolize categories such as time and space. This may lead in the future to a tendency to develop symbiotic relationships with others, and a feeling of body fragmentation (somatic dissociation).

Aside from those more rare clinical situations, which are found in the consulting rooms, there is a new challenge in modern life. The growing problem of how to approach and deal with the relationship between young children and "screens" in multiple electronic devices. It would be valuable if this issue were investigated more, but we suggest some areas *a propos* of this to reflect and posit some questions.

The Body, Parenthood, and Electronic Devices

“Do more with yourtablet....” This is one of many advertisements encouraging the audience to buy a new tablet, which can do more things. The commercial on television starts with the face of a baby, who appears excited and is screaming for joy. Then it focuses on the father’s face, who says “Oh, no.” Then we can see with a wider view that both are sitting next to each other, sitting at a table and viewing the same tablet. The father is holding the tablet and tries to distract his child by pointing and saying “look, look” pointing to a corner of the screen. While the child is temporarily distracted, the father looks at another part of the tablet, smiling and screaming “yes..yes!” The infant looks at the father and starts to cry, screaming and putting his hand on his mouth. The father then plays a children’s cartoon on the tablet and shows it to the child, who quickly appears to calm down. Then the advertisement says: “What is wrong? It looks like the tablet can only do one thing at a time... But what happens with the new Brand of.....tablet”? Then in the commercial one can see the image of a tablet, its display, and functions. On the tablet, a new function is activated, one of a split screen, on one side one can see a soccer game, and on the other, cartoons. One can see the face of the baby, enthusiastic and content, then the father screams: “Goal!!!,” and the child observes the father. Then the tablet starts to ring, it is the baby’s mother calling. The announcer’s voice says: “with this new tablet the whole family has something to smile about.” One observes the father adding a third display on the screen, to take the incoming call. The screen now displays three videos at once. The baby now is being held by the father, both looking at the screen of the tablet. The advertisement ends with: “do you see what I see”?

Presently, one speaks of a “culture of images,” as well as the “search of a sensory impact” and of an era of impulsiveness. But what do we know of relationship between images and the formation of the psyche?

In Freud’s view (1914) of narcissism, he proposed that the ego was formed by identifica-

tions, in an intersubjective process. Lacan (1949) building up on those ideas attempts to show that the image of the ego is built through images, one’s own and other people’s images, in a sort of mirroring process, in which “the other” functions as a mirror. There is a process of identification of the subject with the other person, and the other sustains and unifies the mirror image of the original subject, an image that is vulnerable and fragmented. Lacan emphasizes the importance of this “capture” of images, from a mirror, imagined, which eventually leads to the unification of a primal ego, an ideal ego, based on those images.

From Winnicott’s perspective (1971), it is the face of the mother which functions as a mirror and the role if the mother is essential in building the ego of the child. He describes the “good enough mother” who looks at the child with love, recognizing the baby as hers. All this requires a more or less healthy psychic structure in the mother, which should be able to reflect the states of mind of the baby, not hers, nor the “rigidity of her own defenses.” In this problematic situation, if the baby looks at the mother, the child does not see himself (or herself) but a fixed image, the mother’s rigid state. When this occurs repeatedly, there is an atrophy of the creative ability in the baby, who will look elsewhere that the environment mirrors something about him (or her).

All these authors starting with Freud, but even more Lacan and Winnicott, highlight the importance of the other, the adult, in the psychic building up of the subject. This occurs by helping the child to symbolize, but also because of the images offered by the other. How are these interactions modified in the current times, when there is a much greater exposure to images and screens than anytime in the past?

In the commercial described above, we observe the difficulty of the adult (the father) in his function of giving up distractions to satisfy the baby’s needs for attention. We also see how the baby becomes anxious when the father does not pay attention to him. When the same device is of interest for each of them, there is a state of calm in all.

In the situation described, there is a superposition of interests and satisfactions (three audiovisual stimuli at the same time), and there is no intersubjective exploration (between father and child) nor mutual pleasure. If this were to occur very often, what images would the adult offer to the developing child whose psyche is being built? The images described appear more to be a fragmentation (they are simultaneous and not coordinated). How are these images impacting the developing mind?

It has been observed that in the course of the previously customary parent–child interactions, the parent “gives up some of his or her narcissism” to focus on the infant. This is a crucial component of the parental function. This “giving up” to focus on the child allows the latter to gradually build the child’s “own narcissism.” In the situation we presented, there appears to be more a separated “individual negotiation” by each member, which is built of separated parts, with little interaction between the subjects. How does this influence the infant’s mind? Could this be the contemporary new way of parenting, or perhaps this does not occur all the time?

If we think of play activity, central to infancy, as a structuring activity per se (Winnicott, 1971), how is play modified in this new paradigm of everyone looking at screens?

Corea and Lewkowicz (1999) use the term “media-based degradation of discourse,” where the intercorporeal interaction between child and adult is secondary. There is then a transmutation of the traditional culture, propelled by consumption and technology. These forces are impacting very strongly the traditional bourgeois structures which were characteristic and central aspects of modernity, such as the family and the school. These authors note that there is not only an erosion of those institutions but a media-based imposition of new ideas. Could one contemplate the enormous power of audiovisual media as institutions (television, notebooks, smartphones, tablets, etc.) displacing the influence of old institutions that heretofore have molded childhood?

There are multiple open questions on the impact of images on the culture of infancy and

these probably will determine a new context for growth. Sartori (1998) an Italian political scientist proposed the idea of the creation of a new type of child the “video-child,” considering television as a new *paideia*. The term *paideia* is used here as a complete system for education and training of children. N. Postman (1982) in his early work proposes that the invention of printing at the end of the Middle ages allowed a new conception of childhood. This created a new symbolic universe which also required a new concept of what it is to be an adult, which excluded children. In the view of Postman television, a “new” medium was a new transformation. It eroded the dividing line between childhood and adulthood in three ways. First, it does not require any sort of instruction to be exposed to it (like books did, require the capacity to read); second, it does not present complex demands to the mind or in behavior, and third, it does not separate its audience, it is the same for everyone.

In the Italian-French movie, directed by Giuseppe Tornatore (1990) “*Stanno tutti bene*” (Everyone is fine), the new phenomenon was exposed: it elicited diverse sensations and reflections. In one scene, the grandfather is looking after a baby, who is sitting in front of the television, hypnotized by images. The grandfather attempts to interact but there is no response. During breakfast, the grandfather obstructs the view of the television, but the baby stretches the neck and moves his head to continue watching it. The grandfather leaves the scene; a while later he listens to a scream from the child. He finds the infant difficult to calm as the television stopped transmitting images. In the following scene, the baby is calm, sucking his thumb, in front of the washing machine, which is turning, the baby is enthralled. Behind him, the grandfather says, “we invented another television.” We can see that the baby is captivated by images and movement, very far from the construction of a meaning, of a meaningful interaction or any intersubjectivity with the person who looks after him. When the term “video-child” is used to refer to a new type of child, the term video is before the term “child,” prioritizing the capture of images. We wonder,

are we introducing images to children, through screens, before the child is really developed as a child? What is the place of adults in this sort of co-construction? Is there room for symbolization? These are just some of the initial questions in the present world.

Canteros (2007) suggests that we are privileging the development of a symbolic logic, of informatics and cybernetics, and that this has produced a shift in our discipline, toward a “cognitive paradigm,” and an abandonment of the body of the child as a focus of interest. The brain is the most important part of the body now. We wonder what are the effects of the very early and daily use of these new technological devices? Multiple screens, smartphones, tablets, computers, etc. These are items that are now forced onto the young child and are after all only bidimensional stimuli.

The use of these technological developments is also present in the clinical situations. Can one introduce them usefully in our clinical work? Do we know the effects and ramifications of that inclusion? We are not certain of the effects. How does this impact the development of the child’s body and new forms of playing that now incorporate the technology?

In this chapter, we have attempted to underline the fact that early child development and the construction of the body are the result of interactions between genes and environment, biology, and culture. These are complex processes and highly individualized.

The development of the child is multidimensional, from the mostly biological influences on one side to the sociocultural milieu on the other. The child becomes a “subject” through a loving bond with others. We conceive of intersubjectivity as a foundational axis. This is fostered through play interaction, which assists in building up the mind and the body of the child. The first years of life are therefore a critical period. This is a time of risk, but also it offers a great opportunity. We believe therefore that “if we change the beginning of the story, we change the whole story” (Renner, 2016).

References

- Anzieu, D. (1988). *El yo-piel*. Ed. Biblioteca Nueva.
- Aulagnier, P. (1975). *La violencia de la interpretación – del pictograma al enunciado*. Amorrortu Editores.
- Bick, E., Briggs, A., & Meltzer, D. (1986). Further considerations on the function of the skin in early object relations: Findings from infant observation integrated into child and adult analysis. In A. Briggs (Ed.), *Surviving space* (pp. 60–71). Routledge.
- Bion, W. (1970). *Atención e interpretación*. Paidós.
- Bleichmar, S. (2012). *La construcción del sujeto ético*. Grupo Planeta.
- Blumenberg, Y. (2006). His majesty the baby (S. Freud). *Forum der Psychoanalyse*, 22(3), 219–230.
- Bowlby, J. (1998). *El apego. Tomo 1 de la trilogía “El apego y la pérdida”*. Paidós.
- Calmels, D. (2004). *Juegos de crianza*. Ed. Biblios.
- Canteros, J. (2007). El cuerpo en psicoanálisis. *Revista de Psicoanálisis*, Volumen LXIV, N° 2, Junio de 2007. Buenos Aires: Asociación Psicoanalítica Argentina.
- Corea, C., & Lewkowicz, I. (1999). *¿Se acabó la infancia? Ensayo sobre la destitución de la niñez*. Editorial Lumen Humanitas.
- Deleuze, G. (1995). *Conversaciones*. Pre Textos.
- Fonagy, P., & Target, M. (2007). The rooting of the mind in the body: New links between attachment theory and psychoanalytic thought. *Journal of the American Psychoanalytic Association*, 55(2), 411–456.
- Freud, S. (1914). “Introducción del Narcisismo”. En *Obras Completas*. Amorrortu Editores, 1996.
- Freud, S. (1915) “Pulsión y destinos de la pulsión,” En *Obras Completas*. Tomo XIV, Amorrortu Editores, 1996.
- Freud, S. (1923). The ego and the id. In S. Freud & J. Strachey (Eds.), *Standard edition of the complete psychological works of Sigmund Freud*. The Hogarth Press.
- Golse, B. (2013a). “Conferencia Inaugural”. *Jornada Encrucijadas Actuales en Primera Infancia: Coordenadas para Pensar Derechos Impostergables, organizada por la Sociedad Argentina de Primera Infancia*. 26 de Abril de 2013.
- Golse, B. (2013b). *Mi combate por los niños autistas* (pp. 35–42). Miño y Dávila.
- Golse, B. (2019). In M. R. Moro-B Golse (Ed.), *La adopción internacional. La doble extranjería del niño adoptado de otros lugares En Crecer en situación Transcultural* (pp. 65–66). Miño y Dávila.
- Gorali, V. (2012). “El cuerpo material”. XXII Jornadas Anuales de la EOL: Encrucijadas del Análisis., Argentina.
- Gutton, P. (1983). *El bebé del psicoanalista*, Amorrortu editores, 1987.
- Homer, S. (2005). *Jacques Lacan*. Psychology Press/London/Routledge/Taylor and Francis.

- Lacan, J. (1949). "El estadio del espejo como formación del yo tal como se nos revela en la experiencia psicoanalítica". En *Escritos I*. México: Siglo XXI, 1972.
- Lacan, J. (1964) *Los cuatro conceptos fundamentales del psicoanálisis, Seminario 11, Paidós, Bs. As.*, 1995.
- Laplanche, J. (1989). *Nuevos fundamentos para el psicoanálisis*. Amorrortu Editores.
- Lebovici, S. (1983). *El lactante, su madre y el psicoanalista*. Argentina Amorrortu Editores.
- Lebovici, S. (1988). Fantasmatic interaction and intergenerational transmission. *Infant Mental Health Journal*, 9(1), 10–19.
- Lebovici, S., Barriguete, J. A., & Salinas, J. L. (2002). The therapeutic consultation. In J. M. Maldonado-Duran (Ed.), *Infant and toddler mental health* (pp. 161–186). American Psychiatric Press.
- Mac Donald, S. G. (2001). The real and the researchable: A brief review of the contribution of John Bowlby (1907–1990). *Perspectives in Psychiatric Care*, 37(2), 60.
- Maiello, S. (1993). L'oggetto sonoro. *Richard e Piggle*, 1, 31–47.
- Maldavsky, D. (1994). *Las neurosis traumáticas y sus variedades Actualidad Psicológica*, Julio.
- Mannoni, M. (1964). *El retardado mental y su madre*. Paidós. 1982.
- Nasio, J. D. (1996). *Los gritos del cuerpo*. Editorial Paidós.
- Piaget, J. (1947). *Psicología de la Inteligencia Psique*, 1966.
- Postman, N. (1982). *The disappearance of childhood*. Delacorte Press.
- Renner, E. (2016). *En los comienzos de la vida*. Documental, Unicef.
- Rodulfo, R. (1989). *El niño y el significante. Un estudio sobre las funciones del jugar en la constitución psíquica temprana*. Paidós Psicología Profunda.
- Roussillon, R. (2010). Working through and its various models. *The International Journal of Psychoanalysis*, 91(6), 1405–1417.
- Rukeyser, M. (1968). In J. E. Kaufman & J. E. Herzog (Eds.), *The speed of darkness*. The University of Pittsburgh Press.
- Sartori, G. (1998). *Homo videns. La sociedad teledirigida*. Taurus.
- Schejman, C. (2008). *Primera Infancia. Psicoanálisis e Investigación*: Librería Akadia Editorial.
- Silver, R., Feldberg, L., Vernengo, P., Mrahad, M. C. & Mindez, S. (2008). *Dimensiones del juego madre-bebé en el primer año de vida. Primera Infancia. Psicoanálisis e Investigación. Clara R. de Schejman (compiladora)*: Librería Akadia Editorial.
- Spitz, R. (1958). *El primer año de vida del niño*, Madrid Aguilar ediciones, 1972.
- Stern, D. N. (1985). *El mundo interpersonal del Infante. Una perspectiva desde el psicoanálisis y la psicología evolutiva*.
- Tendlarz, S. E. (2010). *¿De qué sufren los niños? La Psicosis en la Infancia*. Lugar Editorial.
- Trevarthen, C. (2003). Infant psychology is an evolving culture. *Human Development*, 46(4), 233–246.
- Ulnik, D. J. (2009). *Nuevas formas de enfermar en el siglo XXI: La vuelta al cuerpo psicosomático*.
- Winnicott, D. W. (1958). *Escritos de pediatría y psicoanálisis*. Barcelona Ed. LAIA, 1979.
- Winnicott, D. W. (1965). *El proceso de maduración en el niño*. Barcelona Ed. LAIA, 1981.
- Winnicott, D. W. (1971). *Realidad y juego*. Editorial Granica.
- Juan Augusto Laplacette** PhD, Doctorate in psychology, University of Buenos Aires (UBA), Argentina, Grantee of the National Council for Scientific and Technical Investigations (CONICET). Master's in psychology with honors, University of Buenos Aires. Specialization in clinical psychology with children and adolescents (UBA). High-level lecturer in child and adolescent development at the Universidad Nacional Pedagógica (UNPE) in the Instituto Superior del Profesorado de Educación Inicial Sara C de Eccleston and the Instituto Superior del Profesorado Dr. Joaquín V. Gonzales. Coordinator in programs workshops, seminars, and educational courses addressed to health and education of professionals on topics of early childhood. Member of the Argentinian Society for Infancy (SAPI). Author of several didactic materials for the community and of multiple scientific and academic publications. Member of the Association of graphic artists in Argentina (ADA). Author of the book "Como si fuera tan fácil" (As if it were so easy) published by La Brujita de Papel.
- Ana Lia Ruiz** PhD, Doctor in Psychology, University of El Salvador (USAL), Argentina. Child and adolescent psychotherapist graduated from the School of Psychoanalytic Child and Adolescent Psychotherapy (ASAPIA). Graduate studies in Psychology, University of Buenos Aires (UBA). Instructor at the School for the Blind. Previously docent for pregraduate and postgraduate education at the Instituto Superior de Educación Especial (ISPEE), as well as the School of Psychology of the University of Buenos Aires and the Universidad del Museo Social Argentino (UMSA). Postgraduate instructor in Argentinian and other universities on topics of child prematurity. Formerly psychologist at the Neonatology service, Hospital Italiano de Buenos Aires, as well as in the Children's Neurological Hospital Ricardo Gutierrez. Supervisor for profession all teams in the area of special education and neonatology. Received the Abraham Minujin Prize by the Argentinian Pediatric Society (SAP). Founding member of the Argentinian Society for Infancy (SAPI). Author of the book "The Premature Baby and His Parents" published by Editorial Miiño y Dávila, as well as other books and articles in journals devoted to early childhood.

Nora Woscoboinik Psychologist and Psychoanalyst (Paris Psychoanalytic Society and Argentinian Psychoanalytic Association). Founding member and past president of the Argentinian Society for infancy (affiliated to the World Association for Infant Mental Health). Member of CIPPA (International Coordination of Psychotherapists for Autistic Persons). Coordinator for Latinamerica of CIPPA. Member of RIEPP (International network of studies on psychopathology

and psychoanalysis of children). Adjunct professor to the child and adolescent clinic of the University of Belgrano, Argentina. Professor in the postgraduate course of the University of Buenos Aires (Interdisciplinary seminar on subjectivity). Founding member of PREAUT, France. Member of the child and adolescent section of the Argentinian Psychoanalytic Association.



The Body and the Mind of the Preschool-Age Child

2

Clara Aisenstein and Kulsoom Kazmi

In this chapter, we attempt to give a brief description of the mind, the body, and the embodied mind of the preschool-age child, boy and girl. We focus on the main developmental issues that a child of this age deals with and then we address some of the issues that may be salient in dealing with the family: father, mother, other caregivers, as well as siblings.

Many children all over the globe at this age “enter the world” outside the family, i.e., in the preschool setting or a childcare center. We focus on how these issues may interact with children’s fantasies and theories about themselves, their families and also of their bodies, and the impact of some negative experiences at this age, such as illnesses.

Selma Fraiberg (1996), a pioneer in the study of young children’s emotional life, described this age as “the magic years” in the sense that most children of this age live in a space between fantasy and reality, and they can imagine vividly, believe they might have magical powers, have fairies visit them, and to be a prince or a princess, among many others.

Anna Freud (1952) used a very apt metaphor to describe the preschool-age child, being “like an opera character,” i.e., a person who lives intense dramas, traverses difficult obstacles, faces unknown or scary situations, and has very intense emotions: love, tenderness, empathy but also jealousy, rage, fear, which are indeed very vivid and which at times are difficult for the adult to understand. The preschool child exhibits “animistic thinking” which generally means that inanimate objects, plants, and animals can be invested with human-like qualities such as intentionality and a mind of their own. Children may imagine that their toys have feelings. For example, a child might not want to leave their doll behind if going somewhere, for fear it might get lonely and cry when without them. This is particularly true at the beginning of the preschool years (Galyer and Evans, 2001). Therefore, things that for adults may be inconsequential, such as a teddy bear or a doll, for a young child may be protectors or scary objects, depending on the child’s imagination and memories.

There has been considerable interest in the question of amnesia of early childhood (Hayne & Jack, 2011), as many adults do not remember much before the third year of life. This seems particularly true when there have been difficult experiences. Many adults find it very hard to see the world from the point of view of a very small child. For a child of this age, the world may seem like “a world of giants” with furniture mostly

C. Aisenstein (✉)
La Jolla, CA, USA

K. Kazmi
Child and Adolescent Psychiatrist, Baylor College of
Medicine, Staff Child Psychiatrist Legacy
Community Health, Baytown, TX, USA
e-mail: kkazmi@legacycommunityhealth.org

designed for adults, for example. When an adult stands in front of a small child, the adult indeed may seem like a giant. If an adult yells or makes an angry face, this may be very scary for the child.

Even though theoretically, it is easy to understand that a preschool-age child thinks differently, this discovery has not been an easy achievement. Only a few decades ago, Jean Piaget described how a preschool-age child thinks and the differences with later stages. He described the patterns of thought of a preschooler with the name of preoperational stage. During this phase, a child's experience is almost totally subjective, dominated by the child's visual cues and perceptions and by strong emotions. For example, a preschooler playing hide and seek, may cover their eyes, or hide in plain sight reasoning that if they can't see the other person, the other person can't see them either. Later on in this stage, the child can start seeing the perspective of others.

Anna Freud and Dorothy Burlingham (Burlingham and Freud, 1942), through their work on the London Hampstead nurseries after World War II, described the anxieties and fears a child may have when they have been separated from parents and discussed in some detail the bodily responses to stress, tension, and happiness. The careful observation of children under stress showed the suffering a young child experiences when there are major separations or losses. These can show in withdrawal, temper outbursts, and self-stimulation such as pinching the skin, hitting the head, oscillatory body movements, sucking the thumb, and many others.

Since then, much has been written about the attachment needs of the young child and their emotional life. Alicia Lieberman (2017) wrote the important work *The Emotional Life of the Toddler*, which has been later supplemented with other work on the effects of trauma on young children. She and her colleagues have noted the vulnerabilities and emotional impact that negative experiences can have on the emotional development of a child. Those descriptions have been furthered by other researchers, who have studied

dissociative phenomena in preschool children (Carlson et al., 2009) in response to difficult circumstances. Dissociation in the preschool years is often overlooked by adults, and can show as sudden changes in behavior, assuming a different voice, acting as though one were an animal, etc. When these experiences assume a life of their own, so to speak, they are pathological dissociation.

Everyone is aware that young children throw temper tantrums and may struggle to manage anger and aggression. However, sadness and anxiety are less often recognized as a problem, even though they take a toll on the development of the child and might be addressed then. The child may not know how to speak of these emotions, particularly if nobody asks him or her about their feelings.

The Body of the Preschool-Age Child

When a pediatrician or a mental health clinician thinks of a preschooler, roughly a child between the ages of 3 and 6, what should come to mind is a small person who has a zest for life, whose eyes shine in response to new experiences, and who is eager to explore the world around him or her. The boy or girl will want to find new things, play, is curious, and wants to learn naturally. Maria Montessori (2004; Montessori et al., 2014) developed her pedagogic methods suggesting to take advantage of the natural tendency of the child to learn by experimenting or "learn by doing" (Gehard, 2020, Needham & Libertus, 2011; Thelen, 2000).

The preschooler grows physically at a steady pace. There is a noticeable change in the physique as the child grows taller, the child at this stage is also more aware of their greater motor coordination and skills. He or she is observed to explore the spaces around them by running, climbing, hopping, jumping, etc. with increased gross motor skills.

As the boy or girl gains more confidence in body strength and coordination, he or she takes pleasure in this newfound awareness, ventures

out to explore, play, and asks many questions about the world and those around him or her.

The body of the young child is of course small, and when he or she goes out of the house, the world offers many opportunities to learn new things and to “take them in.” If one thinks, for example, of a visit to the zoo with a preschooler, most parents delight in pointing out to the child a zebra or a chimpanzee, and the child is absolutely fascinated, if perhaps also a little scared by some of the huge animals.

The young child in a clinician’s office should appear in principle, confident as long as his or her mother, father, or other caregivers are around. The child refers to them and generally wants to share in the joy of any discoveries. Several experiments and observations have demonstrated that the young child seeks the attention of a parent every 2 or 3 min. The child says to the caregiver and other people around “look at me!” and shows that he/she can jump high, is strong, has new shoes, a new dress, etc.

The girl or boy takes joy in climbing obstacles, going up a set of stairs and then going down, etc. It seems this would be a way of practicing and developing new skills. If the teacher, physician, or another clinician does not see this basic energy and happiness, one should wonder what is happening in the emotional life of that child.

One of the developmental processes going on at this age is the synaptic pruning and at the same time myelination in the brain. In the corpus callosum—fibers that connect the left hemisphere with the right one there is active myelination and pruning of connections. This link allows communication between the two hemispheres of the brain. Usually, the right hemisphere is specialized in emotional processing and the left one is responsible for language production and comprehension. This is observable in a preschooler with his/her ability to understand the emotional context and nuances of words (Hellige, 2001).

Another main developmental line in early childhood is fine and gross motor development and coordination. The girl or boy will naturally develop more skills if given the opportunity to practice them. The child will develop “handedness” (most often for more dexterity on the right

hand) by the age of 4. This indicates the development of a “specialization” of the brain hemispheres on the (usually) right brain more likely to process emotions and visuomotor abilities, while the left brain favors language and reasoning. A 4-year-old child who still uses both hands might elicit the question of whether the brain is undergoing that specialization. At times, parents think of this as the child being ambidextrous when the problem is very different.

The preschool child is working on gross motor coordination and acquiring fine motor skills that will be used and reinforced in their specific culture. Gross motor skills refer to the capacity to use the whole body or large segments of it for specific purposes. These abilities require much coordination and balance of the body (informed by the vestibular system in the inner ear). The young child will learn to run faster, to climb and descend faster, usually with close supervision from caregivers. The motor functioning often comprehends motor planning and perceptual awareness which is the ability to picture in the mind how to carry out an action. If one wants to descend from a chair, should the child turn his or her body around and descend feet first or try to jump from the chair? If one wants to reach the marmalade jar, how to get to it? Would that require complicated movements, displacement of the whole body, or trying to reach it over the table?

Muscular tone refers to the basic ongoing level of muscle tension in the body. The child should have an adequate tone to maintain the body standing up, sitting up, and supporting certain actions. If the muscular tone is too low, the child will tend to lean on things, “slouch” the body, complain that he or she is tired, and manage to walk only short distances at a time. A high muscular tone is noticed in children who appear somewhat stiff and “very strong,” who are forceful and not very elegant in their movements. Some young children struggle to assess their strength and may crash onto or hit another child even when they meant only to touch.

More complicated movements are work in progress, so to say, like the ones required to learn to swim, dance, learn martial arts, or play a musi-

cal instrument. Movements must be performed in a certain sequence. Normally, this sequencing of movements is carried out automatically, once the sequence is learned, and is reaffirmed by practice. Children who appear clumsy struggle to sequence movements.

Many activities in the preschool years involve motor imitation of each other and of parents and teachers who sing songs accompanied by certain motions, which the child is only eager to imitate and master.

It has been proposed that the mirror neurons (present in the prefrontal cortex) are central in the innate tendency to imitate the movements of others. Mirror neurons were described a few decades ago and they seem to be activated when a person views someone else performing a certain action (Gallese et al., 2002; Rizzolatti & Craighero, 2004). Just by the child looking at a certain action, the mirror neurons send messages that activate the corresponding muscles in the brain of the observer as though he or she were performing the same activity.

Stamina is a somewhat vague concept that involves how soon the child will become physically tired from physical activity. Some children appear to have immense amounts of it, while others complain of getting tired after walking half a block and hope to be carried the rest of the way. Most parents intuitively detect challenges or difficulties in motor development and may attempt to reinforce those abilities that are more difficult for a child.

Regarding fine motor skills, this requires the adequate myelination of nerve pathways, to be able to isolate movements that are increasingly small in range, of the fingers. The development of these skills progresses from the core of the body in a distal direction, i.e., from the center of the body to the periphery (Pauen, 2011). First, the child will learn to control the whole arm, then the hand, and then the fingers. A pincer grasp is generally achieved at 10 months and the child will industriously practice these skills in the first years of life. Before the age of 3, in the Western world, adults introduce pencils and crayons for the child to draw and color, to draw circles (mas-

tered at around age 3), and then figures that require angles (squares and rectangles) which are mastered around age 4 in general (Frisch, 2006).

Along with developing fine motor skills, there is improved hand–eye coordination, observable by the ability of a 4-year-old preschooler to draw a discernible human figure. The child will attempt to draw people which at first (age 3–4) look like “tadpoles” and gradually will introduce more features such as ears, eyebrows, eyelashes, fingers, etc.

All of this requires patience and the chance to practice in a safe environment that encourages this development, in the Vygotskian sense of presenting to the boy or girl challenges in the “zone of proximal development” (Wertsch, 1984), i.e., in skills that they are barely able to master and are the next step.

Manipulating scissors is only practiced if there are scissors available. Holding the pencil with a tripod grasp (three fingers instead of the whole palm of the hand) is more readily acquired if the child has an opportunity to draw and color. The clinician can evaluate the smoothness of movements, their accuracy, and the presence or absence of an intentional tremor (a tremor in the fingers or hands which is more noticeable when the child attempts intentionally to perform a certain movement).

Identifying any problems in motor development is important. First, they are readily misinterpreted by parents and preschool instructors as “laziness” on the part of the child, or not trying hard enough or if the child avoids doing them because the result is unsatisfactory, as a behavioral problem, not cooperating or obstinacy. The child may complain that his or her hand hurts when trying to draw or do other manual activities. An adequate early intervention with occupational therapy assessment can be crucial to detect this, which would lead to interventions while the child is very young.

In most preschools in the world, body motion, bodily actions, postures, and the sequencing of movements are introduced through music and an elementary form of dancing. The songs are accompanied by motions with the whole body

which the child will imitate at first only and then reproduce. This enhances awareness of the body, acquisition of a body schema, sequencing, and practicing imitation.

The Mind of the Preschool-Age Child

An entire book could be devoted to the cognitive and emotional development of a young child. We highlight a few important elements that are not necessarily kept in mind when working with preschool children. The preschooler stage is marked by the transition from toddlerhood, where the child has a mostly egocentric view of the world, to an ability to think of others' minds. As the child enters the preschool age, there is a move away from a self-centered view of the world, toward a view where a child can understand the world exists separate from self. There is a gradual de-centration, and the preschooler is able to grasp that a world exists where other people might see things differently (Davies, 2010).

Developmentally, the myelination and progression of neural networks taking place in the forebrain is observable by the more mature and flexible thinker (Moriguchi & Hiraki, 2009).

More sophisticated cognitions are slowly acquired by the young child, who has been described by various research as a "little psychologist," a little scientist, or a little detective. The child learns new information mostly by doing things and observing what happens around him or her. He or she interacts with the world largely in a physical way, trying to ascertain the properties of things with which he comes into contact, their texture, their physical behavior, their weight, and how they can be manipulated. The child constantly is engaged in experiments with the objects around, to learn their behavior through manipulation and permutations in position, stacking, displacing them, etc. The child's thinking is dominated by what he can see, hear, and touch. Abstract categories are more elusive. If something "looks bigger" then it is bigger. If a line of small objects looks longer than another one with the same number of items, but with the

objects are closer together, the longer one "has more items," despite counting the same number. Piaget (1964) conducted several experiments demonstrating that most preschool children think in this way through various "conservation experiments." The conservation term refers to a number of things, or length, surface, and volume. The principle of conservation will be acquired until the child enters school age, in general around age 7. Therefore, if two blocks of plasticine look identical, and one is rolled into a short cylinder, and the other one into a long cylinder, the child says that the longer one has more plasticine. It is not possible yet to hold two variables in mind, but just the one on which he or she is focusing. Just half a century ago, these issues of development of cognition were not known, and children were often treated often as "small adults."

Something similar applies to causal thinking, which can be described as magical or "superstitious," i.e., the preschool child may think that his or her parents are arguing because he or she is a bad boy or girl. Not picking up one's toys may lead to a negative event happening later on in a temporal and causal relationship that can be named magical thinking or "omnipotence of thought."

The thinking process of a preschool child is dominated by perception and egocentric thinking to a large degree, i.e., the world centered on the child. Emotions also dominate cognition. If a 4-year-old boy feels that it is not fair that an older brother has "more colored pencils" than him, even if the parents count the same number, the child still may be upset because it "feels" as though the older brother has more, better, or more impressive colored pencils. Since emotions are very intense, they are more important than abstract categories like numbers or measurements.

An important developmental gain usually achieved in the preschool age is "theory of mind" or the capacity to theorize or imagine how other people think and feel in a given situation. This is a crucial ability to be able to "read others" and to understand other people's points of view. This is often achieved through reasoning and interacting

with parents and siblings, and through symbolic play.

The central characteristic of the theory of mind is the capacity to “decenter” the mind from one’s perspective and realize other people might see things differently. This is often tested with the paradigm of “false belief” (Tompkins et al., 2020). In this, which will not be explained here in detail, the child is shown how someone “could not realize” that something has changed. If the child is only able to see things from his perspective, he does not have yet a “theory of mind” (Frith & Frith, 2005) if he or she is able to see that the other person “thinks” erroneously of something, this shows the theory has been acquired. This is achieved usually around 4 years of age.

Theory of mind is also at the basis of lying and deceiving others, as the child is now able to see that a parent or other caregiver “did not notice,” for example, who took a cookie without permission and can be fooled. This is a major developmental acquisition in the capacity to relate to other people.

The child at this age will also be able to acquire “metacognition” or realize that some things are not done in a certain context, while they are acceptable in others. Some rules of behavior are implicit even if not openly stated. By imitating and observing the parent’s behavior, one can learn that “one does not hit when one is angry” or that “one cannot speak loudly at church.” Of course, the opposite is true. Very often parents unwittingly model behaviors that they find unacceptable. A parent may tell a child “we don’t scream” while screaming this admonition to the child. It is implicit, intercorporeal teaching that is a more powerful message than the mere words the parent is uttering, i.e., the parent is teaching by example.

Another aspect of cognition is the achievement of some arithmetical functions. Often these involve counting items, and the achievement of ordinality (the order of numbers) and cardinality (the final count, or the number of items). It also requires generally the motion of “tagging” items (with the aid of touch) in order to count them so that one only counts each item one time and does

not skip any items. Longitudinal sense is achieved first and years later the notions of surface area and volume.

The child is aided in counting by mnemonic devices such as songs specific to his or her language (in English “ten little monkeys jumping on the bed” and in Spanish “yo tenia diez perritos” or I had ten puppies would be good examples), in which the child counts down with each verse of the song.

The body of the child is also used to count items. If one asks a preschooler how old he or she is, at first it will be conveyed by the number of fingers shown and only later with a numerical concept. The acquisition of the numerical sense and counting requires numerous repetitions, most of the time in the form of play.

Inner Monologue and Language Abilities

Humans developed thousands of codified systems of communication verbally, i.e., spoken languages which the child learns very early on, starting in utero (the rhythm of the language spoken by the mother and several sounds). Once the child is born, there is an exponential acquisition of words and sets of words to communicate with others. In the infant, there is a predominance of sounds and gestures to communicate needs or emotions. During the preschool age, an added instrument is the spoken language used in the culture in which the child is. This is a gradual communicative process by which the child learns more and more words and phrases, to then combine them to acquire also a “grammatical sense.” That will involve syntax (the ordering of words in the corresponding language), semantics (the meaning of different words and phrases), prosody or phonetics (the way the words are pronounced to convey an accurate meaning), and then the pragmatics of that language (the use of tones, pauses, figures of speech to denote questions, denial, sarcasm, irony, etc.). The sheer number of words increases dramatically in the preschool years for children of most cultures. In some cultures, spoken language is very salient, as

in the communication between parents and children in Westernized cultures. Among the aboriginal people in Guatemala, as in many other cultures, it has been shown that the mother speaks little to the child in the first year, and most communication is nonverbal and through touch, gestures, and implicit references. This changes after that and the child will eventually learn many more words. A similar pattern has been observed in some Native American cultures in North America.

Around the age of 2–3, a child roughly has a vocabulary of 1000 words, which increases roughly by 50 words each month. Around age 3, a child’s language is quite developed and the child should be “conversational.” The boy or girl should be able to answer questions and elicit information verbally. He or she has acquired the ability to question and asks “why” and “what”; the response to these questions by the caregivers helps increase his vocabulary and directly aids in his language development as well as acquisition of knowledge. By age 4, in many cultures, the child’s language is complex and grammatically correct most of the time. The child then can speak in longer sentences using past and present tense and connecting words, *like but, if, and, so*, etc., and is able to tell a story using just words, as compared to toddlers who do not possess the vocabulary and use actions to tell a story. A child of 3 will still rely on actions to express him/herself, but by the age of 5, they will be able to use words and their meanings to explain his actions or play. One way to measure the acquisition of language is counting the number of words per utterance by the child. At age 3 or 4 to produce sentences with five or more words signals satisfactory language acquisition.

The next question is what the language is used for and what is the purpose of learning it. This will require that the caregiver speaks to the child to convey meanings, to teach about emotions, about events taking place now (“you are running fast”), and about recent or past events (“yesterday you sang us this song”). It will also require others surrounding the child to register the communications of the young person, their ideas, their impressions, and reports, and mark having

received that communication. In previous generations in many cultures, children were taught to “be seen and not heard,” but nowadays in many cultures, people are interested in listening to what a young child might say. This process of being talked to, and being listened to, reinforces the acquisition of language and the sense of self as an effective agent.

Eventually, the child will “embody the language” and will acquire what has been called an inner monologue or internal speech. This function has also been called the “dialogical self” (Fogel et al., 2002) or private speech (Kraft & Berk, 1998).

Preschoolers talk to themselves; they say out loud what older children and adults may just think. A child may be heard sometimes repeating instructions from parents, even when the child is by him or herself: “we don’t hit” or “don’t throw water on the floor” (Knudsen, 2008). This sort of internal language or private speech assists the boy or girl in regulating their behavior and emotions and is a way to direct themselves. For instance, a 4-year-old boy playing by himself with a train track carries out a running commentary about his play that describes the scenes playing out. “The track will go here and then the train will go over it. And then the train will whistle when it is ready to start.” Eventually, all these words lead to this inner monologue which is also a way of processing experiences and containing and modulating the expression of emotions. Children with fewer language abilities, who have difficulties negotiating frustrations through language, are more likely to exhibit desperation and aggressive behavior (Clark et al., 2020). Similarly, preschoolers with language delays are more likely to play alone and have more conflicts when playing together with children their age, due to their limited communication skills and diminished ability to understand and be understood by their peers (Fabes et al., 2006).

Language is essentially a social exchange as it is learned from other people (Bloom, 1998). The parent–child dialogue helps shape emotional understanding, development of reality testing, and acquisition of higher and more complex language skills. Parents who talk to their children in

an animated style help them develop storytelling abilities. This is especially important when parents talk to their child about a shared experience, by elaborating on the memory and the details, parents pass on their child the ability to put words to their experience and memory.

Emma a four-year-old girl comes crying to her mother. She cannot go to sleep because she is afraid of the “dark and the big shadow” in her room.

Mother: (while comforting her child), It seems like you got scared by the shadow and thought there was something scary in your room.

Emma: (Nods) Yes.

Parent: When you can't see anything in the dark, it is easy to get scared

Emma: I thought ...there is something in the corner of my room. But it was dark, and I didn't want to look there.

Parent: You must have been afraid!

Emma: (Nods again) Yes, I thought... maybe there was a monster with a very long arm.

Parent: I can imagine that doesn't feel very good. What might help you feel less scared of the dark?

Emma: I don't know mommy... can we go together and look?

Parent: (Nods) Yes.

The child reaches out for her mother's hand looking relieved.

In this conversation, the mother understands her daughter's distress over imagining something scary, instead of telling her “It's okay” and “there is nothing there,” the parent listens calmly, empathizes with, and shows compassion. By doing so, the parent is telling her daughter that her emotions and thoughts are important and her mother cares that she is upset. In addition, by exploring the child's fear, the parent supports the child's attempt to resolve her fear.

The Emotions of the Young Child

Many child therapists explain to worried parents that a preschool child has “big feelings” and relatively lesser capacity to control them if they are very intense. A child could become very sad

about things that for adults are relatively less important. The birth of a sibling is a major event in the life of a young child because it almost literally means some sort of betrayal as the mother acquires a new baby, who will unavoidably take a lot of her attention. Much as the young child has been prepared, still it may be hard to control the feelings of jealousy. There will be internal conflict in the older sibling, and at times the child may give way to the expression of anger, much to their regret later. This could take the form of squeezing the baby too hard, pinching after caressing or even biting the baby. One often can see the internal struggle of a preschooler to control these powerful emotions.

The same can be said of fear of separation from parents when the child enters preschool. Adults tend to encourage the child to “be brave” and “not to cry” when they are left by a mother or a father at the preschool. Even when there has been preparation (visits, getting acquainted with the teacher, etc.). The boy or girl may feel scared and very lonely even if peers are friendly and the teacher welcomes the child. One can see the struggle not to cry and to keep the feelings inside, when the child actually feels scared or worried, he or she might fear that the parents may not come back to get him or her after school, might get lost, etc. Very intelligent children at times start worrying about possible scenarios quite early on:

Walter, a four-year-old boy, is the only child yet in the family. His parents are expecting a second child, as the mother is pregnant. Walter is a very intelligent little boy and tries to be very good in every way. His parents ask him to be good. He sometimes cannot go to sleep because he is worried that there might be monsters under the bed or in the closet. His parents are careful not to show him scary movies or cartoons. Still, he worries: “what if the ceiling caves in and falls on top of us and we die?”. Walter imagines many other things that could go wrong. His parents are very patient and reassure him, but he imagines negative scenarios. If his mother buys him a toy he asks: “are we going to have enough money for the rent at the end of the month?” as he has heard his parents talk about this, even though they do not have major financial problems. If his father is going to work, and says he might be late, Walter worries a lot that his father might be fired. The parents seek help to find strategies to help Walter not to worry so much.

In the above scenario, we have a very intelligent child, with sensitive parents who are very careful not to scare him and try to be sensitive to his worries (Sroufe et al. 2009). Particularly in clinical settings, one often finds preschool-age children who have seen frightening horror movies, movies about zombies, *Dracula*, monsters, a doll that comes alive in the night and stabs children, etc. Often a young child says she or he “is not scared of anything” and the parents may allow their child to see them, later the consequences occur in the form of further fears, nightmares, or being intensely afraid of the dark.

Parents often worry about the need to socialize the child and assist him or her to contain intense emotions, be polite, be friendly, and show compassion and empathy for others. This is hard, and many adults are still trying to acquire those skills. For a young child, they may be very difficult things. In many cultures, young children must show respect and love to their elders even if they are scared. For instance, the parents may insist that a 4-year-old kiss grandma when greeting her, even if the child does not want to and is a little afraid of a very old or stern lady. Children may be encouraged to answer questions politely and to speak when spoken to, even if they are shy around strangers. Sometimes parents criticize or even shame the child for not being more outgoing.

One often finds in working with families of young children that parents may have forgotten how it feels to be a small child. They may see the child as naughty, manipulative, vindictive, or lazy. Having a small child show intense emotions may evoke in the parents memories of their past, perhaps fears of their own parents, suffering from punishments, and this may make it difficult for them to have empathy for their child. It is often helpful to encourage parents to see the world from the point of view of their son or daughter and realize how little power a small child has.

The boy or girl will acquire a concept of him or herself as a “good boy” or “good girl” or the opposite. Optimally, the child basks in the admiration of his or her parents through showing accomplishments, abilities, singing, counting, dancing, etc. This is an age in which the child is

internalizing (or embodying) the family’s values and parents are the source of all wisdom, but also of disapproval and criticism. Lieberman (2017) has emphasized how pervasive the fear of “being bad” is, even in quite young children. At first, there is only the fear of external disapproval or reprimand by parents, but later this is internalized into a form of conscience in which there may be a great fear of being bad or doing the wrong thing. This is further exacerbated if parents scare the child, yell, punish extensively, criticize, or demean by saying “you are being bad.” Some children may never quite recuperate as they grow up from this pervasive sense not being good enough.

At first, the moral development of the young child is acquired by prohibitions and being told “no” about certain actions. The child will usually be afraid of breaking norms such as not hitting others, destroying objects, or lying. Internally, there may already be doubts as to one’s “goodness.” Some young children when asked if they are a good or a bad boy or girl say, good boy or good girl. Others even at age 3 offer a more nuanced perspective “sometimes good and sometimes bad” and others, more tormented, say “I am bad.”

On the other hand, empathy seems to be an innate quality in most young children, which appears first in infancy. Studies show that preschool children also show empathy if presented with a situation in which another child is suffering or is being hurt (Paulus et al., 2020). This quality flourishes in some children, particularly if the caregivers show kindness and compassion to their child and toward others, which the son or daughter will see in action. However, some children may be aggressive or nonempathic if they have been mistreated or have intense resentment and anger toward others for the way they are treated.

Temperament

Explaining individual differences between children of the same age or belonging to the same family requires invoking genes, birth order, gen-

der, cultural attributions to boys, girls, firstborn, youngest child, etc. Also, it requires exploring the reactions of the child to the physical qualities of his or her body. Attractive children seem to be treated better in general (Principe & Langlois, 2011), and in a patriarchal world, boys are more encouraged to “keep trying” to solve problems, while girls may not be. Aside from those differences, the concept of temperament refers to a biologically determined tendency, which of course is influenced by interpersonal and social factors. As Chess, Thomas, Rothbart, Kagan, Fox, and many other researchers (Chess & Thomas, 2013; Hertzog, 2012; Fox et al., 2008; Kagan & Snidman, 2009; Rothbart & Derryberry, 2002) have shown, some children are very open to the world, willing to explore, try new things, and embrace novelty. Others are much more cautious and careful before approaching new situations.

Temperament features encompass a normal variation of exploring and responding to the world. The researchers mentioned above have included in temperament, a style of reacting to situations. Some children have intense reactions to small frustrations, and some are very placid. Perhaps these would be two poles, one a “difficult” temperament and the other an easy one.

Most teachers and many parents prefer children with an easy temperament to a child who is more demanding, intense, and very emotional. Another temperamental feature is how quickly one reacts to stimuli and what thoughts are involved (or not) before responding to a dilemma. For instance, there are experiments on the capacity to delay gratification. A child may be told not to eat a piece of candy and wait if he or she can, and if they wait, there will be a greater reward at the end of a few minutes. Some children can defer gratification, and some prefer to act at the moment, sacrificing later gains. Tremblay and his group (Lacourse et al., 2006; Tremblay et al., 2004) in longitudinal studies have shown some characteristics that are risk factors for boys, like being a big child, being very restless, impulsive, and aggressive during preschool age predisposes the child to have more difficulties of an externalizing nature later in life. This is also an opportu-

nity for early intervention in children who are most at risk so that these predictions are not fulfilled.

Socialization and Its Vicissitudes

Most young children around the world start the process of interacting with other people outside their nuclear family by interacting with extended family (cousins, aunts, and uncles) and neighbors or in parks. In many Westernized countries in which mothers go to work outside of the house, from infancy, the child may spend many hours of the day in a childcare center. However, in many areas of the globe, children start attending social settings in preschool. Here the boy or girl will be interacting with peers, and with teachers, an authority figure different from the parents or extended family.

In most preschools in the United States, teachers want to impart information of a preacademic nature (letters, numbers, the surrounding environment, weather, etc.) plus starting to expect self-control, management of aggression, and learning to interact kindly with others. In the United States, there is much emphasis on individual self-control and each child accomplishing their own goals with help from the teacher. In Japan, although the academic goals are very similar, there is more emphasis on collaboration between groups or small *troupes* of children. Kindness and politeness are also emphasized, and actively taught by encouraging children to help each other (Burdelski, 2010). If a child is struggling with a concept or task, a peer might be asked to help that child.

Children will learn concepts of discipline and rules and fortunately, most preschools now are moving away from punishments, negative consequences, and emphasize more socioemotional development, rather than a purely behavioristic approach, in which a transgression is followed by a punishment hoping it will make that disappear.

A preschool group is still a collection of small children who may have to learn to share toys, take turns, interact with one another, and manage their frustration, anger, and other emotions.

Several authors have observed the behavior of these children in ethological terms. How much touch and play-fighting occurs in the setting, how do children look up to a “dominant” boy or girl who has a higher standing in the group. Children start developing a concept of who is good at running, drawing, writing, etc. This is an informal hierarchy. Boys may want to “sit next” to the boy with “higher status” and copy his tastes and preferences, gestures, etc. (Martin et al., 2005; Santos et al., 2015). Other children might defer to that child, who may take toys from others without any resistance, etc. Teachers generally are observant to help children manage those interactions, but much goes unnoticed. Some children will have to work on controlling their anger, while others due to a more sensitive nature or temperament may need to be helped to learn to say “no” or to assert their wishes even in the face of a dominant child.

Preschools can be a microcosm of the larger society in which some values and beliefs are reinforced and other practices discouraged. Children learn the rules of social interaction and the pragmatics of interactions by practicing them and to some extent through trial and error.

Entering the Inner World of the Preschool Child

There are several “royal roads” to explore the emotional life, fantasies, fears, and memories of a young child. Perhaps the most easily accessible one is symbolic play and representational play, be it with miniature toys, puppets, or “dressing up games” in which the child acts like different characters. The plots of the representational play often are a sort of “working through” everyday experiences, emotionally charged events, and traumatic experiences. Generally, the play is self-directed, and spontaneous and is an external representation of what the child thinks, feels, and what he or she has been through. This is a natural way in which children process experiences and communicate with their parents. Unfortunately, many parents in the current electronic environment are not involved in these activities and spend time with their own “smartphones” or let

their children watch endless videos on their electronic tablets.

When the play involves events like hitting someone, making the “daddy fall from the ceiling of a dollhouse” many parents may be tempted to interrupt these sequences because “violence is not acceptable.” However, this is a symbolic representation of the feelings the child may harbor. In general, it would be best if the child were free to display his or her fantasies in the play as this is a form of expressing intense feelings and of dealing with them as the child knows these representations are not in the real world.

Another major vehicle of expression for the child is drawings. If the child is provided a surface where he or she can draw and some sort of drawing instrument, there will be representations of everyday life, the family, the school, monsters, and other creatures that might be frightening, as well as positive figures. Like play, the drawings are spontaneous if the child is allowed this freedom of expression and serve to describe the internal world or “put it outside” and make it what one wants it to be. This spontaneous strategy to deal with situations is helpful to the child and communicates to those around him or her what has had an impact or impressed the son or daughter. In general, the greater the detail of the drawings, this represents a greater degree of intelligence in the visuospatial area and a “visual child” who is very bright and puts on the paper what he or she sees.

These forms of communication by the child are nonverbal but to the observer, they contain the impressions of life and particularly any stressful situations the child may have encountered. For the mind of the child, moving to another house, the birth of a sibling, starting to go to school all by oneself, etc. are all major stressors and they may cause a temporary regression in the child’s behavior. Parents may see these changes as minor disruptions in the life of a young child but indeed they are major changes in the child’s milieu or routine, which may leave him disoriented and somewhat confused as to what happened and why. Discussing these topics with the child and their understanding of them may help prevent resentment and intense anger at what just happened.

Preschool Children's Concept of Illness

It is pertinent to approach an understanding of what young children might think of illness, being sick, and the remedies for those illnesses. There are questions about causality, and “immanent justice”: who gets sick and why. Immanent justice was described by Piaget, and it is like the notion that when one gets sick, it must be one's fault, although this way of thinking can persist into adulthood (Raman & Winer, 2004). A part of these explanations is of course influenced by the cultural milieu of the child: young children now talk about germs, bacteria, viruses, and the fear of contagion, particularly in the era of the pandemic of 2020. The question remains on how children can emotionally process and understand a chronic or severe illness and how parents might alleviate the possible self-blame associated with this causal thinking. A young child exposed to many concepts of illness, medicines, and the like will acquire this language of the body to refer to him or herself. A 3-year-old recently said that she had “a terrible immune system” to indicate that sometimes she gets sick from going to the child-care center.

Parent–Child Interactions in the Preschool Age

Parenting books are generally very popular with parents, many are eager to get advice on how to deal with the behavior and emotional life of young children. It is clear that parenting practices are highly influenced by cultural factors and that parents tend to see what they do as the “correct” way to raise children, to balance limits, discipline, and affection. Parents have different goals for their children. In many cultures in the world, parents want to instill in their children their values, such as a feeling of belonging and faithfulness to their family. Many also prolong dependency for a long time and becoming independent as a child or an adult is not such an important goal. This is more common in traditional societies and in cultures where families are

extended and there is high interdependence between family members. In that family structure, children may be allowed to be dependent on their parents for a much longer time, which is less common in more modern industrialized countries. For example, preschool children typically sleep in the same bed with their parents; they may be spoon-fed by a caregiver, particularly if the child is not a good eater. Parents may dress their children in the morning and be very permissive in general. Punishments may not be emphasized as the child is considered too young for that. This pattern is observed also in South American, Japanese, and other Asian cultures. The picture may change when the child becomes older.

By contrast, in countries like the United States, United Kingdom, and others, more urbanized families tend to reinforce independence and self-reliance in their children fairly soon, by comparison. The child may never sleep in the same bed with his or her parents. There is even a “sleep disorder” characterized as a “limit-setting sleep disorder” in which the parents “fail to enforce” the rule that the child should not leave his or her room and attempt to sleep with the parents. Self-feeding is encouraged since the end of the first year of life. Parents may use more behavioral strategies of positive and negative reinforcements to encourage or discourage certain behaviors. The child is taught to regulate him or herself when he or she is upset. There is more emphasis on “self-regulation” as opposed to “regulation with the help of another.” These rules tend to be also applied regularly in preschool settings where the child is expected to practice a lot of self-reliance and self-regulation as well.

It seems clear that children may thrive in any of these two styles of rearing children, and those in which there is a mixture of practices. However, some children will struggle more if they are very strong-willed, more animated, and prone to show anger if their culture expects a high degree of self-control. Similarly, if a child is very timid and anxious, does not speak to any strangers, and never speaks his or her mind, a traditional culture that encourages reliance on others may reinforce that dependency.

There is no ideal culture or a best culture, and that milieu reinforces the values that are more important in that context and that lead to desirable personality or character features.

Despite this, it can be said that we know more about “what not to do” with preschool children, rather than what are the best practices. In most cultures, it would be undesirable to humiliate and scare young children, who are very impressionable and are so dependent on their parents. Extensive and cruel physical discipline also tends to create long-lasting damage in the short and long term. Long separations from parents, leaving them with different caregivers instead of the constant presence of a few caretakers is also detrimental. Exposing children to frequent and intense marital disputes, domestic violence, and a regime of intense control, criticism, and rejection are also highly detrimental.

Clinicians and other adults that encounter young children could be prepared to detect alarm signs in them, such as aggressive behavior, extensive fears, and post-traumatic acting out. Behaviors like depression, internalized anxiety, and dissociative phenomena are more often overlooked by clinicians and staff in various settings because these children tend not to create disturbances or give problems to adults, but could suffer considerably.

Young children are very fragile in the physical sense and the emotional and psychological arenas. Due to our “amnesia” of the preschool age, adults may not reflect on how young children experience an adult world that can feel unsafe, overwhelming, or chaotic. The above account gives some idea about the emotional needs of young children and their vulnerabilities.

References

- Bloom, L. (1998). *Language acquisition in its developmental context*.
- Burdelski, M. (2010). Socializing politeness routines: Action, other-orientation, and embodiment in a Japanese preschool. *Journal of Pragmatics*, 42(6), 1606–1621.
- Burlingham, D., & Freud, A. (1942). *Young children in wartime*. Allen & Unwin.
- Carlson, E. A., Yates, T. M., & Sroufe, L. A. (2009). Dissociation and development of the self. In P. F. Dell, J. O’Neil, & E. Somer (Eds.), *Dissociation and the dissociative disorders*. Routledge.
- Chess, S., & Thomas, A. (2013). *Temperament: Theory and practice*. Routledge.
- Clark, R., Menna, R., McAndrew, A. J., & Johnson, E. M. (2020). Language, aggression, and self-regulation in young children. *Journal of Emotional and Behavioral Disorders*, 29, 135. <https://doi.org/10.1177/10634266209376911>
- Davies, D. (2010). *Child development: A practitioner’s guide*. Guilford Press.
- Fabes, R. A., Gaertner, B. M., & Popp, T. K. (2006). *Getting along with others: Social competence in early childhood*.
- Fogel, A., de Koeper, I., Bellagamba, F., & Bell, H. (2002). The dialogical self in the first two years of life: Embarking on a journey of discovery. *Theory and Psychology*, 12, 191–205.
- Fox, N. A., Henderson, H. A., Pérez-Edgar, K., & White, L. K. (2008). The biology of temperament: An integrative approach. In C. A. Nelson & M. Luciana (Eds.), *Handbook of developmental cognitive neuroscience* (pp. 839–853). MIT Press.
- Fraiberg, S. H. (1996). *The magic years: Understanding and handling the problems of early childhood*. Simon and Schuster.
- Freud, A. (1952). The role of bodily illness in the mental life of children. *The Psychoanalytic Study of the Child*, 7(1), 69–81.
- Frisch, N. S. (2006). Drawing in preschools: A didactic experience. *International Journal of Art & Design Education*, 25(1), 74–85.
- Frith, C., & Frith, U. (2005). Theory of mind. *Current Biology*, 15(17), 644–645.
- Gallese, V., Fadiga, L., Fogass, i. L., & Rizzolatti, G. (2002). Action representation and the inferior parietal lobe. In W. Prinz & B. Hommel (Eds.), *Common mechanisms in perception and action: Attention and performance* (pp. 334–355). Oxford University Press.
- Galyer, K. T., & Evans, I. M. (2001). Pretend play and the development of emotion regulation in preschool children. *Early Child Development and Care*, 166(1), 93–108.
- Gehard, U. (2020). *Kind und Natur. Die Bedeutung der Natur für die Psychische Entwicklung* (pp. 51–65). Springer VS.
- Hayne, H., & Jack, F. (2011). Childhood amnesia. *Wiley Interdisciplinary Reviews: Cognitive Science*, 2(2), 136–145.
- Hellige, J. B. (2001). *Hemispheric asymmetry: What’s right and what’s left* (Vol. 6). Harvard University Press.
- Hertzog, M. E. (2012). Temperament: Then and now. *The Journal of Nervous and Mental Disease*, 200(8), 659–663.
- Kagan, J., & Snidman, N. C. (2009). *The long shadow of temperament*. Harvard University Press.

- Knudsen, J. S. (2008). Children's improvised vocalisations: Learning, communication, and technology of the self. *Contemporary Issues in Early Childhood*, 9(4), 287–296.
- Kraft, K., & Berk, L. E. (1998). Private speech in two preschools: Significance of open-ended activities and make-believe play for verbal self-regulation. *Early Childhood Research Quarterly*, 13, 637–658.
- Lacourse, E., Nagin, D. S., Vitaro, F., Côté, S., Arseneault, L., & Tremblay, R. E. (2006). Prediction of early-onset deviant peer group affiliation: A 12-year longitudinal study. *Archives of General Psychiatry*, 63(5), 562–568.
- Lieberman, A. F. (2017). *The emotional life of the toddler*. Simon and Schuster.
- Martin, C. L., Fabes, R. A., Hanish, L. D., & Hollenstein, T. (2005). Social dynamics in the preschool. *Developmental Review*, 25, 299–327.
- Montessori, M. (2004). *The Montessori method: The origins of an educational innovation: Including an abridged and annotated edition of Maria Montessori's the Montessori method*. Rowman & Littlefield.
- Montessori, M., Hunt, J. M., & Valsiner, J. (2014). *The Montessori method* (Vol. 2). Routledge.
- Moriguchi, Y., & Hiraki, K. (2009). Neural origin of cognitive shifting in young children. *Proceedings of the National Academy of Sciences*, 106(14), 6017–6021.
- Needham, A., & Libertus, K. (2011). Embodiment in early development. *Cognitive Science*, 2, 117–123.
- Pauen, S. (2011). *Vom Baby zum Kleinkind. Entwicklungstagebuch zur Beobachtung und Begleitung in den ersten Lebensjahren*. Spektrum Akademischer Verlag.
- Paulus, M., Wörle, M., & Christner, N. (2020). The emergence of human altruism: Preschool children develop a norm for empathy-based comforting. *Journal of Cognition and Development*, 21(1), 104–124.
- Piaget, J. (1964). Part I: Cognitive development in children: Piaget development and learning. *Journal of Research in Science Teaching*, 2(3), 176–186.
- Principe, C. P., & Langlois, J. H. (2011). Faces differing in attractiveness elicit corresponding affective responses. *Cognition and Emotion*, 25(1), 140–148.
- Raman, L., & Winer, G. A. (2004). Evidence of more immanent justice responding in adults than children: A challenge to traditional developmental theories. *British Journal of Developmental Psychology*, 22(2), 255–274.
- Rizzolatti, G., & Craighero, L. (2004). The mirror-neuron system. *Annual Review of Neuroscience*, 27, 169–192.
- Rothbart, M. K., & Derryberry, D. (2002). Temperament in children. In *Psychology at the turn of the millennium* (pp. 33–52). Psychology Press.
- Santos, A. J., Daniel, J. R., Fernandes, C., & Vaughn, B. E. (2015). Affiliative subgroups in preschool classrooms: Integrating constructs and methods from social ethology and sociometric traditions. *PLoS One*, 10(7), e0130932.
- Sroufe, L. A., Egeland, B., Carlson, E. A., & Collins, W. A. (2009). *The development of the person: The Minnesota study of risk and adaptation from birth to adulthood*. Guilford Press.
- Thelen, E. (2000). Grounded in the world. Developmental origins of the embodied mind. *Infancy*, 1(1), 3–28.
- Tompkins, V., Blosser, M. K., & Downing, M. (2020). False belief understanding and narrative comprehension in the preschool years. *Cognitive Development*, 56, 1–18.
- Tremblay, R. E., Nagin, D. S., Séguin, J. R., Zoccolillo, M., Zelazo, P. D., Boivin, M., et al. (2004). Physical aggression during early childhood: Trajectories and predictors. *Pediatrics*, 114(1), e43–e50.
- Wertsch, J. V. (1984). The zone of proximal development: Some conceptual issues. *New Directions for Child and Adolescent Development*, 1984(23), 7–18.
- Clara Aisenstein** MD Child and adolescent psychiatrist and psychotherapist. Former faculty at Georgetown University, Washington DC. Consultant psychiatrist Indian Health Service. Author of numerous papers and book chapters on topics of infant and early childhood mental health and transcultural psychiatry. Currently private practice of psychiatry, La Joya, California.
- Kulsoom Kazmi** MD Child and adolescent psychiatrist, Baylor College of Medicine. Staff child psychiatrist Legacy Community Health.



The Body and Mind of the School-Age Child

3

Andres Jimenez-Gomez and Simone Higgins

*Llueve
y al árbol le pesan sus hojas,
a los rosales sus rosas.
Llueve
y el jardín huele a infancia,
(Hugo Mujica)*

*It rains,
The tree is heavy with its leaves,
the rose bush is heavy with its roses,
it rains
it smells of childhood
(Hugo Mujica)*

Introduction

An apt and blossoming individual emerges from the explosive changes of early development. This individual has typically gained independence in their communication as well as in their mobility; they have mastered bowel and bladder control and aptly make decisions about many and all aspects of their life that are often reasonable and plausible. The explosive changes and whirlwind behavioral displays have made way to more secure regulation of their emotions and responses (and with this, an incrementally internalized perception of their emotions and interactions).

Almost universally, the school-age child now has a routine that is more independent of the par-

ents, in his or her own space. During school hours, the child is surrounded by peers that act as a reflection and a model, and teachers as novel figures of authority and guidance. The boundaries of home and the family-centric and “individual cultural” norms and axioms learnt within the family nucleus will meet a constant challenge as they thus blend and relate with others away from the physically present oversight of their parental safeguard.

The process of development and embodiment of self in the growing child may appear to become more subtle and nuanced than that of the rambunctious strides of the infant and toddler, often heavily celebrated by the family. Nevertheless, the process is anything but simple, and the milestones achieved across domains shape the child into the adult that will become, adding instrumental skills and abilities that condition their future professional, social, emotional, and personal achievements.

In this chapter, we aim to dissect the elements in this process of school-age development, as well as the forces that play a substantial role in its prosperity and disruption. The subtleties between and within domains of development are herein separated by major areas of achievement, in the mind, body, and emotions, allowing the reader to

A. Jimenez-Gomez (✉)
Joe DiMaggio Children’s Hospital,
Hollywood, FL, USA

Stiles-Nicholson Brain Institute,
Florida Atlantic University, FL, Jupiter, USA
e-mail: ajimenezgomez@fau.edu

S. Higgins
University of Washington-Seattle Children’s Hospital,
Seattle, WA, USA

understand the individual forces at play and how they come together into the end result.

We attempt, also, to bring together neurodevelopmental, psychological, and psychodynamic theories of child development and their interplay in the conflicts and gains that are the definition of this life stage. The integration between these features is at times self-evident, at times left to the reader at their discretion and experience.

The Mind, Body, and Emotions of the School-Age Child

The Body as a Motor and Sensory Entity

The school-age child emerges as the culmination of an extensive process of neuromuscular maturation. A body prior conditioned by the intensity of tone (as controlled by the nervous system) rather than by the robustness of its own musculoskeletal system—intrinsically compliant by sturdy ligaments and tendons—emerges. Somewhere after 4 years of age, the emphatic forces of descending wave of postural and motor control best described in the seminal works of Julie Gosselin and Claudine Amiel-Tison in France, have come to establish competent mobility, posture, and balance. In the “neurologically intact child,” such a descending way to myelination is decreasing in its intensity and constancy (Gosselin & Amiel-Tison, 2007). The main trend of motor development becomes the refinement of abilities, rather than the inherent acquisition of such abilities. The child is no longer learning to walk or run, but is utilizing those abilities, more firmly established, and proceeds to dominate their extensions: hopping and skipping, running while dribbling a football and evading obstacles, while balancing an egg on a spoon. These abilities are often practiced while competing with their peers, an exhibition of competency and prowess central to the psycho-socio-emotional development of this stage.

The body of the school-age child is, generally in constant motion, as a manner of refinement of its abilities, except when he or she has to engage

in focused work at school. There is a progression of these acquired abilities in gross motor skills through constant practice of motions and novel actions.

Many descriptions of this process have emerged, perhaps best consigned in the works of American developmentalist Arnold Gesell. Clearly, the details of those motor abilities are certainly variable according to societal norms, cultural tendencies, and resource availability.

It is common that the 5-year-old is able to dominate roller skating (or ice skating), and the 5-1/2- to 6-year-old may master the bicycle without training wheels; however, how many of the world’s children in fact own bicycles or access ice rinks is perhaps an innocently biased observation. The basic tenets of Gesell’s gross motor observations, however, remain near-universal (Weizmann et al., 2011): the pursuit of finesse, symmetry, coordination, grace, and rhythm; the emergence of caution; the elimination of clumsiness; the demonstration of power, strength, and stamina.

The 9-year-old, achieving such impressive movement sequences now “works and plays hard” (Gesell & Ilg, 1946), a display that will often condition subsequent aspects of the child life, for better or worse.

A child’s physical displays may promote or hinder their informal and future formal participation in a sport or a physical talent (e.g., dance), even defining their future opportunities.

It is well-known that, even at this stage, sport “scouts” (or recruiters) for different professional teams seek out blossoming talents to offer opportunities in professional team “academies” to attempt to nurture those talents and shape them into professional sportsmen once they come of age.

Whether this is a suitable pursuit, however, is very much determined by socioeconomic and cultural factors (e.g., an opportunity offered to a “young Cristiano Ronaldo” in the deprived Brazilian favelas by a British football enterprise may seem unopposable). It is often, in fact, at this stage that the parents of the child serve as “scouts” themselves and pressure a child to nurture said ambitions, at times serving the interests or aspirations of the parent rather than the child.

The development and refinement of visual-motor coordination and fine motor skills become the inevitable companion to the gross motor prowess. In parallel—and in fact, in conjunction with—the growing perfection of abilities in coordination and accuracy, the concept of dexterity emerges strong and often determines particularly the early stages of school participation.

Whereas the infant, toddler, and preschooler have come to master many basic abilities in self-help (adaptive skills such as feeding with a fork and a spoon or putting their trousers on), the child of school age is refining their hand-eye coordination with the goal of perfecting and building on those more primitive skills.

The coarse crayon designs on paper that embellish the walls of kindergarten classrooms make way to more delicate drawings and meticulous penmanship and crafts; the hand-feeding and awkward use of utensils become a coordinate task in cutting food with knife and fork or using chopsticks to eat; the cumbersome fitting of a pair of pants makes way to the exacting task of tying one's shoelaces.

None of the above is without the need for diligent and precise sensory integration—that is, the perception of the different sensory inputs (tactile, gustatory, visual, olfactory, auditory, and proprioceptive) in simultaneity. This is neurobiological ability to associate them to construct an adequate and dynamic representation of the outside world. In essence, the process of early child development depends on adequate feedback from the multitude of sensory perceptions, and mature neuromuscular function emerging from a reflex neuromotor scaffolding afforded by evolution itself (Lantz & Ray, 2021; Inhelder & Piaget, 1958, 2008). The predominant sensory input is that of a mature visual system, fortifying the visual-motor abilities that govern coordination for hand function, but also in sports and other more bodily feats. But it is of course, not independent nor exclusive—sensory input from other sources (tactile, proprioceptive) must be paired spatiotemporally with those visual input and motor responses (volitional or reflex) to be able to construct a socially and contextually appropriate world perception. When this integration

becomes distorted, and further, when processing within one's individual senses is impaired, the response—motor, behavioral, emotional—becomes in itself impaired. It is not uncommon to see in the early school-age child the remnants of immature sensory integration play out in various behavioral and emotional displays. At times the persistent traits may be as simple as the so-called “picky eating” (gustatory), ritualistic displeasure in seams in clothing (tactile), or food groups touching (visual). Further displays with a frank neurobiologic basis include persistent tip-toe-walking, or synkinesis/mirror movements (Vaivre-Douret et al., 2016). The degree to which some of these persistent changes have been pathologized as isolated behaviors is a feature of intense cultural discrepancy (with a more pathologized approach from the American Diagnostic and Statistical Manual, DSM-5). Regardless, it is in fact not uncommon to have a wealth of sensory preferences and aversions, and to display mature and immature responses to such (of pleasure and displeasure), conditioned by individual cognitive and emotional maturity, as well as socio-cultural aspects (Dunn, 2007). This culmination of skills contrasts with the evidence delivered by variation in development and its impact in the individual's own embodiment, the family, and cultural perception of self (Maldonado-Duran & Goldberg, 2019). While the traits of motor and cognitive development in the school-age child are incrementally determined and made distinct by socio-cultural factors, the underlying processes, as above described, are a constant. Therefore, outlining the variations to this constant sets the stage for understanding the different changes in development, and their impact on the self.

While it was Arnold Gesell that heavily outlined the process of typical development in the [American] child, it was Arnold Capute whose “triangle” of neuromotor, neurobehavioral, and cognitive development, and whose understanding of developmental variations, offered a structured framework that remains globally applicable in the evaluation process of the child (Voigt, 2018). In this model, development—cognitive but also motor—can vary by virtue of delay, unequal areas of development (isolated changes

in one area), and deviation (disorganization within development). The means by which this becomes evident in the school-age child, mostly, is in the presence of delay and disparities in the different areas of development. Often, this age group has overcome the more coarse and self-evident traits of motor impairment resulting from frank cerebral changes at or around birth (for example, the child with an early diagnosis of spastic quadriplegic cerebral palsy is anticipated, at an early age, to display difficulties in mobility and dexterity; this knowledge allows the parents early bereavement and acceptance (not to say it is an easier process, however). Instead, the blossoming 8- or 9-year old tends to display emerging difficulties in coordination or penmanship (often denominated dyspraxia, dysgraphia, or developmental coordination disorder). These motor difficulties emerging in what was once perceived as a “well-developing child,” at a time where individual prowess and industry are implicit, present in both the child and often in very competitive parents a difficult understanding of why a virtuous child now appears incompetent. The following vignette encompasses one such example:

An 8-year-old boy presents for assessment of academic difficulties. He is the first child to a healthy mother who reports an uneventful pregnancy. The child reportedly met all developmental milestones on time through his first 5 or 6 years but notable difficulties emerged through the school setting where teachers started to worry about his “sloppiness” and “rushed” performance on tasks, where he would have difficulty in learning to write and copying off the board. He was also described as “hyper” and “clumsy.” The pediatrician had managed this under a diagnosis of attention-deficit/hyperactivity disorder (ADHD), and prescribed several stimulants; while the child was less hyperkinetic, there was continued clumsiness, poor penmanship and trouble copying off the board. Detailed developmental review demonstrated the child had had trouble mastering aspects of self-help such as feeding with utensils or brushing his teeth, always attributed to “laziness” or “wanting to be fed.” Other than the traits described examination is nonfocal, and developmental assessment suggests appropriate visual-perceptual (nonverbal problem-solving) abilities and language abilities, albeit with significant fine motor interference; poor performance on tandem gait is also noted.

The Body and Its Functions: Sleep, Eating, Elimination

By school age, children have mostly well-developed autonomic functions and a routine that allows for relatively regular sleep/wake cycles and alimentation patterns. From a dietary perspective, the school-age child’s mealtime routines are set in, typically subjected to or modulated by aspects of the environment. For example, traditional Western “three meals a day” constructs depend on socio-economic feasibility, school schedules (and inherent delivery of foods), and access to snacks (for those with grazing habits). Other cultures have different customs that children may be inclined to adopt, even when not expected to adhere to them: Such is the case for fasting during Ramadan, for example (Kalra et al., 2019).

The dinner table has been a traditional setting for consolidation and transmission of customs and cultural values across cultures. It is a space for exploration of likes and dislikes early on in life as an infant, toddler, and preschooler mostly (Mura Paroche et al., 2017), but in the school-age child, two roles become more precise: the table (and the event) as a space for communion between children now typically removed for the school day, and the parents, themselves busy at work; and the table as a place to develop socially acceptable “manners” and “etiquette.” A similar role is then taken and re-enacted thus in the school setting proper, where mealtimes with peers and adults become another opportunity for social displays and the development of preferences and styles (Harte et al., 2019).

The role of such rituals around alimentation in development is immense, and thus the impact of changing demographics and the cultural blending as influenced mostly by American customs (predominantly in the West but increasingly elsewhere) cannot be overstated. The home setting facilitates both the variety and pattern of alimentation in the child, and thus, dietary tendencies follow later into the future and may substantially impact the child’s health in the long term. Perhaps the commonest difficulty encountered in recent times in this regard is the influence in dietary

diversity across many parts of the world, leading to an effect in global obesity (Park et al., 2014; Mahmood et al., 2021; Birch et al., 2007). Home and school-based practices conditioned by changing demographics (urbanization), work patterns (shorter hours at home, less available time for cooking, and participative culinary practices), children's leisure habits (sedentarism) have played a substantial role in generating new trends. Moreover, even marketing of fast food and simplistic diets (often of insufficient nutritional benefit) has incrementally targeted the ever more vocal youth in the "democratized" contemporary household of the West (Lobstein, 2013).

To a different degree, other alimentary disturbances may persist or emerge during this life period. Emerging difficulties may include the various eating disorders that are encountered by the pediatrician such as those with an organic or psychogenic origin (e.g., pica), to more frankly psychiatric conditions such as avoidant/restrictive patterns and binge eating, bulimia nervosa, and anorexia nervosa (Reilly & Schonwald, 2018). In this regard, the role of early traumatic practices pairs with the incremental sexualization of the school-age child, paradoxically in this age of "latency." From toys to media input, increasing availability and limited content monitoring present an optimal opportunity for targeted exposure to "ideal" bodies to "attract" attention from the opposite sex. Thus, children are ever more exposed to traditionally age-inappropriate opportunities in grooming and dressing or exercising (strength training) and food practices (Wild, 2011). There are increasing pressures from a number of sources for children to be more "attractive" as early as possible.

Similarly to diet, sleep undergoes substantial changes with a combination of physiologic and cultural influences. The school-age child is expected to sleep consistently and through the night, and guidelines from the American Academy of Sleep Medicine suggest that this should equal approximately 9–12 h per 24-h period "to promote optimal health" (Paruthi et al., 2016).

The sleep time and the way children go to sleep are also subject to external influences and

other aspects dubbed "sleep hygiene" that heavily influence and modify the rituals surrounding bedtime. Sleep refusal often takes on different forms than the "tantrum"-based opposition of the preschool child and toddler. In many industrialized countries, the school-age child has increasing unrestricted access to technology (from televisions to handheld devices such as phones, gaming devices, or others) in bed with which they bypass the stated requirements from the parents.

School-age children may continue to experience different parasomnias (such as night terrors, somnambulism, and somniloquies) that are believed to represent neither specific pathophysiology nor frank psychopathology. Disturbances surrounding dreams and their interpretation have long been the subject to evaluation, perhaps most extensively documented by David Foulkes, in regards to presence, content, variations between qualitative aspects therein (i.e., movement and social interactions) (Foulkes, 1999). In the clinical setting, the fantasies and dreams, or nightmares reported by children are an important communication as to what are the wishes, fears, and experiences of a child.

In the United States, there is controversy on the issue of cosleeping, without agreement even within different pediatric specialties. Societal norms governing bed-sharing with caregiver adults or with siblings are extremely heterogeneous and conditioned by family practices, financial status, access to different rooms in housing, and broader cultural practices.

Beyond campaigns against cosleeping in infants to diminish the risk of sudden infant death (Jullien, 2021), certain cultures—mostly Western, industrialized—have favored the introduction of early sleep separation (Ferber, 1985), in contrast with others where cosleeping is natural and encouraged, even into early adolescence (Yang & Hahn, 2002; Palmer et al., 2018; Cortesi et al., 2004). What remains consistent, however, is the importance of identifying factors that may prompt changes in sleep patterns (i.e., increasing cosleeping in an anxious child), or factors that may vary from the expected within each culture. Rigidity in rules from parents, regarding where

the child sleeps may conflict with difficult experiences from school-age children, who if they were scared or had a difficult day may wish to sleep with a parent that night.

Elimination habit is a mostly mastered area of the school-age child. Typically, by around age four, the child has matured enough to achieve bowel and bladder control during the daytime and has the communicative abilities to advise the caregiver or teacher about the need to void. A complex balance of willingly controlled external sphincters in coordination with specialized sensory elements and autonomic sphincters has been integrated in the child's psyche. It is notable that the age of attainment of sphincter control reportedly has increased over time, with reportedly more lenient "training" among American parents over recent decades (Horn et al., 2006).

Two elements remain harder to master in full at the onset of school-age: personal hygiene and nighttime bladder control. With most children autonomously displaying ability to "wipe" and clean themselves by around 7 years and achieving consistent nighttime continence by ages 8 to 9 years old.

Bowel and bladder however remain a simultaneously autonomic and volitional part of physiology that offers the child an element of control ("autonomy vs. shame/doubt" as per EH Erikson), as much as a conscious/unconscious outlet of other anxiety and distress. At times of stress or tension, the child may "regress" at different time periods, often in relation to circumstantial changes (a move, a change of school, the birth of a sibling) prompting temporary enuresis (urinary incontinence) or even encopresis (stool incontinence).

It is important to distinguish between primary and secondary incontinence. In the former, the child has never attained control. This type of elimination problem is often linked to anatomical or physiological traits or developmental delays. Conversely, secondary changes are often tied to common environmental changes/circumstances, distress, or acute physiologic changes (e.g., urinary infections). One common display of aberrant bowel control, for example, is retention of urine or feces for the purpose of continued

involvement in games or other activities). In the case of retention of feces, this may ultimately lead to cycles of constipation/incontinence or "leaky stool" and "streaking" of a child's underwear.

Also, it is not uncommon to find in the child with developmental delays and sensory processing/sensory integration difficulties a pattern in which continence and incontinence (and constipation) associate to an immature or incorrect representation of sensations prompting a desire to void, thus leading to retention or soiling, alongside marked indifference or unusual discontent about the result (e.g., going about their day with a soiled diaper without manifest complaint).

The Mind: Cognition and Schooling

Cognition

The ultimate goal of the concurrent motor and language development in the school-age child is to form the budding adult in his or her social and emotional persona. It is imperative to recognize that these accomplishments are undoubtedly and inalienably governed by ultimate cognitive achievement. A wealth of psychological theorems as discussed below and elsewhere in this book helplessly depend on the brain plasticity and growth (functional and structural) resulting in the development of the different planes of cognition. A child whose cognitive development remains well below their chronological age will be unable to process mathematical as much as psychosexual conflict in the way expected for that age. While possible to regress to earlier psychological and behavioral patterns, it is quite impossible to do the opposite.

The complexity of the operations carried out from the functioning of neural structures involved in visual-perceptual and language result in the development of cognition and intelligence, through the employment of different neurological pathways governing association and control of input, consolidation of memories, as well as the organized access to those resources (executive function). Increasingly, the school age child

is expected, as the years progress to achieve more control of his or her own abilities, and to make decisions without the immediate input of parents. In the classroom, this becomes obvious, and the child has to access his or her own resources to solve problems, perhaps if available with the help of his parents.

The mature use of these resources—evidenced first in the school-age child—depends on structural integrity, adequate genetic substrate, nutrition, parent–child interaction and teaching of actual information, and, of course, culture, among others. It is, thus, that at this time, neuropsychologists and other experts start to measure cognition in a more precise and concrete manner; this involves standardization wherein standardization and norming of expectations in the many areas of cognitive achievement. All this eventually translates into “standard scores” across the intelligence domains perhaps best consolidated into the Cattell–Horn–Carroll theory of intelligence (McGrew, 2005).

Language Development

Verbal and nonverbal development of intelligence depends on the language development of the child and their communicative intent, and its synchrony and simultaneity with the visual-perceptual norms. Language development is of course dependent on adequate brain structures that can support the neuronal connexions to support the development of receptive and expressive language skills and language processing. Aside from these basics, language development is highly dependent on the “diet of language” in the child’s family and on cultural values. Some generations ago children were instructed to “be quiet” at meal times in many cultures, while now most clinicians recommend a pleasant exchange of conversation at mealtimes. Also, children used to be “seen and not heard” and in modern times parents are encouraged to listen to their children’s point of view.

From a Vygotskian perspective, language develops as a result of the “need to communicate” to be heard and to convey meanings, also

to understand what parents and siblings want to transmit to the child, i.e., for purposes of communication. If a child has limited language skills or very restricted vocabulary, this could be the result of the level of intelligence of the child. However, most of the time this is related to the fact that in the home “nobody talks” or hardly anybody talks to the child or listens to what he or she has to say. Also, it is very clear that there are vast differences in the number of words used by parents and children according to social class and level of education. There may be a huge difference between children who hear little from adults or very simple communications, versus children whose parents tell stories and communicate verbally with their child. In summary, language development is a neurological issue but equally a relational and interpersonal skill. If one is not heard, why talk?

A 5-year-old boy presents for initial developmental evaluation following referral from his pediatrician for delayed language development. The child was born full term to a healthy young mother with an otherwise uneventful pregnancy. The child had been apparently meeting all milestones including language by a year of age (using “mama” and “dada” specifically, waving, and asking for “ball”). somewhere around 18–24 months of age the child appeared to lose these skills, displaying no further use of words or gestures for communicative purposes. Rather, the child became fascinated with letters and numbers, as the parents attempted to foment language development by a wealth of such displays. The parents report the child does repeat some words or sentences quite immediately, but does not seem to understand when requests are made. He is capable of object recognition (octagons, hexagons) and letter recognition, but cannot seem to draw a circle or write his name. He does very much enjoy reading street signs, naming their letters or reading out “STOP” or “SPEED LIMIT.” Direct developmental assessment reveals, among other findings, that the child has very limited capability of following instructions with or without visual cues. He, however, is incredibly proficient at letter and word recognition, including nonsense words in which he may briskly sound out and say “ABOSE” or “RTHUP” as presented by the examiner. There is no use of gestures or protoimperative/protodeclarative pointing, and the eye contact displayed is sparse and fugacious. The child is ultimately diagnosed with autism spectrum disorder.

In the above child, the achievement of reading per se is based upon an asynchronous and advanced ability to identify symbols (letters/numbers), access their phonemes and blend them into an expressive form. This is a classic display of significant deviation; their communicative language is certainly not age-expected, and therefore, the ability of reading displayed is rote and nonfunctional. It does not in fact allow the child to access the cognitive abilities in comprehension that emerge as growth progresses—initially from following instructions as a preschooler, to comprehending meaning and analogies, to learning to read, to reading to learn.

Children who struggle with their language development often have much frustration and express their feelings intensely

John is brought for evaluation for disruptive behavior, he is 7 years old. The teacher says he has all the abilities to learn, but “does not want” to learn and do work. He is disruptive at school and refuses to do many of the academic tasks, preferring only recess. When one asks questions to John he has little to say and does not name feelings, and his account of events is very limited. When the clinician asks the parent his opinion about John, he gives a similar presentation. Very few sentences, very short ones, and with limited vocabulary. The father says in the house they are very busy and the parents “work all the time,” spending about two hours with their children every day before bed time. The father is a man of “few words” and the mother is depressed and withdrawn. There is a “climate of silence” in the family. When one shows John different characters in cartoons with various emotions, he identifies many of them as “angry” or “mad” even when the child could be sad, disappointed, frustrated, etc. John does not possess this vocabulary and his world view is very simplistic and reduced, very similar to that of his parents.

However, an exaggerated example above, nuances of language development play a significant role in the child’s academic achievement as much as they do in social, emotional, and behavioral achievement (Ekelman & Lewis, 2019). However, it is often the mature and cognitively intact child who suffers expressive difficulties in language—apraxia of speech (O’Hare & Bremner, 2016). A repeated sense of failure in school based on these difficulties may condition the child’s own perception of their “defective”

body, just as the perception from peers (a “slow” or “dumb” classmate) and the teacher (“shy,” “uncooperative” or “distracted” child).

Learning Academic Skills

What we commonly call “academic skills” in the formal sense of the word is typically acquired in elementary school. This involves tasks like learning to read, to write, to draw, to do arithmetical calculations, and to learn about nature and geography, perhaps also about music, playing a musical instrument, or other artistic activities if the child is fortunate enough to attend a school where art is taught.

An academic skill like reading is an enormous achievement from the developmental point of view. Reading is a highly artificial activity from the evolutionary point of view. It consists of the learning of symbols (letters or ideographic expressions) that have to be sequenced into words, interpreted and deciphered as they succeed one another. The child at this age learns this task. It is easier to achieve in highly phonetic languages like French, German, or Spanish, and much more difficult in languages like English.

Reading in the sense of decoding symbols is not enough, the child has to comprehend what was just read, the meaning of what was written and to make a “mental gestalt” of the narrative, which then can be reproduced verbally or in writing. All this requires multiple chances to practice, repetitions, and a love of learning. These are difficult things for many children, whose parents may be too busy to sit with them to practice, or who may see reading as a “work task” rather than something that is a pleasure in itself.

Other academic skills like adding, subtracting, multiplying, dividing, and the beginnings of geometry are learned at this age. They require higher-order thinking and also instruction and for the child to see why this is important or why it is being taught. Unfortunately, many children see the learning of these tasks as dreadful or boring. The style of teaching has an enormous impact on the acquisition of skills, and on the attitude toward learning new things.

In some countries, notably Scandinavian countries and the Netherlands, for example, a majority of children “love school” in surveys. In the United States, many children “hate school.” A positive emotional climate in the classroom and a warm relationship with a nurturing teacher are optimal conditions to learn. A climate of fear and punitive strategies, with little “actual teaching” are ingredients that tend to lead to disliking learning and school in general.

It is also clear that learning is much easier if parents model this stance of trying to learn new things, if they talk to their children about what they learn and inspire curiosity, and they themselves read, write, or practice skills together with their children. The child has to see what is the purpose of this practice and not merely see school as a “sentence” or as “work” that serves no purpose later on in life.

The child spends many hours of the day in school. It is clear that there are “good schools” and “bad schools.” This not only refers to the actual academic standards, but to whether the teachers teach, inspire children, and maintain order and respect in the school setting. In many countries, schools are “segregated.” That is, good schools are more likely in wealthy neighborhoods and for middle-class children. Bad schools, dilapidated buildings, absence of interesting teaching materials, no field trip trips, and no art education are very common in schools in poor neighborhoods. The experiences in these settings have long life consequences for the child.

Demands on Attention and Concentration

By school age, the expectation of active engagement and ongoing participation for prolonged school periods of time is generally established. This can consist of structured and lengthy sessions demanding continued attention, concentration, and self-control. This is dependent on the schooling method. The old traditions of Western elementary and middle/high school education which consisted of rigid offerings like boarding schools and military or religious institutions have

generally given way to more liberal displays of open classrooms, “co-op” schooling, and even homeschooling. The demands and expectations for attention and academic achievement are relatively constant (e.g., ability to read fluently and at a certain pace, or expected ability in arithmetic (Kaufman & Kaufman, 2014; Wilkinson & Robertson, 2017)). The expectation for certain behavior and performance influence what will be considered as normal child behavior or a “disorder.” For instance, the expectation that a 7-year-old should be sitting for long periods of time and be “on task” with little variety or flexibility may lead to labeling a child who struggles to do that as having an anomaly. An example is attention-deficit/hyperactivity disorder (ADHD). The diagnosing of certain children as having that condition has seen a progressive metamorphosis from a relatively “normal” process into a heavily diagnosed and medicated condition, particularly in the United States (Smith, 2017; Fayyad et al., 2017). Thus, many children are “diagnosed” and medicated on the basis of a simple document such as the (in reality a screening questionnaire) Vanderbilt Scales (NICHQ, 2002), without further exploration of why the child behaves a certain way or what the child might be thinking or feeling. Even when this condition is readily diagnosed, the child often does not receive any additional supports from the school staff, such as accommodations in the classroom or psychological or behavioral interventions, but only pharmacotherapy (Mate, 2000; Newmark, 2015; Schwartz, 2016).

While the traditional structured curricular school setting is undergoing constant evolution, the educational process itself remains heavily reliant on the cultural predetermination and preferences of the parents and continually adopts a pattern acceptable to each social group (Toruno Arguedas, 2020; Cruz Cabrera et al., 2019).

The school experience for children may vary from submissiveness to disciplinary methods, to nonconforming behaviors or open protest if the child perceives the rules as “unfair” or unreasonable. The same applies to teachers’ strategies. It has been shown that teachers that use mostly

coercive strategies to deal with students tend to have more students with disruptive behavior: anger begets anger. Teachers who actually teach and are sensitive to their student's emotional states tend to be more successful academically and in the behavior of the students. Increasingly in the United States, parent groups want to have increasing influence on what is being taught or not taught, and different states promote or discourage certain topics.

Many traditional schools, particularly those in less cosmopolitan areas, may retain harsh disciplinary methods implemented by teachers, including physical punishment (spanking, slapping) or separation from the classroom or "in school" or "out of school" suspension. Unfortunately, these strategies, including physical punishment are commonly applied in many countries around the globe in all continents. They succeed in instilling fear and resentment and promote doing things in an underhanded way and an "externalizing discipline" instead of the acquisition of values like compassion, kindness, and cooperation.

Many parents, with the best of intentions, endorse these punitive strategies and parents believe they are an important part of education, having been victims to that themselves. In particular, it is worrisome to observe variations in degree and severity of such practices from an ethnoracial standpoint in countries with more multi-ethnic or multicultural societies (Peguero et al., 2021). In the United States, Black children, particularly boys, tend to be disciplined more harshly than Caucasian children at all ages. Black children and those of other minorities are more likely to be referred to correctional systems and are treated with less empathy across the country.

Children who protest or defy harsh disciplinary rules or are not scared enough by threats of punishment may be considered as having a disorder and are often referred for pharmacological treatment by psychiatrists or pediatricians. A more thoughtful assessment of the situation and listening to the child's point of view about what are the objections to the school regime could promote a more thorough intervention that addressed concerns about school practices or teachers.

An eight-year-old boy, Juan, referred for evaluation due to "hyperactivity" and oppositional behavior seen by us illustrated this point. He had had a first grade teacher who was very flexible and experienced and he got excellent grades and was well behaved. There were no signs of restlessness then. In second grade his new teacher was young and quite rigid. She wanted to keep a very "quiet classroom" and constantly threatened children with negative reports, referrals to the principal, leaving children without recess or calling the parents. She wanted Juan to sit down and would leave him without recess after warning him "not to talk," etc. The boy got a "daily report" with "sad faces" that his parents had to sign. As the weeks went by the teacher seemed increasingly punitive and Juan increasingly defiant. He was not used to this very negative way of being admonished, scolded or someone yelling at him. The clinician suggested a meeting with the school staff. After the teacher vented her complains, it became obvious that she had considerably animosity toward this boy and she appeared to be somewhat prejudiced, she referred to Juan as of "Hispanic heritage" many times. The principal, a very experienced teacher, suggested a change of teacher. The boy changed his behavior very soon and the signs of defiance and restlessness disappeared.

Many children who have similar struggles may receive diagnoses like oppositional defiant disorder intermittent explosive disorder or even bipolar disorder, without taking into account the biographical information of the child or the stressors, family, and school influences that may lead to these difficult behaviors. When these are addressed often the "symptoms" improve considerably. A child who appears inattentive may be daydreaming or worrying about parents arguing, about financial problems he heard his parents were having, or worry about other issues. Only by directly talking to the child, these issues may come to the fore. This parent-teacher-student triad, but particularly the parent-child dyad, has thus a vital role in the child's success or failure, and importantly, well-being and happiness.

In addition to school involvement, in many modernized societies and urban centers, children have multiple extracurricular activities in order to provide a "well-rounded education" by well-meaning parents: tennis lessons, Karate, violin lessons, extra teaching of mathematics, theater practices, etc. In their attempts to enrich their

child's academic and extracurricular endeavors, including those that carry forth special talents in the arts, athletics, or sciences, some children become overwhelmed and feel that they are never free to do what they want or to "do nothing" or play at their leisure., in many modern societies such physical or mental prowess becomes the source of incentives, for example, current and future scholarships as well as financial gain. This is supported as much by private educational institutions (in the West) as by governmental agencies in other countries (e.g., in China and Russia). This often leads to undue pressure and demands (lack of praise and unduly high admonishment) on the growing child with excessive expectations, potentially influencing physical health, and affecting the child's psycho-emotional well-being, as well as the interactions with peers (Bernstein & Kern, 2020; Bonavolontà et al., 2021). In many ways, it is at this time that parents often "fear" having an average child, rather than one who is gifted.

Engagement in Social Play

Play is perhaps one of the most important frontiers for children of all ages, no less so for the school-age child. It is an important display of a child's psycho-emotional development as much as a means to interpret, participate, and elaborate on the family and social environment.

Play undergoes a progressive evolution, most notably distinguished by two salient elements: the internalization of play, and the incorporation of rules and structure (structured play). In the first case, as the child evolves emotionally and developmentally, so does their manner of play. The externalized dramatization of circumstances either through toys or theatrical re-enactments of internal conflict present in the preschooler dissipates into more elaborate constructions and structures in the older child, which remain often vaulted in the child's mind, rather than in the prior unfiltered displays. This is also influenced by the newfound physical capacities of the child, who discovers competence in their strength and agility to pursue

physical activities that are more structured and reflective of inherent competitive and cooperative interests (e.g., team sports). A more clearly defined difference between (traditional) gender identities also provides a platform to differentiating preferred play and play structures (as it generally does for toys, for example) is gradually disappearing. It is increasingly more acceptable for girls to practice soccer or baseball and for boys to have dance lessons, for example (Willett et al., 2013). Further, the dynamics of play have been seriously impacted by the introduction of technology and electronics at an ever younger age to children, particularly in the western and industrialized world.

When left to their own devices, children tend to develop their own "social rules" and introduce principles of fairness, taking turns, and joining groups or teams. In traditional societies, children play outside the home, in spontaneous activities that have some rules and adults are not involved, play may be practiced for sheer pleasure, exertion of capacities, and social bonds; for instance, spontaneous soccer playing in the favelas or streets of Brazilian cities. In the United States and other industrialized countries, adults increasingly encroach in the "world of children" with all sorts of rules, uniforms, clubs, fees, etc. regimenting the play of children into quasi-adult versions, introducing for example competitiveness and organized tournaments.

Social Media, Technology, and the Evolution of Play

The unprecedented evolution of both technological capability and access over the past three decades has thus brought a transformation in all aspects of life. The introduction of videogames and virtual spaces has indeed further evolved and affected the dynamic of play and childhood interaction. From a certain perspective, this novel and ever-evolving space is "limitless" and fosters the creative and endless imagination of the child. There is no frank limit to the possibilities other than those in the child's very mind. The child can transform themselves within (presenting as an

animal, a superhero, another gender, change their hair color, etc.); they may build structures and games at their behest and adherent to their novel rules. This in itself represents a fast-paced evolution of the more “traditional” structure of virtual play (e.g., comparison of older gaming platforms and evolving into novel games and platforms such as Minecraft or Roblox), where inherent rules and limitations were in place (inability to “code” beyond the stretches of the factory-built game).

A both interesting and worrisome characteristic of these platforms is their continued and continuous presence. Where a traditionally “wired” gaming experience in a home TV would cease to function until the child returned home (thus the play outside of this setting would inherently be physically and nonvirtually interactive), the current virtual scenarios, “stored” online and continually “running,” and accessible. Children are now in possession of technology that allows them to use these disruptively (e.g., during class at school), and communicatively (becoming thus a means by which children are continually engaged with one another). The “gaming” communities have indeed become social media platforms for children equivalent to those used contemporarily by older individuals (e.g., Instagram, Twitter), with similar virtues and vicissitudes (anonymity and supplantation, exposure to misinformation, aggressive and targeted marketing). These virtual environments are indeed incrementally social and are governed by similar “rules” among these virtual residents, transferring the playground/play arena to this setting. In a similar principle, these present societal interactions that also allow for alliances and exclusion, even bullying that may certainly exceed that of real life (e.g., murder or significant bodily injury, sexualization, or others) (Burn & Richards, 2016). Intense peer relationships thus remain both unfiltered and unmonitored (to the extent typically feasible from passive parental or adult observation), often leading to distorted attachments and interpretations of virtue and foul, distancing in fact from the parental formation (Neufeld & Mate, 2005).

Of additional interest is the “economy” and exploitation of children. These platforms offer

scenarios for targeted advertisement and (essentially) grooming by promising virtual rewards or by influencing tendencies via direct marketing techniques, even presenting “role models” often cosponsored (or co-opted) by their parents (Haas et al., 2021; Luscombe, 2021). It is in fact so that this virtual “playground” is becoming ever more diverse, intuitive (artificially intelligent), and realistic. The advent of augmented and virtual reality with multisensorial input may, in fact, harbor new rules and interactions, risks, and virtues for children’s cognitive, social, and emotional development.

References

- Arguedas, C. T. (2020). Aportes de Vigotsky y la pedagogía crítica para la transformación del diseño curricular en el siglo XXI. *Innovaciones Educativas*, 22(33), 186–195.
- Bernstein, S., & Kern, L. Z. (2022). Parents are holding their kids back in school to make them more competitive athletes. January 3, 2020, available at <https://www.parents.com/kids/education/parents-are-holding-their-kids-back-in-school-to-make-them-more-competitive-athletes/>. Accessed april 10, 2022
- Birch, L., Savage, J. S., & Ventura, A. (2007). Influences on the development of children’s eating behaviours: From infancy to adolescence. *Canadian Journal of Dietetic Practice and Research*, 68(1), s1–s11.
- Bonavolontà, V., Cataldi, S., Latino, F., Carvutto, R., De Candia, M., Mastrorilli, G., et al. (2021). The role of parental involvement in youth sport experience: Perceived and desired behavior by male soccer players. *International Journal of Environmental Research and Public Health*, 18(16), 1–9.
- Burn, A., & Richards, C. (2016). *Children’s games in the new media age: Childlore, media and the playground*. Routledge.
- Cortesi, F., Giannotti, F., Sebastiani, T., & Vagnoni, C. (2004). Cosleeping and sleep behavior in Italian school-aged children. *Journal of Developmental & Behavioral Pediatrics*, 25(1), 28–33.
- Cruz Cabrera, F., Lorenzo Fernández, Y., & Hernández Pina, Á. D. J. (2019). La obra de Vygotsky como sustento teórico del proceso de formación del profesional de la educación primaria. *Conrado*, 15(70), 67–73.
- Dunn, W. (2007). Supporting children to participate successfully in everyday life by using sensory processing knowledge. *Infants & Young Children*, 20(2), 84–101.
- Ekelman, B. L., & Lewis, B. A. (2019). Speech and language disorders. In M. L. Batshaw, N. J. Roizen, & L. Pellegrino (Eds.), *Children with disabilities*. Brookes Publishing Company.

- Fayyad, J., Sampson, N. A., Hwang, I., Adamowski, T., Aguilar-Gaxiola, S., Al-Hamzawi, A., et al. (2017). The descriptive epidemiology of DSM-IV adult ADHD in the World Health Organization world mental health surveys. *ADHD Attention Deficit and Hyperactivity Disorders*, 9(1), 47–65.
- Ferber, R. (1985). *Solve your child's sleeping problems*. Simon & Schuster.
- Foulkes, D. (1999). Children's dreaming and the development of consciousness. In *Children's dreaming and the development of consciousness*. Harvard University Press.
- Gesell, A., & Ilg, F. L. (1946). *Child development II. The child from five to ten*. Harper and Brothers Publishers.
- Gosselin, J., & Amiel-Tison, C. (2007). *Évaluation neurologique de la naissance à 6 ans*. Éditions Chu Sainte-Justine.
- Haas, J., Osakue, L., Nieuwenhuis, M., & de Boer, T. (2021). *Kids see kidfluencers; a qualitative study on the negative effects of child influencers on Youtube*. University of Amsterdam Masters of Media. Available at: <https://mastersofmedia.hum.uva.nl/blog/2021/10/30/kids-see-kidfluencers-a-qualitative-study-on-the-negative-effects-of-child-influencers-on-youtube/>. Accessed 15 Apr 2022.
- Harte, S., Theobald, M., & Trost, S. G. (2019). Culture and community: Observation of mealtime enactment in early childhood education and care settings. *International Journal of Behavioral Nutrition and Physical Activity*, 16(1), 1–11.
- Horn, I. B., Brenner, R., Rao, M., & Cheng, T. L. (2006). Beliefs about the appropriate age for initiating toilet training: Are there racial and socioeconomic differences? *The Journal of Pediatrics*, 149(2), 165–168.
- Inhelder, B., & Piaget, J. (1958). *The growth of logical thinking from childhood to adolescence: An essay on the construction of formal operational structures* (Vol. 22). Psychology Press.
- Inhelder, B., & Piaget, J. (2008). *The psychology of the child*. Basic Books.
- Jullien, S. (2021). Sudden infant death syndrome prevention. *BMC Pediatrics*, 21(1), 1–9.
- Kalra, S., Al Deeb, A., & Sahay, R. (2019). Ramadan fasting in children. *Journal of the Pakistan Medical Association*, 69(5), 745–746.
- Kaufman, A. S., & Kaufman, N. L. (2014). *Kaufman test of educational achievement* (3rd ed.). Available at: <https://www.pearsonassessments.com/store/usassessments/en/Store/Professional-Assessments/Academic-Learning/Reading/Kaufman-Test-of-Educational-Achievement-%7C-Third-Edition/p/100000777.html?tab=product-details>. Accessed 10 Apr 2022.
- Lantz, S. E., & Ray, S. (2021). Freud developmental theory. In *StatPearls [Internet]*. StatPearls Publishing; 2022 Jan. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK557526/>
- Lobstein, T. (2013). Child obesity and the junk for marketers. In J. Wild (Ed.), *Exploiting childhood*. Jessica Kingsley Publishers.
- Luscombe, B. (2021, November 12). How Ryan Kaji became the most popular 10-year-old in the world. *Time Magazine*. Available at: <https://time.com/6116624/ryan-kaji-youtube/>. Accessed 15 Apr 2022.
- Mahmood, L., Flores-Barrantes, P., Moreno, L. A., Manios, Y., & Gonzalez-Gil, E. M. (2021). The influence of parental dietary behaviors and practices on children's eating habits. *Nutrients*, 13(4), 1138–1151.
- Maldonado-Duran, J. M., & Goldberg, A. (2019). The body of the infant and the parents, parent-child interaction, and the embodiment of cultural patterns: Commonalities and differences. In J. M. Maldonado-Duran, A. Jimenez-Gomez, M. X. Maldonado-Morales, & F. Lecannelier (Eds.), *Clinical handbook of transcultural infant mental health*. Chem Nature/ Springer.
- Mate, G. (2000). *Scattered minds: The origins and healing of attention deficit disorder*. Vintage.
- McGrew, K. S. (2005). The Cattell-Horn-Carroll theory of cognitive abilities: Past, present, and future. In D. P. Flanagan & P. L. Harrison (Eds.), *Contemporary intellectual assessment: Theories, tests, and issues*. The Guilford Press.
- Mura Paroche, M., Caton, S. J., Vereijken, C. M., Weenen, H., & Houston-Price, C. (2017). How infants and young children learn about food: A systematic review. *Frontiers in Psychology*, 8(1046), 1–33.
- National Institute for Children's Health Quality. (2002). *Vanderbilt assessment scales*. Available at <https://www.nichq.org/resource/nichq-vanderbilt-assessment-scales>. Accessed 7 Apr 2022.
- Neufeld, G., & Mate, G. (2005). *Hold on to your kids: Why parents need to matter more than peers*. Random House.
- Newmark, S. (2015, July 28). A true ADHD epidemic or an epidemic of overdiagnosis? *Psychiatry Advisor*. Available at: <https://www.psychiatryadvisor.com/home/topics/adhd/a-true-adhd-epidemic-or-an-epidemic-of-overdiagnosis/>. Accessed 7 Apr 2022.
- O'Hare, A., & Bremner, L. (2016). Management of developmental speech and language disorders. *Archives of Disease in Childhood*, 101(3), 272–277.
- Palmer, C. A., Clementi, M. A., Meers, J. M., & Alfano, C. A. (2018). Co-sleeping among school-aged anxious and non-anxious children: Associations with sleep variability and timing. *Journal of Abnormal Child Psychology*, 46(6), 1321–1332.
- Park, S., Kang, J. H., Lawrence, R., & Gittelsohn, J. (2014). Environmental influences on youth eating habits: Insights from parents and teachers in South Korea. *Ecology of Food and Nutrition*, 53(4), 347–362.
- Paruthi, S., Brooks, L. J., D'Ambrosio, C., Hall, W. A., Kotagal, S., Lloyd, R. M., et al. (2016). Recommended amount of sleep for pediatric populations: A consensus statement of the American Academy of sleep medicine. *Journal of Clinical Sleep Medicine*, 12(6), 785–786.

- Peguro, A. A., Varela, K. S., Marchbanks, M. P. T., III, Blake, J., & Eason, J. M. (2021). School punishment and education: Racial/ethnic disparities with grade retention and the role of urbanicity. *Urban Education, 56*(2), 228–260.
- Reilly, M., & Schonwald, A. (2018). Development and disorders of feeding, sleep, and elimination. In R. G. Voigt, M. M. Macias, S. M. Myers, & C. D. Tapia (Eds.), *Developmental and behavioral pediatrics*. American Academy of Pediatrics.
- Schwartz, A. (2016). *ADHD nation: Children, doctors, big pharma, and the making of an American epidemic*. Simon and Schuster.
- Smith, M. (2017). Hyperactive around the world? The history of ADHD in global perspective. *Social History of Medicine, 30*(4), 767–787.
- Vaivre-Douret, L., Lalanne, C., & Golse, B. (2016). Developmental coordination disorder, an umbrella term for motor impairments in children: Nature and co-morbid disorders. *Frontiers in Psychology, 7*(502), 1–13.
- Voigt, R. G. (2018). Developmental-behavioral pediatric diagnosis. In M. W. Kline (Ed.), *Rudolph's pediatrics* (23rd ed.). McGraw Hill. Accessed 09 Apr 2022.
- Weizmann, F., Harris, B., & Capute, A. (2011). The maturationist. In W. Pickren, D. A. Dewsbury, & M. Wertheimer (Eds.), *Portraits of pioneers in developmental psychology* (1st ed.). Psychology Press.
- Wild, J. (Ed.). (2011). *Exploiting childhood: How fast food, material obsession and porn culture are creating new forms of child abuse*. Jessica Kingsley Publishers.
- Wilkinson, G. J., & Robertson, G. S. (2017). *Wide range achievement test* (5th ed.). Available at: <https://www.pearsonassessments.com/store/usassessments/en/Store/Professional-Assessments/Academic-Learning/Brief/Wide-Range-Achievement-Test-%7C-Fifth-Edition/p/100001954.html>. Accessed 10 Apr 2022.
- Willett, R., Richards, C., Marsh, J., Burn, A., & Bishop, J. C. (2013). *Children, media and playground cultures: Ethnographic studies of school playtimes*. Springer.
- Yang, C. K., & Hahn, H. M. (2002). Cosleeping in young Korean children. *Journal of Developmental & Behavioral Pediatrics, 23*(3), 151–157.
- Andres Jimenez-Gomez** MD Pediatric neurologist and neurodevelopmental disabilities specialist at Joe DiMaggio Children's Hospital in South Florida, where he leads the autism and complex neurodevelopment program, as well as the neurogenetics and developmental and epileptic encephalopathies clinics. He has written numerous research articles addressing aspects of pediatric neurology, genetics, and disability, as well as pediatric education and global health. Dr Jimenez is also coeditor of the "Clinical Handbook of Transcultural Infant Mental Health" (Springer). He is invested in the longitudinal transcultural care of children with complex neurologic, neurodevelopmental, and behavioral conditions mainly across the Americas.
- Simone Higgins** MD Dr Higgins is a clinical fellow in developmental and behavioral pediatrics at the University of Washington-Seattle Children's Hospital.



The Body and Mind of the Adolescent

4

Mayela Moreno, Celia Atri, and Teresa Lartigue

What is happening with our youth? They disrespect their elders, disobey their parents, ignore the law. (Plato)

What happens with your youth? The adolescents of today are out of control, wrote Plato and Aristotle 2500 years ago. Both thought that young people behave differently from adults and that their stage in life makes them passionate, irritable, and prone to be led by their impulses. Their passion, impulsiveness to change things, and their transgression can be understood as pathways to the way of life.

It is important to remember that according to anthropologists, adolescence as such does not exist (Schlegel & Hewlett, 2011), and it is not a concept that is known in many cultures. This applies particularly to rural areas and marginalized urban communities where youngsters, shortly after their menarche or the first ejaculation, start to work beside their parents or in some cases are victims of exploitation. Child labor is still a major Global problem.

Today's adolescents are out of control. They eat like pigs, they are disrespectful toward adults, they disrupt and contradict their parents, and terrorize their teachers. (Aristotle)

M. Moreno
Mentalizar México and Anna Freud Center,
London, UK

C. Atri
Clinical Masters at Centro Eleia,
Mexico City, Mexico

T. Lartigue (✉)
Mexican Psychoanalytical Association,
Mexico City, Mexico

In this chapter, we look at adolescence mostly from a psychodynamic perspective. Freud, more than a hundred years ago, published “Three Essays on Theory of Sexuality” (Freud, 1905a). In them, Freud, explained his notions about infantile sexuality, opened the way to explore the origins of a number of developmental issues, and opened the pathway for the psychodynamic or psychoanalytic treatment of children. Such treatment could take place directly, or through the parent as in the case of “little Hans” (Freud, 1909). The first psychoanalytic treatment was conducted by Freud, on an adolescent girl, the famous case of “Dora” (Freud, 1905b). Freud's work continued with the important contribution of numerous psychoanalysts from all over the world, the most remarkable ones being Karl Abraham, Sandor Ferenczi, Melanie Klein, Anna Freud, Donald W. Winnicott, and Moses Laufer. In France recent contributions of Serge Lebovici, Rene Diatkine, and Michel Soulé, who in seven volumes wrote the “Treatise on Child and Adolescent Psychiatry” (Lebovici et al., 1985; Soulé et al., 2004). Also remarkable are Françoise Dolto, Phillippe Gutton, and Phillippe Mazet, among others. In the United States, one could mention the editors of the series “The Psychoanalytic Study of the Child” at Yale University and also the writings of Erik Erikson, Peter Blos, Robert Stoller, James Anthony, Phyllis, and Robert Tyson, among others. In

Latin America, a pioneer in child psychoanalysis was Armida Aberastury, and other important contributions were made by Betty Joseph, J. Garcia Badaracco, and Eva Rotenberg. In Mexico, Ramón Parres, Marco Antonio Dupont, Victor Manuel Aíza, Manuel I. López, Norma León, Marcelo Salles, Eduardo Dallal, Lauro Estrada, Pablo Cuevas, Esperanza Plá, Janet Shein were major contributors to the theory and practice of psychoanalytic treatment of children and adolescents.

Of course, one can study children's development from several points of view, including the cognitive, behavioral, and emotional. Freud underlined the development of the libido while Piaget focused on cognitive development. Anna Freud introduced notions such as the passage from dependency to emotional self-sufficiency (1965) and achieving adult object relationships. Complementing the above with the following lines of development from egocentrism to companionship; in terms of the body at play, from playing with toys to play as work as well as the development of the ego and the superego.

Dio Bleichmer (1997, 1998), instead of speaking of developmental lines, like Anna Freud, propose five "motivational systems" which also evolve through childhood and adolescence. These motivational systems are attachment, narcissism, emotional self-regulation (Ahmed et al., 2015), sensuality and sexuality, and, finally, what they denominated self- and hetero-preservation.

López studied the fundamental requirements for the process of adolescence to occur normally and proposed several axes: integrity of the psychic apparatus, strengthening of the defensive functions of the ego, augmentation of cognitive functioning and appreciation of reality, development of the capacity for socialization, and also development of the capacity for sublimation (creative abilities). Also, there needs to be an attitude of tolerance, acceptance, and encouragement on the part of the family and the social group toward the individuation of the young person.

In this chapter, we focus mainly on the lines of development involving the neurobiological development of the brain, a psycho-sexual development which will lead to the achievement of a psychosexual identity.

Also, we discuss the role of parents, three mourning processes which adolescents go through, the meaning of tattoos, and being a "digital self" Nowadays.

In our clinical experience often shows that the events during the early stages in development, even though they are processed and modified to the external reality, they remind in the unconscious mind, and that memories are modified but not totally lost. We also clarify that even if we use a "binary" language, we are referring to all persons, independently of whether they are a sexual or gender minority or majority. Regarding this issue when we speak of "mother" or "father," we are referring to the persons that furnish the caretaking and rearing environment to the child and who fulfill parental functions, regardless of their gender, sexuality, or reproductive techniques.

It also bears saying that parents of adolescents often are also facing a sort of middle-life crisis, and experience the change in attitudes of behaviors of their children toward them. Often these parents may also experience the requirements or demands of their own parents, the grandparents of their children, which may further complicate this phase of the life cycle.

Adolescence

At times, adolescents in the twenty-first century seem to endorse the sentence "you only live once, one must live, no matter what happens." Could the tendency toward transgressions be a form of finding themselves? Indeed, adolescents need to take distance from adults, and some do it in a hostile or rebellious form to achieve this.

"I need to find my voice, to know who I am, what I want. I need my own sense of identity. What am I going to do with my life? I need my own sense of belonging, I need to become a person, I want to be myself and my body belongs to me."

Erikson (1963) in his descriptions of the eight psychosocial developmental stages, looking at the age around age 11. Erikson thought in this stage of life, the central conflict is identity vs. role confusion. The central psychological work of the adolescent is to achieve a sense of him or herself, searching for an identity and their place in the world.

It seems that most adolescents try different identities to find out which they fit better. They need to explore different roles, ideas, values, ways of life, and perspectives about people. Adolescents may need to test what they have learned before and put it into question, they could evaluate what they saw in their parents and decide if they want those experiences/values or would discard them. In a metaphorical way, it would be like having one's room all upside down, keep it in disarray and then slowly start deciding how to rearrange things. The young person might "renovate" their room, if they have one, with a more suitable set of objects for this stage of life. Many teenagers try to conquer the world, a feeling of rebelliousness and reliance on their peers are their source of energy.

If an adolescent succeeds to achieve this at this stage of development, he or she may acquire a strong sense of identity. The young person may toward the end of this stage wish to fend for themselves. Of course, there is also anxiety about the future, they may want to leave the parental home, but also be afraid of doing so.

The reverse of the conquering and rebellious adolescent is in the apathetic adolescent. This is perhaps the other side of the coin. At times parents feel reassured that their child "is a good teen, stays in his/her room, is not a follower, calm, he stays mostly in his room, all is well." If a child is extremely passive, this could be also alarming. Parents may need to wonder if their child is searching for his or her own identity. At times parents are content to see their child embrace totally their own ideas and values, without any question, or even pressure the child to do so: "you will become a lawyer, like your father and your grandfather."

A youngster in this situation may renounce to try to get to know him or herself, to think of their

own dreams or hopes, not to fight for them, and may end with a feeling of role confusion. In the long run, this may led to resentment, insecurity, or feeling overwhelmed with their path.

The adolescents described by Plato and Aristotle, who can be at that age rebellious and turbulent, may be ones that eventually try to find a positive role in their life, they may make better decisions based on their previous failures, mistakes, and may learn from that. In a sense they may obtain more life experience, it may be complicated but there is passion.

Some adolescents have difficulty negotiating this developmental state. Ungar used the coined word "adultescent" to refer to those young adults who try to prolong their adolescence, one may be totally dependent on their parents. There are some in their thirties who insist on living with their family of origin, when this is not part of their cultural background. Some of those in their thirties may dress still as preteenagers, and are interested in programs meant for children, watch only cartoons, spend much time playing video-games, are most interested in superheroes, which also decorate their walls.

Puberty, a Metamorphosis

A good understanding of the cognitive, emotional, and physical changes, which take place in a young person, 11 or 12 years old to becoming an adult, roughly around age 18, requires a good understanding of puberty.

Hormones take over the body of the boy or girl, promoting the typical changes in development and secondary sexual characteristics, visible from the outside. Those hormones have been there during childhood, but the amount produced now is much higher.

In girls, generally, the first sign of puberty is the growth of the breasts, then hair in the pubic and axillary areas. In general, the last change is menarche.

Estrogen and progesterone secretion undergo fluctuations according to the menstrual cycle. They exert an important influence on the girl's mood. A 14-year-old girl who previously was

happy and friendly may become suddenly irritable or easily upset and try to achieve more privacy.

In boys, there is an increase in size of the genitals. Then the growth of pubic and axillary hair, the increase in muscle mass, the voice is lower, and facial hair. There may be ejaculation of semen in the night (nocturnal emissions) or during the day. There is a greater influx of testosterone, which influences also moods and may contribute to greater irritability, and aggression (Jensen & Ellis Nutt, 2015).

Some youngsters may become more irritable impulsive and easily bored. At times they misbehave, yell, and are a bit more impulsive. The influence of peers is important in terms of socialization and feeling of belonging. If the family situation is conflictive, friends will be a refuge and a role model. So they may be vulnerable to drug exposure, alcohol, or sexual intercourse without protection. Many adolescents feel they are “invincible” and that the negative consequences of their actions will not happen to them. There are strong sociocultural factors in this, but also the cognitive development of the young person, and their difficulty to foresee the results of their behavior all based on neurophysiological “immaturity” so to speak.

Even though, biologically an adolescent is “mature”, however his/her cognitive and emotional development is not yet. There is clearly a change in brain functioning that allows a good understanding of what is happening to the young person.

Neurophysiological Development

As Siegel (2013) points out, between infancy and adulthood, there is a remarkable “re-modeling” of the brain. The first 3 years of life are a constant change, with neuronal reproduction and pruning. Then, just before adolescence, there is a new shift which continues till the 20th birthday. There is a new process of cell migration particularly in the frontal lobe; new neuronal connections are being established, and there are other changes influenced by outside experiences and learning oppor-

tunities (Blakemore, 2012; Jensen & Ellis Nutt, 2015).

Even in adolescence, there is accelerated change in the brain, on the one hand, new connections and cell migration, and on the other, pruning of neurons that “are not used” or no longer useful. Some functions are reinforced or stimulated, and those not used can be discarded.

There is also a new process of myelination (Araín et al., 2013). As it is known, this facilitates neuronal conduction (up to a hundred times faster) and certain pathways become more efficient. In myelinated neurons, the refractory period is 30 times shorter. It is estimated that the adolescent brain has reached about 80% maturity. All of this explains why adolescents sometimes act in a disconcerting way, with changes in mood states, irritability, and impulsiveness. There may be difficulties concentrating. The impulsiveness and difficulty in imagining the consequences of one’s actions may favor the temptation to use drugs and engage in other risky behaviors (Blakemore & Robbins, 2012; Casey et al., 2008). It has been posited (Blakemore & Robbins, 2012) that there is a slow development of the systems involved in response inhibition, and impulse control, while the system involved in reward responses is hyper-functional, so to say.

Another important phenomenon in the adolescent brain is neuroplasticity, which is a further factor in adolescent behavior. By plasticity, we refer to the capacity of the brain to mold itself. The process of thinking, problem-solving, learning, and planning those activities influences brain development from the physical and functional points of view (Jensen & Ellis Nutt, 2015).

The final objective of this “brain remodeling” is to acquire an “integrated brain,” in which there may be a balance between different structures that may be in contradiction and may need to be adapted to the needs of the environment. Culture plays a crucial role in determining the content of the adolescent’s functioning and is a crucial element to take into account.

The family environment is another important element, as has been pointed out by numerous authors dealing with adolescence. Winnicott sug-

gested that often parents have to “endure” the adolescence of their children. Hopefully, parents can contain, encourage, and set limits to their children. Adults can foresee the possible positive or negative results of a decision, which for the teenager may be very difficult.

The frontal lobes are the site of our capacity to generate ideas, for judgment, foreplanning, abstraction, and planning. They are related to self-awareness and to our ability to assess danger. They can be models for their children or be at odds with them.

Cognition, Learning, and Sleep

What is my child thinking? What does he/she act like that? Why have you stopped being worried about your schoolwork? Why his/her school performance has dropped? Why is he/she so forgetful?

Adolescents need to sleep, and it should not be “a luxury” (Short & Louca, 2015). Sleep has been investigated for decades and we know little about its function. We know it is necessary for well-being and to consolidate memories and rest the mind. It is thought that memories and learning become consolidated during sleep. It is a vital requirement all life, and particularly so for adolescents. Many of them do not get enough sleep, either by the demands of school, sports, extra-curricular activities, and socialization (Hansen et al., 2005; Short et al., 2013). In many cities, adolescents spend much time during the evening or night playing video games or “online” (Bartel et al., 2015).

Sleep can be compared to food and breathing in terms of how vital it is for well-being.

Getting enough sleep allows the youngster to manage stress and even to eat better. Most experts recommend that adolescents need to sleep around 9 h per 24-h periods in order to maintain well-being and function adequately during the day. Some young people got to sleep quite late, when this is not due to deliberate actions. It may be related to a tendency observed recently for melatonin to be released in the brain later in the day, perhaps up to 2 h later than in the adult. Several

studies have indeed shown a sleep phase delay in adolescent sleep onset, from the physiological point of view (Carskadon, 2011; Carskadon et al., 2004). If the school-age child might go to sleep at 8 or 9 PM, the teenager may do so around 10 or 11 PM. This may also lead to difficulty getting up in the morning due to similar effects. Of course, there is also a large contribution from sociocultural factors. Young people may feel more independent if they go to sleep late, and sometimes very late. Obviously in the daytime, it may be difficult to find the motivation to get up to go to school at 6 AM. Carskadon (2011), who has studied the sleep of children for decades, has proposed to start school around 10 AM for most adolescents. Indeed, when young people “cut sleep time” due to academic pressures (which are a major factor in some countries, e.g., in many Japanese and Korean schools, due to the competition to enter university through entrance examinations) and in many “advanced schools” in countries like the United States where youngsters may have several hours of homework after a day of school. Sleep deprivation is associated with mood problems, irritability, worse concentration, and academic performance. Sleep deprivation is a factor in depressive conditions (Roberts & Duong, 2014). There is also more likelihood of being tardy at school and school absenteeism. As with any deprivation of sleep, there is also a higher risk of accidents, difficulties during driving and injuries (Wolfson & Carskadon, 1998). Very “social” adolescents or those who are otherwise isolated in their home family may spend much time in bed sending texts to their friends, communicating with them on the telephone and with screens in general, leading to sleep deprivation.

Sleep physiology has been studied extensively in children and adolescents. The “restorative sleep” or slow wave sleep occurs after more “superficial sleep,” then there will be the episodic development of rapid eye movement (REM) sleep. The latter is the predominant portion of the sleep cycle in which the child is dreaming, and it is thought to assist in processing daytime experiences and consolidating memories. The sleep architecture, not only the total amount of sleep in

the night, is to be taken into account. For instance, obesity is on the increase in many countries even in adolescents, and this is often associated with obstructive sleep apnea. This is often undetected in young people. Many parents think it is normal for the adolescent to snore during the night or to have daytime sleepiness (sleeping while watching television or going in a car or public transport). This is generally a sign of hypersomnia and of poor quality of sleep, even when the child has slept 9 h or so.

Incidentally, sleep deprivation has also been associated with increases in blood pressure, higher rates of obesity, and taking more snacks and sugary sodas. It hardly needs to be said that taking caffeine or energy drinks in the evening is unadvisable, they help the child to stake awake, at the sacrifice of the total amount of sleep or the quality of the sleep itself.

In the general evaluation of the quality of life of an adolescent, the quality and amount of sleep, the day/night cycles and what happens on weeknights and weekend nights should be taken into account. Sleep-deprived adolescents may sleep during most of the morning on weekends, to “pay” a debt of sleep. Their parents may worry that they are “lazy” or not interested in maintaining a competitive edge in school or sports. The deprivation of sleep may contribute to states of anxiety and worsen conditions described elsewhere in this book regarding stress and somatization.

In terms of cognitive functioning, we emphasize the counterproductive nature of sleep deprivation. It is associated with worse learning ability, memory difficulties, and more difficulty solving problems.

In terms of adolescent sleep hygiene, it is generally recommended to have a limit in the night for the time a young person can be “online” or in front of electronic screens. In some families, it may be necessary for the devices to be taken elsewhere if the child cannot “turn them off” him or herself. It is always a wise idea to convince the young person about the need to rest and to defer communications for the next day perhaps. In many countries of course, parents and youngsters may take a midday nap or “siesta” in order to

refresh themselves. These should not be for several hours, but a short nap so the child can go to sleep at night.

The Role of Parents During Adolescence

Being the parent of an adolescent is a most rewarding phase of life, noticing the changes in the child, his or her new competencies, and the hope for the future and enjoying their display of abilities. Nevertheless, it can also have many challenges because of this independence or the search for “different values” and ways of being in the world. Also, the adolescent is at times a “moving target” one day wanting to be very independent and the next acting more like a younger child and regretting the mother or father not doing things for him or her.

Clearly, the child is more self-reliant, particularly if one compares the new capacities with those of the time when the child was much younger. Still, the child needs emotional closeness and to spend time with parents. Often, the young person does not ask for this time, and it is easy to assume the son or daughter “do not need us.” However, it is useful not to assume the child will solve every problem by her or himself. At times, parents become offended when they deal with a criticism or confrontation from their adolescent child, becoming emotionally distant. This is more likely if the caregiver is him or herself very stressed, immersed in their own emotional turmoil, with work problems. It is tempting for the adult to be focused only on one’s problems and assume the child does not need us. It is important to try to maintain a dialogue with the children and to try to see the world from the child’s point of view. The adolescent, like children in other ages, needs both empathy/tenderness and limits. The relationship with the adolescent is going to be different, but it can be harmonious most of the time and collaborative.

In some families, parents feel jealous of the youth of their children, their opportunities and their relationships, particularly if the parent him

or herself does not have a satisfying life. Of course, the child will have difficult days and need to rebel or criticize the parent. A very obedient and docile child can now confront a mother or father with observations the adult may not be ready to entertain. The parent might consider whether the critiques might be based on reality. Also, it is tempting to lecture children about what “they should do” or “they should think.” A very common problem in parenting adolescents is not trying to listen to their arguments, their point of view, and their desires even if “they are wrong.” Listening is hard, particularly if one hears things that one does not want to hear, but it is necessary for a young person to feel understood, which may not necessarily mean agreeing with what the adolescent is saying.

The child becoming an adolescent represents a sort of crisis in any family, as the emotional needs of the child and ways of negotiating disagreements may need to change. The child may need to disagree and to insist on their point of view or correct the parent’s statements. In this context, it is important for the adults to wonder “what is happening inside the child’s mind?” what are the worries, concerns, how does the world look from the child’s point of view?

The child is no longer just interacting with the family. In fact, peers and friends assume a much greater importance. The parent needs to be attentive to the nuances of the child’s emotions and behavior. Is there any social pressure at school from classmates, teachers or neighbors? Parents may have great expectations for their children’s success, but this should not mean fulfilling the adult’s dream through one’s child. Parents may pressure children to excel academically, in sports or otherwise, even if this is not the child’s interest. Tobacco, alcohol, and drugs are an omnipresent issue that young people will have to negotiate. For parents, it is tempting just to “forbid” things but this may be difficult to enforce. The parent cannot be any longer in control of the child, and the adolescent will have to exert some degree of self-control. At times, this may mean learning from mistakes, despite one’s best hopes on the contrary.

The young person relies more on peers than before. Still, he or she needs to know that they can also rely on their parents. This is helpful if the family situation is not in itself chaotic and stressful.

A young person, a 17-year-old boy, Carlos, was brought by his parents because he was rather angry at his parents, resentful and did not want to spend much time at home. He was getting “all A’s” at school and was very conscientious. He spent most of the time after school in his girlfriend’s house. His parents were resentful, they thought Carlos was ungrateful and not appreciative of their efforts. They had no other complaints about Carlos, when at home, he tried to be helpful but was spending most of his time with his girlfriend. The clinician asked Carlos why this was so. He said “well, at my girlfriend’s house, they love me, they eat dinner with us, they give me space to do my homework and help me if I need help. Also, I do not have sex with my girlfriend because it goes against our values to have sex now. Also, the parents are in a good mood and seem happy”... The clinician asked, and what about with your family? “In my family there are always fights, my parents argue about everything practically, there is a climate of chaos at home and I feel very tense there. They also criticize everything I do, as they do with everyone else in the family.” The clinician asked the parents if this was true and they said yes. The therapist tried, in vain, to help the parents how it would be very reasonable that the boy wanted to spend time in a place where he felt loved and appreciated.

Adults may need to understand the world of the adolescent. It may be useful to know what music they are listening to, what movies they are interested in, and the books they read. Not so much to “supervise everything” as to understand what the child is experiencing.

In other families, parents try to be the child’s best friend, which may be very difficult. The child often needs to rely on peers and to learn to trust others, in order to become his or her own self, not only a “member of the family of origin.” The child still may need limits which may be tested from time to time. For instance, it is not prudent for parents to allow a child who is going to drink at a party to drive home, even if the child protests.

The fact remains the most important thing about parents is what they do and how they

behave, more than what they say. Children observe their parents' behavior and detect inconsistencies or actual lies. The way the parents approach conflicts, frustrations, and how they deal with stress are perhaps the best models for their children in the long run.

Parents have to be ready to let their children go, which is painful, to be different from them and to pursue their own inclinations. The child is not perfect and there are going to be controversies and conflicts; this needs to be approached realistically.

A "mentalizing stance" on the parents of parents can guide them on how to respond to their child. One cannot only focus on external behaviors, but on what is underlying them. The child may be experiencing depression, anxiety, or other difficulties that he or she will not discuss openly at first. Adolescence is a long journey, full of first times, for example; the first time the youngster gets drunk coming from a party smelling of marijuana. The first disappointment in love. They are only the beginning of a long trip. It seems useful to maintain an attitude of respect toward the child and attempting to understand what the son or daughter is going through.

One of the most difficult things for many parents is to find the wisdom to know when to be supportive, and when to give negative consequences to their beloved child. Part of love is to convey when something is unacceptable or needs to change. Some children may need to actually experience consequences to find the limits of what they can and cannot do. Most of the time, or with most adolescents, an attitude of dialogue and collaboration is enough. However, as we noted, in adolescence, there is a predominance of functioning of the "centers for reward" over those involved with foreseeing the consequences of one's actions, plus a degree of impulsiveness in many of them. If the child is engaging in risky behavior, it may be helpful for the child to face consequences. We are not suggesting to use "tough love" as some books and parenting "experts" recommend, i.e., to let the child fail and not to intervene so the child can learn from utter failure. Often such "falls" are so severe that they make the child feel hopeless without the

support of parents. It is perhaps best to err on the side of empathy than on the side of coldness and indifference.

The use of drugs is a problem to which many young people are vulnerable. Again here the neurophysiology facilitates this. The ventral tegmental area of the brain is strongly involved with the "reward system" of the brain. They produce pleasure and release dopamine which may produce feelings of euphoria and calmness afterward that could become addictive. In these situations, it is also important to wonder what makes a child seek such immediate recompense, evading every day's stressors and problems, and try to address those in addition to any rehabilitation strategies or using mere unrealistic prohibitions that are not going to be effective.

In effect, there are multiple substances that can become "addictive" such as tobacco, alcohol, cannabis, and the more addictive drugs such as amphetamines, cocaine, etc., as well as in some youngsters, eating, or gambling even. All of these stimulate pleasure centers and release dopamine. One would wonder if someone is so vulnerable to these forms of very brief pleasure if there are difficulties with emptiness, sadness, or depression, or difficulties with emotional regulation and other major difficulties.

Goodbye to Childhood. Mourning Processes

As Erikson pointed out, adolescence is a hard period with many changes. The body has changed, sometimes very rapidly so the child may hardly recognize or get used to the "new body." There is sexual maturity in biological terms, but in our modern cultures, this is not accompanied by emotional maturation yet. Aberastury and Knobel (2014) pointed out several "markers" or psychological processes that they consider as pertaining to "normal adolescence": Some of them are: searching for an identity and for oneself, tendency to feel more affiliated to groups and peers/friends, and cognitive shifts that allow the child to intellectualize and fantasize increasingly. Teenagers ques-

tion everything. Mainly the behavior of their parents, the values with which they have been educated, religion, family ideology, etc. In this way some adolescents become ascetic or religious, while others are questioning what they learned as children or may become atheistic. At times the child has VERY strong emotions that make him act in forms that are very uncharacteristic, being dominated by emotion. Higher interest in sexuality goes from self-stimulation to sexual satisfaction with others. There is often an increasing awareness of the problems with the world, the hypocrisy of many adults, and an awareness of social injustice and inequalities. Adolescents may become very committed to social causes. This is because adolescents are constantly faced with the ambivalence of separating or staying with their parents. The idea of mourning has to do with all these new developments in the young person. Because although it is known that adolescence is yet to come, the untimely way in which it arrives is always surprising. Who just a few months prior was just a child, now is a teenager growing up to be an “adult in construction” so to speak. Aberastury and Knobel suggest three main areas of “mourning.”

Mourning the Body

The body is changing and may appear strange with all the physical changes, growth, and sexual characteristics the child may feel like an invasion. Boys tend to welcome more readily the changes of puberty. Many girls experience more ambivalence, as this includes menstruation, often changes in the distribution of body fat, and the pressures of “beauty” and thinness. Some girls may feel rather confused or ashamed of their new body, using clothes that are quite loose for example. In both, there is little time to adapt to so many changes. Many youngsters feel embarrassed by the slightest physical change, like acne, etc. and feel there is an imaginary audience scrutinizing them. This may amount to a feeling of loss of control over the body, hyper-vigilance, and feeling self-conscious. This can

lead to a social phobia. The child may try to “hide” undesirable characteristics with scarves, long hair, make-up, etc. Of course, the appearance of sexual characteristics brings to the fore the possibility of becoming an adult, marrying, having children, etc., after sexual intercourse. In psychoanalytic terms, every person has a “basic bisexuality” and in the new body the person may feel the need to “define” their sexuality in terms of sexual orientation and acquiring “Labels.” In the modern culture, young people feel more open about greater repertoire of possibilities in this sense, some defining themselves as “bisexual,” nonbinary, pansexual, demi-sexual, etc. Many youngsters are afraid of becoming an adult, particularly if the adults around them are not happy, have many problems or difficulties in relationships. The child may dread becoming like the parents.

Mourning the Previous Identity

In his description of the developmental talk of becoming a more social being, Meltzer (2011) refers to this process as similar to one from “endogamy” to “exogamy.” The peer group seems a very important developmental need to develop friendships and confidants who can help the child. Children contain the tendency to act and imitate the impulsive behavior of others. Children are experiencing more intimate relationships outside of the family and really without the involvement of adults. The child will try to find a place where he or she is not closely supervised by parents, and to identify themselves with the interests and values of the peer group. The youngster can identify with peers and talk freely, without fearing so much being judged and not getting admonitions from parents. The exchanges with peers go from strategies to look better, to musical groups, writing poetry, going to activities together, and protest together. In high schools in the United States and many countries of the world, there are “groups” or cliques of students who identify themselves as “geeks,” “emos, gamers, punks, goth, skaters,” etc. in a spectrum which may include gangs. Some young people organize in protests against social

inequality, climate change, etc. The Otaku groups identify themselves as interested in anime and manga, cartoons of Japanese origin, and playing related video games in their free time. Another example of group identity could be the “preppy” (in Spanish “*fresas*” or in Britain “posh”), who are adolescents focused on their social status, a feeling of being favored and superior to other people and come from higher social status. They gather in more exclusive places and do not admit other people easily in their groups. In cities in the Western world and Japan or Korea, there are “skaters,” who spend time together, practice their skills on the skateboard, and try new maneuvers and daring moves. Others practice graffiti and street art. The membership in these groups is like a subculture, in a manner of speaking a “substitute family,” with rules and behaviors that make them different from those of their families of origin.

These groups give the adolescent a sense of belonging to a special group that gives them a temporary identity, and with whose values they are identified. Labels, a way of dressing, of acting, of applying makeup, are part of this sense of belonging and identity. In some gangs, common in many large cities, certainly in Latin America, the United States, and many other areas of the world, they can associate to prove their bravery, maintaining control of territory, performing some criminal actions, etc. like the young “*Marasalvatruchas*” of Guatemalan origin. Abadi and Gill (2020) emphasizes that some adolescents develop “from crisis to crisis” and not in a slow and continuous pace. This means, shifting suddenly from one identity to another, from a set of values to a different one.

Mourning for the Parents

Amelie Nothomb, a Belgian writer (Nothomb, 2011), notes in her book “Killing the Father” (*Tuer le pere*) takes up the myth of the son killing the father, which is a topic present in the drama of many cultures, and in psychoanalysis, form the actual myth of Oedipus to the psychoanalytic views. This issue could be reactivated during adolescence. Besides searching for identity and

freedom, the child may come into conflict with the father figure. The adolescent will try to resolve the issue of infantile dependence on caregivers on the one side and the opposite, leaving and being one’s own person. In the aforementioned novella, the adolescent character describes his desire to become a magician and to leave the family, abandoning it. In the narrative “they say goodbye without any emotion. The mother is worried about her son as if he were the evil eye. The son despises his mother.”

In a psychological sense, the child “breaks” the bonds with the internal images of the parents to negotiate this stage (Levy-Warren, 2008). Of course, parents worry about their children. For many parents, it is hard to contemplate their precious child growing and becoming different from them. Parents will have to also mourn the small child, and make room for this “new person,” transformed and with many of his or her own ideas and preferences. It may be difficult to be questioned, emotionally distant or even at times mistreated. It is necessary for parents “not to take this personally” in the sense that such questioning and distancing may be the only way in which a child can separate, in conflict with the parents, which may be less painful emotionally than experiencing just sadness and longing for the parents. Perhaps the psychological work for the parents can require to find inner strength and not to abandon their child. One could say that the child is saying to the parents, with his behavior and attitudes “don’t say anything to me mother, don’t say anything to me, father. Both only love me, even though I don’t seem to deserve it, and embrace me when I need it.”

The way in which the child and the parents resolve this adolescent crisis depends also on extended family factors, culture, social circumstances, and where the parents are emotionally. If parents are close emotionally as a couple, this makes it less likely to “cling to one’s child” and to find support in each other when dealing with the young person. So, one could say that any crisis is a difficult challenge, but also an opportunity to forge a new set of relationships, between family members and for the parents with their child.

Edgar Morin (Alfonso, 2008; Montuori, 2004) the French epistemologist gives a definition of a crisis that is useful in this context. In his view, a crisis releases both forces of destruction and regeneration. It also releases that is latent and potential. It shows the existence of underground cracks, and the concealed advance of new realities, and brings out the capacity for survival. This allows the evolution of a system into a new one, its transformation. This is an apt definition of what adolescence entails, for the child and for the family.

“Born Digital” Adolescents

Prensky (2010) describes “native digitals” as those persons who since early on in their life have been exposed and are surrounded by new technologies and devices, like computers, video games, video cameras, cellular telephones, and tablets, among others. This includes the new communication media which are massively consumed. The adolescents exposed to them develop spontaneously new ways of thinking and understanding the world, compared with previous generations. Jensen (Jensen & Ellis Nutt, 2015) signals that the new technology is another example of “novelty seeking” typical of adolescence. In the use of the Internet by adolescents, a majority of the time is spent in video games. These games generate a visual and auditory response, fairly immediate, and contingent. These games now are almost ubiquitous in most devices. The games are reinforcing responses of the “reward centers” of the brain, cause an increase in dopamine, the neurotransmitter of pleasure. This makes an interest in the newest telephone model, the latest games, as attractive as some of the drugs or other “thrills” like driving a fast car. Technology is a very powerful reinforcer and this can lead to a form of addiction. There have been reports of adolescents participating in experiments in which they are deprived of electronic devices for various periods. Even at 24 h, youngsters might report: “I was about to go crazy” or “I felt incapacitated,” “I felt I was dead,” “I panicked, it was torture,” and other similar responses.

Similarly, some young people report that they are dependent on their smartphone: “my life is in this phone, if I lost it I think I would die.” These devices are now part of everyday life. There is a new phenomenon called the “phantom vibration” (Deb, 2015; Rosenberger, 2015), in which people may perceive their smartphone is vibrating when in reality it is not.

Indeed some of the behaviors and attitudes observed in people with addictions are observed in some adolescents regarding electronic devices or screens. These can include deceiving others, feeling anxiety when not in front of screens, increasing the amount of time consumed on the activity, hiding the behavior, and postponing other important activities in favor of the Internet.

Ungar (2009) points out that some of these social platforms and media amount to “ego ideal” models, to which a young person may aspire to become. To be “liked” to be resent, etc. An adolescent may desire to have a large number of “followers” or a “fan-base,” thus feeling accepted or successful. Unfortunately, the opposite can occur and a person might feel dejected or a failure, if he or she does not get “more followers,” etc. Children are told they could become a “trend” or an influencer or even a celebrity. Indeed, there are a few adolescents who have become celebrities due to their beauty, exploits, attitudes, etc. but a great majority of them only dream of achieving that notoriety.

Being an adolescent if one is immersed or surrounded by a digital world is different from the past. A young person in these circumstances spends much of their life “online.” It is common to see a group of friends at a table, eating and “chatting” through the telephone with friends, rather than with each other who are physically present there. Incidentally, the same can occur with a family in which each member is interacting with someone else in this way, rather than with each other. A text, a message, a “notification” may acquire an immediacy that is hard to resist. Aside these actual communications, anyone can be “playing games online” on the telephone, as well as betting, playing fantasy sports, or gambling. Relationships are nowadays initiated through these channels. These are several

applications that use algorithms to “match” persons or to simply offer the opportunity to meet someone who seems promising. The new platforms offer the possibility to “become” what one is not, to have an avatar, or to “offer to the world” a new identity, sometimes very different from the real person. One can set aside name and last name, for the sake of a nickname or screen name. The new technology allows one to change physical appearance, hair color, etc. and “become” a new self. There are many strong relationships, including romantic ones, in which the people never have “met in person” and the whole relationship has occurred through digital media, video conference, etc.

Tattoos, the Body as Self-Expression

Donald Winnicott (Winnicott et al., 1989) wrote that inside each person there is a story that needs to be told and that often nobody had had the time to listen to it. Indeed, tattoos may be a way to tell such stories; they have become a new and more acceptable means of self-expression. They may express aesthetic ideals, opinions, protests, advocacy, etc. Each tattoo may tell a story or convey a message about the person with it. Catz (2021), in her work on tattoos, underlines that they have existed for millennia and in most cultures. Its meaning depends on the cultural context, and what it implies within its social environment. It is not the same for a young Jew to have the Star of David tattooed, than for a young man of another ideology. At times, they are a way of conveying belonging to a group or interdependence. They also can be a form of body art, a strategy to embellish the self. A tattoo may represent a form of affiliation or adherence to certain values or movements, or opinions. Like adults, adolescents may desire to make their skin represent a canvas, which may become a sort of narrative if the child gets more tattoos. Some tattoos are concealed, and they are a form of “intimate communication” to oneself or special persons. Some are visible and appear to elicit attention, and perhaps curiosity, seduction, a threat of violence, etc. One way of

thinking of tattoos is as a “protective skin” and attempts to contain and assuage feelings, for example, anxieties that are lived but not experienced consciously. In a way, the tattoo expresses the emotion that the child might not be able to articulate in words, even to him or herself. Tattoos can represent a loss, a process of grief, scars from the past, and a fear of losing something or someone that “should be kept” with oneself. Ideally, the tattoo is permanent and not subject to the passage of time, a testimonial, and a homage to someone or a protective device. “I have my mother with me” or “my boyfriend is always with me.” Of course, there are some young people who may become addicted to tattoos.

We have attempted to give a brief view of some of the current pressing issues in adolescence, which, as is clear from the views of Aristotle and Plato, are at the same time “ancient issues”, or similar complaints that adults may now have regarding their children. In the romantic period, youth is interpreted and even glorified as the age of purity, innocence, and very noble emotions, as well as suffering. Parents may try to see adolescence as a time of searching, where young person needs to be accompanied as much as possible, supported and guided, and balance this with the child’s need for independence and being themselves. Winnicott used to say “it is a joy to be hidden, but a disaster not to be found.” Parents and other adults dealing with adolescents can attempt to find the meanings in the communications and behaviors of those in their charge and to be emotionally available to them.

References

- Abadi, E., & Gill, D. L. (2020). The role of socializing agents on dropout and continuing participation of adolescent girls in masculine-typed sports. *International Journal of kinesiology and Higher Education*, 4(3), 77–79.
- Aberastury, A., & Knobel, M. (2014). *La adolescencia normal*. Paidós.
- Ahmed, S. P., Bittencourt-Hewitt, A., & Sebastian, C. L. (2015). Neurocognitive bases of emotion regulation development in adolescence. *Developmental Cognitive Neuroscience*, 15, 11–25.

- Alfonso, P. B. (2008). Fundamentos teóricos del pensamiento complejo de Edgar Morin. *Revista Electrónica Educare*, 12(2), 95–113.
- Araín, M., Haque, M., Johal, L., Mathur, P., Nel, W., Rais, A., et al. (2013). Maturation of the adolescent brain. *Neuropsychiatric Disease and Treatment*, 9, 449–461.
- Bartel, K. A., Gradisar, M., & Williamson, P. (2015). Protective and risk factors for adolescent sleep: A meta-analytic review. *Sleep Medicine Reviews*, 21, 72–85.
- Blakemore, S. J. (2012). Imaging brain development: The adolescent brain. *NeuroImage*, 61(2), 397–406.
- Blakemore, S. J., & Robbins, T. W. (2012). Decision-making in the adolescent brain. *Nature Neuroscience*, 15(9), 1184–1191.
- Bleichmar, H. (1997). *Avances en psicoterapia psicoanalítica: Hacia una técnica de intervenciones específicas*. El Salvador: Ediciones Paidós Ibérica.
- Bleichmar, E. D. (1998). La sexualidad femenina: delanina & 12 mujer. In *La sexualidad Femenina*. Ediciones Paidós.
- Bleichmar, H. (1999). Fundamentos y aplicaciones del enfoque modular-transformational. *Aperturas Psicoanalíticas*, 1, 3–15.
- Bleichmar, E. D. (2016). The fortune of a precocious awareness psychoanalytic. *Inquiry*, 35(2), 155–171.
- Carskadon, M. A. (2011). Sleep in adolescents: The perfect storm. *Pediatric Clinics of North America*, 58(3), 637–646.
- Carskadon, M. A., Acebo, C., & Jenni, O. G. (2004). Regulation of adolescent sleep: Implications for behavior. *Annals of the New York Academy of Sciences*, 1021(1), 276–291.
- Casey, B. J., Getz, S., & Galvan, A. (2008). The adolescent brain. *Developmental Review*, 28(1), 62–77.
- Catz, H. (2021). *Tatuajes como macas simbolizantes. La relevancia clínica de los tatuajes para el proceso psicósomático*. Ricardo Vergara Ediciones.
- Deb, A. (2015). Phantom vibration and phantom ringing among mobile phone users: A systematic review of literature. *Asia-Pacific Psychiatry*, 7(3), 231–239.
- Erikson, E. (1963). *Childhood and society*. W.W. Norton and Company.
- Freud, S. (1905a). Three essays on the theory of sexuality. In *The standard edition of the complete psychological works of Sigmund Freud* (Vol. 7, pp. 123–295). Hogarth Press.
- Freud, S. (1905b). Fragment of an analysis of a case of hysteria. In *The standard edition of the complete psychological works of Sigmund Freud* (Vol. 10, pp. 5–147). Hogarth Press.
- Freud, A., (1965). La evaluación de la normalidad en la niñez. En normalidad y patología en la niñez. Buenos Aires, Paidós, 1973, pp. 49–87.
- Hansen, M., Janssen, I., Schiff, A., Zee, P. C., & Dubocovich, M. L. (2005). The impact of school daily schedule on adolescent sleep. *Pediatrics*, 115(6), 1555–1561.
- Jensen, F., & Ellis Nutt, A. (2015). *The teenage brain. A neuroscientist's survival guide to raising adolescents and young children*. Harper Collins.
- Lebovici, S., Diatkine, R., & Soulé, M. (1985). *Traité de psychiatrie de l'enfant et de l'adolescent*. Presses Universitaires de France-PUF.
- Levy-Warren, M. H. (2008). Wherefore the Oedipus complex in adolescence? Its relevance, evolution, and appearance in treatment. *Studies in Gender and Sexuality*, 9(4), 328–348.
- Meltzer, D. (2011). Adolescent psychoanalytical theory. In *Talks and papers by Donald Meltzer and Martha Harris* (Vol. 145, pp. 21–37).
- Montuori, A. (2004). Edgar Morin: A partial introduction. *World Futures*, 60(5–6), 349–355.
- Nothomb, A. (2011). *Tuer le père*. Editions Albin Michel.
- Premsky, M. R. (2010). *Teaching digital natives: Partnering for real learning*. Corwin Press.
- Roberts, R. E., & Duong, H. T. (2014). The prospective association between sleep deprivation and depression among adolescents. *Sleep*, 37(2), 239–244.
- Rosenberger, R. (2015). An experiential account of phantom vibration syndrome. *Computers in Human Behavior*, 52, 124–131.
- Schlegel, A., & Hewlett, B. L. (2011). Contributions of anthropology to study of adolescence. *Journal of Research on Adolescence*, 21(1), 281–289.
- Short, M. A., & Louca, M. (2015). Sleep deprivation leads to mood deficits in healthy adolescents. *Sleep Medicine* 16(8), 987–993. <https://doi.org/10.1016/j.sleep.2015.03.007>. Epub 2015 Apr 16. PMID: 26141007.
- Short, M. A., Gradisar, M., Gill, J., & Camfferman, D. (2013). Identifying adolescent sleep problems. *Public Library of Science Plus One*, 8(9), e75301.
- Siegel, D. (2013). *Brainstorm: The power and purpose of the teenage brain*. Tarcher Perigree/Penguin.
- Soulé, M., Diatkine, R., & Lebovici, S. (2004). *Nouveau traité de psychiatrie de l'enfant et de l'adolescent* (4 vol). Presses Universitaires de France.
- Ungar, V. (2009). Adolescence and urban cultures. *Controversies in Children and Adolescents Psychoanalysis*, 4, 1–9.
- Winnicott, C., Shepherd, R., & Davis, M. (Eds.). (1989). *D.W. Winnicott psychoanalytic explorations*. Routledge.
- Wolfson, A. R., & Carskadon, M. A. (1998). Sleep schedules and daytime functioning in adolescents. *Child Development*, 69(4), 875–887.

Mayela Moreno Clinical psychologist. Masters in Education and Family. Family counselor. Former member of the Scientific Committee of the Mexican Society for Neurology and Psychiatry. Author of the article “Education for peace starting with the family” for the Journal of the Panamerican University. She is author and coauthor in a series called “Getting to know myself, numbers 1,2,3 & 4”

published by Trillas Publishers. Also, of “Puericultura and child development” (Child Rearing and Development: A Practical Guide for Parents and Teachers). She is training in mentalization-based psychotherapy at the Anna Freud Centre (London) and Mentalizar Mexico.

Celia Atri PhD Psychoanalytic candidate, Mexican Psychoanalytical Association. Clinical Masters at Centro Eleia, Mexico City. Masters in psychoanalytic treatment of children and adolescents. Psychologist graduated

from the Universidad Iberoamericana. School psychologist in High Schools and currently in private practice.

Teresa Lartigue PhD Training psychoanalyst, Mexican Psychoanalytical Association. Child and adolescent psychoanalyst, and infant-parent psychotherapist. Editor of several books: Psychoanalysis and Gender Relationships; Sexuality and Gender; Gender and Psychoanalysis; The Culture of Parenting; Attachment and Early Infant Bonding; Social and Filial Violence in Latin America; and Power, Gender and Love, among others.



Mindless Child Psychiatry and Psychosomatics

5

Manuel Morales-Monsalve, J. Martin Maldonado-Duran, and Prakash Chandra

It is easy to write prescriptions. What is difficult is to understand people's lives.

(Franz Kafka. A country doctor)

Embrace complexity
(Sally Provence M.D.)

Mindlessness

It would seem easy to comprehend that a person, a child, and adolescent, is a complex being, and the result of multiple factors and influences. These influences are genetic, the environment and experiences during pregnancy, the birth process, early childhood, the relationships with caregivers, and what happens later on in the interpersonal, social and cultural milieu. Despite this, we often think in a more linear way, as cause and effect.

We often think more simplistically and to embrace “one” explanation or way of thinking about a child who exhibits problems: “he or she

has a biochemical imbalance” or “he is acting like this because of the parent’s divorce” or “the problem is she is the object of witchcraft.” These explanations depend on social and cultural factors to a large degree. In the United States, for example, in the 80s of the last century, it was common to diagnose children as having “schizophrenia” and to formulate children’s problems as being the result of problems in the separation-individuation process described by Margaret Mahler (1972). These trends have been abandoned now. There are new trends now, such as cognitive-behavioral psychotherapies and theories of biochemical imbalances in the brain, which underlie many emotional and behavioral problems.

Prior to Charcot and Freud’s work, much of psychiatry was focused on severe mental disorders and everything was attributed solely to brain pathology or degenerative processes. In the Western world, particularly in the United States with the ascendance of psychoanalysis in the decades after the Second World War, psychiatry was dominated by psychoanalysis and it also purported to comprehend almost every disturbance, every condition and to have “the answer” for treatment.

In the last few decades, the pendulum has swung in the opposite direction (Decker, 2016; Kim, 2000) and now we have a psychiatry whose formulations are based largely on the behavior of the individual child or adolescent. The mind of

M. Morales-Monsalve (✉)
Faculty of Psychoanalytic, Center for Greater Kansas
City, Kansas City, MO, USA

General, Child and Adolescent Psychiatry, Truman
Medical Center, Kansas City, MO, USA

University of Missouri Kansas City School of
Medicine, Kansas City, MO, USA
e-mail: manuel.morales@uhkc.org

J. M. Maldonado-Duran
Menninger Department of Psychiatry, Baylor College
of Medicine, Houston, TX, USA

Complex Care Service, Texas Childrens Hospital,
Houston, TX, USA

P. Chandra
University of Missouri Kansas City School of
Medicine, Kansas City, MO, USA

the young person is of secondary importance, particularly all the complexity of a person's emotional life, their history, their wishes, ambitions, and hopes are sacrificed in honor of focusing on a list of symptoms the patient may or may not endorse. There is now less emphasis on what the patient feels, how he or she has felt in the past and how the youngster perceives and relates to the world around. As a result, the boy or girl's emotional life remains unexplored. The emphasis on "diagnostic criteria" which were originally designed as a research tool, mostly to be used by researchers has had multiple consequences. As pointed out by N. Andreasen (2007), the nomothetic system (diagnosing based on diagnostic criteria only) has made the "person" disappear, all the heritage of several centuries of exploring the mental life, emotions and lived experience of the patient are being gradually lost. Andreasen referred to this as the "death of phenomenology," i.e., the detailed and in-depth exploration of the person's emotional life and experiences. This is unfortunate on several accounts. One is that clinicians in reality do not adhere strictly, like researchers do, to the diagnostic rules of the classification system. The same patient can be diagnosed with very different disorders by two or more clinicians, as has been shown in multiple studies (Chmielewski et al., 2015; Fabiano & Haslam, 2020; Kraemer et al., 2012). Also, in some centers, since the clinician trained in this fashion only has to inquire about the presence or absence of symptoms, this can be done perhaps more comprehensively by a person filling out questions on a computer, then the software produces a diagnosis. Then the patient can see an actual human being, from where a prescription for pharmacotherapeutic treatment can be issued.

Also, the diagnostic system sees the child just as "the patient" in the usual medical model, assigning to the child or adolescent a disease or a disorder. While this is understandable, often it is taken literally as the child "being sick" or having a disease. Since children (and adults) are so embedded in family relationships and school relationships, this system focused on the individual is insufficient to understand the network of

influences and factors that affect the child. It is necessary also to understand interpersonal, social, and cultural contexts, not only to understand how the child reacts but also to detect where intervention may be needed, for example, in improving the parent-child relationship, or some factors in the school setting. Difficulties in those relationships are very important determinants of what is causing mental suffering or "symptoms."

All these challenges are the result of multiple factors, but a major one is the pharmacological industry and the insurance companies, which in the United States have come to dictate which treatments are acceptable, for how long, and for whom. The economic emphasis is on "efficiency" (or productivity), which often means spending less time with each patient, and to quickly decide what is the diagnosis of a child (after the first session) and, in the case of psychiatry, to suggest a psychopharmacological intervention.

It seems that in some parts of the world, certainly in the United States and some of the areas influenced by its practices, the mind of the persons involved is relegated to a minimal portion. This has implications for the diagnostic understanding of a patient, but also for the possible interventions or therapies based on that conception of what is happening to the patient. Several authors have emphasized this trend, but Lipowski made a particular emphasis in a paper about 40 years ago (Lipowski, 1989), suggesting that psychiatry could become "mindless" (Laungani, 2002).

The nomothetic approach to psychiatry has dominated so much of what is taught in many psychiatry training programs that the "lived experience" of the patient (phenomenology of the problems) is almost forgotten or thought irrelevant. The nomothetic format, referring to diagnostic criteria, symptom collections, inclusion and exclusion criteria, and duration of symptoms and their severity, is a useful approach to "classify" disorders, but not people.

The nomothetic format favored by the Diagnostic and Statistical Manuals gives the clinician a sense of "certainty" about the condition and problems of a person. Indeed, most disorders in the DSM V system are defined as "intra-

sonal” and the interpersonal world is largely not taken into account. This has been named “third person psychiatry,” i.e., the patient is described by the clinician as it is customary in many other areas of medicine (Fuchs, 2010). The level of certainty can be very comforting to the young clinician, who may ascertain that a boy or girl “has a disorder” and then convey this to the child or the family, or the school system. However, the situation is often much more complex and this has important implications for what is recommended for treatment and for the future of the child.

The diagnostic certainty leads to a diagnostic label. In the new psychiatry, very often while the interrogatory on symptoms and their nature is taking place, the child psychiatrist is thinking of mostly one therapeutic intervention, usually pharmacotherapy. In many training programs, the instruction is reduced to teaching the nomothetic format of mental disorders (the “third person psychiatry”) and then to an almost exclusive emphasis on pharmacological interventions. Any psychotherapies are thought to be “complementary” and to be performed by other clinicians.

This reduces psychiatry to a “minimal expression” in which the psychiatrist is only thought to need to memorize all the diagnostic criteria and apply them, arriving at a certain diagnosis and then prescribing a “corresponding medicine or medicines” to alleviate the problem. Many psychiatrists trained in this model after a few years of clinical practice discover the limitations of this model, and the loss of the richness of the “mental life of the patient,” his or her emotions and relationships with family and other multiple factors.

Many newly trained child psychiatrists are experts on the boundaries between “mental disorders” in children, and diagnostic criteria, as well as on pharmacological agents, cytochromes, metabolism of the few drugs that are available and drug–drug interactions. In many quarters, the term psychiatry has been abandoned in favor of the term “behavioral medicine” eliminating the mind (*psyche*) from the possible considerations and only thinking about observable “behaviors.” The question of what “causes a behavior” or what

“fuels an action” is outside of the relevant considerations.

The understanding of a situation has implications for treatment. If one were only interested in behavior, e.g., “maladaptive behavior” or “disruptive behavior” taken as such, as a thing in itself, then the goal of treatment might be, from a purely behavioral point of view, to eliminate “undesired behavior,” for instance, trying to get a child to obey his or her parents all the time instead of being disobedient. The same would apply to temper tantrums. The remedies might be pharmacological or purely behavioral. This leads to a clinical practice in which the psychiatrist tries to help the child to eliminate undesired symptoms, such as temper tantrums, for example. Success is measured by how much these disappear. However, the reasons for the tantrums, the anger or resentment behind them is often not understood or explored.

From a phenomenological or lived experience point of view, the clinician might wonder with the child and the parents of such a child why he or she is angry, what is making the child resentful, and what brings about the final product of “temper tantrums.” We might discover then chains of phenomena, relational factors, situational and environmental influences, as well as interpersonal ones that might contribute to the problematic behavior. Is it possible that improving those interpersonal or environmental factors that bring about the negative behavior might be a part of the solution to the problem?

The Diagnostic and Statistical Manual (DSM) produced by the American Psychiatric Association is considered in many centers as the gold standard for the diagnosis of emotional and behavioral disturbances in children and adolescents. There are multiple effects of the contents and rules contained in the manual, which have an impact on the clinical practice with children and adolescents (as well as adults).

The system makes still a categorical distinction between normality and pathology, as though one “has” a mental disturbance or “not have it” (i.e., caseness). This is a system taken from the medical tradition. However, when it comes to the

feelings and behavior of humans, particularly children, there should be other considerations (Khoury et al., 2014). Angry behavior in children may be a manifestation of their mental health, of being alive, even if it is difficult for parents to deal with it. Just eliminating it as undesirable may not be helpful to the child. The question “what does this anger mean?” (or this sadness, this anxiety) is not raised. Also, many symptoms are not categorical, i.e., they exist or not. Many are “dimensional” in the sense that anxiety may be experienced a little or a lot, in different contexts, etc. the same with sadness and irritability. It may very well take several sessions to get to know a person, a child, or adolescent and his or her circumstances, then why diagnose from the first session? This is largely due to the demand of health insurance agents who “need to know” the diagnosis in order to decide on reimbursement.

Another important consequence of the exclusive reliance on some diagnostic categories is the changes in diagnostic categories assigned to children. Decades ago, children were not thought to suffer from bipolar disorder, now symptoms like anger, temper outbursts, and irritability may be diagnosed as the child having bipolar disorder, even in younger children. In the United States, there is recently a great increase in the use of the diagnosis of “bipolar disorder” in minors (Moreno et al., 2007; Parry et al. 2014). Also, some diagnoses have become practically “damning” to children, so many clinicians do not dare to use them with children, e.g., conduct disorder. This latter diagnosis is often used by insurance companies and clinics to exclude these children from a clinical setting and insist that those children should be only seen in forensic or child correctional settings.

Furthermore, the diagnostic classification “splits” the disorders so much that one given child or adolescent may well have four or five diagnoses. This trend may or may not be related to the phenomenon of billing insurance companies for different disorders when attempting to treat a child and obtaining reimbursement from the child’s insurance. The fact is that the number of disorders has increased progressively with new editions (Houts, 2002). With the newer edi-

tions, aside from the number of diagnostic categories, the diagnostic exclusionary criteria have been relaxed, increasing the prevalence of several disorders by the mere definitions, which some have called an “inflation” of diagnoses (Batstra & Frances, 2012). Also, the quick application of a diagnostic label to a child, adolescent (or an adult) can lead to stigmatization and, in some cases, dehumanization of the person, reduced to a diagnosis (Boysen et al., 2020). The parents of a child may see him or her as different because a diagnosis has been assigned, or several of them, coloring the framework in which they see their child. Sometimes, instead of trying to understand the emotional life of their child, they may ascribe all his emotions and behavior to “the disorder.”

The various insurance companies have developed algorithms as to “which categories” they will recognize as appropriate for treatment or “are not covered.” The number of conditions has gone from less than 100 several decades ago to around 350 by now (including children and adults). The same applies to several forms of “personality disorder” which would be considered almost untreatable or damning, such as borderline, histrionic, and antisocial personality disorders.

Also, phenomena that previously were considered more as “symptoms” of a broader disturbance are now conceptualized as diagnostic categories in themselves, for instance, “skin picking disorder,” which always was thought to be a manifestation of distress or anxiety, now is a disorder in itself.

Many of the diagnostic criteria and decisions as to the number of symptoms, their severity, and their duration are largely decided by consensus among the experts deciding on the diagnostic criteria, inclusionary and exclusionary ones.

In some clinical centers, the diagnosis is made now through a computer, in which parents or adolescents answer questions (questionnaires) which, at the end, following diagnostic algorithms, deliver a diagnosis. By the time the child or family sees a clinician, a person, the diagnosis is already made and the doctor then can proceed to the treatment, usually involving some sort of psycho-pharmacological agent. Clinical judgment and human interaction are taken out of the

situation. After all, this is a logical consequence of such certainties, as a computer is more likely to apply “decision trees” more consistently than a human being.

These recent developments have multiple implications and affect not only psychiatry but also most areas of medicine in the United States, including pediatricians, internists. The trend is an emphasis on “productivity” (Venkatesan & Murali, 2019). Health care is seen as a commodity that can be measured and made more efficient, at lower costs and serialized, using models from the production of other commodities. Productivity is a term borrowed from industry, e.g., the assembly lines, which count how many of a specific object can be produced per unit of time. In American Medicine and in many other parts of the world also, departments of psychiatry (and many other areas of medicine) are now directed by administrators without any clinical experience and a very limited understanding of what a suffering patient is, a troubled family, etc. Due to the demands of “the market” increasingly the time that a psychiatrist (but also a pediatrician, a neurologist, etc.) can spend with each patient has been progressively reduced. In some centers, psychiatrists are encouraged to maximize their “productivity” and reduce their clinical time to 20 min per patient. This includes usually a “medication check” of the effects of psychotropic medications, or medication management, the doctor inquiries about side effects and improvement, adjustment of dose, and writing of a prescription. Then documentation of what just happened usually in an electronic health record. With the preeminence of the electronic medical record, this has become a work onto itself that also requires time. In these circumstances, the clinician could scarcely obtain much information or detail about a patient’s symptoms, feelings, and experiences of their life. There is only time for an enumeration of symptoms and then attempting to address them with some medication and, if needed, referring the patient to a possible psychotherapist. For instance, “panic attacks”; the Diagnostic and Statistical Manual says that most of the time these occur “without a precipitating cause.” However, most clinicians

who attempt to understand panic attacks realize that even when the patient does not immediately report it, often there are antecedents and worries before the panic attack, sometimes hypochondriacal fears, and other anxieties (Fava, 2001). With the pressure to see “the next patient,” any exploration of the child’s way of life, relationships, etc. is very difficult and eventually it is lost. It may be that in the future it will be considered irrelevant, as the main object of the treatment is the removal of the panic attacks, not so much what worries the patient. Yet, a thorough understanding of the thoughts and feelings previous to the panic attacks might help the patient identify triggers, antecedents, and underpinnings to his or her anxieties. Such understanding could contribute to a therapeutic intervention, but there is no time for that.

The Body of the Child and Psychosomatics

In psychodynamic or “in-depth” mental health, it is customary to pay attention to the body of children and parents, which is also emphasized in a number of family therapy schools. In psychodynamic mental health, the clinician is very interested in the child’s body language. With younger children, the body is often the main communicator of states of mind, attitudes, reactions, and tensions. The interaction between bodies, between a mother and an infant, a father and a toddler, and between siblings, parents, and children tells a lot about the quality of relationships, emotional involvement, and affection. Also, these can convey hostility, rejection, fear, sadness, etc. This way of communicating was taught carefully when residents learned about “psychiatric interviewing of children,” and not only the language in terms of movements and position but also the gaze of the child, tone of voice, voice changes, silences, and pauses. The clinician should be trained in recognizing all these messages which often convey much more than the “digital messages” of words and what is conscious, or what is being said with words. This way of seeing things is lost when a psychiatrist is focused on writing

things on the computer while she or he is interviewing a child and family.

Furthermore, the way the family members interact with each other, or the “choreography” of the session, can convey powerful meanings that can suggest themes and issues for the family. Often, even during the first session, this leads to the experience of a “sacred moment,” in which the clinician is able to comprehend and empathize with the child and family (Lebovici et al., 2002). Obviously, all of this requires for the clinician to have an open mind and to embrace uncertainty, so to speak, as he or she is trying to understand the life of a child or adolescent, the experience of each of the participants and attempting to empathize with them.

Furthermore, the concept of “enaction” emphasized by many clinicians (Lebovici et al., 2002) involves the reactions of the clinicians in terms of thoughts and feelings, but also what the clinician feels in his or her body in the presence of a certain child or family. These bodily reactions of the clinician can be an important source of information, of how it feels to be in the presence of a certain child, father or mother, and guide one to understand what is happening.

In the field of mind–body problems, the body assumes a more central role in understanding the situation of the child/family who is expressing messages, distress, anxiety, anger, or other feelings through the language of the body, i.e., somatization.

Problems of mind–body interactions are quite frequent and they tend to appear first in the office of the pediatrician. Whether a pediatrician or pediatric specialist is interested or not in mental health problems, these are inescapable in a pediatric practice and they occur in multiple presentations.

One such presentation is the child/family who is a “frequent visitor” or the child who is brought more often than others, due to concerns for which “nothing is physically wrong” or no medical problem can be found, for instance, due to headaches, abdominal pain, which are two of the most frequent presentations of somatization problems, along with lack of energy, low appetite, and fatigue.

Emotional and behavioral difficulties manifesting through the body can affect practically any organ system. Some systems are more immediately related to the central and peripheral nervous systems, such as the skin, pain receptors, as well as the gastrointestinal system and muscles.

Pain is a frequent complaint. It has been estimated that between 2% and 10% of children have pains for which no organic cause can be found, or “functional pain” or “medically unexplained pain.” In another population study, about 11% of girls are thought by their parents to be “sickly” and 4% of boys (Garralda, 1999).

Mind–Body Problems in Children

In the Western world, it is common to divide conditions between medical and psychological/psychiatric conditions. The distinction between mind and body is not made in many cultures however and people find it very natural that the body and the mind are both scenarios for the expression of stress.

Somatization generally refers to the manifestation of psychological distress or emotional states in the form of somatic symptoms, for which no medical findings or pathological findings exist. It is assumed to be a form of communication of distress through bodily symptoms.

The term psychosomatic is closely related to somatization, but it is most often used to refer to conditions that are expressed in symptoms of disturbance of various organ systems and which have an important component with emotional difficulties and stressors.

Functional or Somatoform Disturbances

Conversion was the traditional term to refer precisely to the transformation of conflicts, often unconscious, or “forbidden emotions” or thoughts in the form of bodily metaphors, i.e., symptoms in the body which are bothersome, require medical attention but are thought to be caused by emotional or psychological factors.

The somatic symptoms also have been described as “concretized metaphors” (Skårderud, 2007) in the sense that the physicality of the body is the manifestation of emotions and states of mind which are not felt consciously by the child or adolescent “in the mind.” The “meaning of symptoms” for the individual patient or family can mostly be ascertained by a “narrative approach” to explore the bodily manifestations, feelings, and emotions of the child and the interactions with those around her. Much of the current scientific literature is in trying to establish the correlation between the functional somatic symptoms observed and a number of conditions, such as anxiety disorders, depression, school avoidance, and personality traits (e.g., perfectionism or dependency). The other interest is the method of removal of the functional symptoms, not necessarily on the meaning of the symptoms and what they convey to the parents, siblings, and teachers and what they might say about the emotional life of the child with somatization problems. This is the emphasis in purely behavioral therapies. For instance, a parent might be instructed to “ignore” certain attention-seeking behaviors on the part of a young child, even though perhaps the need for attention is at the root of the problem, attention that the child might actually need from the developmental point of view.

Perhaps the focus should be on mental health and the long-term perspective for the child, and a better function or well-being of the child in his or her world and within the family. This is a more ambitious goal than just getting the child rid of symptoms. Several reviews highlight the scarcity of empirical studies on the outcome of treatments. Some strategies may be easier to test, rather than the highly individualized multimodal therapeutic approaches. For instance, physical therapy, or cognitive-behavioral psychotherapy (particularly if a manualized approach is used) are easier to test in terms of outcome and follow-up after a certain number of sessions or participation in therapeutic sessions. It is quite a different issue to try to “standardize” individualized problems and interventions, such as the interplay between individual (intrapsychic) factors, family

relationships and family functioning, stressors for the individual child, school factors, as well as cultural ones involved in the manifestation of distress.

Cultural Dimension of Somatization

In many traditional cultures, there is not a sharp distinction between “mind and body” and distress is expressed through the language of the body, explicitly. The language used in many of those cultures reveals this equivalence between body symptoms and emotional distress. It is assumed that emotions cause physical symptoms, and that physical symptoms cause disturbances in the emotions and mind of the affected person. There are a number of culture-bound symptoms which manifest in the bodily expression of distress.

Implications for Child Psychiatry: Diagnosis and Treatment

The emphasis on “the biological” and the brain as the main “site” of emotional disturbances has led to a number of phenomena, such as the high frequency of the diagnosis of attention deficit disorder and bipolar disorder in children, even very young ones. The high frequency of pediatric bipolar disorder appears to be restricted to the United States (Parry et al., 2014; Parry, 2014), reflecting the focus on diagnostic criteria and the quick assignment of a diagnostic label without necessarily taking into account other factors that might account for symptoms like “mood swings,” “irritability,” temper tantrums, and others. There is even a term that now is also applied to young children called “rapid cycling” bipolar disorder which explains phenomena that are commonly seen in young children, due to the maturation of their emotional regulation, but which do not necessarily constitute a bipolar disorder. A similar phenomenon has been described in Australia regarding the “epidemic” of autistic spectrum disorder. In that country, this relates to rebates in insurance rates and welfare benefits for families

with a child who has that syndrome, as well as educational accommodations which many children require but would not get if they were not diagnosed as autistic (Basu & Parry, 2013). Something similar occurs in the United States, where educational systems acknowledge autistic disorder in children as requiring educational accommodations, but often this is not the case with learning disabilities or other learning problems.

The Heritage of Hysteria

Hysteria has been recognized for many centuries since the time of the first medical treatises, in the sense that some conditions were a reflection of the emotional difficulties of the sufferer. It has always been clear to physicians that certain patients may develop complaints and symptoms of somatic dysfunction, where there is no “organic disease.”

At the end of the nineteenth century, together with the birth of modern neurology, systematized by Charcot and his associates and students (Bogousslavsky et al., 2009), there was a great clinical interest in hysterical phenomena. These were termed hysterical conversion or hysteria, and numerous authors wrote monographs and detailed descriptions of such problems, such as Briquet, Janet, and others (Bogousslavsky, 2020). Initially, hysteria was thought to affect only or mostly women, but soon there was a further term, “hysteria virilis,” to indicate the same phenomena in men.

After Charcot, numerous former disciples, particularly Pierre Marie, Pierre Janet, and Pierre Briquet among many others continued studies of hysteria and dissociation and made numerous publications. Freud and Breuer’s work of six cases of hysteria was a very detailed narrative of the clinical picture and treatment of cases of conversion, which often included additional psychosocial difficulties.

Also, Freud’s followers, in particular Felix Deutsch and Franz Alexander in the United States, published numerous formulations on issues of conversion and psychosomatic condi-

tions, emphasizing particularly the influence of the psyche on some chronic health conditions.

For a number of reasons, after the Second World War, Germany flourished many centers of “psychosomatic medicine.” This happened first in private settings and later on in multiple universities. This has led to a unique expertise in embracing a true biopsychosocial model in medicine and mental health problems. Also a number of treatment approaches have been quite innovative in psychosomatic medicine.

Prior to the Second World War, in Germany, at Heidelberg University, there was a school of “the psychosomatic,” whose most known initiators are Thure von Uexküll and Viktor von Weiszäcker, both wrote extensively on the unity of body and mind and the “kidnapping” of the person when one guided by narrow research methods reduces the whole person into a set of biological variables or data (Christian, 1987). Von Uexküll described the importance of listening to the “language of the body” and emphasized very much the need to take into account the manifestations of the patient’s distress in multiple ways. Anger is a particularly difficult emotion to express, and more so in certain families, as well as fear and anxiety. Von Uexküll utilized a “semiological approach” to the patient, i.e., as a person whose manifestations (symptoms, verbalizations, their own theories of disease) had to be understood “in toto” including the circumstances in which the patient lives. The symptoms or complaints are a communication that has to be deciphered.

Von Weiszäcker emphasized the importance of taking into account the marital relationship, family interactions, place of work and occupation, as well as social and cultural *milieu* in which the patient found him or herself. In order to understand the signs of distress, it is not enough to describe the person’s symptoms or attempt to eliminate them, but the physician should try to comprehend their origin and purpose. For example, if a worker is bored or exhausted from routine and unstimulating tasks day after day, what does that do to the quality of life, mental health, and the outlook of this person? Weiszäcker suggested that it should be those conditions that should be changed, rather than just help the

patient to become resigned to the circumstances, adapt himself and return to work. This is the concept of *kreisgestalt* (whole circumstance) or the circle of existence, so to speak, in which we all live. Weiszäcker was interested in “biographical medicine,” biography understood as the development of the person, what kind of life the patient has had and what he or she has gone through. Also, one would need to know why the symptoms appear at this point, and in the way that they do. Weiszäcker was interested in the integration of psychoanalysis and medicine, or psychodynamic thinking and psychosomatic treatments (Lolas Stepke, 2010). This was largely achieved in German-speaking countries through different avenues. This is also the case in the French “*psychosomatique*.” In many other countries, the psychosomatic realm is dreaded by physicians, as they do not know what to do with those patients, and psychiatrists may easily become frustrated by the patient’s reluctance to discuss their difficulties, particularly emotions and to develop a therapeutic relationship.

In the “psychosomatic,” the clinician is not to be necessarily the “judge” as to whether a condition is “real” or not, as it is the lived experience of the patient or an expression of what the patient is facing, for example, pain, vertigo, etc. (Sternberger, 1987). The formulations of the “Heidelberg school” led to the establishment of psychotherapeutic services in various medical clinics mostly for adults. These clinics were often separated from psychiatric services, which tended to be mostly focused on a narrower scope.

After World War II, Alexander Mitscherlich and other physicians exposed the abuses of “Nazified psychiatry” (Mitscherlich & Mielke, 2015), and they were instrumental in dealing with multiple psychosomatic conditions after the war, when so much trauma had been experienced by soldiers and the general population. Psychosomatic centers were established as psychosomatic medicine became an obligatory part of the training in medical schools, at first only in West Germany but later in the unified country (Roelcke, 2020).

A decade later, in France, in the 50s, the psychoanalyst Pierre Maury developed a theory –

“psychosomatic realm” (*l’ordre psychosomatique*), which had as its focus the psychosomatic patient. Marty and his collaborators studied the mechanisms of conversion and psychic determinants of psychosomatic chronic medical conditions, such as some autoimmune diseases, asthma and skin conditions, which are known to be very susceptible to emotional factors and stressors (Stora, 2012). Marty and his colleagues theorized that emotional experiences that were intense, and certainly traumatic ones, had to be “mentalized” in normal persons. When this mentalization is not possible, then psychosomatic conditions may appear. In this context, mentalization is a psychoanalytic concept that implies dealing with tensions, emotions, experiences, or traumatic events in an “internal dialogue,” with words connected with feelings: realizing, processing, and dealing psychologically with the emotions elicited by difficult experiences. These emotions could include fear, panic, anger, sadness due to losses or separations, etc. The psychic elaboration (mentalization) would allow the emotions to be worked through, expressed in verbal and emotional way, sometimes through thoughts and words and sometimes through actions. However, when this does not occur, then the expression occurs through the body in the form of symptoms, such as vertigo, pain, or other forms of conversion. This is presently theorized to occur through the limbic system, amygdala, and messages that involve epigenetic mechanisms, neurohormonal messengers, and stress hormones (Stora, 2012).

Several authors have recently suggested that hysterical phenomena have now been transformed, and they are manifesting in more subtle forms, for instance, in the form of “chronic fatigue” (Shorter, 1993). Others argue that somatoform conditions have not really disappeared but they are often not taken seriously by neurologists or other physicians. These patients often decline to see a psychiatrist and may not engage in any form of psychotherapy (Stone et al., 2008). This does not mean that the problems have disappeared.

Several studies in the German-speaking world, many of them inspired on the work of Anne

Marie Dührssen (Rücker, 1999; Roelcke, 2020) illustrated the benefits of psychotherapy in improving the health and outcome of chronic health conditions, particularly those strongly influenced by emotional factors and stress, and pointed out to the benefits in terms of improvement of the patient and diminished absenteeism and burden to the health care system. These “medical psychotherapeutic” interventions often have developed outside of formal psychiatric services, but in connection with medical systems and their need to refer patients for “psychological interventions” to alleviate the multiple somatic manifestations of distress, conflict, or difficult circumstances.

Looking at the available literature on psychosomatic conditions in children, two major pitfalls are highlighted. One pitfall is quickly arriving at the assumption that certain symptoms are “conversion” when in reality the child is affected with an important medical condition, which has not been diagnosed adequately, or in which not enough diagnostic tests have been considered (Fritzsche and Dornberg, 2003; Garralda, 2004). This might be the case in some instances of autoimmune diseases that have been diagnosed as “conversion disorder.” The other pitfall is to proceed to diagnose as “likely” a major medical condition, leading to an intervention when it was unnecessary and the problem was indeed one of conversion. For instance, a case of cochlear implant surgery has been described when the problem was conversion deafness (Balko et al., 2003).

So the clinician should be extremely careful to categorically affirm that a condition “is” of a conversion nature, and on the other hand, he or she should keep in mind this possibility when the symptoms of the child do not fit (Caulley et al., 2018) or they have an unusual nature.

This leads to two cautionary notes. One is that in many cases, the diagnosis of conversion disorder should be one “of exclusion,” i.e., when reasonable methods have been used to rule out an “organic” condition in a child that should be treated with other interventions. Another one is

that there are instances of pathognomonic manifestations of some conversion disorders, where minimal further diagnostic studies are necessary, such as some forms of sock and glove anesthesia, or pseudoseizures that last for many minutes and have characteristic manifestations. The same can be said of some perceptual impairments that could have no basis on a known pathological (medical) condition.

Epidemiological Considerations

It is generally accepted that in adult outpatient clinics, around 20% of all the patients who present to be assessed, no organic or pathological problem will be found (Jackson & Kroenke, 2008; Kaphammer, 2011; Morris & Gask, 2006).

There have been a few surveys of somatoform disorders in pediatric practices (Ani et al., 2013; Kozłowska et al., 2007). One in Australia (Kozłowska et al., 2007) and one in the United Kingdom and Ireland (Ani et al., 2013). These studies, are important because they use a “case surveillance” methodology, i.e., pediatricians would report the cases to a central registry. In these countries, pediatricians are asked to report on a particular condition and to mail in a card with information about the child and family.

The UK/Ireland study found an incidence of around 1 per 100,000 children in the population that goes to a pediatric clinic to be treated for a condition. The incidence was double in Australia, with a much higher response rate (above 95%) by pediatricians. There may be an under-reporting of cases as busy pediatricians may not take the time to mail in cards despite repeated requests to do so.

In any case, the series involves several hundred children in each study. The most frequent antecedents of psychosocial stress are bullying in the European study and family conflict and discord in the Australian one. One of the conclusions of these studies is that often the same child presents more than one conversion symptom, i.e., that there may be more than one.

In the UK/Ireland study, the most frequent presentation was motor weakness, and the majority of children (70%) were girls. The incidence increased with age up to the adolescent years (Garralda, 2004). Often, there was a sick relative at home, most frequently with seizures or another neurological condition. Contrary to the common belief in clinicians, a significant number of families (around half) accepted a referral to a mental health professional or psychiatrist and were told that the condition was related to emotional factors. The prognosis at 1-year follow-up was of improvement in about two-third of cases. However, there may be others where the condition lasts for a long time.

The Australian study, with similar methodology (Kozłowska et al., 2007) involved data in around 200 children. The most frequent conditions were also motor weakness, followed by disturbances in sensation (24%), as well as pseudoseizures (23%) and respiratory difficulties (14%). Surprisingly 70% of patients required admission to the pediatric hospital to have diagnostic studies.

In both studies, there were often magnetic resonance studies, other imaging, laboratory tests, and consultations by specialists.

In both studies, the most frequent emotional problems in the child were anxiety disturbances, followed by depression. The incidence was between 2.3 and 4.2 per 100,000 children.

Psychosocial Factors

In the world of psychosomatic medicine, the biopsychosocial model takes into account possible factors in the mind of the person, in family relationships, and in the developmental history of the child (Kozłowska et al., 2007). Among the social determinants, there are the economic circumstances and stressors faced by the individual. For adults, an important determinant is the conditions of work in which the person spends at least 8 h a day, if not more. It is important to determine what those circumstances are, the milieu or the work atmosphere, and the stress and tensions involved in the work itself, the nature of the tasks, the sal-

ary earned, and the interpersonal relationships at work. This issue was highlighted by von Weiszäcker as an important determinant of the mental health of the person.

In the clinical work with children and adolescents, the “school environment” is often taken for granted as a fact of life. Clinicians may assume that schools are “more or less the same.” This is not so. To give an example, a big contrast, a great majority of teenagers in high school in the Netherlands report that they “love attending school” (OECD, 2017) and over 80% say they have “kind and friendly peers.” In contrast, in the United States, a great majority of adolescents report precisely the opposite, they detest school or find it unstimulating and stressful. Also, it is well known that in a given country the quality of the school environment varies enormously. Some schools appear to maintain a mostly positive emotional climate, while in others there is a tendency to more violence among the students, destruction of property, and general discontent in students and teachers (Haynes et al., 1997). These issues, like the quality of teacher–student interactions, bullying by teachers, have received little attention in the general literature in child and adolescent psychiatry, with a few exceptions (Datta et al., 2017; Twemlow et al., 2006). The fact remains that for a great number of children and adolescents, going to school may be an experience similar to being “trapped” in a system in which they experience failure, harsh discipline, constant criticism, and other negative events from teachers, from the other students, or from academic tasks that the child cannot tackle by him or herself.

In many schools in the United States, children are told they have to accomplish a certain “quota of work” per day. They may be organized in a seating similar to “cubicles.” Parents at times tell their children that school “is their work” and children experience that their parent may dislike their work, and feel similarly toward their schooling.

In the United States, schools are very different from one another in multiple ways. There are no uniform standards regarding what is taught, curriculum content, etc. School districts have different philosophies and they can dictate to a large

degree some of the subjects, textbooks, etc. Also, individual schools are funded in large part by tax contributions from houses in the vicinity. As a result, there are wide disparities between schools in affluent neighborhoods from those in impoverished areas. This creates a sort of inherent inequality in the access to special services, educational opportunities, art lessons, music, physical education, and “curriculum enrichment” opportunities.

Also, there is an emphasis on individualistic achievement. Children are not encouraged to help each other in learning, as each child should accomplish their own amount of work with minimal help from others. In many classrooms, the role of the teacher somewhat reduced, and the children spend much of their time answering “work sheets” after reading a chapter of a book, one after another.

In high schools, there is a highly individualized curriculum for students. Friendships are an individual affair, as well as a “group mindset.” Many children have no friends in a given class, and the student rushes from one class to another all through the day. He or she may have one friend or several in a class, but none in the next class, etc., as each child has his or her own schedule. This tends to diffuse bonds between students who must rely on their own devices to establish friendships, some never really “fit in” in any peer group as it requires social skills and being accepted in a friend group.

An additional stressor in high schools in some countries, like the United States, is the violence that may be pervasive in some. Nowadays students might be afraid that there might be a “mass shooting” in any given school, as well as a bomb threat, or other threats, like from gangs. Youngsters who may be more sensitive or apprehensive would likely feel more the dangers that are possible in their school.

References

- Andreasen, N. C. (2007). DSM and the death of phenomenology in America: An example of unintended consequences. *Schizophrenia Bulletin*, 33(1), 108–112.
- Ani, C., Reading, R., Lynn, R., Forlee, S., & Garralda, E. (2013). Incidence and 12-month outcome of non-transient childhood conversion disorder in the U.K. and Ireland. *British Journal of Psychiatry*, 202, 413–418.
- Balko, K., Fordyce, D., Blankenship, K., Littman, T., & Backous, D. (2003). Conversion deafness in a cochlear implant patient. *Cochlear Implants International*, 4(1), 19–20.
- Basu, S., & Parry, P. I. (2013). The autism spectrum disorder “epidemic”: Need for biopsychosocial formulation. *Australian and New Zealand Journal of Psychiatry*, 47, 1116–1118.
- Batstra, L., & Frances, A. (2012). Holding the line against diagnostic inflation in psychiatry. *Psychotherapy and Psychosomatics*, 81, 5–10.
- Bogousslavsky, J. (2020). The mysteries of hysteria: A historical perspective. *International Review of Psychiatry*, 32(5–6), 437–450.
- Bogousslavsky, J., Walusinski, O., & Veyrunes, D. (2009). Crime, hysteria and belle époque hypnotism: The path traced by Jean-Martin Charcot and Georges Gilles de la Tourette. *European Neurology*, 62(4), 193–199.
- Boysen, G. A., Isaacs, R. A., Tretter, L., & Markowski, S. (2020). Evidence for blatant dehumanization of mental illness and its relation to stigma. *The Journal of Social Psychology*, 160(3), 346–356.
- Caulley, L., Kohlert, S., Gandy, H., Olds, J., & Bromwich, M. (2018). When symptoms don’t fit: A case series of conversion disorder in the pediatric otolaryngology practice. *Journal of Otolaryngology, Head and Neck Surgery*, 47, 39–44.
- Chmielewski, M., Clark, L. A., Bagby, R. M., & Watson, D. (2015). Method matters: Understanding diagnostic reliability in DSM-IV and DSM-5. *Journal of Abnormal Psychology*, 124(3), 764–769.
- Christian, P. (1987). Der “Gestaltkreis” von Viktor von Weizsäcker. In *Viktor von Weizsäcker zum 100* (pp. 72–79). Geburtstag/Springer.
- Datta, P., Cornell, D., & Huang, F. (2017). The toxicity of bullying by teachers and other school staff. *School Psychology Review*, 46(4), 335–348.
- Decker, H. S. (2016). Cyclical swings: The *bete noire* of psychiatry. *History of Psychology*, 19(1), 52–56.
- Fabiano, F., & Haslam, N. (2020). Diagnostic inflation in the DSM: A meta-analysis of changes in the stringency of psychiatric diagnosis from DSM-III to DSM-5. *Clinical Psychology Review*, 80, 101889.
- Fava, G. A. (2001). Clinical psychology: A psychosocial antidote to biological reductivism in psychiatry? The Italian scenario. *Epidemiologia e Psichiatria Sociale*, 10, 150–152.
- Fritzsche, K., & Dornberg, M. (2003). Somatisierung. In K. Fritzsche, W. Geigges, D. Richter, & M. Wirsching (Eds.), *Psychosomatische Grundversorgung* (pp. 175–188). Springer.
- Fuchs, T. (2010). Subjectivity and intersubjectivity in psychiatric diagnosis. *Psychopathology*, 43(4), 268–274.
- Garralda, E. (1999). Practitioner review. Assessment and management of somatization in childhood and ado-

- lence: A practical perspective. *Journal of Child Psychology and Psychiatry*, 40(8), 159–167.
- Garralda, E. M. (2004). The interface between physical and mental health problems and medical help seeking in children and adolescents: A research perspective. *Child and Adolescent Mental Health*, 9(4), 146–155.
- Haynes, N. M., Emmons, C., & Ben-Avie, M. (1997). School climate as a factor in student adjustment and achievement. *Journal of Educational and Psychological Consultation*, 8(3), 321–329.
- Houts, A. C. (2002). Discovery, invention, and the expansion of the modern diagnostic and statistical manual of mental disorders. In L. E. Beutler & M. L. Malik (Eds.), *Rethinking the DSM: A psychological perspective* (pp. 17–65). American Psychological Association.
- Jackson, J. L., & Kroenke, K. (2008). Prevalence, impact, and prognosis of multisomatoform disorder in primary care: a 5-year follow-up study. *Psychosomatic Medicine*, 70(4), 430–434.
- Kaphammer, H. P. (2011). Somatoforme Störungen. In H. J. Möller et al. (Eds.), *Psychiatrie, Psychosomatik, Psychotherapie* (pp. 733–884). Springer.
- Khoury, B., Langer, E. J., & Pagnini, F. (2014). The DSM: Mindful science or mindless power? A critical review. *Frontiers in Psychology*, 5, 602.
- Kim, K. (2000). The crisis of psychiatry: Psychiatric patients, quo vadis? *Journal of the Korean Neuropsychiatric Association*, 39(4), 675–679.
- Kozłowska, K., Nunn, K. P., Rose, D., Morris, A., Ouvrier, R. A., & Varghese, J. (2007). Conversion disorder in Australian pediatric practice. *Journal of the American Academy of Child and Adolescent Psychiatry*, 46(1), 68–75.
- Kraemer, H. C., Kupfer, D. J., Clarke, D. E., Narrow, W. E., & Regier, D. A. (2012). DSM-5: How reliable is reliable enough? *American Journal of Psychiatry*, 169(1), 13–15.
- Laungani, P. (2002). Mindless psychiatry and dubious ethics. *Counselling Psychology Quarterly*, 15, 23–33.
- Lebovici, S., Barriguet, J. A., & Salinas, J. L. (2002). The therapeutic consultation. In J. M. Maldonado-Duran (Ed.), *Infant and toddler mental health* (pp. 161–186). American Psychiatric Press.
- Lipowski, Z. J. (1989). Psychiatry: Mindless or brainless, both or neither? *Canadian Journal of Psychiatry*, 34(3), 249–254.
- Lolas Stepke, F. (2010). La medicina antropologica y el juicio de Nuremberg. El aporte de Victor von Weizsäcker. *Monografías de Acta Bioética*, 5, 13–28.
- Mahler, M. S. (1972). On the first three subphases of the separation-individuation process. *International Journal of Psycho-Analysis*, 53, 333–338.
- Mitscherlich, A., & Mielke, F. (2015). *Doctors of infamy: The story of the Nazi medical crimes*. Pickle Partners Publishing.
- Moreno, C., Laje, G., Blanco, C., Jiang, H., Schmidt, A. B., & Olfson, M. (2007). National trends in the outpatient diagnosis and treatment of bipolar disorder in youth. *Archives of General Psychiatry*, 64(9), 1032–1039.
- Morris, M., & Gask, L. (2006). Assessment and management of patients with medically unexplained symptoms in primary care. *Psychiatry MMC*, 5, 65–69.
- OECD. (2017). *PISA (Program for international student assessment) 2015 results (volume III): Students' well-being, PISA*. OECD Publishing. <https://doi.org/10.1787/9789264273856-en>
- Parry, P. (2014). Biologism in psychiatry a young man's experience of being diagnosed with “pediatric bipolar disorder”. *Journal of Clinical Medicine*, 3, 334–347.
- Parry, P., Furber, G., & Allison, S. (2014). The paediatric bipolar hypothesis: The view from Australia and New Zealand. *Child Adolescent Mental Health*, 14, 140–147.
- Roelcke, V. (2020). Geschichte der Psychosomatik. In U. T. Egle, C. Heim, B. Strauss, & R. Von Känel (Eds.), *Psychosomatic -neurobiologisch fundiert und evidenzbasiert* (pp. 49–54). Verlag W Kohlhammer.
- Rücker, U. (1999). Anne Marie Dührssen (1916-1998). *Nervenarzt*, 70, 482–483.
- Shorter, E. (1993). Chronic fatigue. A historical perspective. *Ciba Foundation Symposia*, 173, 6–22.
- Skårderud, F. (2007). Eating one's words: Part III. Mentalisation-based psychotherapy for anorexia nervosa—An outline for a treatment and training manual. *European Eating Disorders Review*, 15(5), 323–339.
- Sternberger, D. (1987). Erinnerung und Viktor von Weizsäcker. In F. Lamprecht (Ed.), *Spezialisierung und Integration in Psychosomatik und Psychotherapie* (pp. 17–23). Springer.
- Stone, J., Hewett, R., Carson, A., Warlow, C., & Sharpe, M. (2008). The “disappearance” of hysteria: Historical mystery or illusion? *Journal of the Royal Society of Medicine*, 101(1), 12–18.
- Stora, J. B. (2012). Le rôle de l'appareil psychique, des mécanismes neuronaux et neurohormonaux dans les somatisations: l'approche de la psychosomatique intégrative. *Annales Medico-Psychologiques*, 170, 26–31.
- Twemlow, S. W., Fonagy, P., Sacco, F. C., & Brethour, J. R. (2006). Teachers who bully students: A hidden trauma. *International Journal of Social Psychiatry*, 52(3), 187–198.
- Venkatesan, S., & Murali, C. (2019). Graphic medicine and the critique of contemporary U.S. healthcare. *Journal of Medical Humanities*, 1, 16. <https://doi.org/10.1007/s10912-019-09571-z>

Manuel Morales-Monsalve MD Faculty of Psychoanalytic Center for Greater Kansas City, General, Child and adolescent psychiatry at Truman Medical Center, Assistant Professor of Psychiatry University of Missouri Kansas City School of Medicine.

J. Martin Maldonado-Duran, M.D., is an infant, child, and adolescent psychiatrist and family therapist. He is Associate Professor of Psychiatry at the Menninger Department of Psychiatry, Baylor College of Medicine and works at the complex care service in the Texas Children's Hospital. He edited the book *Infant and Toddler Mental Health*, published by American Psychiatric Press, and has coedited or edited five additional books in Spanish on topics of child and infant mental health. Coeditor of the book "Clinical Handbook of Transcultural Infant Mental Health" (Springer). He has written numerous papers and book chapters on topics of child development and psychopathology in several countries.

Prakash Chandra MD Associate Professor of psychiatry at University of Missouri Kansas City School of Medicine, Kansas City, USA. Child and adolescent psychiatrist. He treats patients and their families using mind and body concepts of mental and physical health. Dr. Chandra's research interests include early life stress and perinatal mental illness. Dr. Chandra is actively involved in training and mentoring medical students, residents, and fellows in child psychiatry. He has presented his research and clinical work at both national and international scientific meetings. Associate Editor of the journal *Chronic Stress*.

Part II

**Trauma and Mind Body Consequences in
Children and Adolescents**



Embodiment of the Self in Conditions of Neglect and Antipathy During Childhood and Adolescence

Juan Manuel Saucedo-Garcia
and J. Martin Maldonado-Duran

In these chapters, we describe separately various forms of maltreatment that in the “real world” for children in families often coexist and are not clearly separated. We do this for the purpose of focusing on an examination of the nature of the problem at hand and the effects of these interactions on the child, siblings, caregivers, and the family as a whole. Here we are referring not to very subtle phenomena, but to rather clear patterns of emotions and behavior. Every parent would have moments of being unresponsive, difficult, or even exploding toward a child, but then attempt to repair the relationship and go back to the normal relationship. Here we describe a pervasive and longstanding pattern that is easy to detect as it is so disturbing to watch or to hear about from the child or the parent. There are some determinants in parents and child which contribute to the optimal development of the child. In the parent, sensitivity, psychological maturity, adequate mental health, and a favorable developmental history. In the child, physical health and an easy temperament. In the interpersonal context, support between the parents toward

each other and less social adversities (Reder et al., 2003).

The committee on child maltreatment of the American Academy of Pediatrics indicates that isolated incidents of hostile behavior do not necessarily indicate psychological abuse. They emphasize there must be a repeated pattern of behaviors on the part of the caregiver, which are interpreted by the child as not being loved or wanted, or which have a negative impact in the child’s psychosocial development (Hibbard et al., 2012).

Determining the existence of psychological or emotional abuse can be complicated because, according to Glaser, it includes the overall quality of the relationship between caregiver and child, rather than this or that event, or isolated episodes (Glaser, 2002).

In examining the quality of these relationships, it is necessary to explore the family relationships and dynamic interactions in the family system, which underlie and determine the hostile acts toward the child. An issue that influences the outcome of any form of abuse is that children differ in terms of their temperamental style and resilience in dealing with harsh treatment, and one could say there are different degrees of resilience (Rutter, 2012).

J. M. Saucedo-Garcia (✉)
Universidad Nacional Autónoma de México,
Mexico City, Mexico

J. M. Maldonado-Duran
Menninger Department of Psychiatry, Baylor College
of Medicine, Houston, TX, USA

It is worth pointing out that psychological or emotional abuse consists of verbal acts on the part of a parent or caregiver, which cause significant psychological damage in the child. Neglect refers to a pattern of carelessness or disinterest in satisfying the needs of the child. Therefore, psychological abuse is a problem of carrying out actions, while neglect is one of omission (Organizacion Panamericana de la Salud, 2003). Antipathy is a feeling of aversion that someone, in greater or lesser degree experiences toward someone, in this case one's child.

A further problem is to distinguish between psychological abuse and caregiving that is not good enough or has deficits, and the limits between these phenomena are elusive because different cultures have diverse caregiving practices. For instance, depending on the cultural background and socioeconomical status of each family, different nonphysical modalities of discipline are employed to correct children verbally, to scold them or to take disciplinary measures. Yelling at children, for example, is very common in most cultures, as well as making threats or insulting them verbally (Organización Panamericana de la Salud, 2003).

Of course, there are also great variations in the use of physical punishments.

To make these distinctions more objective, it has been proposed that the threshold in determining the existence of psychological abuse should depend on the impact that such aggressiveness in childrearing has on the child. In this proposal, discipline is not considered abusive if the child is not significantly impacted in a negative way. In this regard, there would be three possibilities as to the impact on the child: (a) the child is significantly damaged (evidenced by enough symptoms to determine the presence of a psychiatric condition or by significant somatic symptoms); (b) the child does not manifest significant symptoms but the experiences with the caregiver have generated fear of being hurt physically (verbalized as threats or manifested in behavior) or the child manifests more than transient anxiety; or (c) none of the above but an external observer determines that in the context of various risk and protective factors, there is a reasonable potential to create

psychological damage or to negatively affect the psychosocial development of the child.

Hostile actions by the parent in the absence of the impact criteria mentioned above are considered as emotional aggressions and therefore under the threshold of psychological or emotional abuse (Slep et al., 2011).

There is general agreement between people of different cultures on the rights of children to live in a safe environment, free of risks of preventable physical or psychological damage. Therefore, it seems reasonable to use the concept of impact on the child (potential or actual) as the threshold (UNICEF, 1989).

We attempt to have a wider focus examining the problem in various contexts and countries, to explore how this is addressed, or not, in different cultures and areas.

Neglect and antipathy are often "not taken into account" except when the harsh attitude of the caregiver is one of great severity and endangers the survival of the child, particularly the young child. For instance, when an infant is malnourished or shows marked failure to thrive or is grossly uncared for, it is likely that the child protection services of any country would intervene. However, emotional maltreatment or marked antipathy toward one child may be less often identified. Often, child protective systems are more concerned with physical lesions or other imminent dangers to a child and protecting the life of the minor in a physical way. The psychological life or the effects on the self-image or the self of the child are less readily identified or are a cause for intervention. It is necessary to realize that emotional abuse and neglect (including emotional neglect) can have very profound effects on the adjustment and wellbeing of the child as he or she grows up.

Epidemiological Issues

Since there is no universally agreed consensus on an operationalized definition of psychological abuse, its identification and registry of cases is difficult. As a result, there are very few reliable data regarding the epidemiology of this phenom-

enon (Hammarman & Bernet, 2000), (Glaser, 2002).

In official registries and scientific publications, there is a great variation in how these phenomena are approached. For instance, there are multiple terms used such as: psychological maltreatment, emotional maltreatment, emotional abuse, verbal maltreatment, psychic maltreatment, general lack of care and emotional neglect. These terms have been used often interchangeably. Perhaps the most accepted term would be psychological abuse. The term “psychological” includes several realms such as cognitive, emotional and volitional components, psychodynamic factors and the impact of interpersonal relationships, in interchange with the physical realm (Sauceda-García & Maldonado-Duran, 2016).

Among all the forms of maltreatment of children, neglect is the most common one, which is reported to the child protective system of a given country and which, if severe, may endanger the physical survival of the child or delay medical treatment or intervention that is necessary for the welfare of the child. Neglect, like other forms of abuse, is more readily identified in the very young child. However, neglecting the emotional needs of a child, or exposing him or her to constant criticism, are phenomena which are often observed even in the older child and in adolescents. This can take multiple forms and manifestations and has various negative effects on the emotional life and even the physical status of a child, reasons enough for the patterns needing to be identified.

It is important to underline a phenomenon called multivictimization, that is, it is rare for a child to only suffer one form of maltreatment. Often, psychological maltreatment is seen together with other forms of maltreatment. It is also clear that the worst outcomes are observed in older children and adults who have experienced multiple forms of abuse.

A meta-analytic study of the global prevalence of maltreatment reveals that emotional abuse is more frequently reported by adults (30% of all cases), over physical abuse (18% of cases) or

sexual abuse (8–18%) as well as physical neglect (16%). It should be made clear that children in any psychosocial context can be subjected to emotional abuse and neglect, but the prevalence rates can be higher in some groups. For instance, LGBTQ (lesbian, gay, bisexual, transsexual, or questioning) minors are more often the victims of abuse, including sexual abuse, but probably to other forms of abuse due to social rejection, disapproval or lack of acceptance even by parents or other caregivers. Also, children who live in poverty or economic disadvantage, children who are engaged in actual work outside the home or have been displaced by wars or other crises, are at higher risk of abuse and neglect within and outside the family. There are presently very limited reliable and specific data from low-income countries (Kumari, 2020).

A study carried out with adolescents who exhibit psychopathology and who were patients at a public psychiatric service in Mexico City, reported that emotional maltreatment was the most frequently encountered form of maltreatment, with a frequency of 77% of the sample (Ulloa-Flores & Navarro-Machuca, 2011).

There is also a report on an evaluation of adolescents in Cuba, among the open population, in this 75% of youngsters experienced psychological maltreatment (Fernandez-Couce et al., 2006).

Emotional maltreatment and neglect are a serious worldwide problem, and their prevalence is estimated at 20% of all children or more. The key determinants are family structure, psychological or mental disturbance in the child, psychopathology in the caregiver and economic disadvantage. The most frequent outcome, in behavioral terms, is poor modulation of aggression toward the self (p. 607) and toward others in adult age (Joshi et al., 2016).

Victims of abuse and neglect during childhood often have trouble to process and modulate their emotional reactions to life events. Often, there is an incapacity to regulate their degree of physiological arousal in the face of life events, in the context of affect-laden experiences, and this can readily escalate to aggressive behavior (Maneta et al., 2012).

The underlying mechanisms for these associations have been studied in animal models (Liu et al., 1997).

Manifestations of Neglect, Antipathy and Emotional Abuse

One manifestation of neglect is for a caregiver not to satisfy the minimal needs of care of a child. In an infant, this would mean of food, maintaining the child clothed, in a minimal state of cleanliness, providing an opportunity for rest and for growth, physical and emotional. Another possibility is not protecting the minor from dangerous situations or not providing adequate monitoring.

In emotional neglect, the parent may feed the son or daughter, provide an opportunity for sleep and rest, keep the child minimally clean but otherwise ignore the child most of the time. This can be seen in severe forms of maternal or paternal depression, where the caregiver responds to the child's vies for food and hygiene, but there is little or no language exchange, playfulness or pleasurable interactions between the adult and the child.

Antipathy and emotional abuse are observed in the harsh statements of the caregiver toward the child or about the child. At times, a parent expresses strong dislike, disappointment or dissatisfaction with a particular child. This may refer to the physical characteristics of the youngster (for instance, being of the wrong gender, skin color, not liking their facial features, shape of the body, etc.) denoting disapproval and dislike. It can also refer to the performance or behavior of the minor, such as defining the child as a bad person, clumsy, inept, incompetent, evil, lazy, etc. The criticism may consist of constantly comparing negatively the child with "better children" (like a sibling) or equating the child to a hated caregiver or relative ("you are just like your criminal father" or "so selfish and stupid as your grandfather"). The pattern can be observed at times from the time of pregnancy or in infancy, but most frequently when the child has more "agency" and his or her actions and behavior do not satisfy the parent or caregiver.

In all ages, there can be a pattern of excessive expectations from the minor, such as demanding an unusual degree of self-control, or attributing malignant or evil intentions to a very young child, such as "he is doing it on purpose" when the child (1-year-old) had a toileting accident or tipped something over. In the older child, like a preschooler, there may be an expectation of "keeping the house clean" by doing excessive number of chores or constant denigration for the performance of these duties. In the school-age child or adolescent, constant criticism, excessive expectations for childcare (i.e., caring for siblings), or the minor becoming the cleaner of the house, or severely limiting opportunities for the adolescent to rest, go out of the house or socialize.

All these actions must be seen in a cultural context, as in some cultures it is expected that a parent would impose restrictions on a child of a certain gender, particularly girls, or age. Even a generation ago in many cities in the United States, it was common for parents to tell the children to go outside and play with other children in the street. In many cities, nowadays this might be risky. Often, if a 3- or 4-year-old is wondering the streets alone the parent could be deemed neglectful. A similar situation in a small rural community without traffic might be considered completely normative. There may be an informal monitoring of children by neighbors and relatives of a child, who may live nearby.

Manifestations of Antipathy and Neglect in the Caregiver-Child Relationship

The Infant

The child who is not fed is a prime example of this problem. The caregiver(s) may be too distracted, involved in other situations, using drugs or alcohol and be unavailable to meet the needs of the child. The pediatrician encountering an infant who is not gaining weight is faced with the puzzle of ascertaining what is happening. On the other hand, an infant who experiences failure to thrive may have excellent parents, and not gain

weight due to feeding difficulties that have not been identified or treated properly (Maldonado-Duran et al., 2008).

However, the clinician should keep in mind the possibility of “forgetting to feed” the infant or deliberately restraining access to food for other reasons, for instance, the fear that the infant would be “fat,” among many other possibilities.

In the issue of neglect as a cause of failure to thrive, the actual financial situation of the family should be considered. Another indicator is the parent–infant interaction as it is observed during an office visit: if the baby is clean and looks cared for, or there are other manifestations of neglect, such as dirty clothes, severe diaper rash, no emotional investment in the baby. At times, parents speak disparagingly of even a small infant, as a burden, very demanding, manipulative or as a malicious child who does not let the caregiver sleep or does not give them respite. The clinician should pay attention to what the parents say spontaneously about the baby, the actions of caring when the baby vies for attention, cries or moves around and, finally, the emotional warmth and involvement that the parent may or may not display vis-a-vis the infant. The parent may be more preoccupied with her or his own situation and speak more about their problems. Maternal postpartum depression affects around 15–20% of mothers, and when the mother is depressed the father of the infant is also more likely to be depressed (Musser et al., 2013). If the depression is severe, this may be the cause of neglect. The caregiver may also be irritable and not appear to relate warmly to the baby. The pediatrician or general physician should be prepared to detect depression in the caregivers and attempt to engage them in seeking treatment or alerting them to the problem.

The toddler who seems sad, without exploring the environment, “acts depressed” or is highly inhibited may be another manifestation of a sort of “lifelessness” in the infant due to neglect. Normal toddlers should appear eager to explore the environment, at least in the presence of the mother or father or other primary caregiver. The parent may come to the pediatric appointment without any toys to entertain the child, without

diapers and without any food in case the child might be hungry. Also, the behavior in the waiting room may be another indicator. The parent may be self-absorbed, withdrawn or distracted, perhaps watching television, his or her smart telephone most of the time, and not monitoring the movements of the toddler. The parent may be hyper-focused on his own activities and “lose track” of the child’s activities. If the toddler gets into a problematic situation, or is about to fall from a chair, the parent may not get up from his/her position to assist, but issue commands from a distance, such as: “stop,” “get down,” “don’t” and expect that the very young child will have the common sense, judgment or impulse control to appreciate a potentially dangerous situation. If the child needs something or is distressed he or she does not ask for help from the caregivers, stays crying on site or goes to a stranger for comfort.

The Older Child

The preschool and school-age child may appear unkempt, come to the appointment still in pajamas and at times without shoes (when it is not the custom in their culture). The child may appear dirty and rather disinhibited. He or she may intrude into other people’s space, ask for things and be excessively sociable or may seem sad and tormented. The child may not know how to interact with other children or becomes easily aggressive. If hurt, he or she does not go to the caregiver for comfort. The youngster may immediately ask the doctor for a toy he observes in the office. The caregiver knows very few details about what is happening with the son or daughter, and speaks in very vague terms. In the case of pediatric symptoms, there is only general complains of “pain in the stomach” but with little detail (duration, features, what has been tried to help the pain) as the caregiver does not know. If the concern is about emotional or behavioral problems, the caregiver speaks in very general terms “he is defiant” or “she is non-compliant” at times pointing to the child with an accusatory finger. The caregiver may speak in very hostile terms about the child: “this one is a menace.”

The father of an 8-year-old girl who was seen by one of us due to sleep difficulties and problems focusing was asked by the clinician to describe his daughter's personality. In front of her, he said "she is a little bitch" in a very negative tone. The child felt extremely embarrassed and put her head down, without daring to say anything, nor her mother. Both were obviously afraid of this man.

The caregiver may be very insensitive about how the child feels or this consideration does not even enter his or her mind.

An 8-year-old boy with long blonde hair, started to cry when asked how he liked to go to school. He said that he did not like to be in school because other children made fun of him and called him "girl" as his hair was very long, reaching down beyond the shoulders. He said he would wish to have it "cut like a boy." His mother immediately interrupted, saying that she "liked it that way" and this is how it was going to stay. The boy just stopped crying as soon as he heard his mother speak, perhaps for fear of annoying her more.

The caregiver may know little about the food preferences or tastes of the child, and when there are complaints at school, the adult has not tried to find out any details, but assumes the worst in her son or daughter, i.e., it must be the child's fault.

Often, without thinking about the possible reactions of the child, the caregiver describes the son or daughter in very negative terms and attacking their personality: "he is very lazy... she is mean... he is always bad," or "I would like to throw her out the window," in a rather insensitive "joke." The caregiver may speak about very delicate subjects without taking into account how the child might react, for instance discussing major marital problems, infidelities, or sexual difficulties between the parents, as well as embarrassing details about the child's behavior in very direct terms: "he is lazy, he always pees on the bed at night."

The general notion is that there is little awareness of the child as a person with a mind and with feelings, which may be different from those of the caregiver.

The preschool or school-age child may describe him or herself as "being bad," lazy, not

good at anything or is utterly afraid to say what he or she thinks, particularly to reveal any negative perceptions of the parents. The youngster, when asked a question, may look repeatedly in the direction of the adult, as if afraid of being censured or expecting permission to say something. The child may be very inhibited to choose a toy or to play with toys in the office, waiting concretely for the authorization of the caregiver. The adult may speak to the child in harsh tones, and threatening what will happen when they get home.

Adolescents, as they are more competent and cognitively advanced, are often thought by clinicians to be somewhat protected from the negative effects of emotional abuse and neglect. This is not the case. Antipathy and emotional maltreatment can be manifested in undermining the adolescent's self-esteem, body image or attempts to become an individual, all difficult developmental tasks. The scenario in which a mother or father may be very disappointed with the fact that their daughter is overweight, or does not look as beautiful as they expected is well known, sometimes making this obvious by verbal comments about the way the child looks and their disappointment with that. Even more subtle comments like "are you going to wear that?" implying disapproval may be quite damaging to the adolescent's self-confidence and esteem. Comments from the father regarding her daughter's overweight can be devastating, as the way she dresses, even though it is very similar to how other young people dress.

A 17 year old (Anthony) seen at our clinic was quite depressed and felt inadequate and "stupid." He is very tall and corpulent, but not really overweight. He feels that his father dislikes him strongly or hates him. The father never goes to the high school theater plays in which Anthony participates even though he has a central role. He does not go either to any of his son's musical shows. The father disapproves that Anthony is a member of some clubs at school (like Spanish club or drama club) instead of participating in the school's American football team. Anthony is very tall and strong but prefers to sing and act than to play football. His father does not understand this, Anthony cries when he mentions that he feels worthless and is a disappointment and an embarrassment to his father, The clinician suggested to invite Anthony's father to join in a future session, to get the father's

point of view, hoping to help the father to mention what he likes about Anthony and convey his love for his son. During that second interview, the father confirmed his intense disappointment and anger that Anthony does not play football. He asked the clinician if he did not think a boy with Anthony's body and size "should" play football. The father was very short and rather slender, and said he never could have made it to a football team when he was an adolescent, but his son could easily do that. The father was insistent in his disappointment in his son's preferences, which he considered effeminate and "gay." The father was impermeable to questions about how he thought his son felt when he voiced these opinions. He simply insisted that Anthony should "wake up" and realize the waste of time his activities were and turn all his efforts to sports.

In this situation, the clinician had to validate Anthony's perceptions of his father and attempt to help the teenager realize that his father's views were not due to shortcomings on Anthony's part, but to the father's own unfulfilled dreams of being "tall and strong" and admired by everyone for playing football. Anthony would need to content himself with the love of his mother and other family members, including some male ones, who admired his talents and validated his pursuits, including the therapist. Eventually, Anthony was less depressed and was able to see his father's difficulty with accepting his son "the way he is" and not to feel he "should have fulfilled his father's dreams" instead of pursuing his own interests. His depression improved remarkably then.

At times, a female adolescent is strongly criticized by her mother or father for "being lazy" and not helping more around the house, expecting her to be a sort of a substitute parent vis a vis her younger siblings. Excessive expectations for domestic labors are a form of maltreatment. The same with the withdrawal of "privileges" such as any opportunity to have fun, to listen of music, be with friends, have time to rest, etc. Parents at times severely restrict the ability of the adolescent to engage with peers, not allowing any to come to the house or not permitting their child to spend any time in friends' homes even when this is culturally normative in their community. The child may feel trapped and constrained. Some children start then contemplating to "run away," or may quickly fall in love with a boy or girl,

hoping to move in this partner's family and "escaping their prison" in this way.

Family Factors in Emotional Abuse

Emotional abuse may occur in a wide spectrum of different families, but it is seen more frequently in those families with multiple problems which lead to stress in the adults and children, such as family conflict, domestic violence, emotional disturbance in the parents and drug or alcohol abuse.

Mere threats or actual attacks from one parent to another almost always adversely affect the child when if he or she is not the direct victim. These negative effects will be made worse when the child already has some emotional difficulty which puts him or her at greater risk (such as difficult behavior, impulsiveness, forgetfulness, etc.)

In a study conducted with families in which a child exhibit attention-deficit problems and hyperactivity, their association with domestic conflict (and specifically aggressions from the father toward the mother) was investigated. The result was the association of more symptoms of emotional difficulties in the child in addition to the attention deficit. Indeed, the younger the child was when witnessing that domestic violence, there were more additional symptoms. Incidentally, this study also found that the younger the mother was, she experienced more violence. Also, the younger the father, he exhibited more violence. Parents with a lower educational level tended to exhibit more aggression. If the father was unemployed or had limited work, this was associated with more violence. The conclusion was that when a child who exhibits attention-deficit disorder is exposed to domestic violence, the problems are compounded by further psychiatric difficulties in the child, detected with Conner's questionnaire (Reyes, 2005).

When there is marital conflict between a couple, it is common for a child to be "triangulated" (i.e., involved in the conflict) and that he or she will become an ally of one of the parents against the other. This further affects his or her emotional

adjustment. At the very least, it is commonly seen that the children are confused and cannot process their anxieties, fear or anger as any activity on their part can lead to another confrontation between parents.

When there are frequent fights and hostility between the parents of a child, there is an increased risk of emotional difficulties in the child. The worst combination may be marital discord associated with rejection toward the son or daughter; however, both situations can lead to behavioral alterations in the children.

Rutter has underlined the importance of several factors: First, children can be damaged by the open hostility in their home, as well as the lack of warmth and positive interactions. Second, the effect on a child is worse if he or she is involved in the disputes between the parents, for instance, when the conflict is due to custody and visitation between the parents. When the parents fight, the child can have conflicted loyalties which cause intense anxiety and stress. Third, there is a worse effect if the marital discord continues for years. Fourth, the negative effects of all this are not necessarily irreversible, as the damage can be attenuated if there is a positive change in the postdivorce dynamics. Fifth, if the child is already at risk due to the marital discord, there is additional peril if there is a severe personality disorder in one of the parents or in both. Sixth, a good and supportive relationship with at least one of the parents can compensate considerably the negative effects of a negative relationship with the other parent. Among the possible protective factors in this situation is a positive relationship with someone outside the family with whom the child can maintain an enduring relationship and whom he or she can trust. There is also a protective effect when the youngster has a positive/supportive relationship with someone outside the family who can be trusted (Rutter, 1975).

The Psychological and Somatic Effects of Neglect and Antipathy/Emotional Abuse on Children and Adolescents

Various forms of maltreatment tend to be associated with different consequences. However, there is a growing consensus that emotional maltreatment, which is often accompanied by other forms of abuse, is at the basis of a negative outcome in the child's development. Emotional maltreatment often occurs in addition to physical abuse and many of the negative effects of the latter are psychological in nature (Brassard, 1987). Emotional abuse is inherent to any form of abuse by parents (Jones, 2008).

There is evidence that some psychopathological conditions are rooted in early abnormal experiences, such as emotional abuse and neglect (Bowlby, 1982).

The internal representation of an attachment figure (or figures) depends on the availability and responsiveness of the caregiver. As time goes by, the infant develops certain expectations regarding future interactions, based on previous experiences and interactions with the primary caregiver. An infant becomes securely attached to a mother who is sensitive to his or her needs. Insensitive or nonresponsive child-rearing leads to an insecure attachment. The different forms of insecure attachment have been named anxious/avoidant, anxious/ambivalent and disorganized.

It is known that children who suffer maltreatment of any kind, when they become adults experience poorer physical and mental health, this is not primarily dependent on geographical or sociocultural factors. Many adults who underwent emotional abuse during childhood experience feelings of hopelessness, poor self-esteem, and less psychosocial support. They also show poor satisfaction with their life and neurobiological alterations in the systems of response to

stress. There are structural and functional changes in the brain, as well as a higher risk of developing psychiatric conditions.

A meta-analytic study investigated the association between early stressful circumstances and the risk of experiencing depression during childhood and adolescence. Eight specific forms of early stressful circumstances were included as to their association with major depressive disorder later on during childhood. Emotional abuse had a stronger association with major depressive disorder than “early life stress” defined widely (LeMoult et al., 2019).

Disruptive Behavior

In a somewhat contradictory way, we encounter that sometimes the child, seeking empathy, containment, company and affection may realize this is impossible in the “normal course of events.” Normally the mother or father would respond to the young child who says “look at me” while he jumps, or shows off his ability to dance or to draw. When this attention is not forthcoming, the boy or girl may resort to other strategies to elicit some response from parents. Of course, some children just “give up” and realize they are not important or do not expect to be taken into account. However, other children exhibit disruptive, loud and aggressive behavior to engage one or the other parent in interactions.

A 4 year old boy seen by us, Jose, was brought for treatment because his mother complained that Jose yelled loudly and threw temper tantrums. This happened when she said “no” to him. The boy would be aggressive toward the pets in the house, break things, disobey rules on purpose (like by jumping on the couch) and at times he got hurt because he would bump into things or fall down. As we interacted with Jose, he was very bold: he said he was a bad boy, he laughed about this and he insulted the clinicians saying “you are stupid, you are a bitch” etc. His mother was embarrassed and wanted help. In the second session, she revealed that perhaps her son was “like this” because she had not interacted with him hardly in the first two years of his life. She mentioned that she became very depressed after Jose’s birth and would just cry or feel exhausted and just go to sleep. Her husband would go to work and leave

her at home with the baby for long hours. The child would just “play next to the bed” with his toys while she tried to sleep. She revealed that she would spend hours in dissociative episodes in which she did not realize what had happened and were like lacunae in the continuity of her mental life. She wanted help for her multiple memories of trauma during childhood, including physical and sexual abuse by adult acquaintances of her parents, and neglect by them. As she became more animated and less depressed, the child’s disruptive behavior abated. It seemed that this was the only way to elicit reactions and responses from his mother, to break something or create a disruption.

Of all child-rearing factors, poor supervision by parents is the strongest predictor of delinquency. This may co-occur with harsh discipline at other times, and an attitude of rejection toward the child (Goodman & Scott, 2005).

Depression and Invisibility

Andre Green (Green, 1993. Levine & Migliozi, 2018) suggested the term “white depression” or “holes in the psyche” for a psychic phenomenon that he described as an “identification [of the child] with a dead mother.” Dead mother in this context refers not to the actual death of the mother, but to a mother that is “psychologically dead,” i.e., unresponsive, disengaged, self-absorbed, or emotionally and interpersonally unavailable, starting often during infancy. The child may identify with this mother, splitting his sense of self into an interactive persona coexisting with a “dead self” in which there is literally a “hole,” as it were, in which there is no “live image” in the self, the person may feel inactive, unimportant, unseen or nonexistent.

A young man who was seen by us as a part of family evaluation, was the father of three small children. He would drink beer in excess in order to assuage a sense of anguish and traumatic memories. He sometimes would become physically violent with his wife, the mother of the children, who would criticize him for drinking and being irresponsible. He agreed to a mental health evaluation and described in the course of several interviews how he felt “invisible” in his family as a small child. He felt that his parents did not care if he came in or out of the house and did not worry about his whereabouts. If he needed to eat, he had

to find something himself in the refrigerator or go to neighbor's houses hoping to be given some food. This was due to the fact that his mother was quite depressed and his father was an alcoholic and often intoxicated. The young man, the father of the children, had a deep feeling of being unwanted, disliked and that his parents wished he would disappear literally. These feelings were what he hoped to alleviate by drinking. It was very hard for him to resonate emotionally with his children or his wife, as he needed so much emotional nurturance himself.

The “dead mother” phenomenon is characterized by a feeling of futility and inner emptiness, in which nothing one might receive from the world is ever enough to feel a void. It could occur because of the mother’s own bereavement or depression, being unable to instill a “vitality” in her child, energize him or her and help the infant feel seen, heard, important. Eventually, a part of the self of the child identifies with his “dead” mother.

Emotional “Freezing”

In other instances, there appears to be more of a “freezing of the body and the mind” in the child of a mother or father (or both) who interact very little with the young child. There seems to be a sort of mirroring of the body of the caregiver, who may express very little emotion, move little and seem unresponsive and unemotional, or withdrawn. The child may “give up” in trying to interact and just learn to be in the world in a sort of “suspended animation” state.

In a well-known set of studies, Tiffany Field (1988) and colleagues (Hernandez-Reif et al., 2006) demonstrated that infants of depressed mothers could be readily identified by students observing videotapes of infants interacting with others at four months of age. They could distinguish, having been “blinded” to the background of each child, which infants had a depressed mother from those who had a normally responsive mother. Those whose mothers were depressed appeared more sad, had less vitality and interacted less with others. This state of affairs could be maintained throughout early childhood. One would observe a preschool or

school-age child who speaks very little, who scarcely moves and has “little to say” about any topic. These children appear “slowed down” and often the mother or father is similarly quite depressed and withdrawn.

A six year old treated by us seemed precisely a very “lifeless child” who interacted little with others, including his parents and seemed like an “island on to himself.” He was not motivated to learn at school and was almost motionless. When we interviewed him for the first time, he sat next to his mother. They both behaved like a “sphinx” in the sense that they spoke very quietly, moved very little, showed hardly any emotionality and could not be “activated.” The child did not interact at all with toys. He was invited to explore the toys in the office and declined. He preferred to sit there, looking ahead with a somewhat empty expression and answered any questions with monosyllables. His mother was very similar in her own inexpressiveness and scarcity of discourse and emotion. Later on, the mother revealed that she felt very guilty and as a “bad mother” because she had been depressed for years. She spoke of abandonment by her own mother and being raised by aunts who really did not want her. She learned to “go underground” and not create any disruption or reaction from others in order to be spared from the constant criticism and harsh discipline from them. She muted her emotions to a high degree and her son exhibited a very similar behavior.

Mirroring of the Caregiver

Some children, when they are constantly criticized, treated harshly or with constant antipathy become identified with the aggressor, so to speak, and become “just like the parent.” This may be through a process of “incorporation of the other” or a deliberate attempt to retaliate against the caregiver by treating the parent in the same way. The parent may insist that the child do not use “bad words” in the house, to be nice, to not “talk back” or not to act aggressive when precisely this is the way in which the parent treats the child. For instance, a caregiver might complain that his or her child is defiant, aggressive, disobedient and challenges the parent or “talks back.” In observing the parent–child interaction, the clinician may notice precisely this pattern of relating in the caregiver, who unwittingly is “teaching the child how to be” (with the body, i.e., actions and

words): While ostensibly saying “talk nice” the caregiver talks in a harsh and aggressive way to the child most of the time. The boy or girl responds exactly in the same way. The parent may redouble efforts to re-shape the child by means of punishments, more criticisms, restrictions, withdrawal of love or “privileges,” creating more resentment in the child and leading to a vicious cycle.

Resentment and Self-Loathing

Another negative consequence of emotional abuse or neglect is that the child ends up “believing” what the caregiver has been saying for years. This means believing that one is incompetent, evil, stupid, has bad intentions, is manipulative and in general unlovable. This may lead to “attacks on the self” later in the school age or adolescence and early adulthood. The child may perceive him or herself as defective, unlovable and have a negative outlook on his or her future. There is a deep sense of being bad, causing problems and “never amounting to anything.” This may lead to self-injurious behaviors or to always seeking momentaneous love or reprieve from the attacks on the self through the use of drugs, alcohol or ever-changing intimate relationships. The person has the illusion of closeness at least temporarily, until the self-destructive behaviors damage those intimate relationships.

Emotional and sexual abuse has the strongest link with nonsuicidal self-injury (cutting oneself, burning the skin, causing pain and bleeding in oneself). The emotional abuse can lead to a cognitive style of self-criticism, self-damage with an underlying depressive style and symptoms (Glassman et al., 2007).

Determining Factors for Neglect and Antipathy in the Caregiver–Child Interaction

Although it is tempting to immediately get angry at the caregiver who neglects a young child or is extremely harsh with a child of any age, emotion-

ally or verbally, it is also important to explore the factors that sustain this pattern, what they mean and how the child responds to these actions in the caregiver.

Parenting is now understood not only to involve what parents do with their children and how they do it, but also to be affected by the quality of the parents’ relationships more generally, by their psychological functioning, by their previous parenting experiences both with other children and with a particular child, and by the social context in which they are trying to parent (Quinton & Rutter, 1988).

In order to study and address the parent–child interactions, and the negative or abusive attitudes or action of parents, it is useful to explore if the negative interactions are related to a poor adaptation to the temperamental features of the child, and poor “goodness of fit” according to the concept of Thomas and Chess. Given that each child has an individual style of behavior and response to stimuli, demands and expectations, there may be frustration and even abusive attitudes of the caregivers do not respect the temperamental style of the child. Of the three temperamental constellations proposed by Chess and Thomas, children with a “difficult” temperament (who are prone to have difficulty adapting to changes and react negatively) are the ones who most often cause stress, antipathy and even abuse by their parents, all leading to symptoms of emotional disturbance in the child. This is in contrast with what happens with “easy” babies who are more adaptable to the expectations and social interactions, with little or no stress reactions, and present little problem for the parents in terms of rearing. Children considered “slow to warm up” or shy tend to have less difficult behavior or the negative response is minimal, and they elicit less rejection or negative attitudes from parents. An adequate “goodness of fit” is observed when the environmental features and expectations are adequate for the capacity of the child, his or her style of responding and behave. If there is a strong dissonance in this respect, there may be more attitudes of rejection by caregivers (Stein et al., 2008).

There is no single risk factor which predisposes a caregiver to mistreat the child, but a wide

range of influences that make it more likely. These could be characterized in four groups. (1) Poor ability for child rearing. (2) Stressful circumstances. (3) Child features. (4) Poor involvement or attachment from the parent toward the child.

Emotional abuse can occur in any family but it is more frequent when there are many problems which generate stress, such as conflicts between the family members, domestic violence, emotional disorder in a parent and drug or alcohol abuse.

Children whose parents are struggling with repeated separations or conflicted divorce, who are the product of an undesired pregnancy, whose parents are very inexperienced or who have an authoritarian child rearing style are at risk. So children and adolescents who exhibit substance abuse, mistreat animals and who are isolated socially or struggle with an emotional disturbance are also at higher risk of being maltreated (Kairys, S.W., Johnson, C. F. (2002).

The long-term effects of psychological abuse often are disturbances in attachment, developmental and occupational problems, difficulties in socialization, disruptive behavior and a psychopathological condition. This can be observed even if the sole form of abuse is emotional, having also an impact on the child's self-esteem, and is associated with depression, delinquency, aggression and interpersonal problems in general.

As Rutter and Quinton (1984) underlined, the negative effects on the child are not necessarily linked to a diagnosis of a disturbance in the parent, but more to the behaviors, such as family discord and hostility, which are the main mediating factors between parental factors and emotional disturbance in the child. What matters the most is the general functioning of the caregivers and their behavior. Other studies also have shown that a specific disorder or diagnosis in the parent is not so important in the child's outcome, but the most important issue is the quality of rearing the child receives (Golombok, 2000).

Social and Cultural Factors in Antipathy and Neglect

It is doubtless necessary to conduct much research in order to understand the variations in what is considered as an acceptable discipline in different cultures. The same can be said regarding studies as to what is considered neglect. There is an association with high levels of stress, very little educational opportunity and marked poverty. It is important to distinguish what should be considered neglect from what is only the result of poverty, for instance, little access to food or to medicines if a child is ill, as well as regular medical surveillance of children. Only if such studies were carried out could it be determined more accurately what is considered neglect and maltreatment and also design adequate responses to those problems. For instance, in many countries in rural areas, children are free to roam the streets, even when they are of preschool age, as there are relatives around and acquaintances and neighbors who provide informal surveillance of the children and would protect them if need be. Also, they would advise the parents if there were a problem. This would be quite a different proposition in a large urban area, with high crime rates, and with high levels of gun violence, as in many large cities in the United States where the mere presence of unsupervised preschool-age children in the street can be considered neglect. Something similar can be said about the question of access to food, milk, etc. in some countries there is literally very little food to go around for the family and once the infant is weaned from maternal milk, there is a higher likely of malnutrition, which is rampant in countries like Guatemala, Mexico, El Salvador, Haiti and many other countries in the world (Organizacion Panamericana de la Salud, 2003).

Evaluation of Emotional Abuse

Some simple criteria have been proposed to conduct a clinical evaluation as to the severity of emotional maltreatment: the intention of the

caregiver and the degree of damage caused (Hammarman & Bernet, 2000).

An act of maltreatment that is carried out without the intention to damage the child, or is not likely to cause that damage should be considered as mild. If the treatment of the child has the intention to cause harm and is highly likely to cause damage, it should be considered severe. A case in the middle, where the intention is hard to ascertain or where there is no major damaging effect could be classified as moderate. Even though the majority of instances of maltreatment are carried out without intent to damage the child, any maltreatment can cause some degree of damage and should be carefully evaluated. Certainly, qualifying an act as intentional can be a difficult thing. Psychiatrists and other mental health professionals can conduct such assessments, but they can also be explored by the pediatrician evaluating a child, his or her caregivers and the family's dynamics. Some cases of emotional maltreatment may require only psychoeducational interventions or providing guidance to parents, while the most severe cases may require multiple levels of approaches, from the legal one, pediatric input, specialist evaluations, as well as detailed assessment of the emotional status of a child his or her caregivers and of their interactions.

In determining family interactions, it is important to keep in mind certain factors: (1) what the parent says about the child. (2) what the parent "does" in interacting with the child, (3) the first-hand observation of the degree of warmth, psychological involvement, and affection between caregiver and child. (4) the account of the child and evaluation of the severity, chronicity, and emotional impact on the minor of the ongoing behavior and statements from the caregivers or parents. All of these factors have to be seen as a group and whether there is a pattern, rather than just one isolated event. For instance, some parents may say very negative things about their children, but behave warmly, care for and exhibit tenderness and caring behaviors toward their child. These tend to negate the presence of a "relationship disturbance" between caregiver and child, even though the relationship leaves much

to be desired. The same can be said of the "absence of psychological involvement". A caregiver may speak very eloquently about loving their child, "being a great mother or father" but the evidence does not support these statements. The clinician does not see sensibility in the caregiver, the latter does not provide comfort to the child when hurt or scolds the child not to cry and "act hurt," or the caregiver ignores their son or daughter attributing all the behaviors attempting to elicit caregiving as "manipulations" or "faking" or "wanting attention." This is particularly true with the young child. Parents with the greatest difficulties in caregiving tend to attribute readily quite malignant intentions even to very young children, such as a newborn of a very small infant.

The mother of a very young baby, only 10 days old, was being evaluated for the possibility of depression, she was a single mother. When the baby started to cry, the clinician asked the mother why she thought the baby might be crying. The mother immediately answered "because she is mean." She was quite convinced her little daughter did not like her and tried to give her a hard time in caring for her.

We describe other possible factors that can be readily used to determine the degree of emotional maltreatment or neglect. The clinician may attempt to elucidate if there is a negative impact on the child, in terms of symptoms of emotional or behavioral disturbance. Then one may need to establish the intentionality of parental behaviors and attitudes. The decision to qualify a certain behavior as abusive can be difficult. For instance, certain actions carried out by a caregiver could hurt emotionally a very sensitive child, but not another one with a different temperament, sensitivity or greater resilience. One could even theorize that certain parental behaviors might "steal" the child for the future, i.e., they could help them cope with some degree of stress in the future.

For instance, denying a son or daughter permission to attend a party with friends, or to use videogames at certain times, may be consequences that are part of a disciplinary repertoire without being considered abusive.

In cases of mild emotional maltreatment, there is a degree of harshness in the caregiver, without the intention to cause immediate emotional damage. The caregiver might benefit from acquiring other strategies to deal with the same difficult behavior in the child. After all, the mother or father of a child should be the first persons interested in the wellbeing of their child. In some cases, psychosocial orientation or psychotherapy for the parents can be effective.

Raulito, who is almost three years old is the only child or a couple of young architects who had planned and were eager to have their child. At times, their son does not obey them and resists eating. This is sometimes seen in children at this age, who are attempting to assert themselves, and exhibit some negativistic behavior. His parents are rather perfectionistic and not very flexible, they try to correct their son making "suffer a little" but without the intention to hurt him. At times, they put him in closet and they threaten to make him stay there if he does not eat. They do not really intend to follow through in this threat. The child shows symptoms of anxiety. These symptoms disappeared when the parents stopped threatening to lock him there after the first session of psychological guidance, in which the normal child development was discussed and more adequate or age appropriate techniques for a small child were discussed.

Moderate emotional maltreatment

Maria is 8 months old, she has not gained weight in the last three months, although she had no medical condition that could explain this, she was hospitalized for medical evaluation. She is the only child of a teenage single mother, who has hardly any social supports. When the interaction with the baby was observed while in the hospital, the staff could notice that the young mother was exasperated and she had little patience to help the baby to get enough food while sucking milk from a bottle, which the child did very slowly in the first place. The nurse taught the mother some strategies for feeding and stimulation of the child, with which the child started gaining weight. In this case, there was little empathy toward the baby's difficulty feeding and unintentional neglect, but there was a clear negative impact on the child

Severe emotional abuse.

Noe is a seven-year-old boy who has difficulties with attention deficit and hyperactivity, as well as

some interpersonal difficulties. His parents have a very conflicted marital relationship, from time to time with physical violence. The child takes sides with his mother when the father is attacking his wife. Noe also rejects his father, who tries to get emotionally close to his son and to earn his love without achieving it. There is an antipathy from the father to the child. Noe's mother at times goes on trips due to her work, and the father is in charge of Noe by himself, but the child does not obey his father. The father gets angry and to punish the child tells him: "you'd better behave well with him, your mother abandoned us and she will never come back". This causes great anguish to Noe and he increases his interpersonal and aggression difficulties at school. In this case, we observe a negative intention by the father to hurt the child emotionally, which he achieves assiduously.

In this situation, the intervention of a child psychiatrist and a family therapist, which can be the same clinician, is required. It can be necessary to report the case to a child protection agency if the emotional abuse persists despite the psychotherapeutic interventions.

Psychosocial Interventions and Treatment Strategies

In our description of interventions for these problems, we emphasize psychosocial interventions of a cooperative nature, rather than the coercion of parents to seek help when they do not see the need for it. Often in the case of emotional abuse and constant criticism, it is harder for child protective services to "order" parents to engage in treatment, as there are less often physical manifestations of the maltreatment, such as bruises or scars. There is psychological treatment for specific forms of maltreatment, despite the fact that "pure forms" of maltreatment are the exception rather than the rule (Cohen et al., 2006).

There are few studies which evaluate the efficacy of treatments particularly when it comes to neglect or emotional abuse. There are models like group psychotherapy and multisystemic psychotherapy with questionable results due to methodological issues in the studies.

Interventions with the Family

First one must assess features in the parental behavior and attitudes which may have a negative influence on the development of the child. If the child's problems or symptoms occur in response to such behaviors and attitudes, modifying these issues may be quite useful and enough. More severe cases often require a more complex intervention.

By their very nature, emotional abuse and neglect represent a relational category, i.e., the result of at least two individuals, one who is in charge of the other, providing care, safety emotional nurturance, and the other one receiving this and trying to elicit it, i.e., signaling the caregiver his or her needs. When this is not happening or has not happened to a "good enough" degree, the clinician may try to assist the child and the caregiver(s) to change these transactions. One strategy is to help the caregiver to "read" the child in a different way, e.g., disruptive behavior, being isolated, depressed, etc. as a result of the neglect or the constant criticism, emotional abuse, etc. This strategy is "speaking for the child." In this case, the clinician serves as a bridge (or "translator") between the child and the caregiver. This may help to perceive the behavior of the child from a different perspective. Instead of just aggression, the caregiver may realize this is the attempt of the child to elicit interaction. Instead of being "depressed for no reason" (or solely because of some metabolic imbalance), the caregiver may realize that the child may feel rejected, disliked, unwanted and does not any longer expect to be nurtured emotionally, understood, contained or assisted in his or her problems.

This is a difficult task, particularly in severe cases in which there is intense antipathy toward the child and negative "projections" of the "ghosts from the past" of the caregiver toward the child:

A very intelligent woman, the mother is a 5 year old girl, together with her husband asked to get help to deal with her daughter who was very boisterous, dominant and wanted to control all interactions. At times, the girl when frustrated would yell

and become very angry, saying negative things in public to her mother, such as "I don't like you," "you are a bad mommy," etc. These behaviors not only embarrassed the mother intensely, but also made her very angry. When we were able to explore with her alone what she felt vis a vis her daughter, she started to talk of how the daughter reminded her of her father. She started to cry reminiscing how her father was constantly yelling at her and scaring her. As a child she could never know if her father on any given day would be happy or angry at the slightest transgression. She grew up always in fear of making him angry, and then enduring his intense yelling when she dropped something or broke an object even accidentally. When during the therapy sessions she was able to realize this, she understood why the yelling of her daughter produced such an intense rage reaction in her. The girl almost elicited these negative reactions in her mother and appeared satisfied when the mother finally would lose her patience. Through several sessions of psychotherapy, the mother was able to "read" her daughter differently and be able to maintain her composure and set limits to her daughter without so much rage. This helped her relationship with the girl, who could feel more "contained" by her mother.

Unfortunately, with more troubled parents, who have little insight, or have amnesia of their childhood (often due to traumatic experiences that have been repressed), the caregiver may be quite certain of the correctness of his or her expectations, of the malignant intentions attributed to the child and be convinced that his or her demands are quite reasonable. Sometimes parents feel that since they do not "beat the child" as they were beaten, the child should be thankful, even though there are often barrages of insults, negative comments or other angry expressions, they are not "hitting" literally.

The clinician may attempt a "psychoeducational" approach with caregivers who are quite intelligent, have some flexibility and openness, and willing to consider that they "do not know everything." For instance, the clinician may alert the parent to the fact that the way he or she grew up is not the norm, but quite a depriving or a traumatic past. The clinician may help the caregiver or parent understand the effects that maltreatment had on the mind of the parent as a child, and the remnants of that past in the here and now, and vis a vis their child.

Many parents are responsive to this approach, as after all, they love their children and wish to see them happy and thrive. It is important for the clinician to have a genuinely empathic attitude toward the caregiver, and understand that often, even when to one's eyes the parent is quite self-centered and insensitive, he or she are "doing their best" given the tools they acquired to grow up in their own family of origin as children. If the clinician is able to empathize with the efforts of the parent, but also convey at the same time the possible negative effects of their behavior on their child, many parents make conscious attempts to change or accept the offer of further treatment for themselves.

In the more "refractory" parents, who really do not trust people, who have been very damaged by their own parents, and have "closed themselves to feelings" a long time ago, trying to elicit empathy and sensitizing them to the emotional needs of the child may fall on "deaf ears" so to speak. This is not because the parent does not understand the information cognitively, but is unable to "feel" what one is attempting to convey. A defensive maneuver is to only focus on the behavior of the child "who should be different" and not being able to experience tenderness toward the situation of their child. These scenarios require a much more prolonged approach with an uncertain outcome. One strategy that has shown promise is home visitation with sensitive clinicians, who may listen to the parent's complaints and stressors for a long time. Providing practical help to parents, as suggested by Lieberman and others (Lieberman et al., 2005) may indeed be a "bridge" to connect with the parent in a "teleological way" this means a concrete, physical and observable help. For instance, the clinician may be instrumental in helping this caregiver to connect with a physician, to make an appointment, to communicate with the insurance company, or to obtain assistance to pay the rent, the water bill, etc. Bringing some concrete items to the house, such as a desert, cookies and other items may be perceived by the parent as helpful. It is hard for clinicians who have not suffered neglect/abuse to understand that the life experience of these caregivers is not that "talking about

feelings helps" or that one can rely on others. Their experience is more concrete, and people are nice or mean. Practical help may be a first step for the parent to contemplate the possibility that the clinician may not have malignant intentions or is going to betray the parent, but "might be interested in helping" them. This approach requires a careful balance between helping parents and "enabling dependency" as it is often feared in mental health agencies who may fear that the caregiver may come to "expect" this assistance all the time.

Discussion of the case of the family with colleagues or supervisors may be a helpful practice to find the right balance between empathy and those problems created by an excessive dependency. The hope of the therapist is to arrive at a "corrective attachment experience" in the mind of the mother or father of the child, so that they can then be more sensitive to their son or daughter. This is a difficult thing to achieve as the parent may have a "phobia of attachment" in the first place and fear or become scared when he or she feels supported and emotionally close to a treater, which may trigger alarm signs in their mind, of being dependent and having to flee the relationship.

Interventions with the Child

In some situations, and with older children (school age and older), the clinician may realize that parental attitudes and deep-seated negative beliefs in these parents are not going to be substantially modified. The child may have to be assisted to understand why his parents are so angry, critical, disappointed. They clinician may attempt to help the child to see it is "not his or her fault" that the parents get so angry at him or her, or say hurtful things. A school-age child or an adolescent can be assisted to understand why his or her parents are not more nurturing, sensitive or forgiving as the child sees in the parents of his friends or acquaintances. This does not supplement the "lack of affection" or the thirst for tenderness" in the child but can modify the perception that one should be bad as one's parents

are always angry or dislike the child. The minor can be helped to attempt to gain affection from other sources, relatives, friends or the parents of friends, a mentor, a teacher, etc. Obviously this is not truly a substitute for the love of a parent, but it can alleviate the negative effects on the self to realize that a parent “cannot give what he or she does not have.”

For a majority of people, the effects of early life experiences are the initial steps in an ongoing life path. Other psychosocial interactions and transactions can alter the course of that path. This path can take various courses, straight or winding, incremental or decremental, or fluctuating. Most psychotherapists believe that people can “change their course” and remedy or improve the effects of adverse experiences. The idea that one or several experiences which occurred in a specific timing could by themselves lead to specific long-term consequences should be substituted for a more complex, multidetermined, and continuous process (Clarke & Clarke, 1999).

The Child Protective Systems

Different countries have varied practices regarding the protection of children. Often these systems are somewhat overwhelmed and the emotional maltreatment of children is not a high priority. Neglect is a priority, but only in cases in which the parent is depriving the child of food, supervision, medical care (if the condition is life-threatening or dangerous) and if accompanied by other forms of maltreatment.

In some countries, the child protective system, although feared, can actually provide psychosocial support for parents who may require some assistance with immediate needs, drug and alcohol rehabilitation/treatment, or even mental health treatment. Unfortunately in other countries, like the United States, there appears to be a contentious relationship between the public and the child protective system, which is perceived as persecutory and punitive. Given the problems inherent in the child protective institutions, there are often inadequate services. These may consist

of an adversarial approach to parents, who feel criticized and judged. Also, there is a high staff turnover and the staff themselves have little supervision and support to perform their duties, leading to rapidly changing staff. A more rational child protective system would detect “Parents at risk” from very early on, i.e., since pregnancy or the perinatal period and offer actual assistance and support for parents. This may take the form of economical assistance, help with employment, child care, mental health services or psychotherapy, medication if needed, etc. There is a perception in some sectors of the public that this is “fostering dependency” or “interfering in parent child relationships” and that it is an intrusion or creates a burden on society. In reality, early intervention and actual help would be welcome by most parents who find themselves overwhelmed by the multiple stressors sometimes during pregnancy, due to marital discord or emotional problems, as well as unsurmountable stressors. These only multiply once the child arrives. The resources invested early on in intervention could save later on in preventing crime, violence, police interventions and in the legal system as a whole.

Effect on Clinicians

Burnout and Compassion Fatigue

An obstacle for the clinician to establish rapport with clients is their possible and understandable distaste when facing abusive or neglectful parents. Professionals dealing with cases of abuse or neglect can feel overwhelmed by feelings of anger or hostility toward the actions, or lack of action, by difficult parents. In cases when this occurs, it may be necessary to transfer the case to a colleague who can maintain objectivity. Nevertheless, frequently there are no additional colleagues, or the transfer can be seen as a manifestation of “weakness” or incompetence. It would be advisable then that the clinician attempt to discuss his or her feelings, and vent frustration with a colleague or a supervisor who are

supportive and understanding (Fontana & Schneider, 1978).

It is useful to highlight the advantage for a clinician who is a member of a clinical workgroup where there are professionals from other disciplines such as physicians, psychologists, social workers, nurses, etc.). A clinician can then discuss his or her feelings and have collaboration with other team members in the evaluation and management of difficult cases. In some cases, involving other agencies, private or nongovernmental ones, can assist in the satisfaction of the needs of the family in question in an interdisciplinary strategy.

References

- Bowlby, J. (1982). *Attachment and loss* (2nd ed.). Hogarth.
- Brossard, M. R., & Gelardo, M. S. (1987). Psychological maltreatment: The unifying construct in child abuse and neglect. *School Psychology Review, 16*(2), 127–136.
- Clarke, A., & Clarke, A. (1999). Early experience and the life path. In S. J. Ceci & W. M. Williams (Eds.), *The nature-nurture debate* (pp. 36–146). Blackwell.
- Cohen, J. A., Mannarino, A. P., Murray, L. K., & Igelman, R. (2006). Psychosocial intervention for maltreated and violence-exposed children. *Journal of Social Issues, 62*(4), 737–766.
- Fernandez-Couce, G., Alonso-Castillo, A., & Rodríguez-Iglesias, Z. (2006). Maltrato oculto en adolescentes. *Revista Cubana de Salud Pública* (internet review April 3, 2010). http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0864-3466200600030000371nh=es
- Field, T., Healy, B., Goldstein, S., Perry, S., Bendell, D., Schanberg, S., Zimmerman, E. A., & Kuhn, C. (1988). Infants of depressed mothers show “depressed” behavior even with nondepressed adults. *Child Development, 59*(6), 1569–1579.
- Fontana, V. J., & Schneider, C. (1978). Help for abusive parents. In L. E. Arnold (Ed.), *Helping parents help their children* (pp. 259–269). Brunner/Mazel.
- Glaser, D. (2002). Emotional abuse and neglect: a conceptual framework. *Child Abuse and Neglect, 26*(6–7, 697), –714.
- Glassman, L., Weierich, M., Hooley, J., et al. (2007). Child maltreatment, non-suicidal injury, and the mediating role of self-criticism. *Behavior Research Therapy, 45*(10), 2483–2490.
- Golombok, S. (2000). *Parenting. What really counts?* Routledge.
- Green, A. (1993). The dead mother. *Psyche, 47*(3), 205–240.
- Hammarman, S., & Bernet, W. (2000). Evaluating and reporting emotional abuse in children: Parent-based, action-focus aids in clinical decision making. *Journal of the American Academy of Child and Adolescent Psychiatry, 39*(8), 928–930.
- Hernandez-Reif, M., Field, T., Diego, M., Vera, Y., & Pickens, J. (2006). Happy faces are habituated more slowly by infants of depressed mothers. *Infant Behavior and Development, 29*(1), 131–135.
- Hibbard, R., Barlow, J., MacMillan, H., & The Committee on Child Abuse and Neglect and the American Academy of Child and Adolescent Psychiatry. (2012). *Pediatrics, 130*(2), 372–378.
- Jones, D.P.H. Child maltreatment. (2008). In M. Rutter, D. Bishop, D. Pine, S. Scott, J. Stevenson, E. Taylor, & A. Thapar (Eds.), *Rutter’s child and adolescent psychiatry* (5th ed., pp. 421–439). Blackwell.
- Joshi, P. T., Cullins, L. M., & Southammakosane, C. A. (2016). Child abuse and neglect. In M. K. Dulcan (Ed.), *Dulcan’s textbook of child and adolescent psychiatry* (2nd ed., pp. 539–558). American Psychiatric Association Publishing.
- Kumari, V. (2020). Emotional abuse and neglect: Time to focus on prevention and mental health consequences. *British Journal of Psychiatry, 5*, 597–599.
- LeMoult, J., Humphreys, K., Tracy, A., et al. (2019). Meta-analysis: Exposure to early life stress and risk of depression in childhood and adolescence. *Journal of the American Academy of Child and Adolescent Psychiatry, 59*(7), 842–855.
- Levine, H. B., & Migliozzi, A. (2018). Remembering the dead mother. In G. S. Reed & H. B. Levine (Eds.), *Revisiting Andre Green* (pp. 29–46). Routledge.
- Lieberman, A. F., Van Horn, P., & Ippen, C. G. (2005). Toward evidence-based treatment: Child-parent psychotherapy with preschoolers exposed to marital violence. *Journal of the American Academy of Child & Adolescent Psychiatry, 44*(12), 1241–1248.
- Liu, D., Diorio, J., Tannenbaum, B., et al. (1997). Maternal care, hippocampal glucocorticoid receptors, and hypothalamic-pituitary-adrenal responses to stress. *Science, 277*(5332), 1659–1662.
- Maldonado-Duran, J. M., Fonagy, P., Helmig, L., Millhuff, C., Moody, C., Rosen, L., & VanSickle, G. (2008). In-depth mental health evaluation of a community sample of nonreferred infants with feeding difficulties. *International Journal of Eating Disorders, 41*(6), 513–519.
- Maneta, E., Cohen, S., Schulz, M., et al. (2012). Links between childhood physical abuse and intimate partner aggression: The mediating role of anger expression. *Violence Victim, 27*(3), 315–328.
- Musser, A. K., Ahmed, A. H., & Foli, K. J. (2013). Paternal postpartum depression: What health care providers should know. *Journal of Pediatric Health Care, 27*(6), 479–485.
- Organización Panamericana de la Salud. (2003). *Informe mundial sobre la violencia y la salud*. OMS.

- Quinton, D., & Rutter, M. (1988). *Parenting breakdown. The making and breaking of intergenerational links*. Avebury.
- Reder, P., Duncan, S., & Lucey, C. (2003). What principles guide in parenting assessments?. In P. Reder, S. Duncan, & C. Lucey (Eds.), *Studies in the assessment of parenting* (pp. 3–26). Routledge.
- Reyes, M. (2005). *Síntomas internalizados y externalizados en niños con TDAH testigos de violencia intrafamiliar dirigida a la madre*. Thesis, UNAM.
- Rutter, M. (1975). *Helping troubled children*. Penguin Books.
- Rutter, M. (2012). Resilience as a dynamic concept. *Development and Psychopathology*, 24(2), 335–344.
- Rutter, M., & Quinton, D. (1984). Parental psychiatric disorder: Effects on children. *Psychological Medicine*, 14(4), 853–880.
- Sauceda-García, J., & Maldonado-Duran, M. (2016). The psychological abuse of children in the family. *Revista de la Facultad de Medicina*, 56(5), 15–25.
- Slep, A. M. S., Heyman, R. E., & Snarr, J. D. (2011). Child emotional aggression and abuse: Definitions and prevalence. *Child Abuse & Neglect*, 35(10), 783–796.
- Stein, A., Ramchandani, P., & Murray, L. (2008). Impact of psychiatric disorder and physical illness. In M. Rutter, D. Bishop, D. Pine, S. Scott, J. Stevenson, E. Taylor, & A. Thapar (Eds.), *Thomas, A., Chess, S. (1977) Temperament and development*. Brunner/Mazel.
- Ulloa-Flores, R., & Navarro-Machuca, I. (2011). Estudios descriptivos de la prevalencia y tipos de maltrato en adolescentes con psicopatología. *Salud Mental*, 34(3), 219–225.
- Unicef. (1989). *Convención de las Naciones Unidas sobre los Derechos de los Niños*. ONU.
- Juan Manuel Saucedo-García** MD Child and Adolescent Psychiatrist (Universidad Nacional Autónoma de México y Universidad de Toronto), family therapist (Universidad Iberoamericana). Fellow of the National Academy of Medicine and the Mexican Academy of Pediatrics. Former president of the Mexican Association for Child psychiatry and of the National Council for Psychiatry. Former editor of the Revista Médica of the IMSS and of the Boletín Médico del Hospital Infantil de México. Coeditor of the book “Family, Its Dynamics and Treatment”(Familia. Su dinámica y tratamiento) and Attention Deficit Disorder through the lifespan. Currently professor of Psychiatry at the Faculty of Medicine of the Universidad Nacional Autónoma de México. Author of 69 journal articles and 55 book chapters on topics of child and adolescent mental health and family therapy.
- J. Martín Maldonado-Duran**, M.D., is an infant, child, and adolescent psychiatrist and family therapist. He is Associate Professor of Psychiatry at the Menninger Department of Psychiatry, Baylor College of Medicine and works at the complex care service in the Texas Children’s Hospital. He edited the book *Infant and Toddler Mental Health*, published by American Psychiatric Press, and has coedited or edited five additional books in Spanish on topics of child and infant mental health. Coeditor of the book “Clinical Handbook of Transcultural Infant Mental Health” (Springer). He has written numerous papers and book chapters on topics of child development and psychopathology in several countries.



Embodiment of the Self in Traumatic Situations: Unresolved and Traumatic Losses

7

Stephanie Yudovich
and Maria Ximena Maldonado-Morales

What Is Trauma? How Is Trauma Defined?

There are many ways in which *trauma* or traumatic events/stressors have been defined. This is in part due to the inherent complexity and nuances of the child's experience and its subjective nature. Consider these few of many definitions of childhood trauma:

- A traumatic event is a frightening, dangerous, or violent event that poses a threat to a child's life or bodily integrity (Oseldman, 2017). "Trauma occurs when a child experiences an intense event that threatens or causes harm to his or her emotional and physical well-being" (Oseldman, 2017).
- Trauma refers to the experience of an event that is emotionally painful or distressful, which often results in lasting mental and physical effects (Helping Children and Adolescents Cope with Disasters and Other Traumatic Events, n.d.= no date).
- Event, series of events, or set of circumstances that are experienced by an individual as physi-

cally or emotionally harmful, or life-threatening which have lasting adverse effects on the individual's functioning and mental, physical, social, emotional, or spiritual well-being (SAMHSA's Concept of Trauma and Guidance for a Trauma-Informed Approach, n.d.).

- Any disturbing experience that results in significant fear, helplessness, dissociation, confusion, or other disruptive feelings intense enough to have a long-lasting negative effect on a person's attitudes, behavior, and other aspects of functioning.
- Traumatic events include those caused by human behavior (e.g., rape, war, industrial accidents) as well as by nature (e.g., earthquakes) and often challenge an individual's view of the world as a just, safe, and predictable place (APA Dictionary of Psychology, n.d.).

The National Child Traumatic Stress Network identifies 13 categories of traumatic events or types of events that can be experienced. These include: bullying, community violence, complex trauma, disasters, early childhood trauma, intimate partner violence, medical trauma, physical abuse, refugee trauma, sexual abuse, sex trafficking, terrorism and violence, and traumatic grief (Oseldman, 2017).

Within each of these types of traumatic events, there are nuanced definitions, varied responses

S. Yudovich
Yudovich Counseling and Consulting, PLLC,
Houston, TX, USA

M. X. Maldonado-Morales (✉)
Baylor College of Medicine, Texas Children's
Hospital, Houston, TX, USA
e-mail: mariaximena.maldonado-morales@bcm.edu

by children, and recommendations for assessment, intervention or treatment.

For example, the disaster type can be understood through a breakdown of those that are human-made disasters, such as war, pollution, hazardous materials exposures, explosions, and natural disasters, such as earthquakes, floods, tornados, or volcanoes (Zibulewsky, 2001).

Trauma can be viewed in terms of acute or single instances, such as car accidents, natural disasters, sexual assaults, or *chronic* such as ongoing domestic violence and abuse and neglect, and exposure and/or participation in community violence.

Exposure can also be direct, through a first-hand experience, or indirect, through a second-hand account of a traumatic event. Further, each type and individual instances contain different degrees of magnitude (degree of threat and loss), frequency, duration, predictability, and controllability (Weathers & Keane, 2007).

A “complete” definition of traumatic events encompasses all the complexity of the factors described above. Ultimately, the experience of trauma is subjective, interpersonal, and not characterized solely by a professional field but instead by the individual’s interpretation and response to the events.

In this chapter, we will examine how children and adolescents manage and process a variety of traumatic events, and particularly how trauma is experienced through somatization and embodiment.

Prevalence and Impact of Childhood Trauma

To understand and interpret the data that report incidence and prevalence of childhood trauma, one must acknowledge the inherent difficulty of this task. One example of this epidemiological challenge is the low reporting rates among children.

There are many reasons why children do not report traumatic events, including lack of language to communicate the experience, being afraid of getting into trouble or being punished, a

sense of stigmatization, shame, guilt, or self-blame about the events. They can also experience fear of retaliation by the offender, or be scared of getting the offender into trouble and other possible repercussions, which is especially true when occurring in secrecy or in the home (Saunders & Adams, 2014).

One example of a large-scale longitudinal study, randomly selected children from ages 9 to 13 from a population of 20,000 children in 11 counties in Western North Carolina. This study found that more than two-thirds of children reported at least one traumatic event by 16 years of age. Two-thirds of children reporting an event is indeed a large number, but it is difficult to generalize this figure to other communities, due to potential lack in reporting structures, support systems, and access to care for children and families.

With this knowledge, we must be mindful of the possible inaccuracy of the data due to these barriers and careful in our interpretation of rates and incidences provided by local and national reporting systems.

One landmark study, known as the Kaiser-Permanente Adverse Childhood Events (ACE) Study, was conducted to identify and look at the connection between the number of ACEs (such as witnessing or experiencing violence, growing up in homes with substance abuse problems, or neglect in childhood from ages 0 to 17 years old) and specifically poor health outcomes.

This ACE study was conducted from 1995 to 1997 from a data sample in Southern California (About the CDC-Kaiser ACE Study | Violence Prevention | Injury Center | CDC, 2021). The study found that adverse childhood events can in fact greatly impact childhood physical and mental health, and these adverse effects continue into adulthood.

“ACEs can have lasting, negative effects on health, well-being, and life opportunities such as education and job potential. These experiences can increase the risks of injury, sexually transmitted infections, maternal and child health problems (including teen pregnancy, pregnancy complications, and fetal death), and involvement in sex trafficking. They are also associated with a wide range of chronic diseases and leading causes of death such as cancer, diabetes, heart disease, and suicide.

ACEs and their associated social determinants of poor health include living in under-resourced or racially segregated neighborhoods, frequent moves in housing, and experiencing food insecurity or hunger. All these can cause toxic stress (extended or prolonged stress).

Toxic stress from ACEs can alter brain development and affect such things as the capacity to sustain attention, for decision-making, for learning, and even a later response to stress.

Some children face further exposure to toxic stress from historical and ongoing traumas due to systemic racism or the impacts of poverty, caused by limited educational and economic opportunities” (Preventing Adverse Childhood Experiences |Violence Prevention|Injury Center|CDC, 2021).

ACEs continue to be surveyed and studied in communities across the United States and other countries. In another US study, 61% of adults across 25 states reported having experienced at least one ACE, and one in six reported experiencing four or more ACEs (Preventing Adverse Childhood Experiences |Violence Prevention|Injury Center|CDC, 2021). The data from these and ongoing ACE studies reinforce the prevalence and impact of childhood trauma and the importance of creating trauma-informed care environments.

Traumatic Stress and Related Disorders

The concept of child traumatic stress broadly describes the youth’s emotional, psychological, and/or physiological response to trauma exposure. Traumatic stress symptoms are associated with decreased overall psychosocial functioning and may present as:

“Intense and ongoing emotional upset, depressive symptoms or anxiety, behavioral changes, difficulties with self-regulation, problems relating to other people, or forming attachments. It can lead to regression or loss of previously acquired skills, attention and academic difficulties, nightmares, difficulty sleeping and eating, and physical symptoms, such as multiple aches and pains” (Oseldman, 2017).

Formalized diagnoses of trauma and other stressor related disorders, such as PTSD (post-

traumatic stress disorder) and acute stress disorder can serve to create a shared language amongst mental health professionals and ideally support effective treatment.

While proper identification and diagnosis can lead to seeking effective services and support, many children who have experienced trauma may not present with the expected symptoms.

In fact, children who have experienced trauma are often not diagnosed or are misdiagnosed because they present with behaviors or symptoms that do not “fit” into a diagnostic criteria of trauma or are “masked” by other seemingly similar diagnostic presentations. For example, intrusive symptoms such as flashbacks or avoidance of trauma reminders may present as hyperactivity difficulties with attention or anxiety leading to a misdiagnosis of attention deficit hyperactivity disorder (ADHD) or generalized anxiety disorder (GAD). Symptoms of negative alterations in cognition and mood can present as a depressive disorder. Similarly, alterations in arousal and reactivity often leading to outbursts or reckless behaviors may be seen as a conduct disorder. Persistent behavioral and social-emotional challenges may even lead to diagnosis of personality disorders at a young age, or to assign the diagnosis of bipolar disorder even to a very young child. This occurs when the attention is only focused on the overt reported symptomatology, and the clinician may not explore the antecedents of the child and their life circumstances. If they did that, it would be possible to link the current symptoms to those frightening experiences. Incidentally, the child themselves may not remember (due to post-traumatic amnesia) all the particulars of their past, and other informants may be helpful in this regard. The main point is that when the traumatic nature of symptoms is not addressed, the source of the problem is not treated.

In many cases of chronic trauma, the persistent and repetitive activation of the sympathetic nervous system can also affect the expression of an “expected” trauma presentation as the biological baseline can be altered often presenting as apathy or nonreactiveness.

Similarly, a child presenting with somatic complaints, such as frequent headaches, stomach

aches, or chest pain as a way of communicating the emotional and biological experience of trauma, can easily be dismissed as “wanting attention” or “avoiding difficult situations” when the previous traumas have not yet been disclosed or the clinician has not thought to ask about this.

In exploring the manifestations and consequences of trauma, it is critical to emphasize culture and ethnicity. It is well known that these issues affect how a person is diagnosed and treated. For example, many people of color in the United States experience a sense of mistrust with the healthcare system in general, and particularly the mental health system.

Also, the history of racism in Medicine in the United States is extensive, including cruel and painful experiments conducted on Black, Indigenous, and Brown communities. In the past, clinicians and professionals pathologizing cultural and racial differences (Suite et al., 2007). These issues have contributed to the ever-present systemic inequities in healthcare. Not only is there a fear of the healthcare system for non-White communities, but also there is a lack of quality services and access to care. Also, symptoms may be misinterpreted or not inquired about due to biases in the clinician. A Black adolescent who exhibits disruptive behavior may be assumed to have a conduct disorder “only” when in reality, there may be an important traumatic past, which should be addressed with treatment rather than with just correctional measures.

Trauma Measures and Instruments

Traumatic experiences are challenging to share for children, adolescents and adults. It may be distressing to say the words aloud, and to possibly feel the experience emotionally and somatically occurring all over again. This may also be true in a clinical setting, where the child or adolescent may not feel safe enough or trust the provider to share their thoughts, feelings and experiences. In fact, it may require several sessions with a provider for a child or adolescent to feel safe enough to begin disclosing difficult

experiences. A clinician may be able to observe the child or adolescents’ behaviors, choice of words, emotional expressions to deduce possible exposure to traumatic experiences and utilizing a standardized trauma measure can be a way to begin the conversations about traumatic experiences without the child or adolescent having to disclose the whole extent of the experience. Some youth may respond openly and honestly, while others may not, but it can still be a helpful tool in beginning the conversation around traumatic experiences.

One can easily incorporate a standardized trauma measure into your systematic assessment process. There are a multitude of measures, each with some unique features, which can be considered when determining which best fits the needs in a given clinical setting and depending on the population being served.

Some standardized measures are listed below

- UCLA PTSD Reaction Index for DSM-5 (PTSD-RI-5). For 6–8-year-old children.
- Clinician-Administered PTSD Scale for DSM-5 – Children and Adolescents version.
- Child PTSD Symptom Scale for DSM-V (CPSS-V) children and adolescents.
- Child and adolescent Trauma Screening (CATS) from preschool to 18 years old.
- Child Trauma Screen (CTS) school age and adolescents.
- Trauma Symptom Checklists (TSC) – Multiple versions available.
- PTSD Module of Diagnostic Infant and Preschool Assessment (DIPA).

Clinical judgment, including a reflection on how a child or adolescent responds to questions or interacts with the clinician; such a change in physical presentation (i.e., sharp reduction in eye contact, change in voice tone, increased fidgeting or repetitive behavior, like skin picking or leg shaking) or an emotional response (i.e., varying degrees of crying or expressions of extreme emotions, such as anger outbursts or dissociation) or the child’s ability to self-regulate (i.e. extreme forms of self-soothing or the required role of the caregiver in this) are also equally as important when

assessing the possibility of post-traumatic symptom and making treatment recommendations.

Furthermore, the data collected and the clinical presentation observed during the administration of standardized assessment measures should only represent that moment in time and may be influenced by many factors. A child may be too shy to speak, or be afraid of the interviewer. Also, such an interview may be the first time in which the details of the trauma are being shared, or that specific questions are being asked or simply the youth's emotional state that day, all this impacts what is revealed.

Developmentally, there is much variability in maturity levels even for the age cut-offs for self-report (often 6 or 7 years old) and anecdotally this can contribute to certain reporting behaviors such as answering only in extremes (i.e., only reporting none of the time, i.e., denying everything or saying yes to try to please the interviewer).

Understanding when to ask follow-up questions and how to strategically utilize sensitivity, intuition, and empathy as clinical tools can provide contextual information that is much more valuable than the numbers or scores in a questionnaire. The interview is also a strong opportunity to build rapport and trust during the disclosure of such a vulnerable experience. The clinician should be above all kind, empathetic, and understand that the details may be scary or painful to discuss.

While some developers provide specific guidance on training requirements to administer their measures, a basic understanding of these trauma-informed assessment considerations can influence a youth's overall engagement, honesty, and openness to services.

Trauma and Loss Reminders

In order to conceptualize and understand trauma presentations at any age and through the lens of trauma-informed care, it is critical to understand the role and function of trauma and loss reminders.

Trauma reminders are any form of sensory input, sights, sounds, smells, tastes, and tactile sensations that remind the individual, often involuntarily, of the traumatic incident.

Loss reminders are similarly activated by sensory input; however, they serve as a reminder of a loss, including significant deaths, physical separation/ambiguous losses (i.e., loss of contact with a parent due to incarceration, deportation or a missing person), and secondary losses, (i.e., changes, and impacts as a result of the trauma, such as moving to a new home or school, peer rejection, or change in financial status/access to materials) (Layne et al., 2006).

Trauma and loss reminders can also be people, places, situations, or activities, certain times of the year or specific dates/anniversaries, as well as internal experiences including emotions, thoughts, and physiological sensations. For example, a child who frequently hides from an abuser may be unable to play hide and seek with peers, due to the replicated physiological sensation. For the same child as an adolescent, this may manifest as an inability to pursue a meaningful romantic relationship, because the same sensation is experienced when they feel attracted to someone. When generalized, there may be an inability to distinguish between fear and pleasure, and this can impact all aspects of an individual's life.

A specific stimulus can even serve as both a trauma and a loss reminder, such as attending any sort of legal proceedings serving as a reminder of the incident and the secondary impacts (i.e., loss of privacy or relationships of those involved). Like the definition of trauma, what is considered a trauma or loss reminder and the impact of how those reminders are experienced is subjective and unique to each individual.

Trauma reminders are typically associated with a negative emotional response and may activate post-traumatic stress reactions, while loss reminders can elicit both a negative/painful and positive emotional response depending on the function of the reminder for the individual.

For example, an object such as a necklace or a sweatshirt that belonged to the person who died

may serve as a source of comfort and means of connection with that person and/or create a feeling of longing and missing them, now that they are no longer here.

Further, the valence of loss reminders can change over time, often with normative or therapeutic processing of the grief experience and effective implementation of coping strategies. These reminders and secondary impacts not only affect the child or adolescent's functioning, but also their immediate and possibly extended family, peer groups, and broader community.

One way in which reactions to trauma reminders can be conceptualized is through the understanding of the biological activation of the sympathetic nervous system or the "flight or fight" response. The sympathetic nervous system is unconsciously activated by our body's neural pathways in response to a perceived threat. This causes a rush of hormones to be released in order to rapidly change involuntary functions (i.e., heart rate, pupil dilation, and blood flow) aiming to increase safety and survival (Fight or Flight: The Sympathetic Nervous System | Live Science, n.d.).

During a traumatic incident, one hypothesis suggests that the typical process by which memories are stored and integrated into our brain's schemas and long-term memory is disrupted. This is due to the overwhelming sensory input and hormonal response of the sympathetic nervous system, causing memories to be "stuck" and easily re-activated (Shapiro, 2017). Therefore, exposure to similar stimuli can generate a post-traumatic response as if the incident were occurring at present or in more extreme cases cause a full dissociative experience as if the event were being re-lived.

Children with antecedents of trauma and loss are frequently combating emotional activation and a biological fear response. This is due to exposure to trauma and loss reminders. These children are often expending a great deal of energy to manage the reaction both with and without awareness of what may have caused these reactions.

Expressions of trauma at all stages of development are often in response to exposure to unrec-

ognized/unknown trauma reminders. If the behavior of the child is understood from this lens unexplained or seemingly random behaviors can be connected to the original trauma or loss reminders. Identifying, connecting, and understanding reactions to trauma and loss reminders are a key component of trauma interventions and can facilitate more effective implementation of coping mechanisms, reduction of reminders, and planning and preparing for reminders.

With this, one valuable way to conceptualize presentations of trauma is through a developmental lens, as the age and associated developmental stages of the child can also affect the expression and reactions to a traumatic event.

Age-Related Reactions to Traumatic Events

Infancy/Toddlerhood Excessive clinginess and/or separation anxiety from primary caregivers (i.e., unable to be consoled by others). Difficult to soothe and/or generally irritable. Constricted exploration, mood, or play possibly stemming from generalized fear and/or sense of helplessness. May engage in repetitive traumatic play. Loss of developmental milestones (i.e., language, toileting) and/or developmental delays. Heightened startle response

Mia is a 9-month-old girl who at her pediatric appointment was noted to be underweight and lethargic. Mia was born prematurely at 32 weeks and had to stay in the neonatal intensive care unit (NICU) for about 6 weeks. Mia's parents, Kyle and Jessica, often were seen verbally fighting by the NICU nurses, and would sometimes not visit Mia for several days at a time. Mia did not often cry when she was in the hospital, and was not often held while in the NICU by her parents. Mia was discharged when she had gained sufficient weight and could eat on her own without additional support. However, Mia's parents missed several follow-up appointments with her pediatrician, and so it was not until she was brought for her 9-month appointment that the pediatrician saw Mia.

The pediatrician noted that Mia physically appears to be about 5 or 6 months old, has trouble sitting up on her own, and doesn't turn when her name is called. She appears to always be staring in front of her, but at nothing in particular. Mia does not put

her arms up to be held by her parents, and does not cry or look for them when they are far away or leave the room. When Mia hears a loud noise, she appears very startled, her eyes growing wide, but she also appears to freeze and does not move. Upon further investigation of Mia's home life by the clinic's social worker, Kyle and Jessica report frequent fights at home, often yelling and throwing objects, which was also the case while Jessica was pregnant. They also share that Mia is often left alone in a room while they fight, in an attempt to shield her from the arguments. Mia attends a local day care while her parents are at work, but it is a large classroom and often she is not attended to quickly because she does not often cry.

This case illustrates various risk factors for the family, including premature birth and undernourishment of baby, parental stress and intimate partner violence, and how these can all affect the physical and mental development of a child. Mia's trauma reminders include loud noises (yelling, fighting, machines beeping), being or feeling alone, flashing lights (possibly from hospital setting), sensations of hunger, and not being soothed by her parents.

Another clinical example:

Derek, a 2-year-old boy, was seen by his pediatrician because of constant tantrums, excessive clinginess, and changes in his sleeping and eating. Derek's primary caregiver, his paternal aunt, Sophia, is a professor at a University, and Derek has attended the University day-care since he was 8-week-old. Derek has friends in his class at the day-care, and is usually very willing to go with his instructors, eats all of his lunch, and is overall a very sweet and affable child. Derek enjoys outings to the park, visiting his grandparents in the neighboring town, and occasionally staying for the weekend with them while his aunt is away. However, Derek has recently not wanted to go anywhere. He refuses to get in the car, running away when he is picked up to be put in his car seat. Derek is inconsolable during any car ride, sobbing to the point of coughing and shaking. He normally eats what is given to him, but recently has been complaining of stomach pains, and does not want to eat. Derek has been able to walk since he was 9-month-old, but recently is falling to the ground and demanding to be picked-up, and does not want to walk or crawl on his own. Derek had several words that he could say to communicate to his aunt, but recently has seemed to regress to a much younger age where he just grunts and points and cries. He now only wants to sleep with Sophia, though he had been sleeping in his own bed for

several months, and cannot be soothed if he is left alone in his room. Derek is inconsolable at day-care, even though he had never cried previously when taken there, and even cries and does not want to spend time with his grandparents if his aunt isn't present. The pediatrician referred him to a play therapist, where Derek began to play with cars, and crashed them together. Sophia recalled that several months ago, the two of them were in a car accident. She didn't think the accident had affected Derek much because it was at a slow intersection, and the impact was not terribly damaging to the car. The police arrived at the scene, and there was some stress and tension, but Derek seemed calm and it was a couple of weeks after the event that Derek began to show changes in his behaviors. Thus Sophia had not made the connection, and did not understand that Derek was having a traumatic response to the accident.

This case explores the differences in experience of an event by adults and children, and that young children may experience fear of separation from caregivers when processing a traumatic experience. Derek's trauma reminders include cars (even including color and shape of cars involved in the accident), loud noises (possibly similar to those heard in crash), police sirens and lights, people present the day of the accident, pressure on chest (possible sensation from harness during accident), feelings of fear or lack of control, quick movements or body jerking sensations (i.e. being pushed by a peer in daycare).

Preschool-Age Child Young children of this age can manifest also excessive clinginess and/or separation anxiety from primary caregivers and may no longer engage in activities that were previously done independently. New patterns of avoidant behavior, more likely generalized (i.e., refusing to go to a place similar to where the event occurred). Frequent and often unexplained crying, screaming, or behavioral outbursts. Sleep disturbances, including fear of falling asleep, waking up frequently, trouble falling back to sleep, and possibly nightmares/terrors. They may also engage in repetitive traumatic play or wish to "revisit" the event (i.e., frequent "acting out" of the events with toys), with language in play largely concrete without specific descriptions of thoughts and feeling of the characters. Loss of developmen-

tal gains in eating habits, loss of weight or excessive gain. There may be multiple somatic complaints, as well as apparent, inattentiveness and hyperactivity, generalized anxiety and fearfulness. The child may be seemingly day-dreaming, “spaced out” or dissociated (i.e., staring out the window in class and does not respond to name being called). Sexualized behavior outside of normative curiosity (i.e., touching peers/family members inappropriately) possibly taught/modeled by the perpetrator. Aggressive behaviors or making threatening claims toward others are possibly modeled by the perpetrator.

Priya is a 2-year-old Indian-American girl who recently has exhibited changes in her behaviors and mood. Priya learned to successfully use the toilet 1 year ago (day and night), and hasn't had accidents at home or at school. Priya has friends at preschool and plays with them, and is learning to identify colors, shapes, and letters. She has been able to dress herself, feed herself, and speak in full sentences. Several weeks ago, Priya's teacher began to notice that the child has not been playing with other children, and when she does interact with them, she seems more irritable, is easily frustrated and tends to cry and not verbalize sources of conflict. When the teacher approached Priya's parents, Jay and Sunita, with these concerns, they also reported noticing changes in Priya's behavior: these included being distracted, sometimes like her mind is somewhere else, and when her attention is called she reacts like she is frightened. They also shared that she now wants to be spoon fed again, and Priya says that she can't feed herself, and wants to be dressed because she forgot how to do it herself. Priya has been wetting her bed several nights in a row, and having accidents at school, which create feelings of frustration and anger, and then she is inconsolable. She has been drawing a lot of crying faces and swirls of colors, and saying phrases like, “remember when everything was shaking?” both at home and at school. These reflections with Priya's teacher prompted the memory for Jay and Sunita of visiting Priya's grandparents in India a few months ago, where they experienced a small earthquake as they were sleeping. Priya was awoken by the earthquake and carried out of the house by Jay until the earthquake was over. Her parents assumed that she had forgotten about this, since it was just a few minutes long, and they don't live in an area where earthquakes occur. They didn't really talk about it with her because they assumed she was too young to be affected by something by which they were not really affected. Priya was still processing through

this experience, and having traumatic stress reactions several months after the event.

This case illustrates, regression behaviors that can occur after experiencing a traumatic event, and the importance of exploring what is underneath the exhibited behaviors of the child. Priya's trauma reminders might include sudden movements or jerking sensations like experienced in the earthquake, reminders of India (pictures, foods, music, etc), sights and sounds that remind her of the earthquake, people who were present at the time of the earthquake (i.e. parents, grandparents), sleep or associated activities in sleep routine (i.e. putting on pajamas, reading a bedtime story/singing a bedtime song).

School-Age Children Frequent manifestations are: The child often becomes anxious or fearful, and are more likely to describe feeling overwhelmed by their emotional experience. They may engage in constant retelling of the traumatic event, what looks like attentional problems, and hyperactivity. They may also experience sleep disturbance and nightmares patterns of avoidant behavior, somatic complaints, and aggressive behavior.

Amir is a 5-year-old boy who bites his fingernails creating bloody wounds, appears to have eye-twitches, and selective hearing. Amir often plays alone and does not appear to have many friends or get along with other children. He also is often in trouble at school because the teacher gives directions that Amir says he did not hear, though appeared to be listening. Amir has a lot of trouble falling asleep, and frequently wakes in the night because of nightmares, causing him to be tired during the day and fall asleep in school. This also causes problems with his step-mother, Kayla, and biological father, Omar, with whom he lives. Amir complains about pain in his fingers and so has trouble holding objects, and often drops them. Amir has been assessed by an audiologist and physical therapist with no deemed medical concerns. He has also been examined to rule out attention deficit disorder and autism, but does not quite seem to fit the diagnostic criteria, and so he is referred to a therapist. Amir's biological parents separated when he was an infant, and he spent the first 4 years of his life with his biological mother, Zara, as his primary caregiver. Amir witnessed his mother be hurt by a series of boyfriends, which frightened him and he would try to hide to not hear the

screaming and fighting. Amir was removed from Zara's home by child protective services and Omar was given full custody. In therapy, Amir shared missing his mother, and constantly worrying about her, which manifested in biting his nails to try reduce the anxiety and having nightmares and thinking about her before sleep causing him to stay awake for hours. When Amir remembers the emotional pain of the past, or thinks about Zara, his eyes begin to twitch involuntarily. Amir acknowledged that he tried to actively "go somewhere else in his mind" in moments of violence so that he did not have to see or hear his mother being hurt. Amir blames himself for his mother being hurt, is ashamed that he would hide in fear rather than defend her, and worries about her well-being every day.

This case illustrates experiences of trauma and grief, the complex situations children can face, and how the expression of these emotions may be somatic or physical. Amir's trauma reminders may include sleep or sleep routine associated with pending sleep (i.e. brushing his teeth, laying in bed), the sensation of feeling tired, the experience of hiding and the associated sensations of fear/excitement (often in cases of age-appropriate play), sounds of yelling, arguing, screaming or loud noises, witnessing fights in person or on television/in games, men in general and/or those who resemble his mother's boyfriends, feelings of shame, guilt, weakness or helplessness

Another case example.

Abraham is a 10-year-old boy and his sister Lizette, a 7-year-old girl, are from El Salvador. Abraham and Lizette journeyed on foot from their town in El Salvador to the United States with their two parents, Josefa and Luis. The family were forced to leave their home because of the financial demands of the local gangs and physical threats to their lives. Abraham and Lizette witnessed gang members cut their father's leg after he refused to pay a demanded fee, and Abraham had a knife held to his throat being told that he would soon be initiated into the gang. The family walked for weeks, at times in extreme weather and with little food or water, and witnessed violence and death on their journey. Upon their arrival in the United States, the family was held in a detention center, where the children were able to be with Josefa, but Luis was sent to another center. The children witnessed and experienced verbal abuse from the guards, often felt frightened, and missed their father and worried about him. After several weeks in the center they

all were released and reunited. Once in their new home, while applying for asylum, the children began a routine and were enrolled in school. Abraham would state hunger even after eating a full meal, as well as often complain of stomach pains. Lizette would resist engaging in physical activity, saying her arms and legs were too tired and achy. Both children would have trouble sleeping, often have nightmares and feel fatigue during the day. Abraham has difficulty focusing in school, feeling constantly distracted as though he can't concentrate, and is struggling to learn English, whereas Lizette has thrown herself into school and is learning English easily. Abraham struggles to make friends and sits alone, whereas Lizette has made friends easily and wants to spend the majority of time with them, rather than with her family. Josefa and Luis have noticed that both children seem to withdraw at home, and do not engage with the family as they used to in El Salvador. Through the asylum process, the family was connected by their caseworker with a therapist. In session, both Lizette and Abraham have shared feeling guilty for leaving family, especially their grandmother, behind in El Salvador, and feeling guilty for being safe when their family is not.

This case explores the complexity of trauma and grief through the lens of immigration, and the challenges experienced by individuals but also as a family system. Abraham and Lizette's trauma reminders may include people who resemble or speak like local gang members in El Salvador, feeling verbally or physically threatened, knives or other potentially harmful objects, the sight or smell of blood or the color red, sensations of exhaustion, thirst, and hunger, reading about or seeing acts of violence in person, on television, or in games, feelings of fear, unsafety and guilt, feelings possibly associated with being detained (i.e. fear, confusion, constrained), people of authority (i.e. police officers or those who resemble detention officers), extreme weather changes.

Adolescents Common manifestations include increased withdrawal or isolation, often due to experiences of shame and/or guilt associated with the traumatic events, including fear of rejection from peers if they had knowledge of what had occurred. The young person may feel self-conscious about how they are responding emotionally to the event and be overly concerned or fearful about being labeled names such as "abnor-

mal,” “crazy,” or “weird.” Increased risk of engaging in self-destructive and risk-taking behaviors, such as self-harm, disordered eating (i.e., bingeing, purging, restricting), abuse of alcohol and drugs, dangerous sexual situations often due to a foreshortened sense of future and/or attempts to numb/distract from the emotionally overwhelming experience. The youth may experience fantasies about revenge and retribution sometimes expressed in aggressive behavior toward others. Possibly aggressive, physically and/or sexually, toward intimate partners. Watching, posting on social media (of self and/or others), and/or showing others explicit sexual content without or despite awareness of possible consequences and inappropriateness. Extreme forms of posting on social media, including excessive vagueness or oversharing through explicit content often seeking validation, attention, and/or support suicidal gestures through self-harm (i.e., cutting, burning), depiction of death in drawings, verbalization, or posts on social media about a wish to die. Extreme changes in faith practices, such as firmly denouncing previously held beliefs (often due to feelings of betrayal) or engaging in new strict religious practices (often in attempts to atone, cleanse, or seek control). The child may report overarching beliefs about the world related to loss of hope, sense of security, and trust in humanity (i.e., stating, “The world is a dangerous place; people are innately bad; no one can be trusted; I’m only going to get hurt.” As a result, they may fear growing up and becoming an adult.

Lucy is a 13-year-old girl who has been struggling with incontinence and panic attacks at school. Lucy will urinate on herself in class, but will not draw attention to herself or ask the teacher to use the restroom. The thought of having to ask the teacher anything creates a feeling of panic for her, which she already experiences simply by being at school. Lucy is having trouble focusing during class, and her grades have suffered as a result. Lucy is anxious at home, and will use the restroom, but constantly feels the need to urinate, even if she already has, and has a difficult time sitting still and feeling calm. Lucy has been taken to see several urologists without success, only after which she was referred for therapeutic services. In the therapy intake, Lucy shared that her parents, Nicola and David, had been arguing a lot in the last few

years, and were discussing a separation, which caused a great deal of anxiety for Lucy, and at times she felt responsible for Nicola and David’s arguments. Lucy had been trying to manage the tension of home, and a few months ago fainted in the school bathroom, and does not remember what happened before or after this incident. When she awoke, she was alone and frightened, and since this occurred, she has been terrified to go to the bathroom alone at school and is constantly worried about it happening again. Lucy shared not wanting to tell anyone of what happened because she worried no one would believe her, or that they would think she is crazy. Lucy already feels like an outsider in her school, because she doesn’t have many friends, and has isolated herself from the ones she did have out of feeling ashamed and anxious.

This case explores the physical manifestation of stress and traumatic experiences. Lucy’s trauma reminders may include, sensations of panic and fear (i.e. tight chest, difficulty breathing, light headed), the sensation of needing to urinate, physically feeling wet (including activities of daily living such as washing hands or showering), the smell of urine or restrooms, the sound of fighting, yelling, or generally loud noises, being at school and/or near the restroom where she fainted, being or feeling alone and/or unsafe, feeling light headed or faint.

Risk and Protective Factors

There are many factors that can impact a child’s response to a traumatic event and lead to a greater risk of/increase or in some ways protect/decrease the likelihood a child will develop posttraumatic stress symptoms or PTSD. These risk and protective factors are defined and described by the Substance Abuse And Mental Health Administration:

“Risk factors are characteristics at the biological, psychological, family and community or cultural level that precede and are associated with a higher likelihood of negative outcomes. Protective factors may be seen as positive countering attributes or traits. Some risk and protective factors are fixed: they don’t change over time. Other risk and protective factors are considered variable and can change over time. Variable risk factors include income level, peer group, adverse childhood experiences,

and employment status". (SAMHSA, risk-protective factors, [n.d.](#)).

Cultural values also influence the development of risk and protective factors. For example, access to emotional support and safety in self-expression can be either a risk or protective factor, moderated by individual, familial, and societal values. A child who lives in a home or community where they are discouraged or punished for showing or sharing emotions will learn to not express themselves. The child may even perceive to be or actually be rewarded by caregivers and community members for not engaging in emotional expression. While this is likely protective and helpful within their home and community, it may generally cause challenges in maintaining and fostering relationships outside of these immediate social environments. These patterns become internalized by the youth and integrated in their core beliefs and values and expressed through relational behaviors, reducing the likelihood of social support, open processing of traumas, or even reporting of trauma in the first place, serving as multiple possible risk factors. Alternatively, a child who experiences encouragement and praise for these forms of expression is more likely to engage in this way in all domains of interactions, increasing the likelihood of protective factors such as social connection, support, safety, and trust.

Specific cultural values can also have the potential to emerge as a risk or protective factor depending on how it is internalized and expressed. For example, some cultures place emphasis on independence which may foster autonomy, a sense of self-determination, and self-reliance acting as protective factors. However, when one is not able to maintain independence, there may be feelings of weakness, shame, guilt, or failure which can increase the risk of negative outcomes. Comparatively, many cultures emphasize the importance of interdependence and community, heavily relying on the support of others. This has the potential to serve as a strong protective factor for youth assuming a supportive community that can be relied on during times of distress and difficulty. However, the risk of not meeting expectations, fear of failing, or disappointing the family

and community can cause emotional distress and affect a youth's willingness to reach out or accept support.

The reaction and response of caregiver(s) to a child or adolescents' traumatic experience can drastically affect the child's processing of the traumatic event. Caregivers who believe the child is telling the truth, who respond to the child's physical and emotional concerns and act in some way to protect and support the child, create a feeling of safety and care. Many children try to process the event in their own minds before they can begin to process it with others.

The field's increasingly comprehensive knowledge of these risk and protective factors have contributed to many early intervention and prevention programs. Ideally, some of these factors can be directly addressed in treatment, while others are often not something the child or family can control or easily change.

Other Manifestations of Trauma in the Body

The combination of neuro-psychobiological mechanisms and traumatic experiences is strongly related to experiences of somatization. Somatization can be defined as physical symptoms and sensations that are medically unexplained, and that are not the effects of a substance (Victor & Van Dyk, 2017). Dissociation is a disruption of the functions of memory, identity, consciousness, and the awareness of the body and the environment, where there is no integration between the mental and physical experience (Victor & Van Dyk, 2017). Exposure to trauma increases the likelihood of experiencing dissociation often as a means of coping with overwhelming circumstances. Reoccurring dissociative experiences have been proposed as an explanation of the somatization of trauma (Victor & Van Dyk, 2017), noting that even if the conscious mind cannot process the traumatic content, the body's unconscious survival mechanisms will still be activated. This connection between the body and the mind has been enhanced through neuropsychology.

The neurophysiology of traumatic responses has been further studied in the last several decades, providing greater insight into the responses of the brain, hormonal systems, and behaviors after an individual is exposed to a traumatic event (Scaer, 2014). The right hemisphere of the brain houses pathways for acute responses to threats, received from our body's sensory inputs through a regular scanning of one's environment (Scaer, 2014). This information is sent to the thalamus, which communicates motor and sensory information to the cerebral cortex and then to the amygdala, "the brain's alarm system and storehouse of emotion-linked memory. It evaluates the emotional content of the sensory messages, particularly when they represent danger" (Scaer, 2014, p. 8). The amygdala sends information to the right hippocampus, which processes conscious memory, and modulates the threat response.

"The hippocampus then sends this revised information to the right orbitofrontal cortex for the purpose of further information and memory processing, and for further modulation of the amygdala...the orbitofrontal cortex evaluates threat for its severity...[it] organizes physical motor defensive behavior (fight or flight) as well as autonomic and hormonal responses to this threat" (Scaer, 2014, p. 8).

Children who have experienced traumatic stress and events will manifest changes in their brain chemistry, which may keep their minds in fight, flight, or freeze responses.

The balance between the sympathetic and the parasympathetic nervous system affects the fight, flight, or freeze response and how memories and experiences are recorded in the brain and body. There may occur a disruption in how the body acts, reacts, and remembers a trauma versus how the brain records memory. In trying to process physical experiences and memories, the child or adolescent may experience physical symptoms that cannot be explained for a medical reason (Elklit & Christiansen, 2009; Victor & Van Dyk, 2017). Traumatic experiences in early childhood affect neurodevelopmental processes, which will in turn impact the social and emotional development of the child as they age.

Clinical Interventions

Once an individual is properly screened for trauma and it is determined a trauma intervention could be of value, there are many promising and well-established evidence-based trauma treatments to consider. Below is a list of some of those treatments. Again, please note that this is not an exhaustive list, rather a sample of available treatments to serve as an opportunity to reflect on their unique factors.

While there are concrete differences that can be described when comparing trauma treatment models and these unique differences may contribute to the clinical decision-making regarding which one to utilize with any given client, there are certainly a set of core components consistently incorporated and foundational to each model. Some of these core components include psychoeducation regarding trauma, trauma responses, and trauma reminders, a form of recounting the trauma(s) through verbal or written narratives or the process of accessing those memories, and developing a set of coping skills specific to managing trauma responses and activation from reminders. Sharing or teaching these components to a child or adolescent's parent(s) or primary caregiver(s) is also often built into a curriculum as caregiver facilitation of trauma responses contributes greatly to a youth's overall functioning and resilience after a traumatic event. Further, effective treatment required addressing both trauma and grief through distinct components and best-practices. In order to provide effective trauma services, we must also be equipped to address loss in all forms (i.e. secondary losses after a trauma such as loss of friends after the need to move to a new school and ambiguous loss such as loss due deportation, incarceration, and missing persons). Given the increased risk for safety concerns and frequent comorbidity with other mental health conditions such as depression and anxiety, components of risk screening and safety planning, and maintaining consistent routines and skills for seeking support are also routinely incorporated. Comprehensive training and an understanding of

Treatment name	Brief description	Considerations
<p>Eye movement desensitization and reproprocessing (EMDR)</p>	<p>EMDR is a structured eight-phase approach that aims to address the past, present, and future aspects of a traumatic event and/or distressing memories and associated trauma reminders. Its theoretical foundation is based on the adaptive information processing model (AIP) which postulates the “dysfunctional” storing of memories during a traumatic incident serves as the cause of post-traumatic stress reactions. The goal of EMDR therapy is to properly process and store these distressing memories through the brief accessing of those memories while simultaneously remaining grounded in external stimuli (i.e., bilateral eye movements, tapping, or audio stimulation). An emphasis is also placed on the building of resources or coping mechanisms to manage both distress during and between processing sessions. Shapiro (2017)</p>	<p>Age range: 4-adulthood Estimated number of sessions: Variable; contingent on number of traumas and rate of processing Format(s): Individual, small and large group administration Language(s): English; standard protocol and other materials have made been available in Spanish, Arabic, Bosnian, French, German, and Italian</p>
<p>Cognitive Behavioral interventions for trauma in schools (CBITS) and bounce Back</p>	<p>CBITS is a school-based intervention that was developed as a public health approach to addressing the large number of youth experiencing trauma who would not otherwise have access to services. It is designed to reduce symptoms of post-traumatic stress disorder (PTSD), depression, general anxiety, behavioral problems, and to improve overall functioning, grades, attendance, peer and caregiver support, and coping skills. Treatment components include psychoeducation, parent and teacher education sessions, relaxation skills, affect modulation skills, cognitive coping skills, and individual breakout sessions for trauma narrative development and processing. Bounce Back is the adaptation of CBITS for elementary aged students which includes many of the core components with age appropriate added elements and activities, as well as greater caregiver involvement. Stein et al. (2003) and Kataoka et al. (2003) https://dpi.wi.gov/sites/default/files/imce/sspw/cbits_fact_sheet.pdf</p>	<p>Age range: CBITS 10–15 years old Bounce Back 5–11 years old Estimated number of sessions: 10 Format(s): School-based group model (6–8 sessions) with individual break out components (1–3 sessions); it has also been utilized in other settings such as mental health clinics Language(s): English, Spanish, Korean, Russian, Western Armenian, and Japanese</p>
<p>Trauma-focused cognitive Behavioral therapy (TF-CBT)</p>	<p>TF-CBT is a component based individual child/conjoint caregiver treatment model for youth who have experienced diverse trauma types. It aims to address the impacts of trauma not limited to post-traumatic stress disorder (PTSD), depression, anxiety, externalizing behaviors, relationship and attachment difficulties, school challenges and negative cognitions. TF-CBT components are summarized by the acronym PRACTICE: Psychoeducation, parenting component, relaxation skills to address biological dysregulation, affective modulation skills; cognitive coping and regulation skills; trauma narrative and cognitive processing; in vivo mastery of trauma reminders; conjoint child-parent sessions; and enhancing safety and future developmental trajectory. Cohen and Mannarino (2010) https://www.nctsn.org/sites/default/files/interventions/tfcbt_fact_sheet.pdf</p>	<p>Age range: 3–21 years old Estimated number of sessions: 12–25 sessions (60–90-min sessions, divided approximately equally between youth and parent/caregiver) Format(s): Individual child/conjoint parent treatment model Language(s): English Treatment book has been translated into Chinese (mandarin), German, Dutch, Polish, Japanese and Korean. French and Russian translations are reportedly pending.</p>

<p>Trauma and grief component therapy for adolescents (TGCT-A)</p>	<p>TGCT-A is an assessment-driven, flexibly tailored intervention within a multi-tiered framework designed and developmentally attuned to the specific needs of older children and adolescents following exposure(s) to traumas and/or traumatic deaths, especially those at high risk of exposure to chronic and complex trauma. It is composed of four modules which include elements of 1. Group cohesion/rapport and safety building, psychoeducation and skill building, 2. Trauma processing, 3. Grief processing, and 4. Future planning/resuming developmental progression and termination designed to reduce symptoms of post-traumatic stress, depression and maladaptive grief reactions. Each module is designed to carry out specific therapeutic objectives and which modules, as well as the activities/illustrations within those modules are utilized can be chosen and guided by the therapist's assessment, specific needs of the youth, and other contributing factors (i.e., time constraints). Saltzman et al. (2017) https://www.nctsn.org/sites/default/files/interventions/tgcta_fact_sheet.pdf</p>	<p>Age range: 12–21 years old Estimated number of sessions: Variable ranging from 8 to 24; all four modules may not be indicated Format(s): Manual is written in group format with individual adaptations for each session Language(s): Manual is written in English Youth workbook/handouts available in Spanish</p>
<p>Child–parent psychotherapy (CPP)</p>	<p>CPP is a long-term dyadic child–caregiver treatment model for very young children that is grounded in attachment theory, as well as psychodynamic, developmental, trauma, social learning, and cognitive behavioral theories. Joint child–caregiver sessions are viewed through the lens of trauma's impact on the relationship and the focus of treatment is on increasing relational safety and affect regulation. Treatment components include normalizing and responding to trauma responses, joint construction of a trauma narrative, repaired disruptions in development, and an overall improved relationship. Lieberman et al. (2015) https://www.nctsn.org/sites/default/files/interventions/cpp_fact_sheet.pdf https://www.nctsn.org/sites/default/files/interventions/cpp_culture_specific_fact_sheet.pdf</p>	<p>Age range: 0–6 years old Estimated number of sessions: 50 Format(s): Individual child/conjoint parent treatment model Language(s): Manual written in English Specific guidance provided that all attempts should be made for a child to be seen by a therapist who speaks the family's primary or native language</p>
<p>Somatic experiencing (SE)</p>	<p>SE is a body-based or “bottom-up” therapeutic approach that aims to address the biological causes of trauma and other stress-related disorders. It is based on a multidisciplinary intersection of physiology, psychology, ethology, biology, neuroscience, and medical biophysics. It is clinically grounded in the understanding of the nervous system's response and where a person may be “stuck” in this cycle. The SE model aims to complete the stress cycle and disrupt the frequent reactivation of the autonomic nervous system threat response through increased awareness and tolerance to distressing body sensations and building self-regulation, containment, and resilience. Berman (2019) and Payne et al. (2015)</p>	<p>Age range: All ages Estimated number of sessions: Variable; contingent on an individual's regulation of the nervous system Format(s): Primarily individual Language: Foundational and treatment book available in roughly 29 languages Can be provided in any language a clinician is clinically fluent</p>

Cohen and Mannarino (2010)

these core components will set a strong foundation by which a clinician can grow upon their knowledge of selecting and adapting the best trauma treatments for clients and their specific needs.

References

- About the CDC-Kaiser ACE Study | Violence Prevention/Injury Center/CDC. (2021, November 3). <https://www.cdc.gov/violenceprevention/aces/about.html>. (5th ed.). American Psychiatric Publishing Inc.
- APA Dictionary of Psychology. (n.d.). Retrieved April 20, 2022, from <https://dictionary.apa.org/>
- Berman, A. I. (2019). *The use of somatic experiencing™ in the treatment of an adolescent with trauma-based obsessive-compulsive disorder*. University of Johannesburg.
- Cohen, J. A., & Mannarino, A. P. (2010). Psychotherapeutic options for traumatized children. *Current Opinion in Pediatrics*, 22(5), 605–609. <https://doi.org/10.1097/MOP.0b013e32833e14a2>
- Elklit, A., & Christiansen, D. M. (2009). Predictive factors for somatization in a trauma sample. *Clinical Practice and Epidemiology in Mental Health*, 5(1), 1.
- Fight or Flight: The Sympathetic Nervous System | Live Science. (n.d.). Retrieved April 18, 2022, from <https://www.livescience.com/65446-sympathetic-nervous-system.html>
- Helping Children and Adolescents Cope with Disasters and Other Traumatic Events: What Parents, Rescue Workers, and the Community Can Do. (n.d.). National Institute of Mental Health (NIMH). Retrieved April 20, 2022, from <https://www.nimh.nih.gov/health/publications/helping-children-and-adolescents-cope-with-disasters-and-other-traumatic-events>
- Kataoka, S. H., Stein, B. D., Jaycox, L. H., Wong, M., Escudero, P., Tu, W., et al. (2003). A school-based mental health program for traumatized Latino immigrant children. *Journal of the American Academy of Child & Adolescent Psychiatry*, 42(3), 311–318.
- Layne, C. M., Warren, J. S., Saltzman, W. R., Fulton, J. B., Steinberg, A. M., & Pynoos, R. S. (2006). Contextual influences on posttraumatic adjustment: Re-traumatization and the roles of revictimization, posttraumatic adversities, and distressing reminders. In *Psychological effects of catastrophic disasters*. Routledge.
- Lieberman, A. F., Van Horn, P., & Ippen, C. G. (2015). Toward evidence-based treatment: Child-parent psychotherapy with preschoolers exposed to marital violence. *Journal of the American Academy of Child & Adolescent Psychiatry*, 44(12), 1241–1248.
- Oseldman, D. (2017, October 30). *Trauma types* [Text]. The National Child Traumatic Stress Network. <https://www.nctsn.org/what-is-child-trauma/trauma-types>
- Payne, P., Levine, P. A., & Crane-Godreau, M. A. (2015). Somatic experiencing: Using interoception and proprioception as core elements of trauma therapy. *Frontiers in Psychology*, 6(93), 1–18.
- Preventing Adverse Childhood Experiences | Violence Prevention/Injury Center/CDC. (2021, April 6). <https://www.cdc.gov/violenceprevention/aces/fastfact.html>
- Preventing Child Abuse & Neglect | Violence Prevention/Injury Center/CDC. (2021, March 23). <https://www.cdc.gov/violenceprevention/childabuse-andneglect/fastfact.html>
- Primm, A. B., Vasquez, M. J. T., Mays, R. A., Sammons-Posey, D., McKnight-Eily, L. R., Presley-Cantrell, L. R., McGuire, L. C., Chapman, D. P., & Perry, G. S. (2009). The role of public health in addressing racial and ethnic disparities in mental health and mental illness. *Preventing Chronic Disease*, 7(1), A20.
- Saltzman, W., Layne, C., Pynoos, R., Olafson, E., Kaplow, J., & Boat, B. (2017). *Trauma and grief component therapy for adolescents: A modular approach to treating traumatized and bereaved youth*. Cambridge University Press.
- SAMHSA's Concept of Trauma and Guidance for a Trauma-Informed Approach. (n.d.). 27.
- Saunders, B. E., & Adams, Z. W. (2014). Epidemiology of traumatic experiences in childhood. *Child and Adolescent Psychiatric Clinics of North America*, 23(2), 167–184. <https://doi.org/10.1016/j.chc.2013.12.003>
- Scaer, R. (2014). *The body bears the burden: Trauma, dissociation, and disease* (Vol. 11. 1, 3rd ed., pp. 44–56). Routledge.
- Shapiro, L. (2017). *Eye movement desensitization and reprocessing (EMDR) therapy* (3rd ed.). The Guilford Press.
- Stein, B. D., Jaycox, L. H., Kataoka, S. H., Wong, M., Tu, W., Elliott, M. N., & Fink, A. (2003). A mental health intervention for school children exposed to violence: A randomized controlled trial. *Journal of the American Medical Association*, 290(5), 603–611.
- Suite, D. H., La Bril, R., Primm, A., & Harrison-Ross, P. (2007). Beyond misdiagnosis, misunderstanding and mistrust: Relevance of the historical perspective in the medical and mental health treatment of people of color. *Journal of the National Medical Association*, 99(8), 879–885.
- Victor, T. L., & Van Dyk, K. M. (2017). The role of early life trauma in somatization. In K. B. Boone (Ed.), *Neuropsychological evaluation of somatoform and other functional somatic conditions* (pp. 43–112). Routledge.
- Weathers, F. W., & Keane, T. M. (2007). The criterion a problem revisited: Controversies and challenges in defining and measuring psychological trauma. *Journal of Traumatic Stress*, 20(2), 107–121.
- Zibulewsky, J. (2001). Defining disaster: The emergency department perspective. *Proceedings (Baylor University. Medical Center)*, 14(2), 144–149.

Stephanie Yudovich LCSW Licensed clinical social worker and supervisor with a specialty in working with children, adolescents, and adults who have experienced significant deaths and/or traumas. Through clinical supervision, consultation, and trainings to individuals and organizations, she aims to educate and destigmatize grief and trauma experiences. BA in Psychology with minors in Human Development and Communications at the University of California, Davis. Masters of Social Welfare at the University of California, Los Angeles. She served as Assistant Director at a trauma and grief clinic in Houston, TX, and now remains actively engaged in clinical, supervision, consultation, and training services through her private practice

Maria Ximena Maldonado-Morales, LCSW-S, MPH Multilingual licensed clinical social worker and psychotherapist, with experience working with youth and adults. Over the last 7 years as a therapist has particular experience working with children and youth with trauma and grief, immigrant populations, and women and infants in a perinatal setting. Masters of Social Work and Masters of Public Health from the Brown School of Social Work at Washington University in St. Louis. Doctoral candidate in Clinical Social Work at Smith College for Social Work. She currently serves as a supervisor and therapist at Texas Children's Hospital. Coeditor of the book "Clinical Handbook of Transcultural Infant Mental Health" (Springer).



Embodiment of the Self in Physical and Sexual Abuse During Childhood and Adolescence

8

Maria Ximena Maldonado-Morales
and Stephanie Yudovich

To complete the picture of “traumatic events,” the experiences of physical abuse and/or sexual abuse that unfortunately many children experience will be our focus in this chapter.

Physical or sexual abuse of a child or adolescent is a particularly complicated and not-quite-understood set of phenomena which by definition are interpersonal in nature. Not only that, but a form of power is exerted from a person with higher status or hierarchy toward an individual who is vulnerable and at the mercy of the person who carries out the abuse or maltreatment.

The implications of this “interpersonal” trauma are many, as they, first of all, involve often a contradictory experience: a “caregiver” may be the one carrying out the maltreatment. That is, the person who should protect and comfort the child is the one causing the fear, pain, or sexualized experiences. Second, it can be seen as a form of perversion or betrayal of that caregiving relationship, or “betrayal trauma.”

M. X. Maldonado-Morales (✉)
Baylor College of Medicine, Texas Children’s
Hospital, Houston, TX, USA
e-mail: mariaximena.maldonado-morales@bcm.edu

S. Yudovich
Yudovich Counseling and Consulting, PLLC,
Houston, TX, USA

Epidemiological Issues

Many sources of national victimization information in various countries utilize data from law enforcement or child protective services, which cannot capture underreported cases and may even cause duplicate cases being counted due to cross-reporting state requirements (Saunders & Adams, 2014).

This information most likely underestimates the prevalence of relational traumatic experiences in children. In the United States, the estimated prevalence of child-confirmed maltreatment is estimated at 12% of children (Wildeman et al., 2014). In the United Kingdom, the figures have been around 6% for physical abuse and around 10% for sexual abuse (May-Chahal & Cawson, 2005).

According to the Centers for Disease Control and Prevention, children living in poverty are more likely to experience abuse and neglect, one in seven children experience child abuse in a year, and in 2019, 1,840 children died of abuse and neglect in the United States (Preventing Child Abuse & Neglect | Violence Prevention | Injury Center | CDC, 2021). Children and adolescents who have experienced physical abuse in their homes often struggle with aggression; feel emotionally numb; have low self-worth; experience depression, anxiety, difficulty maintaining friendships, and trusting authority figures; and other traumatic stress reactions.

As discussed in the previous chapter, there are multiple barriers to reporting, which can also contribute to inaccurate data around abuse prevalence. In the United States and other countries, professionals in contact with children are “mandated reporters.” This is a complicated and nuanced system which at times is very helpful to the child or family and at others is detrimental. Once a child is reported by a clinician, the family may not wish to engage in treatment with the reporting care provider, leading to a disruption in services and opportunities to support the child and family.

Also, there are many cultural barriers to reporting physical and particularly sexual abuse. There are social taboos that might be considered by families as “too costly” to report. It “might destroy an entire family,” as is the case in many traditional societies that function as a large network of relatives and not as a nuclear family. Even when others report the maltreatment, often the child will at first acknowledge the problem and then recant in order to avoid those consequences, like legal difficulties for the perpetrator, or “being placed outside the home,” among many other barriers (Malloy et al., 2007).

Definitions

Physical abuse is defined by injury of a youth by an adult, caregiver, or a person in a position of power, including marks, bruises, cuts, and broken bones, even if the wound is unintentional (Peterson, 2018a, b). Excessive punishment, such as burning, poisoning, extreme hot and cold exposure, harm and endangerment are included in the definition of physical abuse (Malinosky-Rummell & Hansen, 1993). A child or adolescent is sexually abused when “the child is used for the sexual stimulation of the perpetrator or an observer. Sexual abuse can include both touching and non-touching behaviors” (Peterson, 2018c).

Regardless of the frequency of the abuse, a child may love their parent or caregiver intensely, despite these episodic attacks.

Also, the person who carries out the abuse is not necessarily always hostile, the inconsistency

in the behavior between manifestations of tenderness and affection can be confusing, especially when manipulating a child’s need for closeness and care.

Children and adolescents who have lived through trauma may experience difficulties in creating trusting relationships, feeling safe, learning in school, requiring more medical attention than their peers, experiencing long-term physical and mental health concerns, substance abuse and possible increased involvement with law enforcement or justice systems (SAMHSA, n.d.). In the long run, relational trauma, particularly if it is a pattern and pervasive can lead to personality disturbances and criminality, as well as other ravages in the self-esteem and ability to function in everyday life.

Clinical Presentations

Physical Abuse

The reason for any form of abuse may vary and may include factors of economic stress, intergenerational trauma, systemic trauma, systemic racism, and lack of social support. Although these factors may contribute to parental/caregiver stress, the result is one of pain and struggle for the child. For some caregivers, punishment for “bad” behavior may, in their mind, warrant physical punishment. In many societies and cultures, a slap or spanking may be socially acceptable forms of discipline. However, if the child is hurt from this interaction, marks are left on the body, and it is a persistent occurrence, it may no longer be punishment, but rather abuse.

Some children experience chronic physical abuse, where their caregiver is hurting them every day or nearly every day and even multiple times a day. This may or may not be related to punishment for a behavior or action. Often regardless of frequency and intensity, children and adolescents who are living in environments of physical abuse often do not report the abuse to other adults, in part due to fear of repercussions from caregivers, but also because they may not recognize or understand their circumstances as abuse. Further,

certain acts of physical abuse such as scars, burns, fractures, or broken bones may or may not be visible to others making it more difficult to be identified and serving as an additional barrier to breaking the cycle of abuse.

Several studies have shown that a history of physical abuse in childhood can lead to aggressive and violent behavior, nonviolent criminal behavior, substance abuse, self-injurious behaviors, suicidal tendencies, emotional and interpersonal difficulties, and academic and professional challenges in childhood persisting into adulthood (Malinosky-Rummell & Hansen, 1993). These behaviors and actions can be recognized as signs and symptoms of abuse with the potential to be identified by others, such as teachers, neighbors, and medical. Traumatic events can cause a lasting impact on not only individuals but families and communities and are even transmitted through generations (SAMHSA, n.d.). In fact, traumas may not be defined by the traumatic incident itself, but rather by the emotional and physical impact of the event on the individual, their family, and their community/staff.

Stress and fear responses vary at stages of development and in the environment; “sensing and perceiving threat must be paired with response to threat if the organism is to survive” (Perry & Pollard, 1998, p. 39). If physical abuse begins during pregnancy or as an infant, the actual development of the brain, emotional, and social development are negatively affected. Further, trauma experiences prenatally and preverbally are more likely to be stored somatically.

Tyler is a 12-year-old self-identified white male (preferred pronouns he/him). Tyler was placed into the foster care system when he was 6-year-old after being removed from his mother’s care. Tyler was placed with foster parents Carlos and Elsa, who identified as Mexican-American. Tyler had been with his foster parents for almost 1 year, and was attending middle school, playing soccer, and learning to speak Spanish. Tyler appeared to be adjusting well to his new school and new home in the first several months of his placement. Carlos and Elsa then began to notice Tyler engaging in what they believed were “strange behaviors.” Tyler was found hoarding food under his bed and in his backpack for school, and when they asked him about why he was doing this, he began to shake and chat-

ter his teeth like he was extremely cold. Tyler’s hands were often sweaty which caused him to easily drop items, such as cups or plates, and when he did, he would apologize profusely for several minutes, his eyes would well up with tears, and was seemingly unable to move. Tyler appeared to remain frozen for several minutes and would not respond to any attempts from Carlos and Elsa to console him. After he would “return” from this state, they reported he was very sleepy and was not aware of the length of time that he was not responsive.

Carlos and Elsa worried about Tyler’s behaviors, and asked his pediatrician if perhaps Tyler was experiencing some sort of illness. The pediatrician found nothing of concern with Tyler’s physical health, and referred them to a neurologist, to further explore the moments where Tyler seemed to “disappear” into his mind. After several visits, the neurologist did not seem to find anything to explain these episodes and suggested the family consider therapy.

At the intake, Tyler was quiet, and did not make direct eye contact with the therapist. Carlos and Elsa had some knowledge of Tyler’s history in the foster care system, that he and his younger brother, Owen, were removed from their biological mother’s home due to abuse and neglect, and that Owen was currently living with a foster family in a nearby town. The therapist asked to speak to Tyler alone, and utilized a standardized youth report trauma measure to explore his trauma history and establish a baseline of symptoms. Tyler reported recurrent and intrusive memories, nightmares, dissociative reactions, avoidance, negative beliefs about himself, hypervigilance, and trouble with concentration. In the first session, Tyler vaguely disclosed experiencing abuse as a child, but did not describe traumatic events in detail.

Over the next several sessions, Tyler was still quiet in session, but was willing to engage in activities, such as coloring, playing games, and practicing breathing exercises. Tyler first felt safest discussing his life with Carlos and Elsa, saying they were nice to him, and providing more details about what life was like living with them. He reported in passing that the way his mother talked about Mexican-Americans didn’t seem to be true from what he had been experiencing with Carlos and Elsa. He also shared that he was not used to going to church since he never did with his mother, but with Carlos and Elsa he goes every Sunday and has been enjoying music and the youth programming. Tyler increasingly began to feel more comfortable in session with the therapist as evidenced by increased eye contact and openly sharing more of his experiences.

With time, Tyler began sharing in greater detail about his childhood and traumatic experiences. He reported that he did not remember much of his

early childhood, but recalled the smell of cigarettes and never living in one place for long. Tyler shared his brother was not much younger than he, but that it always felt as though they were twins, because he did not remember a time without Owen. Tyler's biological mother, Tracy, was a single mother, and often would leave the boys alone at home while she went to work, as well as when she went out socially. Tyler recalled his mother being easily frustrated, and becoming angry when the boys asked for things or dropped or broke something in the home. Tyler recounted that he and his brother were often hit, slapped, kicked, and burned with cigarettes when they cried or bothered their mother. Tyler and Owen were often hungry, as there was little to eat in the house. He recalled that sometimes his mother's boyfriends encouraged them to fight, but the boys did not want to, so their mother would throw food items in the middle of the floor for the boys to fight over. Around age four, Tyler also shared that his mother moved them to her boyfriend's house, where there was a large freezer in the garage. As a consequence for crying, whining, or doing anything their mother deemed punishable, she would place the boys in the large freezer, locking the lid with a key, and leaving them for what he felt to be hours. Tyler shared trying to sit close to his brother to keep each other warm and trying to talk to each other in the dark or to fall asleep in order to not feel as afraid and help the time go by faster.

In school, Tyler would often be sleepy during the day, and feel distracted during class because he would think about everything he was going on at home. Tyler became very withdrawn and appeared shy to his teachers and peers, but it was more that Tyler did not trust others around him to be kind or help him. Owen was more aggressive with his peers, and was often in trouble for hitting or biting in class. In a fight with a classmate, Owen fell and broke his arm, and when taken to the school nurse, burn marks and bruises were found on Owen's torso. Tyler was called into the office and asked if he too was being hurt at home, to which Tyler remained quiet, because he did not want his mother to be in trouble. Child Protective Services were called, and both boys were removed from their home, and taken into foster care. As the oldest child, Tyler was often asked to repeat their trauma history to law enforcement, case workers, and healthcare workers. He and his brother were placed together in their first home, but Owen was often violent with foster parents and other children, so he was sent to a youth facility. Tyler felt guilty that he did not protect his brother enough and that they were separated. Tyler struggled with feeling that if only he had been good enough, or smarter, or better in some way, their mother would not have needed to punish them, and they would all still be together.

In therapy sessions, Tyler was slow to build a therapeutic alliance, because he had trouble trusting strangers, especially adults. Tyler responded well to activities that helped him release the physical tension in his body, such as mindfulness-based exercises. Tyler also responded well to visualization and guided imagery exercises, and in combination with some cognitive based strategies, Tyler was able to begin to experience his feelings less intensely. A critical piece of the treatment involved working with Carlos and Elsa, to help them contextualize Tyler's behaviors, feelings and expressions of his emotions. Individual sessions with Tyler, some sessions with only the foster parents and family sessions with all three members were all utilized to develop techniques and strategies to manage their own feelings and reactions, as well as how to interact with other family members. Carlos and Elsa were very willing and open to work with Tyler and created a safe and nurturing environment.

Tyler's case highlights several important considerations when working with children and adolescents who have experienced physical abuse, as well as youth in the foster care system:

The foster care system is complex and nuanced, and often it is challenging for children to advocate for themselves and ensure that their voices are heard and validated. In the case of Tyler, his foster care experience with Carlos and Elsa is generally very positive and protective, including a positive association with mental health services and willingness to engage in his treatment, which had not been the case in his previous placement. For all providers who engage with youth in the foster care system, it may be necessary to establish protocols of assessing experience and safety of the current placement and actively seek opportunities to advocate on behalf of the youth, including proactive communication with the case worker and other professionals providing services (i.e., lawyers, child advocates) if not already established within the providers' system, as engagement of foster parents in services when possible.

Physical abuse, like sexual abuse, can encompass a wide breadth of experiences and reactions. As seen in the case, Tyler was frightened to disclose the abuse by his mother, out of fear of what would happen to her and to them. Many children feel a sense of responsibility for their parents or

caregivers, and will often sacrifice their own wants and needs to protect them. Further, many youth take on the responsibility of the abuse in some way citing their “bad” behaviors or sense of being a burden financially and/or emotionally. For many providers, it can be challenging to understand and conceptualize this form of traumatic attachment causing many children, regardless of the abuse, to maintain a deep connection to their abusers and desire to be reunited if separated or removed.

Like in Tyler’s case, despite many efforts to keep siblings together in foster care placements, many are often separated as a result of systemic constraints and logistical challenges such as availability of placements. Difference in safety and risk concerns between siblings will also affect degrees of care and placements. These traumatic separations initially of caregiver(s) and secondary losses of siblings can elicit symptoms of both trauma and grief and associated trauma and loss reminders. This provides another example of the importance of understanding the unique presentations and interventions for traumatic versus grief responses.

Children and adolescents in foster care are often placed with individuals who may not share a similar ethnic, racial, or cultural background. Tyler identified as white and was placed with a Mexican-American couple who challenged his previously held stereotypes and introduced opportunities for language and religious growth which were received positively by Tyler. In all placements, both the youth and foster parents likely have preconceived notions, biases, or prejudices about certain communities affecting all interpersonal dynamics. This possible experience of culture shock or immersion can contribute to a youth’s adjustment and attitudes and behaviors within the youth–foster parents’ interactions and must be considered within case conceptualizations and opportunities for intervention.

Children and adolescents who have not felt heard by or protected by adults, particularly in settings presumed to be safe, such as schools, hospitals, or clinics, are more likely to have trouble trusting a mental health professional. Further, youth in foster care who have experienced mul-

iple placements, inconsistency in caseworkers, or other regular changes in adult figures can experience a sense of apathy, apprehension, or underlying fear of getting close to others. For Tyler, simply trusting the therapist took several months and even longer to willingly disclose his full trauma history. Barriers such as set systematic limits regarding the number of sessions in mental health settings and time limits of medical appointments impede best practices for working with youth in foster care who often require several sessions devoted to building rapport, trust, and a therapeutic alliance. Time constraints also pose significant risks and ethical considerations when determining if it is appropriate to elicit disclosure of traumas without sufficient time to process and address the present symptomatology.

One possible challenge faced when providing trauma treatment services to youth in foster care may be the lack of emotional connection to recounting their trauma histories. This emotional disconnection often serves as a protective factor as youth are required at multiple points throughout the foster care system to disclose and provide extensive details of their abuse as experienced by Tyler. Part of exposure work through narratives can require bridging and strengthening the mind–body connection not for the services but as a means of sharing and healing for themselves.

Sexual Abuse

Childhood sexual abuse can occur in a single instance or assault, as well as repeatedly for an extended period of the child’s life. These traumatic experiences create risk factors for children as they become older, in their development of sexuality, attachment, relationships, as well as mental health and behavioral concerns, such as depression or increased substance abuse (Zink et al., 2009). High levels of somatization and reporting of physical health symptoms are also seen in victims of childhood sexual abuse and assault in comparison to individuals who have not experienced these forms of trauma (Zink et al., 2009). For many individuals and families across communities and cultural backgrounds,

basic concepts of sex and sexuality, let alone sexual abuse and assault, are often not discussed openly, resulting in pervasive stigma and silence around these topics. In some cases, caregivers may even be aware of abuse and participate in the concealment as a result of this stigma and shame or for other complex reasons including fear of repercussions for perpetrator, removal of the child, or even their own understanding of their trauma history. This is compounded when broaching these conversations with young children.

Sandor Ferenczi wrote in 1949 in the *Confusion of Tongues* about child sexual abuse and its traumatic effects on children, perhaps one of the first mental health professionals to write openly on this topic. Ferenczi emphasized that the child is the victim of the adult and that the child is not at fault for the adult's actions and behaviors. Further, the recognition that the majority of sexual abuse perpetrated on children and adolescents are from family members or known people was identified by Ferenczi and later validated through research. In the United States, according to the Centers for Disease Control and Prevention, 1 in 4 girls and 1 in 13 boys experience sexual abuse in childhood, and 91% of this is perpetrated by someone the child or their family knows (Preventing Adverse Childhood Experiences | Violence Prevention | Injury Center | CDC, 2021).

The trauma experience of sexual abuse is tremendous, and it is often made worse by the experience of disclosing the abuse. Some children are threatened by the perpetrator to keep the abuse a secret, creating feelings of isolation, shame, and guilt. Children cannot disclose the abuse because of threats to themselves or to others, making stopping the abuse or finding a way out of the situation seemingly impossible. This may also be reinforced by the type of relationship the child has with the perpetrator, where the closer the relationship the more difficulty and delay in disclosing the abuse (Lawson & Akay-Sullivan, 2020), at times even believing the relationship is mutual, consensual, and based on love. Some children believe the abuse is brought on because of something in them—that they are

bad, filthy, or at fault in some way. This feeling may be reinforced upon disclosure if the child is not believed, especially when the abuser is a family member.

“The outcry or discovery often is denied by the family, who may unite around the accused and against the victim, viewing the child as a troublemaker...These children are less likely to receive support and protection due to family denial and loyalty than if the abuser was outside the family or a stranger...[caregivers] who did not offer support and protection to their sexually abused children had a significant influence on the child's nondisclosure of the abuse...Disclosure is complex and multiply determined, and related to child factors, family dynamics, community, and culture...Often, disincentives outweigh incentives to disclose” (Lawson & Akay-Sullivan, 2020, p. 679).

The intensity of carrying the secrecy of abuse, or managing the denial and disbelief of a family is a heavy burden for a child or adolescent, in addition to the intensity of the traumatic experiences of sexual abuse. To endure and survive these difficult moments, children and adolescents may try compartmentalizing their thoughts and feelings by disconnecting from others, as well as disconnecting from themselves, leading to dissociative experiences and increased possibility of somatization of feelings.

The following is a case example of the physical expression of trauma and pain after sexual assault.

Keri, a 16-year-old self-identified white female (preferred pronouns she/her) was referred by her community pediatrician to a gastroenterologist due to complaints of intermittent nausea, vomiting, symptoms of reflux, and intestinal discomfort. The onset of the symptoms reportedly began roughly 6 months prior with no identified changes to routine or diet. A thorough medical examination by the gastroenterology specialist found no medical explanation for the symptoms. The physician suspected the symptoms to be a somatic presentation of anxiety and referred the family to a therapist.

A standardized psychosocial assessment was conducted at the initial intake with both Keri and her primary caregiver since infancy and maternal aunt, Gwynn. Gwynn and Keri demonstrated a strong connection and mutual respect throughout the intake. While Gwynn largely spoke, she regularly encouraged Keri to elaborate or contribute what was being shared. Keri presented as engaged and

calm, but shy. Keri's history was largely unremarkable for periods of functional impairment and presently she maintained good grades and positive peer and adult relationships both in school and at home. When asked by the therapist about any history of traumatic experiences it was first reported by Gwynn that when Keri was 6-year-old, she was sexually assaulted by an older boy in her neighborhood with whom she had played with often. Gwynn shared they had sought support from a therapist at the time, but that Keri seemed to be coping well with the incident and services were terminated after roughly six sessions. Gwynn also noted that not long after the incident was reported to child protective services, his family moved away and since then the incident had rarely been spoken about between Gwynn and Keri. While Gwynn broadly described the incident to the therapist, Keri became noticeably uncomfortable in her facial expressions, breaking previously held eye contact and crouching over in her seat. When asked if Keri wished to add any additional information about the event, she quietly stated, "No, I don't really like talking about it." No additional trauma history was reported by Gwynn or Keri.

The standardized youth report trauma measure utilized at initial intake indicated elevated levels of post-traumatic stress symptoms related to this incident and supported Keri's physical/somatic presentation prompting the initial medical workup and changes seen in session when the incident was recounted by her aunt. When feedback on the trauma measure was provided to Keri in an individual session and trauma reactions were further explored, she began opening up more about how what she referred to as "the incident" had been newly impacting her. She shared that she had rarely thought about the incident until recently when she began feeling attracted to another student at her school. Since then she reported that flashes and images of the incident had been uncontrollably flooding her memory, especially when she romantically thought about or saw the other student. Prior to this, she shared intentionally "staying away" from dating or caring about being in a relationship despite pressure from her peers. When attempting to gain greater details of what had occurred at the time of the incident or what the images she had more recently been experiencing contained, she noticeably struggled to share any details and began to stutter as she tried to find the words. When recounting the image prompted by these questions, she again began fidgeting in her chair, breaking eye contact, hunching and holding her stomach, and this time gagging and swallowing frequently as if nauseated. She was able to clarify that her inability to share about the incident was not due to the lack of memory, but rather reported feelings of physical disgust when she recounted the event.

This initial link between Keri's trauma history, feelings of disgust, and somatic symptoms was described and utilized to recommend an evidence-based trauma treatment. Keri was openly resistant to engage in a trauma-focused intervention due to the anticipation of needing to share details of the incident. Ultimately through continued rapport and safety building, the use of motivational interviewing and a presentation of treatment options that would not require a descriptive narrative, Keri was interested in engaging in services. She remained adamant that she did not wish to involve her aunt in treatment other than periodic updates of progress not because she didn't trust her, but rather did not see the need and wished to "get past this alone."

Given the continued shame and discomfort reported by Keri and frequently by sexual abuse/assault survivors, initial sessions included defining of, exposure to, and modeled dialogue around historically uncomfortable or taboo words and topics (i.e., sex, sex organs, concepts of pleasure), increasing comfort and establishing safety in using such terms in session. Physiological responses to these terms being said aloud were explored and addressed through the integration of somatic coping regulation tools. Specific psychoeducation was also provided on a broader understanding of the body's response to the stimulation of sex organs, specifically how our biological responses can be separated from our mental process. It explained why Keri may have experienced a sense of biological pleasure at the time of the incident and simultaneously a strong sense of shame given she was taught her private parts being touched was wrong. This connection further clarified why now at an older age experiencing attraction elicits a similar biological activation of pleasure pathways results in similar negative emotional responses associated with the trauma. Keri became increasingly comfortable speaking about these stigmatized topics and eventually named her desire to engage in positive, consensual sexual encounters as a strong motivation for treatment.

This open dialogue and modeling by the clinician also provided a safe space for Keri to share for the first time about her questioning her sexual identity and its relation to the internalization of her trauma experience. Keri shared that the first romantic attraction that was referenced at the initial assessment was toward a female student, which she felt contributed to her confusion and distress surrounding her assault. She questioned if her sexual attraction toward the same sex/gender was related to the incident and if she would not have been attracted to other girls if it has not happened/the perpetrator had not been a boy. Comprehensive psychoeducation on the fluidity of sexual identity and expression unrelated to her trauma was provided, and opportunities to more deeply explore her thoughts and beliefs on the incident's possible connection to

her sexual expression and identity were processed in the therapeutic setting. At this time, Keri did not express questioning her gender or gender expression. During the course of treatment, Keri began actively dating and often sought feedback as her relationships began to develop on topics such as if, how, when and what to share about her trauma history with her partner and additional strategies for addressing newly identified trauma reminders as her relationships progressed. Eventually, Keri wished to share about her exploration of her sexual identity with her aunt in session. Her aunt responded with initial shock and confusion, but through psychoeducation, guidance, and resources provided by the therapist was supportive of Keri's exploration.

Additional core treatment components consisted of general psychoeducation on post-traumatic stress responses, identification of trauma reminders, introduction and utilization of coping skills to manage trauma reminders and specifically somatic responses, cognitive restructuring related to self-prescribed guilt and shame over the incident, continued space to explore sexual identity, interests, and needs, as well as future planning and imagery around intimacy with a consensual partner and ongoing caregiver support and guidance. Keri remained engaged in treatment for roughly 9 months, and both self-reported and standardized measures indicated a reduction in post-traumatic stress and somatic symptoms.

The term sexual abuse and assault covers a wide array of experiences and responses influenced by the many factors explored throughout this chapter. Keri's case highlights several important concepts when working with survivors of sexual abuse and assault and other general case considerations:

In this case, Keri was clear in her stance of not wanting to share any details of the incident with anyone and was resistant to engaging in services until treatment options that did not require her to do so were presented. Pervasive shame and guilt are compounded in cases of sexual abuse and assault with societies messaging around sex and pleasure, especially for women, often contributing to this increased apprehension to share details of the abuse or assault. The approach taken of providing multiple treatment options demonstrates an example of the flexibility in selecting a trauma treatment that best meets the present needs/desires of a client and the importance of having well-rounded knowledge of those trauma

treatment options such as alternatives to traditional exposure-based therapies. Despite the strong evidence base of exposure-based trauma interventions, pushing Keri to engage in this type of narrative work could have increased the likelihood of disengagement and harm.

Developmentally, Keri was only 6 years old when the assault occurred and reported in treatment overall feelings of confusion at the time of the event about what had occurred given the disconnect between what she had been taught about her "private parts" as a child and the automatic biological activation of pleasure. She maintained this immature/unclear understanding of the incident for much of her childhood resulting in a latency of processing her assault until she began to experience sexual desire and opportunities for expression in adolescence. Sexual trauma at any age inevitably affects the individual's sense of trust and safety in relationships and treatment requires special attention be given to the impact of attachment expression, especially in the context of attraction and dating.

As previously described, when and to whom a youth discloses sexual abuse or assault and the response of that individual has the potential to serve as a strong protective or risk factor. Keri felt safe and secure enough in her relationship with her aunt to report the assault immediately, and her aunt reacted with kindness and understanding, believing her and taking immediate steps to protect her. This served as a strong protective factor during Keri's childhood. However, over time this factor became less potent as age-appropriate individuation from Gwynn as a caregiver occurred in adolescence, in addition to the overall discomfort speaking about her sexuality increased. This process demonstrates the fluidity of risk and protective factors in the context of development, and the need for building and adjusting resources over time as a trauma is revisited/reprocessed.

Keri's story provides a valuable reflection of one example of the intersection of trauma and sexual identity and expression. Through a broader understanding of sexuality and a facilitated processing of both the possible connections and disconnections to her assault, Keri became

increasingly able to reflect on re-centering herself in how she wanted to identify decontextualized from her trauma. More generally, the expressed gender, sex, and/or sexual identity of both the perpetrator and survivor can serve as significant factors in the processing of a sexual trauma. Youth who identify as LGBTQIA+ experience higher rates of trauma and therefore higher rates of post-traumatic stress (McCormick et al., 2018) requiring that trauma-informed care must include a comprehensive understanding and training in sexual and gender-affirming care.

Keri's persistent resistance to sharing details perhaps represents an extreme presentation of fear of judgment from others or their inability to receive her story in a supportive and healing manner. Children and adolescents often anticipate negative responses or discomfort from others, including healthcare providers, impeding disclosure, and opportunities for healing. Particularly with sexual abuse and assault, it is critical as health professionals to ensure that when a child or adolescent discloses such events, especially specific details, we are aware of our nonverbal, often automatic communication, including facial expressions, body language, and tone of voice. Judgment and shame about their experience can unintentionally be communicated through our unexplored, unidentified, or unprocessed discomfort with the topic. Reflecting on how we were spoken to and taught about sex and sexual expression, our relationship with our own sexual identity and expression, as well as our capacity to hold space for a difficult topic like sexual abuse and assault serves as a foundational opportunity to increase awareness of own personal biases that may be expressed in our interactions.

Part of the therapeutic process and providing trauma-informed care is to collaboratively create a shared language between clinician, client, and families. Some specific terms are assumed and taught through the psychoeducation components of treatment (i.e., trauma and loss reminders), but even these should be considered flexible when collaboratively developing a shared language between the clinician and the client. This can look different for each youth

and requires an ongoing reflection from the clinician or health professional. Keri repeatedly referred to her the sexual assault as "the incident," which the therapist then adopted to honor the degree of comfort Keri found in this specific language. There certainly are therapeutic interventions and benefits to naming traumatic experiences as assaults or abuse; however, this must be approached with caution and mirror the child or adolescents' readiness to be guided in this manner.

Somatic and Clinical Reflections

The expression of emotional distress and pain through a physical manifestation can be a helpful expression for some children and adolescents. If a young person does not have the language for an emotion, the ability to express it physically may be the only way to process and in some cases communicate their experiences. However, in many cases, it can be the expression of distress and pain. Some studies have described somatoform symptoms as caused by dissociation, and that the physical symptoms experienced are a form of somatoform dissociation (Elklit & Christiansen, 2009). Several studies have linked traumatic events to somatization where individuals experience symptoms without medical explanation of chronic pain, gastrointestinal symptoms, headaches, gynecological complaints, and musculoskeletal symptoms (Piontek et al., 2021; Spitzer et al., 2008; Waldinger et al., 2006). For some children and adolescents, the type of traumatic event witnessed or lived may then affect how they express the emotions and memory not only verbally but also physically.

Children who feel believed, safe, and supported are more likely to speak to their caregiver(s) about their experiences without feeling judged or shamed, and can more easily distinguish the separation that what happened was not their fault or something they caused. It also increases the likelihood the youth will continue to communicate with their caregiver(s) about their emotional experience as they begin to process the incident. Children who are met with dis-

belief, blame, judgment, criticisms, and disgust are more likely to not disclose to another adult again, and internalize these negative responses and believe them about themselves.

Trauma-Informed Care

Perhaps information on the foster care system makes more sense in the clinical case with a child in foster care?

The majority of evidence-based treatments mentioned in the previous chapter, require extensive training and a certification process to fully utilize them in practice with clients and patients. These trainings and certifications may have considerable costs and may require in-person or online courses and consultation calls, which can serve as barriers for many clinicians. This, in addition to the factors of prevalence and misdiagnosis described above, has contributed to the renewed and growing conversation regarding the importance of a holistic understanding from a systems level of trauma-informed care. There are now many detailed resource guides on how organizations and, therefore, the individuals within an organization can become more trauma-informed. One such guide from the Substance Abuse and Mental Health Administration provides this comprehensive definition grounded in what is called the “Four Rs”:

A program, organization, or system that is trauma-informed realizes the widespread impact of trauma and understands potential paths for recovery; recognizes the signs and symptoms of trauma in clients, families, staff, and others involved with the system; and responds by fully integrating knowledge about trauma into policies, procedures, and practices, and seeks to actively resist re-traumatization (SAMHSA, *n.d.*, p. 13).

Trauma-informed care requires maintaining a “trauma lens” through which we view all aspects of our work, both direct and indirect patient care, and at all levels of an organization or system. Comprehensive guidance and recommendations such as extensive training for staff, standardized trauma assessment and triage processes, and responding to the inevitable impacts of working with traumatized individuals (i.e., vicarious

trauma, secondary traumatic stress, compassion fatigue, and burnout) can be found detailed in these resources. Equal emphasis is placed on operating within the understanding of the intersection of trauma and the complexities of identity (i.e., culture, race, gender, religion, sexual orientation, etc.), related historical trauma, structural inequities and the unique needs of communities (NCTSN, *n.d.*). One such example can be demonstrated through the understanding of how language affects the recalling of a trauma memory, especially if the individual speaks more than one language. Some studies have observed that trauma memories are recalled in great quantities and from earlier ages when memories are recalled or prompted in the language in which they occurred (Schwanberg, 2010). This indicates the critical importance of providing services in the client’s primary language whenever possible to most effectively process a trauma. The awareness, knowledge, and ability to recognize and respond to trauma in ourselves and our clients and both our and their families and communities have the power to change the course of treatment and address root causes of frequent human suffering. It can be argued that this humanistic approach far outweighs the standardization of any trauma treatment model and its core foundations in connection and humility are perhaps consistent with findings that therapeutic alliance and other relational variables serve as critical elements in treatment outcomes (Shirk et al., 2011; Shirk & Karver, 2003).

Therapy with the whole family can be extremely valuable when the child is not in immediate danger, and can allow for the parents/caregivers to develop parenting and supportive techniques and changes to their past patterns, which may have involved physical discipline, yelling, or humiliating, the child. In cases of sexual abuse, the safety of the child is also most important. If the individual abusing the child is a family member, it may be more challenging to pursue family therapy approaches.

Parents/caregivers may require their own psychotherapeutic intervention if they have difficulties like substance use, alcohol abuse, personality disturbance, and to process their own trauma experiences.

A family therapy approach offers an avenue for the child to continue to feel protected and for the family members to reflect on and make changes to their interactions. It may also help children and parents/caregivers to diminish their emotional reactivity and engage in other responses when they are angry or wish to control the child.

Child abuse is a problem with multiple dimensions, individual and sociocultural ones. Prevention strategies may be best applied when the child is very young, and the parents are known to be at risk. Home visiting programs, when the parents agree to them, have offered a hope to have a long-lasting effect on parents' use of discipline and in learning tools "on site" to manage difficult behaviors in their children. This is particularly effective if the involvement with clinicians is early in the life of the child or during pregnancy, and before there is involvement with child protective services (Affi et al., 2014; MacMillan, 2000; MacMillan et al., 2005; van IJzendoorn et al., 2020). The risk factors are well known, and a preventive strategy is ideally implemented when parents first come into contact with the healthcare system and are parents "at risk" even while they are still expecting the child, such as during pregnancy.

Pharmacological Component

The use of medication in the treatment of mental health is perhaps what is often thought of first by many, particularly in countries like the United States. Many health insurance companies in the United States do not provide coverage for psychotherapy, and so many individuals turn to their primary health physicians for medication to treat their mental health concerns. Some psychiatrists still provide psychotherapy as part of their practice, but many provide only "med management sessions," seeing patients every few weeks for a 15–20-min session to monitor their ongoing response to medication. Although the use of psychotropic medication can be extremely beneficial for the treatment of mental health concerns, it is also crucial to ensure that the medication that is being used to treat a condition is in fact the condition that is being experienced.

As previously stated, symptoms of trauma can at times be misdiagnosed as anxiety, depression, or ADHD. Although the medication may ameliorate the symptoms of anxiety, depression, or ADHD, the trauma experience of the individual is not being addressed by the medication, and may in fact have a negative effect. Some individuals may report a decrease in symptoms, but in fact may be numbing their feelings through medication, as to not have to manage symptoms of trauma. Studies utilizing data from national registries of drug prescriptions found that rates for psychoactive medication prescriptions have increased, as well as the rate of children prescribed psychostimulants in the last 50 years. Even children who do not fully meet the diagnostic criteria for ADHD are treated with psychostimulants (Merten et al., 2017). It is critical for individuals prescribing medication to ensure that the symptoms match the treatment.

The decision to use psychotropic medications is based on multiple factors like the severity of symptoms, how much they impair well-being and functioning, the potential for side effects, as well as the preferences of the individual. The clinician who can prescribe medications may suggest an approach to ameliorate symptoms while the psychotherapeutic work proceeds, hopefully addressing the sources of the symptoms (namely unresolved trauma, losses, traumatic loss, the effects of neglect or antipathy, etc.). Psychotropic medication should be seen as a part of a set of multimodal interventions in order to help the patient remain in psychotherapy, to conduct psychological processing of traumatic events, to experience relief from constant tension, fear, or a feeling of emptiness or depressive thoughts. In other words, the relief provided by the medications is symptomatic and may be extremely beneficial in creating the capacity to work through the sources of those symptoms in order to provide long-lasting relief.

There are a several psychotropic medications utilized in the treatment of trauma symptomatology. There cannot be a fixed set of medications to treat each specific symptomatic manifestation of trauma. In children and adolescents, psychiatrists often resort to alpha-adrenergic medications (e.g., clonidine or guanfacine) to alleviate

the constant anxiety and hyperarousal caused by over-functioning of the sympathetic system. This is a function of “downregulation” of that portion of the autonomic nervous system. In adequate doses, it is possible to use those medications even with younger children without undue danger of long-term negative effects.

In some children and adolescents, constant anxiety and worry can be alleviated with antidepressant medications of the SSRI (selective serotonin reuptake inhibitors) or SNRI (serotonin and norepinephrine reuptake inhibitors). Some of these are approved for use with children and adolescents, but there is no significant evidence that one is uniformly better than the other. Also, in some cases, neuroleptic medications can be used temporarily to alleviate severe symptoms like constant dissociation, hearing voices that tell the child to hurt themselves, self-damaging behavior like cutting or scratching, as well as for severe aggressive behavior. These medications should be supplemented with the use of psychological interventions to treat not only the child but also the family system in which the child resides.

Concluding Thoughts

Trauma and traumatic experiences are complex and nuanced, as can be the approach to treatment. As has been discussed, the phrase “traumatic experiences” encapsulates an immense collection of events and moments. There is no one approach to recognizing and treating trauma, because each child and adolescent is an individual, and there is no “one size fits all” approach. The presentation of trauma in children and adolescents can be difficult to identify, particularly if the child is primarily presenting with physical symptoms. Somatic symptoms are often more tolerable to feel than to acknowledge the difficulty of the emotions associated with the trauma experiences. Somatization can be difficult to detect, particularly in young children, as physical complaints are not uncommon or may be

developmentally explained. Creating an environment that is safe, welcoming, nonjudgmental, and honest is what we can hope to establish; to see the humanity in each individual, family, and community.

References

- Afifi, T. O., MacMillan, H. L., Boyle, M., Taillieu, T., Cheung, K., & Sareen, J. (2014). Child abuse and mental disorders in Canada. *Canadian Medical Association Journal*, *186*(9), E324–E332.
- Byun, S., Brumariu, L. E., & Lyons-Ruth, K. (2016). Disorganized attachment in young adulthood as a partial mediator of relations between severity of childhood abuse and dissociation. *Journal of Trauma & Dissociation*, *17*(4), 460–479.
- Elklit, A., & Christiansen, D. M. (2009). Predictive factors for somatization in a trauma sample. *Clinical Practice and Epidemiology in Mental Health*, *5*(1), 1. <https://doi.org/10.1186/1745-0179-5-1>
- Lawson, D. M., & Akay-Sullivan, S. (2020). Considerations of dissociation, betrayal trauma, and complex trauma in the treatment of incest. *Journal of Child Sexual Abuse*, *29*(6), 677–696. <https://doi.org/10.1080/10538712.2020.1751369>
- MacMillan, H. L. (2000). Child maltreatment: What we know in the year 2000. *The Canadian Journal of Psychiatry*, *45*(8), 702–709.
- MacMillan, H. L., Thomas, B. H., Jamieson, E., Walsh, C. A., Boyle, M. H., Shannon, H. S., & Gafni, A. (2005). Effectiveness of home visitation by public-health nurses in prevention of the recurrence of child physical abuse and neglect: A randomised controlled trial. *The Lancet*, *365*(9473), 1786–1793.
- Malinosky-Rummell, R., & Hansen, D. J. (1993). Long-term consequences of childhood physical abuse. [Review]. *Psychological Bulletin*, *114*(1), 68–79.
- Malloy, L. C., Lyon, T. D., & Quas, J. A. (2007). Filial dependency and recantation of child sexual abuse allegations. *Journal of the American Academy of Child & Adolescent Psychiatry*, *46*(2), 162–170.
- May-Chahal, C., & Cawson, P. (2005). Measuring child maltreatment in the United Kingdom: A study of the prevalence of child abuse and neglect. *Child Abuse & Neglect*, *29*(9), 969–984.
- McCormick, A., Sheyd, K., & Terrazas, S. (2018). Trauma-informed care and LGBTQ youth: Considerations for advancing practice with youth with traumatic experiences. *Families in Society: The Journal of Contemporary Social Services*, *99*(2), 160–169.

- Merten, E. C., Cwik, J. C., Margraf, J., & Schneider, S. (2017). Overdiagnosis of mental disorders in children and adolescents (in developed countries). *Child and Adolescent Psychiatry and Mental Health*, *11*(1), 5.
- NCTSN. (n.d.). The National Child Traumatic Stress Network. <https://www.nctsn.org/>
- Perry, B. D., & Pollard, R. (1998). Homeostasis, stress, trauma and adaptation: A neurodevelopmental view of childhood trauma. *Child & Adolescent Psychiatric Clinics*, *7*(1), 33–51. [https://doi.org/10.1016/S1056-4993\(18\)30258-X](https://doi.org/10.1016/S1056-4993(18)30258-X)
- Peterson, S. (2018a, January 22). *About child trauma* [Text]. The National Child Traumatic Stress Network. <https://www.nctsn.org/what-is-child-trauma/about-child-trauma>
- Peterson, S. (2018b, January 25). *Physical abuse* [Text]. The National Child Traumatic Stress Network. <https://www.nctsn.org/what-is-child-trauma/trauma-types/physical-abuse>
- Peterson, S. (2018c, January 25). *Sexual abuse* [Text]. The National Child Traumatic Stress Network. <https://www.nctsn.org/what-is-child-trauma/trauma-types/sexual-abuse>
- Piontek, K., Wiesmann, U., Apfelbacher, C., Völzke, H., & Grabe, H. J. (2021). The association of childhood maltreatment, somatization and health-related quality of life in adult age: Results from a population-based cohort study. *Child Abuse & Neglect*, *120*, 105226.
- Preventing Child Abuse & Neglect | Violence Prevention | Injury Center | CDC. (2021, March 23). <https://www.cdc.gov/violenceprevention/childabuse-andneglect/fastfact.html>
- Saunders, B. E., & Adams, Z. W. (2014). Epidemiology of traumatic experiences in childhood. *Child and Adolescent Psychiatric Clinics of North America*, *23*(2), 167–184.
- Schwanberg, J. S. (2010). Does language of retrieval affect the remembering of trauma? *Journal of Trauma & Dissociation*, *11*, 44.
- Shirk, S. R., & Karver, M. (2003). Prediction of treatment outcome from relationship variables in child and adolescent therapy: A meta-analytic review. *Journal of Consulting and Clinical Psychology*, *71*(3), 452–464.
- Shirk, S. R., Karver, M. S., & Brown, R. (2011). The alliance in child and adolescent psychotherapy. *Psychotherapy (Chicago, Ill.)*, *48*(1), 17–24.
- SAMHSA's Concept of Trauma and Guidance for a Trauma-Informed Approach. (n.d.). 27.
- Spitzer, C., Barnow, S., Gau, K., Freyberger, H. J., & Grabe, H. J. (2008). Childhood maltreatment in patients with somatization disorder. *Australian & New Zealand Journal of Psychiatry*, *42*(4), 335–341.
- van IJzendoorn, M. H., Bakermans-Kranenburg, M. J., Coughlan, B., & Reijman, S. (2020). Annual research review: Umbrella synthesis of meta-analyses on child maltreatment antecedents and interventions: Differential susceptibility perspective on risk and resilience. *Journal of Child Psychology and Psychiatry*, *61*(3), 272–290.
- Waldinger, R. J., Schulz, M. S., Barsky, A. J., & Ahern, D. K. (2006). Mapping the road from childhood trauma to adult somatization: The role of attachment. *Psychosomatic Medicine*, *68*(1), 129–135.
- Wildeman, C., Emanuel, N., Leventhal, J. M., Putnam-Hornstein, E., Waldfogel, J., & Lee, H. (2014). The prevalence of confirmed maltreatment among US children, 2004 to 2011. *Journal of the American Medical Association. Pediatrics*, *168*(8), 706–713.
- Zink, T., Klesges, L., Stevens, S., & Decker, P. (2009). The development of a sexual abuse severity score: Characteristics of childhood sexual abuse associated with trauma symptomatology, somatization, and alcohol abuse. *Journal of Interpersonal Violence*, *24*, 537.
- Maria Ximena Maldonado-Morales**, LCSW-S, MPH Multilingual licensed clinical social worker and psychotherapist, with experience working with youth and adults. Over the last 7 years as a therapist has particular experience working with children and youth with trauma and grief, immigrant populations, and women and infants in a perinatal setting. Masters of Social Work and Masters of Public Health from the Brown School of Social Work at Washington University in St. Louis. Doctoral candidate in Clinical Social Work at Smith College for Social Work. She currently serves as a supervisor and therapist at Texas Children's Hospital. Coeditor of the book "Clinical Handbook of Transcultural Infant Mental Health" (Springer).
- Stephanie Yudovich** LSCSW Licensed clinical social worker and supervisor with a specialty in working with children, adolescents, and adults who have experienced significant deaths and/or traumas. Through clinical supervision, consultation, and trainings to individuals and organizations, she aims to educate and destigmatize grief and trauma experiences. BA in Psychology with minors in Human Development and Communications at the University of California, Davis. Masters of Social Welfare at the University of California, Los Angeles. She served as Assistant Director at a trauma and grief clinic in Houston, TX, and now remains actively engaged in clinical, supervision, consultation, and training services through her private practice.



Short- and Long-Term Effects of Adverse and Painful Experiences During Very Early Childhood

Henry Marquez-Castro, J. Martin Maldonado-Duran, Muhammad Ishaq Farhan, and Cheru Sehgal

A significant proportion of newborns come into the extrauterine world with health difficulties that require early interventions by means of medical treatments and procedures. Indeed, nowadays it is possible to experience surgery while “in utero” for certain conditions, such as the repair of spina bifida, which usually leads to a better prognosis for the child (Copp et al., 2015) compared with surgery after birth. There are also many more procedures to treat conditions associated with prematurity. The prevalence of prematurity is variable, and in the United States, it is around 10% of all births (Ancel, 2004).

In addition to that, a baby can be born prematurely, sometimes at 22 or 23 weeks of gestational age and survive (Field et al., 2008). This may require a prolonged stay in a neonatal intensive care unit for periods of several months or even over a year. This will mean that the infant will have had a very different early life experience from a normal baby who goes home and is

looked after by their parents. The infant in the NICU (Neonatal Intensive Care Unit) will have an excess of adverse experiences and diminished opportunity to have “compensatory” or positive ones. For instance, he or she will have frequent aspirations of excess airway secretion, repeated punctures on the heel to measure some components of the blood, as well as multiple awakenings at various parts of the day for examinations change of posture and will be exposed to a constant level of noise (El-Metwally & Medina, 2020), and often of light, day and night. There may be additionally some surgical procedures (for instance the repair of necrotizing enterocolitis) as well as other surgeries that may be required to correct some morphological abnormality. There may be a nasogastric tube to feed the child and frequent unforeseen maneuvers to deal with complications. Not only there is a “barrage” of untoward or painful stimuli (Johnston et al., 2011), but also deprivation of normative experiences.

The baby in those circumstances will probably not experience being held by a caregiver contingently, i.e., when he or she cries or is uncomfortable. At times, this is because the child should not be touched at all if he or she is very premature as the skin is very thin and fragile.

Other difficulties in being able to hold a baby may be temperature control or mechanical difficulties due to all the devices connected to the

H. Marquez-Castro (✉)
Imperial County Behavioral Health Services,
El Centro, CA, USA
e-mail: henrymarquez@co.imperial.ca.us

J. M. Maldonado-Duran · C. Sehgal
Menninger Department of Psychiatry, Baylor College
of Medicine, Houston, TX, USA

M. I. Farhan
Department of Psychiatry, University of Missouri
Kansas City, Kansas City, MO, USA

child (respirator, gastric tube, intravenous infusion, oximeter, etc.). Also, the nurse in charge of the baby may not be able to respond contingently to the baby's distress, the way a mother at home would, as the nurse has to perform other duties.

Nowadays, in many neonatal intensive care units, the care of the baby is "clustered" so that many maneuvers may be performed at the same time or in short succession by the nursing staff, and the child would not have to be "awaked each time" for each or the next procedure (suctioning of the airway, bathing, changing position, checking blood sugar, laboratory studies). Increasingly, in many hospitals, parents are encouraged to attend regularly to see their baby and may be encouraged to participate in the care of the baby, or spend there as much time as they can manage. Kangaroo care (Kashaninia et al., 2008) is encouraged in many more centers than in previous times (skin-to-skin contact between the parent and the baby when the condition of the baby allows for this to happen) and this provides some compensatory experiences to the baby and the parents (Kostandy et al., 2008). Kangaroo care has been associated with multiple benefits for the infant and the baby. Kangaroo care benefits the baby in terms of temperature regulation, breastfeeding, normative experiences of touch and containment, and bonding between the child and the caregiver. It also has been shown to improve neurodevelopmental outcome, as well as reduce the pain associated with procedures (Campbell-Yeo et al., 2015). Sadly, in many poor countries, none of these procedures are possible given practical difficulties, hospital rules, fear of infections for the baby, issues of staffing, availability of incubators, etc..

Since the Coronavirus Disease 2019 (COVID-19) pandemic started, many of these practices have changed and are in constant remodeling due to the risk of contagion to infants, parents, and hospital professionals, bringing more stress to the family and affecting parental bonding.

A study that analyzed newborn care services from over a dozen countries (Yeo et al., 2020) found that two-thirds of the workers stated they did not allow COVID-19-positive or unknown-status mothers to practice Kangaroo mother care (KMC) (Rao et al., 2021; Minckas et al., 2021)

and more than 20% of workers did not allow KMC even among mothers testing negative for COVID-19.

NICUs in the United States are allowing parents to visit their baby one at a time and have restricted visits from people other than the parents. Practices such as skin-to-skin care in the delivery room continue to be encouraged with safety measures to minimize the risk of transmission of the virus (American Academy of Pediatrics, 2020).

In many other countries, if COVID-19 is suspected or confirmed in the mother, the baby is separated from the mother to protect the baby. A systematic review of 20 clinical guidelines from Australia, Brazil, Canada, China, France, India, Italy, Japan, Saudi Arabia, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, the UK, and the United States found that during the COVID-19 pandemic one-third recommended separation of mothers and newborns if the mother had or could have had COVID-19 (Hosono et al., 2021).

Some NICUs have started to provide video call conferencing to parents and families to mitigate the loss of bonding time and parental restrictions (Ozawa et al., 2021).

Fortunately, in the last few decades, physicians have become more attentive to the experience of pain in the very young infant, and practice analgesia and sedation more than it was feasible before (MacKenzie, 2006).

However, the fact remains that despite the best efforts of physicians, nurses and parents, the baby in the NICU or who has a medical condition that requires early treatment, will endure adverse and/or painful experiences (Provenzi et al., 2015), and there will be a lack of exposure, maybe for months, to more normative experiences, including the being held and bonding with the biological parents, who may "visit" their child regularly but not be able to provide the usual physical and contingent response that a normal infant would experience at home (Egle, 2009).

What are the immediate, short term, and possibly long term of these early experiences of painful/overwhelming stimuli, and the lack of the normal containing and calming experiences that

an infant would have if he or she were at home? Physical contact between mother and newborn has been shown to calm both, and to produce the release of endorphins, and for the mother of oxytocin, which may be associated with bonding and experiencing tenderness toward the baby (Matthiesen et al., 2001).

Is it possible that there may be long-lasting effects in the child? After all, the experiences of pain and other maneuvers may be conceptualized as “traumatic” as the baby does not know that the pain is induced with the intentions of treating him or her.

The “lived experience” of the infant may have elements similar to those observed in some forms of physical abuse and deprivation of normal parental responses. Particularly if analgesia is not provided regularly, there may be many painful experiences along the months, which may leave short-term and long-term negative consequences (Stevens et al., 2010; Tesarz et al., 2018).

There is some research to explore the question of the effect of those negative early experiences and particularly, how they might be ameliorated or how their possibly negative effects could be curtailed (Zeiner et al., 2016).

One of the issues involved is the mere fact that the baby was very premature at birth, and this by itself has been associated with changes in the development of the brain. This prematurity may lead to reduced amounts of gray and white matter in infancy, and an alteration of patterns of neuronal migration due to the unusual experiences in the NICU. There is ample evidence of a link between prematurity and a higher risk of developing learning difficulties, attention deficit, motor skills problems and emotional dysregulation in the child who was born very premature (Lax et al., 2012; Nosarti et al., 2002, 2008).

How would one differentiate the effects of the prematurity itself from the additional adverse experiences (pain and others) and of the absence of normative experiences? Furthermore, how to distinguish this from the impact on the parents of having a baby with such difficulties? There is clearly also an effect on them, a feeling of fear of the unknown, which may last for months or years. Their own anxieties and fears for their baby prob-

ably have also an impact on how the child will grow and feel, particularly if he is considered a “vulnerable child” by his or her parents.

It is possible that in addition to the above, the negative effects may not only result from pain, but from the lack of control, unpredictability, and long duration of such procedures which impact the baby. Similar experiences affect an infant who suffers from neglect or physically painful treatment by caregivers, and those are well known to have a short-term and long-term impact on the behaviors and emotions of the child.

It would be understandable if there were after-effects such as anxiety and “implicit” or somatic memories of these negative experiences and the consequent posttraumatic stress phenomena. One of the variables could be called “cumulative pain experience” which indicates the repetition over time of painful procedures; which could be different from only occasional or one-time experiences even if quite painful.

Early observers of babies in incubators and neonatal units, theorized that there might be a response of “massive withdrawal” or social withdrawal, or anaclitic depression (Spitz & Wolf, 1946) on the part of the baby to the outside world, since this is so overstimulating and invasive. Some called this “hospitalitis” or “hospitalism.” It would be a form of iatrogenically, or artificially constructed milieu. Those descriptions included the baby becoming unresponsive to stimuli, be them positive or negative, as if the baby would “cease to respond” even to painful stimuli or would hardly cry. This “withdrawal” included a lack of fixation on the eyes of those in front of him, as well as not pursuing objects and a tendency to vomit or regurgitate any food. There would be difficulty to gain weight and at times an aversion to touch of any kind. It was hypothesized that the baby had learned to associate the presence of others with adverse or even painful stimuli and therefore would not respond or withdraw.

Not all infants exposed to those environments/experiences developed such a “withdrawal response” and it is not known if the intensity, frequency or duration of the negative experiences contributed to the response. In any event, it

remained to be ascertained if such withdrawal could be reversed once the child went home and started to have more normative experiences in the care of his or her parents. To what degree can the child bounce back, “forget the past” (in terms of somatic memories) or conversely, continue to respond to the presence of others with caution, fear or not responding at all? What would be the long-term effects?

Rene Spitz (1949) described a similar phenomenon in nonpremature infants, but babies who were raised in orphanages and were fed, cleaned, bathed but had no stable figure in their care nor anyone who would respond to the infant’s needs for attention, proximity and contingent response. He called this also hospitalism. He observed that many children in these circumstances, even if fed, and cared for in minimal ways, with cleanliness and regularly scheduled caregiving maneuvers had a high mortality rate (Spitz, 1949).

Early Pain Experiences

There is evidence (Brummelte et al., 2012, 2015) that early experiences of pain, before the 28th week can have an actual altering effect in the development of several brain structures. This may include an alteration in somatosensory perception (Walker et al., 2009).

The existence of an “endogenous modulatory pain system” has been theorized. It is thought that his system modulates later on in childhood the perception and the response to painful stimuli.

A review of available information (Taddio & Katz, 2005) suggests that when a premature infant has experienced painful events multiple times and for a prolonged time (Meyer et al., 2007), he or she will have an altered response to noxious stimuli later in infancy.

A newborn who has experienced only one or two such negative events might have a somewhat heightened response to further noxious stimuli (Moeller-Bertram et al., 2012). Other researchers have suggested indeed a consequence of dampened “behavioral response,” but heightened phys-

iological response, to painful stimuli later on as a consequence of early adverse events (Donia & Tolba, 2016). That is, the baby would not cry or withdraw, but would experience an activation of the sympathetic system in response to those events.

It also has been suggested that early painful experiences in the neonate can alter the perception of pain when the child is older, or as an adolescent, making the child perceive pain more intensely than children who have not experienced pain during infancy. This is suspected to be due to a permanent alteration of the “pain processing mechanisms” in the brain, making the child more susceptible to perceive pain as severe (Fitzgerald & Beggs, 2001).

It has been shown (Fitzgerald, 2005) that repeated early pain and tissue damage leading to nociceptive transmission can alter the “circuitry” of the dorsal horn at the level of the spinal cord. This would alter the pain response in the future, making it more intense in general, a sort of programming effect that will be noticed later on in life.

It appears that when premature babies have been exposed chronically to adverse and painful procedures, as they get older, they may tend to avoid novelty and unexpected situations, due to a high anxiety level and increased cautiousness (Grunau, 2003; Grunau et al., 2006; Whitfield et al., 1997).

Other authors have found that painful experiences in the neonatal intensive care unit can alter the cortical thickness, as was demonstrated in a study of seven-year-old children with that antecedent (Ranger et al., 2013). A study focused on the consequences for premature babies of being exposed chronically to nociceptive stimuli showed changes at age seven. Studied with functional magnetic resonance imaging (fMRI) those children, compared with controls, manifested an increased activation in areas of the brain that process pain and aversive responses, namely the anterior insular cortex, and anterior insula among others (Hohmeister et al., 2010). This has been related to a higher tendency to experience chronic pain at that age. There may alterations also in motor and cognitive processing (Ranger et al., 2013).

Long-Term Emotional and Behavioral Consequences for the Child

Aversions and Fear of Others

A child or adolescent may not remember what he or she experienced as an infant or very young child, in terms of adverse medical procedures. There is no narrative memory (or episodic memory) of what happened. However, there may be a sort of “screen memory” based on what the parents and others tell the child about what he or she endured in those years. There may also be a somatic memory (or procedural memory) of those adverse experiences, which may become a part of the child’s experience of the world for years to come.

The infant may associate the proximity of people with painful or overwhelming medical procedures, over which she or he has no control, and which may be repeated multiple times. The body may keep, so to speak, a memory of those events of proximity and the child may experience anguish in anticipation of proximity to others. This for instance appeared to be the case for the following adolescent:

A 17 year old (John) is brought for consultation by his parents, who are concerned that John is very anxious and fastidious. He tends to spend a lot of time in his room, practicing guitar and playing videogames. He is very bright, and he studies a lot of things, such as endangered animals, global warming and the effects of pollution on the planet. He has hardly any friends and goes to a cooperative high school. John says he is constantly nervous and only feels really at ease and safe in his room, by himself. He does not like to be touched by anybody. He has an uneasy feeling in physical proximity with people, even his parents, siblings or his few friends.

John seems anxious and worried constantly that he might say “the wrong thing.” He has multiple aversions to foods and only eats a restricted range of them. With tears, his parents explained how John was born very premature, 26 weeks of gestation, and had to undergo a lot of medical procedures. This included a surgery that left him with short gut syndrome. In those months, John developed other complications and had to be flown to specialized center, the parents thought John nearly died in one of these events.

The boy always has a feeling that “something is wrong” and that he himself might do something wrong. The mere physical presence of another person close to him makes him feel anxious, as though he could be attacked. His parents were very kind to him, and never punished him physically.

As we start to explore his early life experiences and the possible impact they might have had on him, he starts to feel less anxious. He has “a reason” for his constant feeling of tension. We engage with him in exercises of relaxation, hypnosis and we recommended massages at home. His anxiety improved considerable and he started to enjoy a little “being around people.”

Dissociation and Being in One’s Own World

A child who as an infant has had to spend a lot of time in hospitals, dealing with multiple nurses and other health care staff, and who had to endure multiple medical procedures, surgeries and repeated evaluations, may develop a number of dissociative experiences as a way to cope with them. Dissociation can be conceptualized as a form of “escape from the mind” in which the child is not fully present or aware of suffering. He or she may feel “he is not in his body” or “she is elsewhere” or “someone else is being hurt” by the procedures. When prolonged stays in hospital or repeated hospitalizations occur, this may become almost a “way of life” in order not to experience difficult or painful events. This of course may include repeated separations and reunions from his parents. It is a form of withdrawal, but not with the body, with the mind, a form of somatic dissociation.

A little boy Jack, six years old, was brought for treatment because of “attention deficit disorder.” He was seen in the complex care clinic, because he had had multiple medical conditions. He had been born prematurely and had to spend many months in the neonatal intensive care unit. Then, toward his first birthday he developed a malignant hepatoma, and was prepared, later on for a liver transplant in another city. Jack had to take immunosuppressant drugs and was very delicate. Now he is mostly recovered. He is an intelligent and likeable boy, engaging at times, but who appears very easily distracted.

During the sessions of evaluation with his parents, he seemed to “be in his own world” very often. As soon as one would not talk to him, he would start “fixing things” in an imaginary world. That is, he would carry out motions that seemed to refer to turning screws, removing parts, and replacing parts. He did this in front of everyone, as though he were a mime artist. He had done this for a long time as his parents explained, and also in the classroom, to the chagrin of his teacher.

Jack seemed to have created his own world, where he was very competent and was often fixing cars, repairing ambulances, and fire trucks. He “knew” these were imaginary, but preferred to engage in these fantasy world when one was not directly talking to him and he was anxious about what might happen. He had spent a lot of time with multiple caregivers and seemed to have developed many fantasies of that sort, being “a worker.” In his world he is utterly competent, confident and could realize his fantasies of “being in control.” In this fantastical world he decided “what to fix” and what to do, and was not at the mercy of his parents or other adults, having to obey them and doing things he found difficult, like reading or writing.

We often see a clinical picture in a child that is diagnosed as “attention deficit disorder” which although it involves distraction, it is more related to phenomena like daydreaming or dissociative events. This is a protective and adaptational device, to deal with being stuck in a room or a bed, perhaps not being able to move, to walk, having to endure multiple procedures, unable to reject the maneuvers that are being performed. In this alternative world, the child is free, competent and completely efficient; he or she can do as one pleases, and there are no limitations or scary events about to happen.

Acting “Without a Mind”

In other instances, a child seems to react to multiple early traumatic events, as the ones described above, with a basic attitude of being oriented to action. This consists of intense hyperactivity, and “creating noise” so as not to “stop and think” or more to the point “stop and feel”. If the child were to reflect, he or she might experience fears, sadness, anger about what he

or she has gone through. We have encountered several children brought to treatment due to disruptive behaviors, loudness, and frequent temper tantrums when faced with a frustration or “for no obvious reason.” The child, who has antecedents of prematurity and long stay in the NICU, seems to be unreachable (interpersonally) and does not respond to the usual dialogue, questions or limits that are attempted to deal with he or she

Mike is a 7 year old child who was born with Crouzon syndrome and also premature. He spent months in the NICU, and later on he had to have multiple surgeries. Those were meant to deal with the deformities in his skull and with visual problems. He got a tracheostomy due to complications that he suffered during the surgeries. He has had prolonged periods of hospitalization. His mother, who is single, has had to balance the needs of her other two children with those of Mike. The boy has learned to make his mother “stop everything” when he throws temper tantrums or hits his siblings, or when he breaks something when he is angry.

The mother hopes that a medication could reverse or alter this course significantly. During the sessions with Mike, he was surprised that instead of being afraid of his screaming and tempers, the clinician tried to help the boy to discuss his feelings about his facial deformities, his surgeries, at least the most recent ones, and to talk about his frustrations in general. After several sessions of enduring his chaotic behavior, Mike starts talking about those things: he starts to cry, and speaks of sadness about being different from other children, and angry about why he had to have these surgeries and a tracheostomy, which invariably draws attention to him. The mother starts to cry when these experiences are evoked. Eventually, Mike starts to discuss more his feelings or anger and frustration, fear of growing up, of dying, and his aggression improves considerably. He is treated as a person “with a mind” and with feelings and able to “talk about things.” It seemed that Mike’s mother had found it very hard to discuss her own reactions to all that had happened, she was very traumatized herself and preferred avoid thinking about the past.

Many children who are diagnosed as having disruptive behavior disorder, attention deficit, or bipolar disorder in early childhood in reality manifest the long-term effects of early painful or traumatic experiences.

Free Floating Anxiety

It is understandable that a child who has been very premature, very small and developed multiple complications early in life, can feel as though he or she is highly fragile and vulnerable. Children with those antecedents may constantly fear a relapse and other complications or a further hospitalization. Even when the parents themselves are not so anxious, the child may see himself as highly sensitive and delicate, in danger of dying, and not dare to try new things, go outside of the house, or fear a complication at all times. These children may develop a fear of death, of disability, of further pain, etc.

The clinician would have to attempt to help the child become calmer, and help the boy or girl to distinguish between rational fears and cautions, versus the need to be “totally safe,” catastrophic thinking, and not daring to take any chances or the smallest risk. Many of these children develop a fear of becoming healthy, as they are very attached to their condition as delicate. At times, this manifests as fear that a gastrostomy could be closed because the child now eats through the mouth, fear of “losing the tracheostomy” or of losing the identity as a “sick child.”

Long-Term Effects on the Parents or Caregivers

There are multiple issues to consider on the mere fact that a baby is born prematurely, and further complexities when in addition there are additional complications. This brings worries and concerns to the parents in the immediate, day-to-day development of the child, as well as concerns about the implications of any eventuality that arises (Obladen, 2002). For instance, if there are periods of apnea, the parents will worry about the possibility of brain damage and its consequences in the future (intellectual handicap, motor difficulties, learning disabilities, impulse control problems, etc.)

The course of an infant born prematurely, may be full of “ups and downs” as the baby is looked after by “strangers.” In a neonatal intensive care

unit, parents may feel they can do little to influence the optimal development of their baby. In those months, it is not known if a recovery or signs of improvement mean the dangers are past, as there is always the possibility of further complications and new problems.

For many parents, it is also a highly traumatic experience to observe their baby lying in an incubator, with very thin and delicate skin, with multiple devices connected to him or her, machines beeping, pumps working and unable to hold the child, sometimes for weeks or longer. Then there is the impossibility to “take the pain for the child” but seeing such a vulnerable small human being go through procedures that adults would consider painful, annoying or bothersome. All this uncertainty and “roller coaster” may go on for months and months.

Once the baby is discharged, there may be many maneuvers to perform at home. Many babies will be discharged with an apnea monitor, in case he or she stops breathing spontaneously. Also, there may be feedings through gastric tube, an oximeter, and even a respirator that is sent home with the child.

All of these things may develop in the parents a deep-seated fear of the child becoming ill at any time, which may last for years even when the child is “mostly normal.” Doctors may give diagnoses such as “chronic restrictive pulmonary disease” or “short gut syndrome” which may be quite frightening to parents. Often, they are trained to monitor their child, administer medicines, and perform tests and tasks that previously only could be carried out in a hospital environment.

Posttraumatic Memories in Parents

As described in the vignettes above, the parents may experience posttraumatic symptoms, i.e., having persistent frightening memories of the past, and fear of intrusive recollections. The child may be perceived as extremely vulnerable, even when he or she is better, of school age or older, and wants to do things like other children.

Maria is an 12 year old child who is referred by her pediatrician for psychotherapy because of increasingly angry behavior toward her parents and a feeling of resentment toward them. She is going through the first pubertal changes, which is difficult mother and father to assimilate, as they have seen Maria always as their little girl.

Maria was born very premature and her parents recount how she was so tiny that she almost could fit in the palm of the father. Maria used to have a tracheostomy, asthma, and chronic pulmonary disease. She now is much better but in the past the parents had to be extremely careful that she did not develop respiratory infections.

In the session, Maria says she wants to go on a field trip with her peers, to the countryside for three days, with teachers and peers from middle school. This prospect scares Maria's parents and the girl is angry that at first the answer is "no." The mother is ambivalent, as she realizes that Maria daughter wants to be like other children. The pediatrician has given the "green light." However, they are still afraid. In the session the child asks the clinician to persuade her parents to let her go as she has never had this experience of being without her parents and with friends and teachers. The father says to his wife "I will let you make the decision, but if something bad happens, it is your fault." The mother is left with all the weight of the decisions and lets her go. Nothing untoward happened but the mother was frightened the whole time her daughter was gone. She feared the worst, a terrible telephone call and dreaded that something awful would happen. We process her fears during sessions and how her husband is so scared that he wants to "not take any chances" but this would stifle the social and emotional growth of their daughter.

dysplasia of the hip. The boy was treated with non-surgical treatments and the mother was told that Gary was a fragile baby like a "crystal baby." The mother was always vigilant of Gary's care and his activities in the house and would not allow him to play "rough" or freely run with his siblings and other children. Gary was not physically active and started to gain weight. In elementary school other children would make fun of his overweight and because he could not participate in physical activities.

Gary's obesity, and the obsession that he should eat properly, being overfed, complicated his dysplasia and eventually it required surgery. The mother recalls very well the date of the surgery because it "was the day when everything changed." Gary's mother was then even more anxious and did not allow him to run at all. Gary became "defiant" and irritable and would throw big temper tantrums at home and school, for which school recommended a mental health evaluation.

The mother shared her concerns about Gary's physical health and was nervous that Gary would require another surgery. In order to prevent the slightest complication, she had restricted all physical activities at school. Gary was not allowed to play at recess and would stay in the classroom.

It was recommended to the mother to share her concerns with Gary's orthopedist and ask about physical activity restrictions. The mother followed up with the specialist. She was told that Gary had the "green light" to do any physical activity. Gary started a program to lose weight and is involved in sports at school. This took extensive work with Gary's mother, who had many painful memories of the past, and fears that the past would repeat itself, as if she were cursed with bad luck.

The Crystal Baby

The constant worry that premature babies are fragile and at risk is very understandable among parents, and is reinforced by nurses and doctors. This perception of the child may not change for many years, even when rationally the child is mostly normal. This belief makes parents sometimes afraid of any contingency and hypervigilant even when they grow up. The "perception" may be unshakeable, despite the efforts of the parents to reassure themselves.

Gary is a 13 year old boy who was born prematurely. Mother had a complication during the delivery and Gary ended up with a developmental

Alienation (*Entfremdung*) vis-à-vis the Child

At times, parents experience so much emotional pain and fear seeing their child so vulnerable and small, that they seem to feel afraid of becoming "too attached" to the baby and then losing him or her if a complication occurred and the baby died.

At times, this is manifested even during the stay at the NICU as a behavior of distancing from the child. The parents may not visit as often and just "get reports" from the nurses over the telephone for fear of what might happen. It seems that sometimes the mere fact of delegating the care of the baby to others, creates in the parents an emotional distance *vis a vis* their child.

On occasion, one of the parents perceives the child as “different” and fails to experience the tenderness and attachment that would be expected. This is often seen in fathers, but also in mothers, when there has been a feeling that the child is very different, odd or so fragile as to require constant care “as a patient.” The child is seen as a medical subject, and less so as a son or daughter, a person.

Alfred is an 8-year-old child with achondroplastic dwarfism, who was also born prematurely and had multiple complications after birth. He had a prolonged stay in the NICU and always has required special care with nursing staff. He had a tracheostomy and gastric feedings and had periods of hypoxia that required treatment with oxygen.

Now Alfred has improved a great deal, and the child is “practically normal” except that he does not make eye contact and acts as though he were autistic. He presents totally unable to make eye contact, and when spoken to, speaks in a sort of jargon that is very hard to understand. His mother and father tend to dress him in odd clothes, like a “small adult” with ties and suits, in order for him to look cute, but he looks almost like a doll.

The clinician was very puzzled for several sessions as to why this child, who might have minor developmental delays, appeared so “autistic”. Eventually, Alfred’s parents that they have never really held him much, and that they were afraid of him because he was so fragile and vulnerable. The mother says her husband was often at work late. She could not bring herself to hold Alfred or hug him because she feared he might get sick or she “might drop him.” She says she hardly ever talks to him and does not try to engage him in conversations. She says this as she notices the clinician makes numerous attempts to talk with Alfred and he tends to just speak in jargon or appears not focused on the face of the other. Alfred’s mother says that in the past, she delegated all his care to the nurses that he had almost constantly, around the clock, and who were changing all the time.

Alfred’s mother feels that she really does not know her child very well and does not understand his behavior. As she and the father recount the events around his birth and their feelings toward Alfred, and expressed their traumatic memories and cried, they gradually started to change their behavior. The mother began to “allow herself to feel emotionally connected to him” and the child started to respond more coherently, focusing on interactions and closing “circles of communication” much more than before. The mother felt that a “barrier had been lifted” and started touching and embracing her child, as though she could finally allow herself to be close physically and emotionally to him.

What Can Be Done?

Each family is unique and will experience the process of prematurity in a unique way; therefore, it is important to understand the psychosocial context of each family to provide adequate and individual support during their baby’s hospitalization and postdischarge. This support will help to mitigate some of the distress and traumatic experience in the child and the parents and should promote the parent-infant bond contributing to the best possible long-term outcome for the baby and their families.

In recent years, NICUs around the world have adopted a policy of Family-Centered Care which is a comprehensive and holistic caring approach actively involving the family in the participation in their baby’s care and decision-making. Families are encouraged to spend time with the baby so they can familiarize themselves with their child, learn how to care for the baby after discharge, and promote parental bonding with the infant. With this approach of care, families are seen as collaborators and not as visitors, thus visiting hours do not exist. If a parent cannot visit the baby during the day due to work or other responsibilities, they can still spend the night with the baby because there are no visiting hour restrictions.

Unfortunately, this is not true for all NICUs where this approach of care is not implemented. In some countries, due to hospital regulations, there are strict visiting hours and they only allow one parent to visit at a time (Montes Bueno et al., 2015). There is a program called COPE, which stands for “creating opportunities for parental empowerment,” which is associated with shorter lengths of stay of the infant in the NICU through empowerment of mothers to be more involved in general in the care of their child (Melnyk et al., 2006).

It is hard for families who live far away from the hospitals and cannot arrive on time for the visiting times. In many of these cases, when it is time for discharge it is until then that parents really get to know their baby in more depth, after months of hospitalization.

Restricting parental involvement may exacerbate the early trauma experiences in the baby and

in their parents, impairing the formation of parent-infant bonds perpetuating preventable damage that may have long-term adverse consequences in the parent attachment and infant's later cognition and behavior (Rees, 2007). It is essential to promote maximum engagement of the parents, reevaluate changes in hospital regulations and abandon the idea that parents are visitors. Parents are collaborators and they always have something important to bring to the table because they are the expert in knowing their babies. Having mental health professionals available to discuss the experiences of parents is a sign of sensitivity on the part of the staff, which helps alleviate the suffering of parents. We have already mentioned the strategies to minimize overwhelming experiences of the baby. Training in the NIDCAP (Als, 1999) procedures (Neonatal Individualized Developmental Care and Assessment Program), in which a staff member can specialize, helps to "read" the baby's behavioral and physiological responses to adverse maneuvers and to calming experiences, such as massage, music, positional changes and clustering of care (Peters et al., 2009). All of this tends to mitigate the long-term effects of early adverse experiences.

References

- Als, H. (1999). Reading the premature infant. In E. Goldson (Ed.), *Nurturing the premature infant* (pp. 18–85). Oxford University Press.
- American Academy of Pediatrics. (2020). Retrieved November 8, 2021, from <https://www.aap.org/en/pages/2019-novel-coronavirus-covid-19-infections/clinical-guidance/faqs-management-of-infants-born-to-covid-19-mothers/>
- Ancel, P. Y. (2004). Perspectives in the prevention of premature birth. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, *117*, S2–S5.
- Brummelte, S., Grunau, R. E., Chau, V., Poskitt, K. J., Brant, R., Vinall, J., et al. (2012). Procedural pain and brain development in premature newborns. *Annals of Neurology*, *71*, 385–396.
- Brummelte, S., Chau, C. M. Y., Cepeda, I. L., Degenhardt, A., Weinberg, J., Synnes, A. R., et al. (2015). Rumet Cortisol levels in former preterm children at school. *Psychoneuroendocrinology*, *51*, 151–163.
- Campbell-Yeo, M. L., Disher, T. C., Benoit, B. L., & Johnston, C. C. (2015). Understanding kangaroo care and its benefits to preterm infants. *Pediatric Health, Medicine and Therapeutics*, *6*, 15.
- Copp, A. J., Adzick, N. S., Chitty, L. S., Fletcher, J. M., Holmbeck, G. N., & Shaw, G. M. (2015). Spina bifida. *Nature Reviews Disease Primers*, *1*(1), 1–18.
- Donia, A. E.-S., & Tolba, O. A. (2016). Effect of early procedural pain experience on subsequent pain responses among premature infants. *Egyptian Pediatric Association Gazette*, *64*(2), 74–80.
- Egle, U. T. (2009). Neurobiologie von Schmerz und Stress. Konsequenzen für Diagnose und Therapie chronischer Schmerzsyndrome. *Der Mund Kiefer und Gesicht-Chirurgie*, *2*, 247–255.
- El-Metwally, D. E., & Medina, A. E. (2020). The potential effects of NICU environment and multisensory stimulation in prematurity. *Pediatric Research*, *88*(2), 161–162.
- Field, D. J., Dorling, J. S., Manktelow, B. N., & Draper, E. S. (2008). Survival of extremely premature babies in a geographically defined population: Prospective cohort study of 1994–9 compared with 2000–5. *British Medical Journal*, *336*(7655), 1221–1223.
- Fitzgerald, M. (2005). The development of nociceptive circuits. *Nature Reviews Neuroscience*, *6*, 507–520.
- Fitzgerald, M., & Beggs, S. (2001). The neurobiology of pain: Developmental aspects. *The Neuroscientist*, *7*(3), 246–252.
- Grunau, R. E. (2003). Self-regulation and behavior in preterm children: Effects of early pain. In P. J. McGrath & G. A. Finley (Eds.), *Pediatric pain: Biological and social context, progress in pain research and management* (Vol. 26, p. 23e55). IASP Press.
- Grunau, R. E., Holsti, L., & Peters, J. W. B. (2006). Long-term consequences of pain in human neonates. *Seminars in Fetal and Neonatal Medicine*, *11*(4), 268–275.
- Hohmeister, J., Kroll, A., Wollgarten-Hadamek, I., Zohsel, K., Demirakça, S., Flor, H., & Hermann, C. (2010). Cerebral processing of pain in school-aged children with neonatal nociceptive input: An exploratory fMRI study. *Pain*, *150*(2), 257–267.
- Hosono, S., Isayama, T., Sugiura, T., Kusakawa, I., Kamei, Y., Ibara, S., Tamori, M., & Wada, M. (2021). Management of infants born to mothers with suspected or confirmed SARS-CoV-2 infection in the delivery room: A tentative proposal 2020. *Pediatrics International*, *63*(3), 260–263.
- Johnston, C. C., Fernandes, A. M., & Campbell-Yeo, M. (2011). Pain in neonates is different. *Pain*, *152*(Supplement), S65–S73.
- Kashaninia, Z., Sajedi, F., Rahgozar, M., & Noghabi, F. A. (2008). The effect of Kangaroo care on behavioral responses to pain of an intramuscular injection in neonates. *Journal for Specialists in Pediatric Nursing*, *13*(4), 275–280.
- Kostandy, R. R., Ludington-Hoe, S. M., Cong, X., Abouelfetoh, A., Bronson, C., Stankus, A., & Jarrell, J. R. (2008). Kangaroo care (skin contact) reduces crying response to pain in preterm neonates. *Pain Nursing*, *9*(2), 55–65.

- Lax, I., Duerden, E., Lin, S., Mallar Chakravarty, M., et al. (2012). Neuroanatomical consequences of very preterm birth in middle childhood. *Brain Structure & Function*, 218, 1–11.
- Mackenzie, A. (2006). Guideline statements on the management of procedure-related pain in neonates, children and adolescents. *Journal of Paediatrics and Child Health*, 42(1–2), 14–15.
- Matthiesen, A. S., Ransjo-Arvidson, A. B., Nissen, E., & Uvnas-Moberg, K. (2001). Postpartum maternal oxytocin release by newborns: Effects of infant hand massage and sucking. *Birth*, 28, 13–19.
- Melnyk, B. M., Feinstein, N. F., Alpert-Gillis, L., Fairbanks, E., Crean, H. F., Sinkin, R. A., et al. (2006). Reducing premature infants' length of stay and improving parents' mental health outcomes with the Creating Opportunities for Parent Empowerment (COPE) neonatal intensive care unit program: A randomized, controlled trial. *Pediatrics*, 118(5), e1414–e1427.
- Meyer, S., Gortner, L., & Gottschling, S. (2007). Pain management in neonates for painful procedures. *European Journal of Pediatrics*, 167(7), 835–835.
- Minckas, N., Medvedev, M. M., Adejuyigbe, E. A., Brotherton, H., Chellani, H., Estifanos, A. S., et al. (2021). Preterm care during the COVID-19 pandemic: A comparative risk analysis of neonatal deaths averted by kangaroo mother care versus mortality due to SARS-CoV-2 infection. *EClinicalMedicine*, 33, 100733.
- Moeller-Bertram, T., Keltner, J., & Strigo, I. A. (2012). Pain and post-traumatic stress disorder – Review of clinical and experimental evidence. *Neuropharmacology*, 62, 586–597.
- Montes Bueno, M., Quiroja, A., Rodriguez, S., & Sola, A. (2015). Acceso de las familias a las unidades de internación de Neonatología en Iberoamérica: una realidad a mejorar. *Anales de Pediatría (Barcelona)*, 85(2), 95–101.
- Nosarti, C., Al-Asady, M. H. S., Frangou, S., Stewart, A. L., Rifkin, L., et al. (2002). Adolescents who were born very preterm have decreased brain volumes. *Brain*, 125, 1616–1623.
- Nosarti, C., Giouroukou, E., Healy, E., Rifkin, L., Walshe, M., et al. (2008). Grey and white matter distribution in very preterm adolescents mediates neurodevelopmental outcome. *Brain*, 131, 205–217.
- Obladen, M. (2002). *Eltern auf der Intensivstation. Neugeborenen Intensivpflege. Grundlagen und Richtlinien* (pp. 565–574). Springer.
- Ozawa, M., Sakaki, H., & Meng, X. (2021). Family presence restrictions and telemedicine use in neonatal intensive care units during the coronavirus disease pandemic. *Children*, 8(7), 590.
- Peters, K. L., Rosychuk, R. J., Henderson, L., Coté, J. J., McPherson, C., & Tyebkhan, J. M. (2009). Improvement of short-and long-term outcomes for very low birth weight infants: Edmonton NIDCAP trial. *Pediatrics*, 124(4), 1009–1020.
- Provenzi, L., Fumagalli, M., Sirgiovanni, I., Giorda, R., Pozzoli, U., Morandi, F., et al. (2015). Pain-related stress during the Neonatal Intensive Care Unit stay and SLC6A4 methylation in very preterm infants. *Frontiers in Behavioral Neuroscience*, 9(99), 1–9.
- Ranger, M., Chau, C. M. Y., Garg, A., Woodward, T. S., Beg, M. F., Bjornson, B., et al. (2013). Neonatal pain-related stress predicts cortical thickness at age 7 years in children born very preterm. *PLoS One*, 8, e76702.
- Rao, S. P., Minckas, N., Medvedev, M. M., Gathara, D., Prashantha, Y. N., Estifanos, A. S., et al. (2021). Small and sick newborn care during the COVID-19 pandemic: Global survey and thematic analysis of health-care providers' voices and experiences. *BMJ Global Health*, 6(3), e004347.
- Rees, C. (2007). Childhood attachment. *British Journal of General Practice*, 57(544), 920–922.
- Spitz, R. A. (1949). Hospitalism. An inquiry into the genesis of psychiatric conditions in early childhood. *The Psychoanalytic Study of the Child*, 1(1), 53–74.
- Spitz, R. A., & Wolf, K. M. (1946). Anaclitic depression: An inquiry into the genesis of psychiatric conditions in early childhood, II. *The Psychoanalytic Study of the Child*, 2(1), 313–342.
- Stevens, B., McGrath, P., Ballantyne, M., Yamada, J., Dupuis, A., Gibbins, S., et al. (2010). Influence of risk of neurological impairment and procedure invasiveness on health professionals' management of procedural pain in neonates. *European Journal of Pain*, 14(7), 735–741.
- Taddio, A., & Katz, J. (2005). The effects of early pain experience in neonates on pain responses in infancy and childhood. *Pediatric Drugs*, 7(4), 245–257.
- Tesarz, J., Gerhardt, A., & Eich, E. (2018). Einfluss frühkindlicher Stresserfahrungen und traumatisierender Lebensereignisse auf das Schmerzempfinden. *Schmerz*, 32, 243–249.
- Walker, S. M., Franck, L. S., Fitzgerald, M., Myles, J., Stocks, J., & Marlow, N. (2009). Long-term impact of neonatal intensive care and surgery on somatosensory perception in children born extremely preterm. *Pain*, 141, 79–87.
- Whitfield, M. F., Grunau, R. V. E., & Holsti, L. (1997). Extremely premature (≤ 800 g) schoolchildren: Multiple areas of hidden disability. *Archives of Disease in Childhood-Fetal and Neonatal Edition*, 77(2), F85–F90.
- Yeo, K. T., Oei, J. L., De Luca, D., Schmölder, G. M., Guaran, R., Palasanthiran, P., Kumar, K., Buonocore, G., Cheon, J., Owen, L. S., Kusuda, S., James, J., Lim, G., Sharma, A., Uthaya, S., Gale, C., Whittaker, E., Battersby, C., Modi, N., et al. (2020). Review of guidelines and recommendations from 17 countries highlights the challenges that clinicians face caring for neonates born to mothers with COVID-19. *Acta Paediatrica*, 109(11), 2192–2207.
- Zeiner, V., Storm, H., & Doheny, K. K. (2016). Preterm infants' behaviors and skin conductance responses to nurse handling in the NICU. *Journal of Maternal Fetal Neonatal Medicine*, 29, 2531–2536.

Henry Marquez-Castro MD, is a double Board Certified Psychiatrist in Child, Adolescent and Adult Psychiatry. He works at Imperial County Behavioral Health Services in El Centro, California. He graduated from the Faculty of Medicine of Dr. Jose Matias Delgado University in El Salvador. He completed a residency in General Psychiatry at St. Elizabeth's Medical Center-Tufts University in Boston, MA, a fellowship in psychoanalysis of children and adolescents at the Boston Psychoanalytic Society and Institute in Boston, MA, and a fellowship in Child and Adolescent Psychiatry at Baylor College of Medicine in Houston, Texas. His areas of interest include, Global Mental Health, Infant-Parent Mental Health, Autism Spectrum Disorder, and Attention Deficit/hyperactivity Disorder.

J. Martin Maldonado-Duran, MD, is an infant, child, and adolescent psychiatrist and family therapist. He is Associate Professor of Psychiatry at the Menninger Department of Psychiatry, Baylor College of Medicine and works at the complex care service in the Texas Children's Hospital. He edited the book *Infant and Toddler Mental Health*, published by American Psychiatric

Press, and has coedited or edited five additional books in Spanish on topics of child and infant mental health. Coeditor of the book "Clinical Handbook of Transcultural Infant Mental Health" (Springer). He has written numerous papers and book chapters on topics of child development and psychopathology in several countries.

Muhammad Ishaq Farhan MD. Assistant Professor, Department of Psychiatry, University of Missouri Kansas City. Chief Department of Pain Management. Consultant sleep physician. American Board certified in psychiatry, sleep medicine and pain medicine. He uses an interdisciplinary approach for the treatment of chronic pain, sleep, and mental health problems. Chief of Division of Interdisciplinary Pain Management Program at University Health, Kansas City, Missouri. Moderator and pain/sleep expert for Missouri Tele Health Network and Chronic Pain Management (ECHO program).

Cheru Sehgal Assistant Professor of Pediatrics, Baylor College of Medicine. Works at the complex care service in the Texas Children's Hospital in Houston, TX, USA.



Medical Child Abuse or Munchausen Syndrome by Proxy

10

Amanda Scully, Amanda Small, Anna West,
and Angela Bachim

The physician–patient relationship has long been held as a sacred bond. It is based on trust and the assumption that everyone involved is principally concerned with the welfare of the patient. Medical practitioners reflexively assume that their patients and families are being truthful, and those taking care of young children rely significantly on caregiver history. Cases of medical child abuse (MCA), in which a caregiver falsifies or induces illness that results in medical harm, either directly or indirectly through invasive testing and treatments, are not only difficult because the diagnosis is often elusive, but are also distressing to providers who are wounded by the exploitation of the doctor–patient relationship and possibility the notion that they have caused iatrogenic harm.

MCA always involves three parties: the caregiver, the child, and the healthcare system; and yet, there is no one specific clinical presentation. In this chapter, we will discuss the varying characteristics of children and caregivers involved in MCA and the range of presentations: from exaggeration of symptoms to seeking invasive medical interventions. We will propose possible psychodynamic explanations for the caregiver’s abusive behavior. Finally, we will explore the characteristics of our modern healthcare system that enable MCA to continue undetected.

David, a 10-year-old boy, had been diagnosed with several diseases. His diagnoses included eosinophilic esophagitis, Ehlers–Danlos syndrome, dysautonomia, and episodic urticaria. He lived with both parents. His mother had wanted to be a doctor but could not fulfill her dream, instead she worked at her parent’s gas station. David’s father “worked all the time” and deferred all decisions and observations regarding his multiple illnesses to his mother. David’s mother had studied his conditions extensively (looking up articles in the internet) and often argued with the various specialists that they had not treated her son properly and demanded invasive studies, like endoscopies, despite prior negative results. She had taken the child to multiple medical facilities for evaluations. She now led a number of “online support groups” for parents of children with rare diseases. She enjoyed getting phone calls from people “all over the world” who consulted with her about rare diseases and she would spend a lot of time advising parents how to advocate for their child. David had a central line placed “for vitamin D administration and IV hydration”, this is

A. Scully
Baylor College of Medicine, Texas Children’s
Hospital, Houston, TX, USA

A. Small
Baylor College of Medicine, Houston, TX, USA

A. West
Complex Care Clinic at Texas Children’s Hospital,
Baylor College of Medicine, Texas Tech University
School of Nursing, Houston, TX, USA

A. Bachim (✉)
Child Abuse Pediatrics. Section of Public Health
Pediatrics, Baylor College of Medicine & Texas
Children’s Hospital, Houston, TX, USA
e-mail: abachim@bcm.edu

extremely unusual and clearly unnecessary. This central line was placed there mostly due to the demands of the mother. While in the hospital, all studies conducted would be non-conclusive, to the chagrin of the mother. Upon going home, the child would erupt into an episode of urticaria or dysautonomia. The mother then would post photographs in messages to the various physicians, “demonstrating” what she had known all along. Most physicians deemed the procedures and infusions unnecessary, but if they told the mother, she would storm out of the office and complained that no one was listening to her. She often sought second opinions with other subspecialists. During consultations with a psychiatrist, David complained that he was always sick and did not like “this life” anymore. Since the boy was older, he could talk and when he was alone contradicted the mother’s reports that he had “vomited all weekend” or that he was “continuously in bed”. In front of his mother, he would never contradict her in any way. Various specialists met and discussed the manipulations, and the fact that other doctors from other institutions might be misguided by David’s mother and would diagnose diseases that were not present. All of this prompted a report to Child Protective Services. However, the investigation was convoluted by multiple physicians believing David’s medical history, while others were certain there were no major health problems. Multiple doctors had prescribed different treatments, despite negative allergy, genetic, and endoscopic testing. David’s mother decided to discontinue treatment at the primary health facility and went to another one.

Terminology

In 1977, British pediatrician Roy Meadow was the first to describe this condition in the literature, coining the term, “Münchhausen syndrome by proxy.” Meadow specified that this type of factitious disorder is presented *through another* (by proxy), in this case through a child. In the decades following, there has been much debate regarding terminology. It has been a part of the vulnerable child syndrome (Schmitz, 2019). The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) uses the term “factitious disorder imposed on another.” Note the inclusion of intent of deception as part of the criteria.

Diagnostic and Statistical Manual, fifth edition, criteria for factitious disorder imposed on another

1. Falsification of physical or psychological signs or symptoms, or induction of injury or disease, in another; associated with identified deception.
2. The individual presents another individual (victim) to others as ill, impaired, or injured. The perpetrator, not the victim, receives the diagnosis.
3. The deceptive behavior is evident even in the absence of obvious external rewards.
4. The behavior is not better explained by another mental disorder, such as delusional disorder or another psychotic disorder. (American Psychiatric Association, 2013)

Pediatricians have largely moved away from these two terms since both imply a psychiatric diagnosis in the caregiver, and instead, preferring terminology that focuses on harm done to the child. The Royal College of Paediatrics and Child Health in the United Kingdom adopted the term “fabricated or induced illness by carers” (2009). Other names are factitious disorder by proxy, induced illness, or fabricated illness. The names “caregiver-fabricated illness in a child” and “pediatric condition falsification” (Kukucker et al., 2010) emphasize the caregiver who falsifies the information (Awadallah et al., 2005). The American Academy of Pediatrics has recommended the name “medical child abuse (MCA)” (Roesler, 2018), which focuses on the type of abuse done to a child, and not the motivation of the caregivers. We will use the term MCA as our preferred terminology.

An 11-month-old medically complex girl was brought by her mother repeatedly to a hospital clinic. She was born prematurely and had spent several weeks at the neonatal intensive care unit. There the child was fed via a nasogastric tube. Several times, the mother expressed fear that her daughter would “become fat” with the feeding tube. After discharge, the baby continued to have poor weight gain. The mother was overheard whis-

pering to the child when the pediatrician left the room “don’t worry, I will not let them make you fat.” The mother reported frequent episodes of oxygen desaturation (the child had a tracheostomy because she had developed tracheal webs and could not breathe without the tracheostomy). These oxygen desaturations often led to a trip to the emergency room. The mother would report her daughter had “crashed” and needed to be “bagged with oxygen.” The mother would report that she felt very alive and excited when she had to resuscitate her daughter, and it “felt good to save her life.” There was no indication of why the girl should have those episodes of hypoxia, which only the mother had witnessed multiple times. The mother said, smiling, that she was “practically a doctor now” after saving her daughter so many times, she was hospitalized so that she could be observed by the nursing staff. The mother would report the same hypoxias, but when the child was only with her in the room, and was entirely normal once the staff arrived to assist. An order was obtained for the mother not to be allowed to visit for a few weeks. Immediately the girl started to gain weight, and there were no further episodes of hypoxia. The child ended up in the care of her paternal grandmother.

Incidence/Prevalence

The diagnosis of MCA is at times uncertain, making it difficult to accurately estimate the incidence. A New Zealand survey of pediatricians with 95% response rate found an annual incidence of 2/100,000 (Denny et al., 2001). The prospective population surveillance study by McClure et al. found an annual incidence of 0.5/100,000 people (1996). Often the most severe cases are recorded in the literature and reported to Child Protective Services; thus, these incidence rates are likely underestimates. Cases have been reported in 24 countries, extending beyond highly medicalized countries (Feldman & Brown, 2002).

Patient Demographics

Female and male patients are affected equally (Rosenberg, 1987; Sheridan, 2003). Most victims are less than 5 years old, with the median age at diagnosis ranging from 18 to 23 months (McClure

et al., 1996; Denny et al., 2001; Sheridan 2003). This is at least partly because infants and toddlers are unable to give their own history and are more reliant on their caregivers for their activities of daily living, making them more vulnerable to illness induction. Despite the higher prevalence in younger children, one study found that approximately 25% of victims were over 6 years old (Awadallah et al., 2005). When MCA involves older children, there may be coaching by the caregiver to report-specific symptoms. Some older children and adolescents with a long history of undiagnosed MCA may either “assume the sick role” or collude with the caregiver in illness fabrication (Libow, 2002). Up to half of the victims had a pre-existing chronic illness, and medically complex children are at increased risk of MCA (McClure et al., 1996). Siblings of MCA victims are also at increased risk of maltreatment. The study by Sheridan et al. showed that 61% of siblings had similar or otherwise suspicious presenting symptoms, and 25% of siblings were deceased (2003).

Caregiver Demographics

Mothers are reported as the perpetrator in 75%–100% of cases, other common caregiver perpetrators include fathers and grandparents (Saad, 2010; Schreier, 2004; van der Pas, 2001). There have been several cases of additional caregivers colluding with the mother both in symptom fabrication and illness induction (Schreier, 2004). Historically, there has been a high association of caregivers having experience with the healthcare system, due to their own medical problems (Yates & Bass, 2017). However, in the last 10 years, with increasing Internet access to medical information and online rare-disease blogs and parent support groups, many caregivers claim a level of “medical expertise” without actual employment or formal training in the medical field (McCulloch & Feldman, 2011).

Although, as pediatric clinicians, we are moving away from identifying MCA in terms of a psychiatric disease diagnosed in the caregiver, it is important to note that in the available scien-

tific literature, perpetrators of MCA have a high association with psychiatric illness. The most frequent psychopathologies found in caregivers were factitious disorder, depression, and cluster B personality disorders (borderline, histrionic, and sociopathic) (Bass & Jones, 2011).

Outcomes

MCA is a very serious situation with an overall mortality estimated at 6%–9% (Hornor, 2021; Rosenberg, 1987). Based on the diagnostic criteria, all victims of MCA suffer short-term morbidity, and in an estimated 75% of cases, harm occurred to the child while in the hospital (Rosenberg, 1987). Rosenberg et al. estimate that 8% of victims have long-term morbidity. Physical harm includes unnecessary invasive procedures (surgeries), starvation, impaired digestion, scarring, and hypoxic brain damage (Beatrice Yorker et al. 2018). But harm is not limited to physical injury. Children may experience social isolation, decreased education from poor school attendance, and unnecessary medical equipment limiting normal childhood functioning (e.g., wheelchairs, central lines). Many studies show long-term psychological harm, resulting in anxiety, depression, PTSD (posttraumatic stress disorder), or development of factitious or somatization disorder in adolescence and adulthood (Beatrice Yorker et al. 2018). For children who are kept in the care of their caregiver, recidivism rate is high (Bools et al., 1993).

A 4-year-old girl with history of prematurity and tracheostomy was brought to a pediatrician's office. Mother reported she needed an oxygen supply sufficient to maintain a dose of 5 liters per minute of oxygen flow at home, which was inconsistent with the amount the child seemed to require in clinic. The little girl appeared healthy, climbing on the office furniture and running around the exam room. The clinician asked the mother what would happen if the oxygen were not given. The mother immediately said her daughter would dangerously "crash," requiring resuscitation. The mother agreed to allow the clinician to remove the oxygen while the staff was closely monitoring. Three hours later, the child was off all oxygen support, would run down the hallways, and seemed to be very content

to be "free" of the constant oxygen tank. The physician advised the mother that clearly the oxygen was not necessary. The mother became very angry. Later on the clinical team realized that the mother had organized a "GoFundMe" campaign on the Internet, to fulfill the child's dream to go to Disney World, and had raised around 30,000 dollars already. The mother had multiple postings in social media, of her daughter on the bed, with oxygen, highlighting the severity of her medical conditions.

Clinical Presentations

History Falsification

A key feature of MCA is the falsification of symptoms, also referred to as "illness simulation." This can be fabricating symptoms or exaggerating existing symptoms. The most frequent reported symptoms include seizures, allergies, vomiting or feeding intolerance, diarrhea, bleeding, apnea, and fever (Klepper et al., 2008; Rosenberg, 2003). The reported symptoms are often vague and unverifiable, depending primarily on caregiver reporting. A common red flag is when the symptoms are witnessed only by the primary caregiver, and never by medical staff or other disinterested third parties. A common theme in the literature is the history of children requiring emergency resuscitation at home multiple times, but never in the hospital while vital signs are monitored. Caregivers often report multiple, intermittent, or changing symptoms, the constellation of which cannot be explained by any known medical diagnosis. Caregivers may also fabricate their child's medical history, claiming they have diagnoses that have never been confirmed. These tend to be rare diseases or ones that encompass varied and vague symptoms. Increasingly, caregiver perpetrators also claim a variety of behavioral symptoms or psychiatric diagnoses, from autism spectrum disorder and attention deficit hyperactivity disorder to conduct disorder and oppositional defiant disorder (Awadallah et al., 2005). In addition to fabricating symptoms, perpetrators may exaggerate signs and symptoms of an existing organic disease, making the child's condition seem more severe

than it is. The severity of symptoms reported may be physiologically impossible, such as report of repeated hematemesis (vomiting blood) with large volume blood loss, but normal hemoglobin and blood pressure upon evaluation.

Interference with Records or Tests

In addition to providing a false history, the caregiver may actually tamper with records or testing, such as putting blood or sugar in a urine sample. Perpetrators may discard samples to avoid negative testing or dispose of important medical records. Often the test results are unusual, such as a bacterial culture from a contaminated sputum sample that grows bacteria more commonly found in dirt than in the respiratory tract.

Induction of Illness

The perpetrator behavior associated with the highest risk of morbidity and mortality is active induction of illness by the caregiver, also referred to as “illness production.” Illness induction may take the form of withholding food or medications, contaminating lines to cause infection, intentional suffocation, or poisoning. Common poisonings include salt poisoning (McClure et al., 1996), laxatives, insulin, alcohol, and benzodiazepines (Yin, 2010).

Over-Medicalization

Many cases involve a combination of illness simulation and production. Both lead to the caregiver’s heightened display of concern, demanding urgent intervention or diagnostic workup.

Perpetrators may appear frustrated or angry when the examination and lengthy diagnostic workup are normal.

A 3-year-old with history of poor defecation was referred by the gastroenterologist for a psychiatric evaluation. Mother, a nurse, reports that her daughter would “require” up to three enemas in one day to manage to defecate. However, a number of stud-

ies, including colonoscopy, had not revealed any pathology, so it was suspected that the situation might be of a factitious nature. The child was a very vivacious and intelligent little girl. She resented the enemas her mother would administer. When she was asked why she did not go to the toilet to defecate, she said she did not know. When asked why her parents gave her enemas even twice a day, she would say “it is ‘cause my parents don’t like me.” The mother seemed to like that her daughter was so sickly and always under study. The mother reported “needing help” from the child’s father to tend to the child and to give her emotional support. She feared he would divorce her if her daughter was not “sick.” A number of pictures on Facebook detailed the plight of the child and her mother who were often at the hospital, and the mother portrayed herself as entirely devoted to Rosie, putting “her career on hold” to take care of her little daughter. Eventually when the child was hospitalized the child started to defecate regularly without medical intervention.

Caregiver Psychosocial Motivation

Just as there is no single patient presentation in cases of MCA, there is also no single driving motivator in caregiver perpetrators. Many possible explanations for caregiver behavior are raised in the literature and briefly discussed below. Of note, these motives are not necessary for the diagnosis, nor are they mutually exclusive.

Playing the Saint/Martyr

The caregiver may derive satisfaction from the attention they get from having a sick child. They are portrayed as an exemplary parent: extremely devoted, attentive, always seeking care for the child, and “fighting” for the right medication, procedure, diagnostic test, equipment, or treatment for her child. They elicit compassion in others for their sacrificial dedication to their child. The caregiver may post their plight on social media emphasizing how hard they have to fight for their child and how misunderstood they are by the medical establishment. The main purpose seems to be to highlight the suffering of the parent—their heroic effort and their struggle, rather their child. Perpetrators may display feelings of

exhilaration or excitement when describing “life-saving maneuvers” like CPR, bagging with oxygen, administering adrenaline for an “anaphylactic reaction,” or treating seizures (Artingstall, 2017).

When that identity as the saint or martyr is not acknowledged by the healthcare professional, the caregiver may become outraged, “firing” any physician who questions the accuracy of their report or who is disinclined to fulfill a request for further invasive testing.

Baffling the Expert

Some parents may be fascinated by the notoriety of having a child with a rare disease and “finding extraordinary remedies” for conditions. The caregiver believes they are extremely well informed about their child’s rare illness, more knowledgeable than the medical experts. The caregiver may attempt to educate the medical team, providing extensive educational materials and websites to learn information about that rare disease. This caregiver may speak of “firing” previous physicians due to their inadequacy.

Another aspect of this motivation is the desire to challenge the physician. They change reports, tamper with tests, or falsify information in order to maintain a competitive and intense relationship with the physician who fails to arrive at the elusive diagnosis. There may be a sense of triumph when they have convinced the physician to do more expensive, invasive testing.

Social Connection

The caregiver may seek social interaction and emotional support through their child’s illness. They may “become friends” with the medical staff and increase the frequency of seeking medical attention. “Rare disease” parent support groups and online social forums provide another source of community. One mother would bring her child to clinic several times a week, demanding that her daughter be checked urgently for the smallest complaint. The mother “came alive” by

acknowledging each staff member, talking with them and treating them as friends, giving them warm greetings, keeping up with their lives and bringing gifts. The mother was a single parent and was “stuck in the house.” Her main way of socializing was through her child’s medical condition.

Marital Discord, the Child in the Middle

In some situations, the caregiver believes that the marriage or relationship is strengthened or maintained through the illness of the child. When their child is sick, the partner or spouse demonstrates tenderness not only toward the “sick” child but also toward the caregiver. The partner may only show interest and support during the child’s exacerbations and relapses. Conversely, caregivers may exaggerate a child’s condition to gain custody or restrict visitation, by arguing that the other parent is not competent enough to provide the extensive medical care this child needs.

Monetary Gain

Perpetrators may engage in fundraising, such as online GoFundMe campaigns for medical expenses (that are often exaggerated) or to finance bucket-list trips and activities. Caregivers may also falsify symptoms in order to receive financial benefits, such as disability.

Goal of Isolation and Control

MCA keeps a child in a vulnerable sick role. This can allow the caregiver total control of the child, including diet, the amount of food the child eats, when the child urinates, defecates, his or her temperature, levels of oxygenation, etc., which are kept in detailed records. One of the mechanisms to maintain the fabricated illness is to isolate the child. The child is kept home from school due to his or her illness. The caregiver may insist on “homeschooling” the child to protect from infec-

tions or poor care by strangers or because of frequent hospitalizations or medical appointments. Other social outlets may also be avoided for the child's safety. This limits the child's ability to communicate with outside parties, exacerbating the dependence on the caregiver.

Healthcare Factors and Dynamics

Just as increasing access to medical information online, the changes in healthcare dynamics in the last decade facilitate a climate for MCA to flourish. Productivity models incentivize performing invasive tests and procedures in patients who may not need them. Emphasis on client satisfaction may make a clinician hesitant to disagree or fail to acquiesce to the demands of a caregiver. Doctors may fear missing a diagnosis or seek to diagnose rare diseases in their field (Bass & Glaser, 2014). Finally, medicine has become increasingly fragmented, in which subspecialists are siloed in their field of practice, often failing to see the patient as a whole. This fragmentation allows caregivers to "doctor shop" and seek medical intervention from multiple institutions and prevents easy communication between providers (Cebul et al., 2008).

Medical child abuse is a complex relationship between the child, caregiver, and the healthcare system that results in harm. In this chapter, we have discussed recurring themes found in the literature of patient and caregiver characteristics, typical presentations, and common caregiver motivations. In practice, these cases are often difficult to recognize and often take years to diagnose. In the next chapter, we will discuss the medical diagnosis and treatment of victims of medical child abuse.

The Diagnosis of Medical Child Abuse

When a parent reports obviously outlandish symptoms for their child, the diagnosis of medical child abuse may seem straightforward. Sometimes the report of abnormal behaviors is

false, the caregiver intending to present the child as emotionally disturbed (Schreier, 1997). In our own practice, for instance, one caregiver reported that her 3-year-old foster child had "not slept even for one hour in four weeks." Another parent reported that her 2-year-old child had "eaten his bed." Both reported histories are clearly impossible. However, even in cases such as these, it is difficult to differentiate between intentionally fabricated symptoms or hyperbole without deceptive intent. The mother of the child who had eaten his bed, for example, later explained that the child had ingested some filling that he had pulled out from a hole in the mattress. Regardless of the caregiver's intent in cases such as these, the child is less likely to experience harm through unnecessary medical intervention prior to receiving a correct diagnosis. Without demonstrable harm to the child, such cases do not always qualify as medical child abuse. The focus of medical child abuse should always be on whether the child is being harmed by unnecessary medical care. A 2007 report by the American Academy of Pediatrics recommends the following criteria to aid in the diagnosis of medical child abuse: (1) the history, signs, and symptoms of the disease are not credible; (2) as a result, the child receives unnecessary and harmful medical care; and (3) the child's caregiver and abuser instigates the evaluation and treatment.

True cases of medical child abuse typically have several barriers to diagnosis, and the average time between the onset of symptoms and diagnosis of medical child abuse is estimated to be between 14.9 and 21.8 months (Rosenberg, 1987; Sheridan, 2003). Physicians rightfully tend to view parents as partners and advocates in the care of their children, and therefore trust parents' reports of their children's symptoms. Misreporting of symptoms may be subtle, and not easily recognized by physicians that are primed to trust the histories provided by parents. Furthermore, an estimated 30% of medical child abuse victims also have a concurrent underlying organic disease, further clouding the diagnosis (Rosenberg, 1987). Because fabricated symptoms are rarely witnessed by medical personnel, it becomes difficult to distinguish between symptoms that are

true, symptoms that are induced, and symptoms that are not present at all.

As with any other medical diagnosis, the first step to the diagnosis of medical child abuse is history and physical examination. When a child's history of present illness does not "fit" the findings on medical examination, this may be the first indication of fabricated illness. Unfortunately, a thorough physical examination is time-consuming and may be foregone by physicians who are pressed for time. Without a physical exam to verify the history, an untrue diagnosis can easily be perpetuated by caregivers.

However, reliance on physical exam is not always sufficient. A parent may also report a diagnosis that causes seizures, headaches, vomiting, allergic reactions, bleeding episodes, or any other array of episodic symptoms which do not persist on physical exam. A parent with medical expertise (or a parent with access to the Internet) may provide a list of symptoms and signs that "perfectly fit" a certain syndrome or condition. As a standard of care, a physician that plans to provide treatment for a previously diagnosed condition should seek medical records to confirm the condition prior to treatment. If the caregiver is the only person to witness the reported symptoms, and if the diagnosis cannot be verified, the clinician should consider the possibility of falsification of symptoms.

In cases such as these, the medical team must carefully review the past medical history and history of present illness, including previous results of diagnostic evaluation, procedures, subspecialist visits, emergency room visits, hospitalizations, and telephone calls and reports from the caregiver. When caring for a child that has had numerous interactions with the healthcare system and extensive medical records, review of records may be a time-consuming undertaking and require review of records from numerous outside institutions. This should be done with attention to health privacy laws, and a release of records should be sought when possible. The reviewer should take care to document the time and descriptions of the child's symptoms, especially noting what is observed versus merely reported, the child's objective findings, prescribed treatments and procedures, and the child's response to each treatment. If the child's illness has a history of unrespon-

siveness to standard treatments, or if the caregiver has a history of insistence on invasive treatments or procedures, this may be another indicator of medical child abuse (Greiner et al., 2013).

A new, if unconventional, source of data to aid in diagnosis may be found on social media (Brown et al., 2014). As blogs, podcasts, photosharing, and networking applications have become ubiquitous in our daily lives, families of children with any variety of medical conditions have been finding community online. Parents of children with fabricated illness are no exception and may post about their children on social media platforms for a multitude of reasons—for attention, sympathy, or fundraising. Although the motivations of the parent are not a diagnostic criteria for medical child abuse, the gains a parent receives through social media may add support for the diagnosis or even evidence of additional falsification.

A history, physical examination, and review of medical and social media records can be completed on an outpatient basis. On occasion, inpatient hospitalization may be required for diagnosis. Hospitalization facilitates objective observation of a child's symptoms by healthcare professionals when the caregiver reports episodic symptoms that have not been observed by healthcare professionals.

When symptoms are falsified or induced by the caregiver, the parent may continue to administer medications, feeds, and treatment without supervision, or the patient may continue to have symptoms only observed by the caregiver when medical staff is not present. In these cases, some options exist. A one-on-one sitter may be placed in the room to observe all parent-child interactions, as well as all treatments and symptoms. One rare course of action is covert video monitoring of the caregiver and child, which may produce video evidence of unnecessary resuscitation, poisoning, suffocation, or other methods of inducing or imitating illness (Southall et al., 1997; Hall et al., 2000). This requires careful planning and coordination with multiple hospital departments, including the physician teams, nursing, hospital security, and legal departments. This method of diagnosis typically requires a court order and is, for obvious reasons, often called into ethical question for many reasons.

Another option for diagnosis is termed “therapeutic separation.” In cases of true medical child abuse, the child is expected to improve, if not make a full recovery, when removed from the care of their abuser on either an inpatient or outpatient basis. This recovery during the separation is diagnostic of MCA. Separation of the child and caregiver is not within the usual spectrum of medical care or recommendations, and while it can be done in voluntary collaboration with the family and caregivers, particularly if there is a parent who is not actively involved in the potential MCA dynamic, it is often not feasible without the involvement of state child welfare services and a high enough concern for the safety of the child and potential for imminent harm.

An 8-month-old infant has been repeatedly admitted to the hospital after the mother reports of the infant becoming unresponsive, requiring the mother to resuscitate in the form of chest compressions and mouth-to-mouth breathing. These episodes continue in the hospital, but only occur when the infant is on an acute care floor when a nurse has more than one patient to care for. The episodes never occur in the pediatric intensive care unit with 1:1 nursing ratio and ensured continuous monitoring. The episodes also stop happening during times when a sitter is placed in the room. Each time the mother yells for help, states that she resuscitated the infant, and each time the monitors happen to become detached from the patient. Each time this happens in the hospital, the scenario becomes more and more unlikely to be either coincidental or organic in origin: happening only in the unobserved times, with detached monitors, and only the mother present. A referral to child welfare services was made, and after the mother was no longer the caregiver, the child never had another episode during the rest of the hospital observation time or after hospital discharge.

Differential Diagnosis

When parents report that their child has symptoms that are inconsistent, unverifiable, or unresponsive to medical interventions, the first step to the diagnosis of medical child abuse is to include it in the differential diagnosis. Medical child abuse remains a diagnosis of exclusion.

Occasionally, there are comorbid conditions that cloud the picture.

Illness anxiety disorder. Illness anxiety disorder according to the DSM-5 may have previously been diagnosed as hypochondriasis. Patients with illness anxiety may experience severe anxiety around normal body sensations or minor symptoms, fearing that they are indicators of severe illness. They may spend excessive amounts of time-researching symptoms, and like caregivers in cases of medical child abuse, may have numerous encounters with the healthcare system. For example, they may fear that a scratch from a small accident will quickly develop into tetanus or gangrene.

Parents that may or may not experience illness anxiety about themselves may experience anxiety about their children. In these situations, the caregiver may take frequently the child to the doctor for very small complaints that she or he imagines could evolve into severe or life-threatening illness. In contrast to medical child abuse, the parent is not fabricating symptoms and not falsifying information.

Vulnerable Child Syndrome

Vulnerable child syndrome is a concept related to illness anxiety disorder, where a particular child is perceived as being at higher risk for medical or developmental problems than they truly are. Frequently, but not always, these children have experienced a previous life-threatening event or illness or have a chronic medical condition such as premature birth or a history of malignancy. The perceived increased health risk may also prompt parents to seek frequent medical care for low-risk complaints. Although this is considered a maladaptive family condition, there is no falsifying or fabricating medical information.

Somatic disorder. In somatic disorder, patients have a preoccupation with one or more chronic somatic symptoms, such as functional abdominal pain or headaches in children or adolescents. Although the child is truly experiencing somatic symptoms, either the child or the parent may

have excessive anxiety about these symptoms. Often times, child and parental anxiety amplify each other. Regardless, these families may also have frequent interactions with the healthcare systems and push for diagnostic procedures that are not indicated.

Organic disorder. Certainly, some children have some unexplained symptoms due to true illness that has not been diagnosed, and even 30% of children who have experienced medical abuse have a comorbid underlying organic disorder. Any child who presents with unexplained symptoms should receive an appropriate diagnostic evaluation for those symptoms, and clinicians should consider their own bias against “difficult” families prior to a premature diagnosis of medical child abuse.

Outcomes of Medical Child Abuse

The direct outcomes of medical child abuse are varied, depending on the method of the abuse. A false report of symptoms arguably has no direct harm to the child, unless it leads to unnecessary and harmful medical procedures. In contrast, a parent that intentionally suffocates their child, poisons their child, or tampers with feeds to simulate an organic illness directly places their child at risk for serious physical harm. These actions may result in death or lasting impairment. Research supports the idea that children with parents who induce symptoms in this manner experience worse outcomes than victims of medical child abuse whose symptoms are simply misreported. Unnecessary medical interventions are a second risk of medical child abuse, and these also place the child at risk of serious physical harm. Invasive diagnostic procedures and surgeries carry the risk of sedation and surgical complications. Even less invasive interventions, such as medication, carry the risk of potential side effects. Altogether, a mortality risk of 6%–9% has been reported for medical child abuse (McClure et al., 1996).

The risks of medical abuse go beyond these direct physical harms, however. Developmental outcomes are affected, as the victim of medical

child abuse typically has poor school attendance, is restricted from normal activities and socially isolated, and taught to assume the sick role with dependence on medical devices such as wheelchairs. This leads to insecure attachment, anxiety, and confusion about their own health and vulnerability, and the development of somatic disorder and illness anxiety disorder themselves. Medical child abuse also correlates with emotional abuse and physical abuse, each with their own risks and outcomes (Davis et al., 1998). Victims of medical child abuse are at risk of clinical anxiety, depression, and post-traumatic stress disorder. Siblings may also be affected, experiencing neglect as the family’s time and resources are allocated to the “sick” child.

Interventions

The different presentations and severities of medical child abuse present different risks, and therefore often require different interventions. When illness is intentionally induced, as in cases of poisoning or suffocation, immediate intervention to protect the child is obviously required. When episodic symptoms such as seizures, headaches, weakness, or fever are simply falsely reported, intervention requires a longer approach.

Preferably, intervention occurs early in the course of medical child abuse, or even when the patient’s frequent interactions with the healthcare system can still be attributed to illness anxiety or somatic disorder and before unnecessary invasive medical interventions are sought. Some institutions have attempted this type of secondary prevention by implementing medical record systems that alert healthcare providers to patients with a high volume of encounters, diagnoses, or procedures, and facilitate communication between subspecialists about diagnoses, or lack thereof, within the medical record. Other institutions attempt to mitigate harm to the child by standardizing the process for procedures that are common in medical child abuse. For instance, an institution may require a child to establish a medical home that will manage feeds and require hospitalization to attempt initiation of oral feeds and

prove the necessity of tube feeding prior to the placement of all gastrostomy tubes (Jenny & Metz, 2020).

When a case of medical child abuse occurs despite attempts at prevention, treatment and management should focus on the physical and psychological safety of the child. The best course to achieve this goal may require a multidisciplinary meeting that includes the child's primary care provider, subspecialists, hospitalists, and potentially law enforcement and child protective services. Different members of the multidisciplinary team may have opposing views on the best course of treatment for the patient, as the perpetrators of abuse often develop close personal relationships with their healthcare providers that may lead the provider to doubt the caregiver's capacity to hurt their child or deceive healthcare providers. Alternatively, acceptance of the diagnosis of medical child abuse may lead to intense anger by healthcare providers that feel betrayed. Engaging in a team approach to understand and decide on a course of action may be helpful to avoid a punitive or accusatory reaction toward caregivers and facilitate an evidence-based but empathetic approach to treating the child.

The team should agree on an approach to remove potentially unnecessary therapies and reintroduce activities and foods to children that may have been restricted in movement and oral intake. Often, this can be done rapidly as an inpatient. Regardless of inpatient or outpatient approach, the most dangerous and invasive therapies should be removed first.

These physical interventions are important and necessary, but psychological intervention is also required for the child and, typically, the caregiver, if the familial relationship is to be maintained. The root cause of medical child abuse is arguably an emotional or behavioral disturbance in the caregiver, but the suggestion of referral to a mental health specialist is typically met with offense and trepidation by the caregiver. If the caregiver refuses to receive mental health intervention and the child remains in their care, the risk of repeat abuse is high: approximately 40% of medical child abuse victims experience

repeated abuse after diagnosis (Bools et al., 1993). The child, who is at high risk for depression, anxiety, post-traumatic stress disorder, and developmental delay, will likely also require mental health services. Treatment of both the child and the parent is required to restore an appropriate parent-child relationship. The psychiatrist, therefore, is an important part of the family's, and the child's, well-being.

Unfortunately, when medical professionals begin to suspect medical child abuse and implement the appropriate interventions, caregivers are likely to leave the practice in question and seek medical care elsewhere. If possible, it is therefore preferable for the healthcare team to seek a team approach with the family, maintaining a therapeutic relationship as medical interventions are deescalated and mental health interventions are recommended. However, especially in more egregious cases of medical child abuse, the child's safety is at risk and the therapeutic relationship between family and healthcare professionals cannot be maintained. In any case where the child's safety is at risk, law enforcement and child protective services must be involved.

In rare cases where previous harm and future danger to the child are obvious and parents are uncooperative with treatment, child protective services may remove the child from the home. Often, however, child protective services attempt to maintain family unity. In cases where the child remains in the home where their medical abuse occurred, child protective services may monitor the family at home and help the parents and child attend mental healthcare. In this case, the child psychiatrist may have an important role in assisting the mother or father with reducing anxiety about the child and medical contact seeking. If the caregiver has insight regarding their illness anxiety, they can be encouraged to call the therapist about their anxieties rather than seeking evaluation by the pediatrician, subspecialist, or emergency department. One effective method of treatment for the child and family involves intensive day treatment programs where both medical and psychiatric care are offered to the child in a single collaborative environment (Roesler et al., 2002).

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (pp. 324–325). American Psychiatric Association.
- Artinstall, K. (2017). *Munchausen by proxy and other factitious abuse: Practical and forensic investigative technique* (pp. 50–55). CRC Press/Taylor & Francis Group.
- Awadallah, N., Vaughan, A., Franco, K., Munir, F., Sharaby, N., & Goldfarb, J. (2005). Munchausen by proxy: A case, chart series, and literature review of older victims. *Child Abuse and Neglect*, *29*, 931–941.
- Bass, C., & Glaser, D. (2014). Early recognition and management of fabricated or induced illness in children. *The Lancet*, *383*(9926), 1412–1421.
- Bass, C., & Jones, D. (2011). Psychopathology of perpetrators of fabricated or induced illness in children: Case series. *British Journal of Psychiatry*, *199*(2), 113–118.
- Bools, C. N., Neale, B. A., & Meadow, S. R. (1993). Follow up of victims of fabricated illness (Munchausen syndrome by proxy). *Archives of Disease in Childhood*, *69*(6), 625–630.
- Brown, A. N., Gonzalez, G. R., Wiester, R. T., Kelley, M. C., & Feldman, K. W. (2014). Care taker blogs in caregiver fabricated illness in a child: A window on the caretaker's thinking? *Child Abuse & Neglect*, *38*(3), 488–497.
- Beatrice Yorker, J. D., Alexander, R., & Sanders, M. (2018). Munchausen by proxy: Abuse by pediatric condition falsification, caregiver-fabricated illness in a child, or medical child abuse due to factitious disorder imposed on another. *ADVISOR*, *4*.
- Cebul, R. D., Rebitzer, J. B., Taylor, L. J., & Votruba, M. E. (2008). Organizational fragmentation and care quality in the US healthcare system. *Journal of Economic Perspectives*, *22*(4), 93–113.
- Davis, P., McClure, R. J., Rolfe, K., Chessman, N., Pearson, S., Sibert, J. R., & Meadow, R. (1998). Procedures, placement, and risks of further abuse after Munchausen syndrome by proxy, non-accidental poisoning, and non-accidental suffocation. *Archives of Disease in Childhood*, *78*(3), 217–221.
- Denny, S. J., Grant, C. C., & Pinnock, R. (2001). Epidemiology of Munchausen syndrome by proxy in New Zealand. *Journal of Paediatrics and Child Health*, *37*, 240–243.
- Feldman, M. D., & Brown, R. M. A. (2002). Munchausen by proxy in an international context. *Child Abuse & Neglect*, *26*, 509–524.
- Greiner, M. V., Palusci, V. J., Keeshin, B. R., Kearns, S. C., & Sinal, S. H. (2013). A preliminary screening instrument for early detection of medical child abuse. *Hospital Pediatrics*, *3*(1), 39–44.
- Hall, D. E., Eubanks, L., Kenney, R. D., & Johnson, S. C. (2000). Evaluation of covert video surveillance in the diagnosis of Munchausen syndrome by proxy: Lessons from 41 cases. *Pediatrics*, *105*(6), 1305–1312.
- Hornor, G. (2021). Medical child abuse: Essentials for pediatric health care providers. *Journal of Pediatric Health Care*, *35*(6), 644–650.
- Jenny, C., & Metz, J. B. (2020). Medical child abuse and medical neglect. *Pediatrics in Review*, *41*(2), 49–60.
- Klepper, J., Heringhaus, A., Wurthmann, C., & Voit, T. (2008). Expect the unexpected: Favourable outcome in Munchausen by proxy syndrome. *European Journal of Pediatrics*, *167*, 1085–1088.
- Kukucker, H., Demir, T., & Oral, R. (2010). Pediatric condition falsification (Munchausen syndrome by proxy) as a continuum of maternal factitious disorder (Munchausen syndrome). *Pediatric Diabetes*, *11*, 572–578.
- Libow, J. (2002). Beyond collusion: Active illness falsification. *Child Abuse & Neglect*, *26*(5), 525–536.
- McClure, R. J., Davis, P. M., Meadow, S. R., & Sibert, J. R. (1996). Epidemiology of Munchausen syndrome by proxy, non-accidental poisoning, and non-accidental suffocation. *Archives of Disease in Childhood*, *75*(1), 57–61.
- McCulloch, V., & Feldman, M. D. (2011). Munchausen by proxy by internet. *Child Abuse & Neglect*, *35*, 965–966.
- Meadow, R. (1977). Münchhausen syndrome by proxy: The hinterlands of child abuse. *The Lancet*, *310*(8033), 343–345.
- Roesler, T. A. (2018). Medical child abuse: What have we learned in 40 Years? *Current Treatment Options in Pediatrics*, *4*(3), 363–372.
- Roesler, T. A., Rickerby, M. L., Nassau, J. H., & High, P. C. (2002). Treating a high-risk population: A collaboration of child psychiatry and pediatrics. *Medicine and Health, Rhode Island*, *85*(9), 265–268.
- Rosenberg, D. A. (1987). Web of deceit: A literature review of Munchausen syndrome by proxy. *Child Abuse & Neglect*, *11*(4), 547–563.
- Rosenberg, D. (2003). Munchausen syndrome by proxy: Medical diagnostic criteria. *Child Abuse & Neglect*, *27*, 421–430.
- Royal College of Paediatrics and Child Health. (2009). Fabricated or Induced Illness by Carers (FII): A practical guide for Paediatricians, 1–54.
- Saad, G. (2010). Munchausen by proxy: The dark side of parental investment theory? *Medical Hypothesis*, *75*, 479–481.
- Schmitz, K. (2019). Vulnerable child syndrome. *Pediatrics in Review*, *40*(6), 313–315.
- Schreier, H. (1997). Factitious presentation of psychiatric disorder: When is it Munchausen by proxy? *Child Psychology & Psychiatry Review*, *2*(3), 108–115.
- Schreier, H. (2004). Munchausen by proxy. *Current Problems in Pediatric and Adolescent Health Care*, *34*, 126–143.
- Sheridan, M. S. (2003). The deceit continues. An updated literature review of Munchausen syndrome by proxy. *Child Abuse & Neglect*, *27*, 431–451.

- Southall, D. P., Plunkett, M. C., Banks, M. W., Falkov, A. F., & Samuels, M. P. (1997). Covert video recordings of life-threatening child abuse: Lessons for child protection. *Pediatrics*, *100*(5), 735–760.
- Van der Pas, A. (2001). Over Munchausen by proxy. Gestoord ouderschap-zieke kinderen. *Tijdschrift voor Psychotherapie*, *27*, 133–137.
- Yates, G., & Bass, C. (2017). The perpetrators of medical child abuse (Munchausen syndrome by proxy)—a systematic review of 796 cases. *Child Abuse & Neglect*, *72*, 45–53.
- Yin, S. (2010). Malicious use of pharmaceuticals in children. *Journal of Pediatrics*, *157*, 5.832–836.

Amanda Scully MD Board certified in general pediatrics. Fellow in child abuse pediatrics at Baylor College of Medicine and Texas Children’s Hospital. Research and advocacy interests include decreasing socioeconomic disparities in the identification and management of child abuse.

Amanda Small MD Child Abuse Pediatrics Fellow. Board-certified pediatrician. Pediatrics Residency at Baylor College of Medicine. Medical degree at Brody School of Medicine at East Carolina University.

Anna West, APRN, CPNP Pediatric nurse practitioner in the Complex Care Clinic at Texas Children’s Hospital. Instructor at Baylor College of Medicine and adjunct faculty member at Texas Tech University School of Nursing. Active in the training of nurse practitioner students and in the training of school nurses in the Greater Houston area in the care of the technology-dependent pediatric patient. Participated in the development of *The Complex Care Guide* to provide a resource for physicians in the community in the care of pediatric patients with medical complexity.

Angela Bachim MD, FAAP Assistant Professor, Fellowship Program Director, Child Abuse Pediatrics. Section of Public Health Pediatrics. Baylor College of Medicine & Texas Children’s Hospital.

Part III

Mind-Body Issues in Psychosomatic and Somatoform Disturbances in Children and Adolescents



Alexithymia in Children/ Adolescents and Psychosomatic Families

11

Patrick O'Malley

Alexithymia, or affective agnosia (Lane et al., 2015), has been defined as the difficulty that a person experiences to identify and “feel” their feelings as well as to talk about them or express them to others. It also comprehends a difficulty to regulate emotions which the person does not process (Kench & Irwin, 2000; Panayiotou, 2018). It is associated with an impoverished fantasy life in the affected child, adolescent or adult. He or she tends not to have an “inner dialogue” which is the constant conversation with oneself about what is happening, what one is feeling, thinking, planning to do, and pondering the next steps. The child or adolescent tends to be focused more on physical things, i.e., the physical or external world, at times in excessive detail. The person will emphasize physical events at the expense of emotions, which Pierre Marty called the “*pensée opératoire*” (thinking in actions). There is a relative impoverishment of the capacity of symbolization and imagining (Jones, 1991), and the person rarely reports dreams. This is contrasted from autism in that the person has a “theory of mind,” i.e., he or she can understand what other people are doing or infer what they are thinking, and there is no major impairment of language or the capacity to interact with others in many ways. However, reading and interpreting other people’s

complex or contradictory emotions may be difficult. Another feature is a general avoidance of difficult emotions such as sadness, anxiety, worry, and also intense positive emotions. Alexithymia has been associated with a number of psychosomatic conditions and somatization, as well as being an important factor in headaches and irritable bowel syndrome (Panayiotou, 2018).

Alexithymia is not a “yes or no” binary trait, but rather a dimensional category. Like many other traits or emotions (such as intelligence, sadness, anxiety), we are describing a dimensional variable, i.e., there are varying degrees of this trait among the general population and certainly in the individual in the consulting room. There are several instruments to approach alexithymia, most of which offer a “cut off” in which one can say the person exhibits alexithymia. One commonly used instrument with adults is the Toronto Alexithymia Scale-20 (Parker et al., 2003).

The concept of alexithymia was introduced to the English-speaking world by two psychiatrists, John Nemiah and Peter Sifneos several decades ago (Sifneos, 1973; Taylor & Bagby, 2004). They postulated an association of alexithymia with a greater tendency for psychosomatic problems as well as poor benefit from psychodynamic psychotherapies, which are based on verbal exchanges about internal states and the expression of feelings. In German-speaking countries, Ruesch (1948) had already introduced the same phenomenon, calling it “infantile personality,”

P. O'Malley (✉)
Child and Adolescent Psychiatrist. Baylor College of
Medicine, Houston, TX, USA
e-mail: patrick.o'malley@bcm.edu

emphasizing that these patients tend to speak with their bodies, or with a “somatic language” (Subic-Wrana & Lane, 2011; Smith et al., 2020), and highlighting that such patients tend to report few dreams and fantasies in general and during psychotherapy.

In the 60s of the last century, Pierre Marty (De M'uzan, 1974) described the same phenomenon in persons who have a “*pensée opératoire*” or an action-oriented thinking. The person fails to pay attention to emotions, focusing more on concrete physical details of events. Marty emphasized that the emotion of anger does not find a symbolic expression and negatively affects a number of somatic functions.

Several other authors have pointed out the relationship between general “psychosomatic states” and alexithymia (Jellesma et al., 2009). This has been found in multiple studies with adults (De Gucht & Heiser, 2003) and with children and adolescents (Burba et al., 2006; Jellesma et al., 2006). However, the picture may be more complex than just difficulty with identifying feelings. Jellesma et al. (2009) in a small sample of children with and without somatic complaints found that children with such complaints could describe feelings, but they were generally more negative than the control group. Also, as noted, the question in dealing with events and relationships is whether one can feel and process the feelings, for example, in a mentalization approach, not a question of “all or nothing” regarding feelings. This processing would also be a step toward emotional regulation: recognizing the emotion, wondering about it, understanding how it might have come about, why it is of such intensity, and what it represents in the life experience of the child or adolescent (Constantinou et al., 2014).

Mechanisms

Rather than a “disorder in itself,” one could say that alexithymia is a style of dealing with emotions: not being aware of them, not identifying them in oneself and others, and focusing atten-

tion on the body and concrete objects in the physical world. How could this come about?

At what age are children able to start identifying their feelings? This depends not just on the normal cognitive development of young children, but the degree of exposure to emotions themselves (sadness, crying, anguish, etc.) and to terms denoting mental states, emotions, and feelings in everyday life, mostly by caregivers and other children. Caregivers vary in their ability to discuss and recognize feelings and to identify and name them for the young child, who may then recognize them. The child may go from being told empathically by a parent, “you are sad” to “I feel sad” and similarly with fears, tension, anger, etc. The recognition, labeling, and reflection by caregivers, mothers, fathers, and others help children to recognize “how it feels” to be angry, happy, jealous, etc.

In many cultural groups, like many Native American tribes, Latino families, and many other traditional societies, people don't necessarily talk about feelings but show their emotional states, through crying, anger, or displays of fear. The adults may not speak about their feelings, but the child learns to recognize the signals of many affects or combinations of them. This may lead to a confirmation of the behavioral manifestation of the feeling which is acknowledged or displayed. A person in great fear may generate a strong behavioral response from relatives of defense and protection. Even if this is not discussed, still the person would feel loved, understood, and protected.

Muting emotional responses and expressiveness is a hallmark of one style of attachment which researchers call “avoidant”: a form of an insecure attachment. Having an insecure attachment is not a pathological state, but a form of dealing with relationships, with childhood experiences and parent-child relationships. Theoretically speaking, avoidant attachment would correspond with childhood experiences in which the child may not elicit a response through the normal signal mechanisms available to a child. If the child repeatedly experiences no response or rejection, he or she will develop a style of “not feeling” and “not giving signals of

distress” as a way of avoiding painful feelings. A study with college students in Italy (Montebarocchi et al., 2004) explored the relationship between the “adult attachment style” and alexithymia in hundreds of students. There was a correlation with subscales of attachment consistent with this avoidant style, such as “considering interpersonal relationships as secondary” and “discomfort with emotional closeness” as well as a “need for approval.” A similar study with college students in Vienna (Hexel, 2003) found an association between alexithymia and an insecure attachment style. In the United Kingdom, a study conducted with girls in schools found an association between more alexithymic features and insecure (both avoidant and anxious) attachment. This was particularly so with fear of emotional closeness, perceived low attachment to caregiver, and externally oriented thinking (Oskis et al., 2013). Several other studies have confirmed the same association between alexithymia, an insecure attachment style, and more reporting of physical symptoms (Besharat et al., 2014), as well as with psychosomatic concerns (Pedroza-Gil et al., 2008).

In the absence of “talking about feelings,” it may be more difficult to learn to identify them. Indeed, a study with college students showed that higher scores of alexithymia were related to antecedents of poor expressiveness of feeling in the family or poorer family functioning in general (King & Mallinckrodt, 2000). Other studies have found a similar association. The same can be said about the link between alexithymia and antecedents of neglect during childhood (Aust et al., 2013). One model of alexithymia stresses a developmentally learned tendency to “not talk about feelings” or not expressing feelings directly. Other authors have noted that, in some individuals, traumatic experiences can “stunt” the development of emotional awareness as though the person could not afford to register emotions. This would serve as a form of psychological protection or defensive strategy that develops naturally after trauma or neglect. This was shown, for example, with survivors of the Holocaust (Krystal, 1988). Krystal interviewed around 2000 Holocaust survivors (being a survi-

vor himself) and found that affect and emotion were not expressed, but the person would complain of physical symptoms like constant headaches. He suggested that one result was that these persons would not seek or expect psychological help for their problems.

In many instances, the emotional development of the child becomes arrested at the level of the age in which the trauma or negative events took place. It is theorized that the traumatic experiences themselves could have a direct neurobiological effect and mute the capacity to realize emotions or talk about them (Henry et al., 2007). One such candidate has been thought to be a diminished function of the anterior cingulate cortex (Aust et al., 2013).

Trauma is not the only agent that can stunt emotional development, but also chronic tension and conflict. In a family climate of tension or when there are severe consequences for difficult behaviors or angry feelings, the child may “silence” his or her emotional awareness.

It is indeed likely that different forms of parental maltreatment may be associated with a muting of emotionality and difficulty acknowledging feelings (Paivio & McCullough, 2004). For instance, we encounter adolescents who have much difficulty expressing sadness, talking about it or crying and say “in my family, if I cried, my father would say, if you cry for no reason I will give you a reason to cry,” which means the fear of being hit. The child can then make strenuous efforts to suppress the outward expression of emotion, particularly anger, resentment, and sadness.

In many other cases, the situation is the opposite and children may exhibit high emotionality associated with memories of abuse and neglect, which are manifested in physical ways, such as angry outbursts, irritability, or hyperactive behavior (Krystal, 1988). Additionally, intentional self-injuries such as cutting and other pain-producing mechanisms may be associated with alexithymia (Paivio & McCullough, 2004) as many adolescents mention they feel “numb” emotionally and that the cutting and the blood coming out makes them feel alive, or “feeling,” and the same can be true for pain. Fonagy and others (Fonagy et al.,

2004) described this as a “teleological mode” of expressing internal states, i.e., not in describing feelings but in doing something physical that represents the feeling, e.g., breaking something if one is angry.

In some families, there is a “fear of emotions” that may have its origin in an over-exposure to difficult situations and emotions in the past (Subic-Wrana & Lane, 2011). Therefore, emotions may be expressed indirectly instead, i.e., in the form of physical symptoms: tiredness, various forms of pain, weakness, headaches, and many others. The child exposed to these forms of communication may learn this is the most acceptable way to elicit care and to gain the interest of a parent focused on the body of the child and its malfunctions or when there is a great anxiety about illnesses. There may be a fear of emotions and a tendency to manifest distress through various malfunctions and pains.

There is some evidence that children who grow up with a family member who has a chronic illness are at higher risk of presenting psychosomatic symptoms, i.e., complaints that are not based on any actual medical diagnosis. For example, children who have a parent who has multiple “true” seizures may develop pseudo-seizures, perhaps due to the exposure to the suffering of the parent. The same can occur with symptoms of chronic pain or fatigue. It is possible that some sort of “corporal language” is what is communicated in these families, rather than verbal exchanges about feelings or emotions.

Furthermore, there are indications of a trans-generational transmission of psychosomatic symptoms. Several studies have found prospectively that children of parents who have multiple somatic complaints are also more likely to show somatic complaints (not based on a medical condition), and retrospectively, adolescents or adults who currently exhibit “somatization” features report having had exposure to relatives, parents, grandparents, or others that also had somatic complaints of an undetermined nature (Craig et al., 2002, 2004).

It has been suggested that part of the mechanism of transmission has to do with the fact that members who exhibit symptoms are the focus of

more attention and concern by the other family members, and the child may learn this way of relating and eliciting care.

In the wider context, it is quite likely that social interactions and cultural factors influence the question of alexithymia, feeling emotions, or talking about them. There may be cultures that emphasize less or do not promote disclosing one’s emotions (particularly negative ones, such as sadness or anger) openly or verbally. Since emotions in these cultures tend to be expressed through gestures or behavior, it would be conceivable that this could lead to higher prevalence of alexithymic features. A study comparing European American with Asian American college students found that there was a higher prevalence of alexithymia among the Asian group, as well as higher rates of somatization symptoms (Le et al., 2002). In some Asian cultural groups, the norm is to not express negative emotions openly and particularly those which could create friction or conflict, as there are norms that dictate respect for elders and obedience or deference to them in most situations. Even in more intimate relationships, like a marriage, it may be thought that each member of the marriage should carry their own burden and not to worry the other party with one’s intense or negative emotions, which should be kept to oneself (Okano, 2019).

Recent studies have explored the neurophysiology of alexithymia. It has been theorized that these neurophysiological changes may be a manifestation of the problem to “feel feelings” or talk about them. For instance, studies with functional magnetic resonance imaging (fMRI) have indicated a diminished activation of the anterior cingulate cortex (Taylor & Bagby, 2004).

Psychosomatic and Medicalizing Families

Around the 1970s, family therapists in various centers around the world wrote about and described treating families in which there were strong psychosomatic components of the disease of one (or several) of its members. This occurred in the United States (Philadelphia, Pennsylvania,

and Palo Alto, California) and in Italy. In Philadelphia, a family therapy team led by Minuchin and his colleagues introduced the concept of the “psychosomatic family” (Minuchin & Fishman, 1979; Wood et al., 1989). In Milan, Italy, Selvini-Palazzoli, Boscolo, and others also proposed a model for treating some psychosomatic conditions. Much of their work at first centered on anorexia nervosa and the family constellation often associated with it. Eventually, this led to the “paradoxical school” or Milan school of family therapy (Barbetta & Telfener, 2021).

The Philadelphia school proposed a “typical” or predominant model of family function which was thought to be characteristic of families in which a member, usually a child, had a chronic disease that was worse than would be expected from a medical examination, laboratory, or other studies. This included relapses, more symptoms than expected, or a worse outcome than anticipated. The functioning of these families was described as embracing dysfunctional relational patterns such as: (1) enmeshment, (2) overprotection, (3) rigidity, (4) poor conflict resolution, (5) conflict avoidance, and (6) triangulation of the index patient.

The above-named difficulties in functioning are the reverse of what would be expected in a normally functioning family. In general, there is an excess of a trait such as protection or consistency, turning into overprotection or rigidity; the same can be said for conflict resolution. Triangulation is a normal reaction to conflict or avoidance of conflict, but in these families, it was thought to be done persistently with the index patient. In triangulation, two people who might have a conflict or disagreement focus their attention on a third person, who is the object of the conflict or differences of opinion or the triangulated person becomes part of the conflict, or is “enlisted” to take part indirectly.

A pattern of overprotection would be one in which family members are overly sensitive to the distress in other members and act anxiously to prevent any discomfort in one or other members. This deprives the overprotected member of the capacity to solve his or her own problems or to

develop strategies to deal with distress, leading the overprotected member to not use his or her own emotional resources. Enmeshment is a close relative of overprotection: the high sensitivity of each member to the minimal distress of the other, leading to a sort of “chain reaction” in which the feelings are exceedingly contagious in their quality and intensity between the members. One “feels the feelings” of the other is closely involved in the emotional life of the other to a level in which individual thoughts, feelings, or actions become difficult. There are poor boundaries between the members, and they “share minds,” so to speak.

Rigidity is an exaggeration of consistency. All families need to make exceptions and adapt to real-life circumstances, in rules, application of discipline, and in order to correct patterns that are producing distress or problems in one another. Rigidity is the tendency to maintain the same strategies despite their being dysfunctional, painful, or counterproductive. This applies certainty to very strict rules and immovable patterns of celebrations, dinner time, etc.

The resolution of disagreement or conflict between family members is essential to arrive at compromises or agreements. When conflict is not recognized or avoided or the differences in opinion are not dealt with, resentment grows, and family members may show their distress, anger, or discontent is shown in passive-aggressive ways or through somatic symptoms. In many cases, the difficulties in conflict resolution refer to the marital subunit of the family, but it can also refer to siblings, parents, and children.

Another manifestation of poor conflict resolution is that disagreements and tensions continue unaddressed, hurting family members chronically, so the clashes between members continue day after day without the participants in the conflict arriving at an agreement or resolving their differences.

Triangulation is a common human tendency, but in some families, it is used extensively to avoid focusing on conflicts or on the problem at hand. In triangulation, two family members focus on a third one, and in this way, they do not have to deal with their interpersonal differences or

conflicts, as they are focused on the third person. This may involve a child who exhibits symptoms, be it excessive anger, anxiety, or poor management of their physical disease. The energy of the family members goes to “taking care of the child” who exhibits even more symptoms to maintain the attention on him- or herself and in this way prevent the parents from fighting.

Laura, a 9-year-old girl was referred for consultation while in the gastroenterology unit of a pediatric hospital. She constantly complained of abdominal pain (unexplained) and of not being able to eat as she would develop intense pains. Also, she complained of nausea and at times it appeared as though she made herself vomit by intense movements of the abdominal muscles. She said she simply had to vomit. She had had numerous hospitalizations and trips to emergency rooms and numerous diagnostic investigations had not revealed any explanation for these conditions. The child was very bright. She was very observant and worried that her parents “fought all the time” and that they might get a divorce. The parents had had previous separations and reunions. Laura told the clinician after he tried to understand how the child felt about all these hospitalizations: “If I get better my parents are going to get a divorce, I know it” and seemed very worried about this possibility. She had realized that if she was sick, her parents would bring her to the emergency room, etc. and then they would not fight. Instead, they would try to make her feel better and showed tenderness toward her and tried to help each other as long as Laura was hospitalized.

The “Milan School” (Barbetta & Telfener, 2021) developed a “paradoxical approach” to family therapy. They adopted a cybernetic model in which they embraced the general system theory: the family is seen as a system with strong forces to maintain certain patterns of interaction, even if they turn out to be counterproductive for some or all of its members. Palazzoli-Selvini and her colleagues developed a deep appreciation of the forces that maintained the situation in its *status quo*, while at the same time coming for treatment ostensibly to “change” either one of the members, the symptomatic one, or the whole family. In more recent times, they adopted a model they purport is based on the “second cybernetic revolution” in which they strongly incorporate the role and the impact of the therapist on the family he or she is attempting to help.

Medicalizing Families

A corollary of alexithymia is that some families that have the characteristics of being “psychosomatic” are strongly focused on one of the members being diagnosed and treated according to standard or extraordinary medical procedures. For these situations, the term “medicalizing family” has also been used (Hardwick, 2005).

The term “medicalizing” is also used extensively in the literature regarding the cultural tendency pervasive in industrialized Western countries to consider many common phenomena as medical conditions or diseases. This could apply to the irritability of infants commonly seen at 3 months of age, or to sadness after a negative experience occurs such as a loss. A child who is restless can be diagnosed as having attention-deficit hyperactivity disorder, or a boy with temper outbursts as having intermittent explosive disorder. One of the consequences of this social trend may be to assign a diagnosis and then prescribe a medication, hoping it will “go away.” Here, we are referring to the tendency of some families to see their child exclusively from a physical and medical point of view without considering the origins and meanings of a behavior or organ dysfunction which may determine such a state. Of course, the medical community may contribute in individual cases to perpetuate this trend.

A 13-year-old boy was hospitalized due to continued attempts to hit and scratch himself. The condition was diagnosed as PANS (pediatric acute neuropsychiatric syndrome) and PANDAS (Pediatric autoimmune neuropsychiatric disorder associated with streptococcal infection). The immunology consultants recommended periodic infusion (of immunoglobulins) treatments to alleviate the effects of this autoimmune response. They were of no benefit to the child who insisted on hitting, scratching, and hurting himself whenever he could. When the child and family therapist saw him at the bedside, he was on restraints in all four points (hands and feet) as otherwise he would hurt himself. He begged to be allowed to hit himself. This state of affairs had lasted for several days. Several psychotropic treatments with neuroleptics, alpha adrenergics and antidepressants had been of no benefit. The parents observed the child very carefully and any negative behavior was

ascribed to the new medication, the new dose, the combination of doses. The psychiatrist continued pursuing, at the parents' request, a new pharmacological regimen which would end all these symptoms. As the family therapist attempted to interview their child about his emotional life, the father was very worried and cautious. He would intervene to object to questions worrying that they might upset the child. The therapist asked the boy why there was so much violence in his wish to hurt himself; the boy said he was the worst person, a horrible child who ruined his parents' lives. He defined himself with very negative terms as self-centered, lazy and "arrogant." He could not give examples of these attitudes or what he referred to. When the boy was asked if he had any sexual thoughts the father interrupted the interview saying his son had no interests along those lines. The mother then forbade all possibility of interventions. She realized her son had "always been a perfectionist" who "strove to maximize his productivity" and would do the schoolwork two or three times if need be to make it "perfect" since the age of 7 years. When asked by the psychotherapist what was her theory of her son being so aggressive and violent toward himself, she said "it is the PANDAS" affecting his brain and she refused to allow any further contact with the child. The child's mother was aghast that any psychological considerations were entertained as all was due to the brain inflammation. She would not permit any conversations with her son and was frightened that a person interested in the mind would "tell him things."

Among the main difficulties in working with children referred for treatment when they are immersed in a "medicalizing" or strongly alexithymic family is their difficulty in engaging with a psychotherapist, including a family therapist. The family members expect a more "medicalized" approach to solving problems, such as further laboratory studies, testing, and resolution of the problem at hand with medications. As Hardwick emphasizes (2005) part of this is related to the "medical culture" of families in highly industrialized countries. Media such as television and magazines in the United States, for example, actively advertise medications directly to the public for various conditions and encourage families to "ask their doctor" about a specific medication for a certain diagnosis. Furthermore, the internet and social media platforms (Conrad & Rondini, 2016) encourage the establishment of "groups of families" sharing some problem, such

as a child with asthma, etc. While there is much benefit in this for many families, in some it fosters the "advocacy" for the child to seek new medications, higher doses, new combinations, as parents wanting a medicalized response hope this will help their child.

For families with strong medicalizing tendencies, it is very hard to live in uncertainty and without "definitive" approaches in terms of medicine, a biological model of the disease, and its cure. They expect to try new approaches quickly when there is not an immediate or magical cure. There is often resistance to engaging in conversations about feelings, beliefs, and possible family problems. Some authors have highlighted, for example, the role of the "good child" in chronic fatigue syndrome in one specific child, whose family is actively seeking a remedy for the condition.

Interventions

An important question to address is how clinicians can intervene when there are strong alexithymic tendencies in a child or adolescent, which may be strongly correlated with the same traits in the child's caregivers. If a family is "medicalizing," would they accept discussions about emotions or mental health? How can the child be assisted without "concrete interventions"? Would parents (and the adolescent) feel stigmatized by the mere suggestion of psychotherapy or mental health treatment if they see the problem as a physical one?

There is controversy in the literature as to whether one can change alexithymia per se, or if there should be a comprehensive and more inclusive approach. Alexithymia itself is not a disease but rather a trait that can be seen as a "deficit in mentalizing ability" (Cameron et al., 2014). This can occur due to deficits encountered during the child's development, but it can also be embraced for defensive purposes, i.e., to avoid emotional and psychological pain and to "not see" emotionally charged phenomena that are in front of the child and other family members.

Obviously, any intervention would depend on the specific features of the problem, the presenting child and family, and their attitudes toward interventions.

The medical team can introduce from the start the notion of a “comprehensive view” of problems that are related to mind–body interactions and the mental health clinician can be introduced from the start in an ideal situation as a participant in the evaluation and possibly transdisciplinary interventions. Most parents understand the notion of a comprehensive approach, and if the physician or medical team emphasizes the need to see the problems from various perspectives, this is more likely to be accepted by the child and family. If this is possible, the question remains as to how to address the issues presented and the “barrier” of alexithymia.

At the most introductory level, there are several games and activities in which the child and/or family can be engaged which discuss emotions and feelings. This may be introduced with cards that depict children or adults in various situations and the child describes “what is happening.” Gradually, questions can be added as to what the “child is feeling inside” faced with these situations. The same can be done with parents: talking about internal states and emotions in the “third person.”

Also, in psychotherapy with younger children, puppets and “miniature people” with a doll house can be introduced. Through the facilitation of the psychotherapist, these toys can depict various difficult situations (e.g., not wanting to go to school, having to go to the hospital, having to have medical treatments, etc.), and the reactions of the puppet(s) can be explored. The puppet can speak freely of feelings and the child (or family) reacts to those feelings. If the child avoids discussing any feelings, the parents may “guess” what a child in the same situation might feel. Some parents object to discussing feelings because “talking about that does not change anything” in the concrete situation. As a bridge, parents can be encouraged to talk about how they “grew up.” The responses to these questions often highlight the center of the difficulties. A parent may say “that would require hours” but it can be

begun at present. Others say “I hardly remember my childhood” but there may be some memories, even if just factual ones. Others can say “my childhood was wonderful” or “I had a wonderful life with my parents.” Then when asked for some episodic memories, they may be unable to provide any, suggesting an “over-idealizing” stance. Over time, the clinician may infer how people might have felt in the situations they describe. Some clinicians use a storytelling approach to describe “similar children” or “similar families” and discuss how they felt in similar circumstances. This may “open the door” to discussions of feelings. Only in extreme situations is this opposed by the child or the family. The more opposition often means the more emotional pain that is being strenuously avoided. The life experience of parents and the child may be that talking about feelings does not lead to any empathy, containment or “sharing the pain,” which, after all, is the purpose of psychotherapy: to remedy those “deficits.” This work requires patience, and the improvement is seen in connecting certain life events and interactions with emotions and thoughts, perhaps first led by the psychotherapist but then by the child, sibling, or parent.

Additionally, it seems that patients with alexithymia show a preference for participation in group psychotherapy modalities (Ogrodniczuk et al., 2011). This modality is becoming a rarity in psychotherapy in the United States, in part due to the training of professionals and insurance issues. However, it might be a more acceptable approach, particularly to adolescents, who may feel relieved when other young people talk about their experiences, grievances, and feelings and, in this way, indirectly obtain an “emotional education” by observing how “other people” react to events, label feelings, and identify what is underlying statements and actions.

References

- Aust, S., Hartwig, E. A., Heuser, I., & Bajbouj, M. (2013). The role of early emotional neglect in alexithymia. *Psychological Trauma Theory Research Practice and Policy, 5*(3), 225–232.

- Barbetta, P., & Telfener, U. (2021). The Milan approach, history and evolution. *Family Process, 60*(1), 4–16.
- Besharat, M. L., Rizi, S., & Mehdi, M. (2014). The relationship between attachment styles and alexithymia: Mediating role of self-regulation. *International Journal of Research Studies in Psychology, 3*(4), 89–98.
- Burba, B., Oswald, R., Grigaliunien, V., Neverauskiene, S., Jankuviene, O., & Chue, P. (2006). A controlled study of alexithymia in adolescent patients with persistent somatoform pain disorder. *The Canadian Journal of Psychiatry, 51*, 468–471.
- Cameron, K., Ogrodniczuk, J., & Hadjipavlou, G. (2014). Changes in alexithymia following psychological intervention: A review. *Harvard Review of Psychiatry, 22*(3), 162–178.
- Conrad, P., & Rondini, A. (2016). The internet and medicalization: Reshaping the global body and illness. In *Culture, bodies and the sociology of health* (pp. 115–128). Routledge.
- Constantinou, E., Panayiotou, G., & Theodorou, M. (2014). Emotion processing deficits in alexithymia and response to a depth of processing intervention. *Biological Psychology, 103*, 212–222.
- Craig, T. K. J., Cox, A. D., & Klein, K. (2002). Intergeneration transmission of somatisation 20: A study of chronic somatizers and their children. *Psychological Medicine, 5*, 805–816.
- Craig, T. K. J., Bialas, I., Hodson, S., & Cox, A. D. (2004). Intergenerational transmission of somatization behaviour: 2. Observations of joint attention and bids for attention. *Psychological Medicine, 34*(2), 199–209.
- De Gucht, V., & Heiser, W. (2003). Alexithymia and somatization: A quantitative review of the literature. *Journal of Psychosomatic Research, 54*, 425–434.
- De M'Uzan, M. (1974). Psychodynamic mechanisms in psychosomatic symptom formation. *Psychotherapy and Psychosomatics, 23*(1-6), 103–110.
- Fonagy, P., Gergely, G., Jurist, E., & Target, M. (2004). *Affektregulierung, mentalisierung und die Entwicklung der Selbst*. Klett-Cotta.
- Hardwick, P. J. (2005). Engaging families who hold strong medical beliefs in a psychosomatic approach. *Clinical Child Psychology and Psychiatry, 10*(4), 601–616.
- Henry, J., Sloane, M., & Black-Pond, C. (2007). Neurobiology and neurodevelopmental impact of childhood traumatic stress and prenatal alcohol exposure. *Language, Speech, and Hearing Services in Schools, 38*(2), 99–108.
- Hexel, M. (2003). Alexithymia and attachment style in relation to locus of control. *Personality and Individual Differences, 35*(6), 1261–1270.
- Jellesma, F. C., Rieffe, C., Meerum Terwogt, M., & Kneepkens, C. M. F. (2006). Somatic complaints and health care use in children: Mood, emotion awareness and sense of coherence. *Social Science & Medicine, 63*, 2640–2648.
- Jellesma, F. C., Rieffe, C., Meerum-Terwogt, M. M., & Westenberg, M. (2009). Do I feel sadness, fear or both? Comparing self-reported alexithymia and emotional task-performance in children with many or few somatic complaints. *Psychology and Health, 24*(8), 881–893.
- Jones, D. M. (1991). Alexithymia: Inner speech and linkage impairment. *Clinical Social Work Journal, 19*(3), 237–249.
- Kench, S., & Irwin, H. J. (2000). Alexithymia and childhood family environment. *Journal of Clinical Psychology, 56*(6), 737–745.
- King, J. L., & Mallinckrodt, B. (2000). Family environment and alexithymia in clients and non-clients. *Psychotherapy Research, 10*(1), 78–86.
- Krystal, H. (1988). *Integration and self healing: Affect, trauma and alexithymia*. Hillsdale, NJ: Analytic Press.
- Lane, R. D., Weihs, K. L., Herring, A., Hishaw, A., & Smith, R. (2015). Affective agnosia: Expansion of the alexithymia construct and a new opportunity to integrate and extend Freud's legacy. *Neuroscience & Biobehavioral Reviews, 55*, 594–611.
- Le, H. N., Berenbaum, H., & Raghavan, C. (2002). Culture and alexithymia: Mean levels, correlates and the role of parental socialization of emotions. *Emotion, 2*(4), 341.
- Minuchin, S., & Fishman, H. C. (1979). Psychosomatic family in child psychiatry. *Journal of the American Academy of Child Psychiatry, 18*(1), 76–90.
- Montebarocchi, O., Codispoti, M., & Baldaro, N. R. (2004). Adult attachment style and alexithymia. *Personality and Individual Differences, 36*, 499–507.
- Ogrodniczuk, J. S., Piper, W. E., & Joyce, A. S. (2011). Effect of alexithymia on the process and outcome of psychotherapy: A programmatic review. *Psychiatry Research, 190*(1), 43–48.
- Okano, K. (2019). Working with Asian families, infants, and young children. In J. Maldonado-Duran, A. Jiménez-Gómez, M. Maldonado-Morales, & F. Lecannelier (Eds.), *Clinical handbook of transcultural infant mental health*. Springer, Cham. https://doi.org/10.1007/978-3-030-23440-9_9
- Osksis, A., Clow, A., Hucklebridge, F., Bifulco, A., Jacobs, C., & Loveday, C. (2013). Understanding alexithymia in female adolescents: The role of attachment style. *Personality and Individual Differences, 54*(1), 97–102.
- Paivio, S. C., & McCullough, C. R. (2004). Alexithymia as mediator between childhood trauma and self injurious behaviors. *Child Abuse and Neglect, 28*(2), 339–354.
- Panayiotou, G. (2018). Alexithymia as a core trait in psychosomatic and other psychological disorders. In C. Chris & G. Panayiotou (Eds.), *Somatoform and other psychosomatic disorders* (pp. 89–106). Springer.
- Parker, J. D., Taylor, G. J., & Bagby, R. M. (2003). The 20-Item Toronto Alexithymia Scale: III. Reliability and factorial validity in a community population. *Journal of Psychosomatic Research, 55*, 269–275.
- Pedroza-Gil, F., Scheidt, C. E., Hoeger, D., & Nickel, M. (2008). Relationship between attachment style, parental bonding and alexithymia in adults with somatoform disorders. *The International Journal of Psychiatry in Medicine, 38*(4), 437–451.

- Ruesch, J. (1948). The infantile personality; the core problem of psychosomatic medicine. *Psychosomatic Medicine*.
- Sifneos, P. E. (1973). The prevalence of alexithymic characteristics in psychosomatic patients. *Psychotherapy and Psychosomatics*, 22, 250–262.
- Smith, R., Gündel, H., & Lane, R. D. (2020). Neurobiologie der emotionen: Anatomie, neuronale Schaltkreise und Alexithymia. In U. T. Egle, C. Heim, B. Strauss, & R. Von Känel (Eds.), *Psychosomatic -neurobiologisch fundiert und evidenzbasiert* (pp. 122–129). Verlag W Kohlhammer.
- Subic-Wrana, C., & Lane, R. D. (2011). Alexithymie. In R. Adler, W. Herzog, P. Joraschky, K. Köhle, W. Langewitz, W. Söllner, & W. Wesiack (Eds.), *Psychosomatische Medizin. Theoretische modelle und klinische praxis* (pp. 241–250). Elsevier.
- Taylor, G. I., & Bagby, R. M. (2004). New trends in alexithymia research. *Psychotherapy and Psychosomatics*, 73, 68–77.
- Wood, B., Watkins, J. B., Boyle, J. T., Nogueira, J. O. S. E., Ziman, & Carroll, L. I. S. A. (1989). The “psychosomatic family” model: An empirical and theoretical analysis. *Family Process*, 28(4), 399–417.
- Patrick O'Malley** MD, MPH Child and adolescent psychiatrist at Texas Children's and assistant professor of psychiatry at Baylor College of Medicine. Board-certified adult psychiatrist, having completed his general psychiatry training at the University of Texas Southwestern, where he undertook the Clinician Educator Track. He completed his child and adolescent psychiatry fellowship at Baylor College of Medicine. He holds a Master of Public Health from the University of Texas Houston, School of Public Health. Medical studies at Texas Tech University Health Sciences Center El Paso Paul L. Foster School of Medicine, where he graduated with Distinction in Scholarship and Research. He received the Outstanding Student in Psychiatry Award, as well as induction into the Gold Humanism Honor Society, serving as chapter president. His clinical interests include psychotherapy and working with underserved populations, especially gender- and sexually diverse individuals.



Generalized Chronic Health Conditions with Mind Body Representations. Neurasthenia. Chronic Fatigue Syndrome & General Distress Syndrome

Gage Rodriguez

Neurasthenia and Chronic Fatigue

Neurasthenia, which literally means nervous weakness, is a term generally associated with American physician George M. Beard (Gijswijt-Hofstra & Porter, 2001), and was introduced in the second half of the nineteenth century. It was described as “nervous exhaustion” and was the result of the multiple stresses that modern life caused on people. Jean-Martin Charcot used to call it “Beard’s disease,” but the term neurasthenia gained popular acceptance as a side effect of modernity.

For children, the term chronic fatigue syndrome has been more frequently used, and it was thought to affect mostly over-sensitive children (Bakker, 2010). It consisted of digestive problems, chronic headaches, a feeling of exhaustion, oversensitivity, irritability and inattentiveness. There was no medical explanation for these symptoms.

In the early twentieth century, chronic fatigue syndrome was considered as fairly common in adolescents in the United States (Rowell, 1905), particularly in minors in the group of 10 to 15 years old. It was thought to be associated with a sensitive temperament, as well as with masturbation and over-exertion of the mind particularly

at nighttime. In Japanese psychiatry, it used to be diagnosed as *Shinkeishitsu* (literally nervousness) and was treated mainly with Morita therapy (Kitanishi & Kondo, 1994) and it was strongly associated with hypochondria.

In terms of clinical manifestations, there is often a controversy between family members of a young person who manifests chronic fatigue and their pediatricians. This takes the form of conflict around access to specialized treatment facilities, the correctness of the diagnosis or delay in the diagnosis, and the perceived dismissal (by pediatricians) of the seriousness of the condition in a given child (Royal College of Pediatrics and Child Health, 2004).

At times, families feel that the physicians involved may not take the condition seriously or deal with it as if it were “not real” or that it is linked to manipulation on the part of the child or families.

Definition

There is no universally agreed definition of this syndrome, which in some areas is considered strictly a neurological condition (and therefore preferably called myalgic encephalopathy), while on the other extreme many clinicians even doubt

G. Rodriguez (✉)
Ochsner Health System, New Orleans, LA, USA
e-mail: gager@bcm.edu

that it exists altogether. In a more traditional stance, the International Classification of Diseases, tenth edition (ICD 10) calls it neurasthenia.

The general agreement in most reports is that chronic fatigue in childhood and adolescence consists of a persistent feeling of fatigue which is not relieved by rest and which is chronic, i.e., lasting several (at least three) months. The Royal College of Paediatrics and Child Health in the UK defines it as “generalized fatigue, leading to disruption in everyday routine, which persists after routine tests and investigations have failed to identify its cause” (May et al., 2010). No single cause has been identified, justifying the term “syndrome,” as there may be multiple contributing factors.

In relatively recent times, a new diagnostic category has been proposed for conditions like those described in this chapter: *Body distress syndrome*. This is presently a proposed diagnostic category in the upcoming International Classification of Diseases, XI edition (Fink, 2017; Fortes et al., 2018; Lam et al., 2013). This term is often favored by general practitioners and family doctors (Budtz-Lilly et al., 2015) who frequently see patients with somatic symptoms such as chronic fatigue, pain in several parts of the body, or symptoms which cannot be explained by any major traditional/medical cause.

At the same time, it is known that there is a high frequency of emotional problems in youngsters suffering from chronic fatigue: anxiety symptoms and depressive ones, which often coexist.

One problem with the category of body distress syndrome is that it also could be used to comprehend what psychiatrists call “unexplained medical symptoms” or previously somatoform disorders as a “global category” in which no medical condition can account for the symptoms exhibited by the minor. This category, even though favored by physicians to comprehend the “umbrella of conditions” is unlikely to be very useful to psychiatrists, as it is too comprehensive and general, as it includes multiple possible conditions.

Prevalence

There are few recent studies of the prevalence specifically of chronic fatigue syndrome in children. However, several studies indicate its increased prevalence during adolescence (Chalder et al., 2003) compared with younger children. One study found that after age 11 the frequency of chronic fatigue syndrome is the same as in the adult population (Farmer et al., 2004). However, the prevalence in adults has been reported as low as 0.1% and up to 1.2% of the general population. A recent review reports an incidence of 0.11% in the general population of adolescents per year (Nijhof et al., 2011), i.e., in children 10–18 years of age. It is more readily diagnosed by pediatricians and less so by general practitioners.

A telephone survey performed by Rimes et al. (2007) puts the prevalence at 0.5% of adolescents. A random dialing study in Wichita, Kansas in the United States (Jones et al., 2004) found a prevalence of 0.3% in adolescents. Others think that it is more common than assumed and report a prevalence of 2% among adolescents (Collard & Murphy, 2020; Crawley et al., 2013). These authors emphasize that not only the physical fatigue but the cognitive difficulties associated with it, i.e., altered mental functions (concentration, memory, higher executive functions) should be taken into account. Most reports find a higher prevalence in girls than in boys.

In a study inquiring exclusively about “severe fatigue,” they noted a prevalence of 20% in girl adolescents and 6.5% in boys (ter Wolbeek et al., 2006). This seems to indicate that the perception by the public is different from the clinical diagnosis of the syndrome. This also may well indicate that despite the presence of fatigue, fewer adolescents are brought to the attention of clinicians for treatment, despite having chronic fatigue (Gaab, 2019).

It is clear that the prevalence of these conditions would be influenced by the definition and diagnostic criteria, and some definitions are narrower than others. Also, there is the additional question of whether adult criteria should be applied exactly to a childhood or adolescence

population. There is some consensus that the age of onset is on average at age twelve, but there are wide variations.

Even if the condition is not as frequent as others, it is important because the affected youngsters have considerable impairment, with around 50% being confined to their beds and unable to function in everyday life. Once the condition is developed, its treatment may be very problematic.

Clinical Presentation and Mind-Body Issues

The onset of the condition generally is insidious, gradual, but can be acute or even sudden. A proportion of patients report that prior to the fatigue they experienced some infectious condition, such as influenza, gastroenteritis, streptococcal pharyngitis, or sinusitis among others. In many cases, there is a recall bias or a need to attribute the present condition to a preceding illness, and those infections have not always been corroborated by a medical diagnosis.

The diagnosis of chronic fatigue is based on symptoms rather than on laboratory studies, i.e., presenting symptoms in the absence of explanatory causes. A common presentation is that it is a long-lasting state of severe tiredness and physical fatigue in the child, not relieved by rest. It can become worse with any exercise and it can be fluctuating (waxing and waning) or be a constant problem.

There is also mental fatigue, which impairs the capacity to engage in normal or everyday activities like schoolwork, and which is not explained by any medical condition. There are often additional complaints of other physical symptoms, such as aches in various parts of the body. There may be abdominal pain. The child may have symptoms such as hyperacusis or visual hypersensitivity, as well as many other minor ones in the individual case. The patient will complain of fatigue and also of problems concerning concentrating during studies, in general, and retaining what they have studied, i.e., with memorization.

Some reports have found a correlation of perfectionism in some of the patients, as well as school phobia and separation anxiety. Some also have exhibited a tendency to somatization prior to the condition.

There are formalized diagnostic criteria published by the CDC (Center for Disease Control and Prevention) in the United States. Also, there is a questionnaire which includes the Oxford criteria. Both are roughly the same, except that the Oxford criteria include “mental fatigue” while the CDC criteria emphasizes the physical aspects of the condition (Cairns & Hotopf, 2005).

The consequences of chronic fatigue, particularly if moderate to severe, are social isolation and chronic school absence, as well as the physical effects of prolonged permanence in bed, i.e., physical deconditioning. In other children there is a fluctuating pattern, in which there are good days followed by periods of bad ones. These may be baffling for parents and school authorities, who may assume the child is pretending the fatigue to avoid their work (Jason et al., 2006). As noted, patients at times will also have abdominal pain, rashes, and headaches.

Clinically, there are often accompanying emotional symptoms, such as depressive ones or anxieties. It has been estimated that between 50% of up to two-thirds of affected children suffer also from prominent symptoms of anxiety or depression.

Another relatively small case series reported by Garralda and Rangel (2005) compared the clinical picture of children with chronic fatigue syndrome and with other emotional disorders. There was considerable overlap in symptoms, and many with chronic fatigue reported depressive feelings and worries. These children tended to have less “premorbid” emotional symptoms and historically had more somatic symptoms than children with only emotional disturbance.

Differential Diagnosis

Distinguishing between “pure chronic fatigue” and overlapping or comorbid conditions may be difficult, for instance with depression and anxiety dis-

turbances. The child or adolescent may have a significant social phobia or school phobia. There may be antecedents of traumatic events (e.g., being bullied in school, social rejection, or sports failure) or of marital discord between the child's parents or other family dysfunction as contributing or even determining factors for the fatigue symptoms.

There is controversy about the question of coexisting substance abuse or dependence plus severe depression (with melancholia). The issue is whether they should be considered coexisting conditions or exclusionary of the diagnosis of chronic fatigue. The same applies to anorexia nervosa. Despite the set of symptoms, most experts do not exclude the diagnosis of chronic fatigue even when there is fibromyalgia, school phobia, and separation anxiety disorder. An indicator of some difference in children with school phobia and separation anxiety is the improvement on days when there is no school (e.g., weekends and holidays) as well as an improvement in the hours after school.

The clinician is advised to rule out a number of medical conditions which could be associated with fatigue, weakness, difficulty with everyday functioning and to perform a number of laboratory tests in order to rule out their presence in all cases of chronic fatigue. The main tests should be:

Blood analysis to rule out the presence of anemia, iron deficiency or leukemia. In blood also, the erythrocyte sedimentation and the presence of C reactive protein may suggest an underlying inflammatory or autoimmune disease. Other conditions that should be ruled out are chronic infections like tuberculosis. Additionally, systemic lupus erythematosus should be ruled out. Blood glucose is necessary to rule out diabetes mellitus.

Blood biochemistry including sodium, potassium, and creatinine is helpful to discard the possibility of kidney dysfunction or endocrine abnormalities. Addison's disease in particular leads to considerable weakness. The level of creatine phosphokinase helps in determining the presence of muscle diseases.

Thyroid function tests should be used to rule out hypothyroidism, also leading to low energy and fatigue. Liver function tests (transaminases,

coagulation factors and albumin) to exclude the possibility of hepatitis or other chronic liver condition. Urine tests should exclude renal disease, diabetes mellitus, presence of blood and leukocytes, and urinary tract infection.

Viral infections and titers: The Epstein-Barr virus has been associated with chronic fatigue. This can be investigated with serological tests. The tests can help differentiate between a past infection, a reactivated one or a new infection. Antibody tests for the Epstein-Barr virus (viral capsid antigen or VCA) as well as levels of IgM (immunoglobulin M), IgG (Immunoglobulin G), and EBNA (Epstein-Barr nuclear antigen) should be considered.

Other conditions that should be ruled out are detected with specific tests, such as brucellosis, hepatitis, Lyme disease, toxoplasmosis, and cytomegalovirus.

Some medications can induce a feeling of fatigue such as some anticonvulsants and beta-blockers. Illicit substance abuse and addiction also should be ruled out.

Among neurological conditions, Wilson's disease and multiple sclerosis should be considered and if suspected there are specific diagnostic tests. Additionally connective tissue conditions such as Ehlers-Danlos syndrome, and postural orthostatic tachycardia syndrome (also called POTS) should be considered.

Among sleep disorders, obstructive sleep apnea and narcolepsy have to be considered either as a comorbidity or as a cause for hypersomnia.

The child's current dietary practices should be taken into account. It may turn out that the child might be fatigued because of malnourishment, being underweight, or from the restriction of intake due to concerns about "being overweight," i.e., an eating disorder. The sheer diminished intake of calories which leads to malnutrition can explain the fatigue and lack of energy. Also, there may be dietary beliefs that lead to the adherence to unusual diets, such as purely vegetarian without adequate caloric or protein intake, leading to similar difficulties. Some of them may be based on spiritual or religious beliefs, as sometimes adolescents embrace practices that may be quite different from those of their parents.

The clinician is encouraged to explore if there are stressors, traumatic events recent or remote, as well as family tensions that could impact on the child's psychosocial functioning.

The question will arise, particularly in complex cases, of referring the child to a "specialized center" for children and adolescents with chronic fatigue, which exist in several countries. This is impractical in many cases, depending on the nature of the health service, and the possibility of remote consultations.

Intervention Strategies

Some interventions focus on the concept of empowerment and self-efficacy. These can be fostered through psychoeducational interviews (Barlow & Ellard, 2004) emphasizing the role of exercise and not allowing deconditioning to take place if possible.

It is important also to validate the lived experience of the patient, and not to doubt that he or she actually feels what is being reported or felt. A program could be designed for gradual increase in physical activity and tolerance of effort. Graded exercise and resistance training (Collard & Murphy, 2020) and activity management have been all used to treat children with chronic fatigue syndrome (Brigden et al., 2017). If there are accompanying symptoms like depression, an anxiety disorder, or tensions in the home or family, these should be addressed as their improvement may contribute much to the motivation to improve overall functioning in the child.

There is little information about the outcome of chronic fatigue. This is complicated due to the relatively small size of patient samples and because there are few studies of follow-up. Of course one of the complicating issues in understanding this outcome is the question of what treatment was applied in the intervening time.

An observational study with follow-up, such as one undertaken by Rangel et al. (2000), is difficult to interpret because patients vary in the severity of the condition, complicating factors, family influences, stressors as well as on the nature of the treatment applied. That study

revealed an improvement in two third of the patients approximately 3 years after the initial diagnosis, leaving one-third still plagued by tiredness, school absence and being in bed much of the time. Another follow-up study (Bell et al., 2001) with 35 affected children followed them at 13 years after the onset of chronic fatigue. It showed that 20% continued to feel very fatigued or were worse, while 80% were "better" even though a significant proportion had mild to moderate symptoms of fatigue. No other conditions had been diagnosed in the interval that could explain the fatigue in any of those patients.

Juvenile Fibromyalgia

In principle, this is a different condition from chronic fatigue, although many children and adolescents with fibromyalgia will also manifest chronic fatigue. The predominant manifestation in juvenile fibromyalgia is really the widespread pain, or a child who "hurts everywhere" (Häfner, 2004). It is most often diagnosed in adolescent girls, but it affects both genders.

The condition is often diagnosed in adults by the symptoms and signs of chronic widespread musculoskeletal pain. The pain should last for several months and there are a number of "painful points" in various parts of the body. The adult criteria have not been validated for adolescents (Kashikar-Zuck & Ting, 2014). Therefore, the main distinguishing symptom is the complaint of extensive and chronic, intense pain.

Understandably, the pain tends to immobilize the child, and there is considerable school absenteeism or the child is unable to get out of bed and perform some basic functions. Interestingly, there is often the complaint of frequent headaches and also symptoms of irritable bowel syndrome with corresponding abdominal pain. The child will often manifest hypersomnolence, as the sleep tends to be nonrestorative. By the time the diagnosis is made, the condition should have lasted at least three months continuously.

In management, many of the principles outlined above would apply. The question of pain management comes to the forefront, though.

Generally, as will be noted in the corresponding chapter on pain, a pain specialist would use medications such as serotonin reuptake inhibitors, oxcarbazepine, and other serotonergic medications to deal with the pain rather than narcotics. Pain management can include a number of complementary and alternative interventions such as hypnosis, relaxation techniques, mindfulness, yoga when possible, etc. Psychotherapy to help the child cope with a chronic health condition, gradual acceptance of a mild level of pain, and focusing on relationships and other activities are important elements. Fibromyalgia in adults is strongly related to traumatic events from the past, such as neglect, physical and sexual abuse, and other conditions (Kosseva et al., 2010; Peres et al., 2009). There is little information about this issue in children and adolescents with fibromyalgia, but the clinician should explore this issue in assessing this possibility with any child, now or in the past. There is emerging information that indeed such a link exists also for adolescents (Mansiz-Kaplan et al., 2020). Also, there are children whose parents or other close relatives are plagued by multiple complaints of pain. This issue also can be a contributor to the symptom picture in the child and can be addressed through specific treatment for the adults, as well as in family therapy interventions. When there are antecedents of emotional trauma these need to be addressed directly in the therapeutic process.

Pervasive Refusal Syndrome and Resignation Syndrome

Pervasive refusal syndrome was first described by Christopher Lask et al. in the UK (Lask et al., 1991; Lask, 2004) and later by Nunn and Thompson in Australia (1996 & 1997) and other accounts have been published (Jaspers et al., 2009; Schepkeret al., 2014). The syndrome is seen in children and adolescents in conditions of severe stress and high family tension, and it has been described also in children who have been through severe traumatic situations and are refugees, for instance in Sweden (Bodegård, 2005). It has been reported more frequently in girls (three

times more frequent than in boys) and generally onset is between the ages of 9 and 15, although younger ages have been described. The youngest case that has been documented is in a 4-year-old (Taylor et al., 2000; Lask, 2004).

There is no clear medical cause for the change in behavior and it is not explained by any known medical condition. If the condition is severe, it will require hospitalization in a pediatric setting (Schieveld & Sallin, 2021). Most patients express anxiety or fear of going outside or engaging with the social world.

The condition can be quite severe and even life-threatening. There are various degrees of severity. There are probably many more cases in which various symptoms are present, but which do not reach the level of “total” refusal as in the original description, but nonetheless reflect the stressors and histories of many of these children and families. It is likely that many cases which are not so severe go unreported.

In the original description, the child refuses to drink, eat, talk, move, use the restroom, practice personal hygiene, or engage in any form of physical activity. Other accounts include the perceived inability in the child to carry out those functions, not necessarily a voluntary refusal (Otasowie et al., 2021). The child or adolescent tends to resist efforts at rehabilitation, will urinate on the bed or require help to go to the toilet, even for defecation. This is not a “disease” in itself but a set of perceived inabilities or difficulties that children manifest with different degrees of severity.

There is little evidence as to the factors that predispose to the condition or precipitate it, but it is generally accepted that the child is sensitive and “vulnerable” in the premorbid state. There is often a stressor, such as family or interpersonal pressures, or one or several traumatic experiences shortly before the onset. At times, it occurs after an episode of infection.

The duration of the condition is of several months and parents usually seek intervention before the child’s health deteriorates severely. It is not primarily an eating disorder as in anorexia nervosa spectrum, as there is no distortion of the body image in general, nor a wish to be thin or a fear of becoming fat.

Psychodynamic Factors: Individual, Family, and Social Factors

It appears that most patients experience anxiety due to various reasons: social, generalized, or posttraumatic. Also, many have low self-esteem, hopelessness and helplessness, and other features of depression.

In many descriptions of cases, the premorbid personality of the child is of a very high-achieving student who is engaged in competitive activities. In the background there are often relatives with somatization difficulties or chronic illnesses. The onset of the condition can be insidious, but it often is sudden, leading to many investigations of conditions such as autoimmune encephalitis, and other medical conditions.

An “enmeshed relationship” between the affected child and the mother or other caregiver has been described as a maintaining factor. Generally, the child is of normal intellectual ability. There is often a fear of “facing the world” or of becoming an adult.

Many adolescents experience fear of growing up, some acknowledge it openly, and others may just manifest it through the body. This is more likely if the child is not accustomed to speaking about feelings. It is also possible that the family would not fathom why a boy, for example, would have fear of growing up. Often chronic marital tension between the child’s parents and having parents with multiple psychosocial problems complicate this pervasive condition. It would seem understandable that a child would be more fearful of growing up seeing that his or her parents struggle enormously to function or are chronically unhappy.

Another possible psychodynamic factor refers to the need to “control something” in their life, for example, how much and whether to eat, drink, or “function normally”.

Some adolescents have been described up until the onset of the condition, as having been extremely obedient, compliant, or perfectionistic. They may instead show their anger or resentment through “non-cooperation” and active refusal to do things like participating in sports, going to school, or simply eating. This produces great

anxiety in the parents, as well as frustration and bewilderment at the degree of change in their previously perceived “perfect child.”

Family stress and conflicted or negative family interactions are another factor, including depression and chronic illness in one or several of the close relatives of the child.

Nunn et al. (2014) propose that in terms of neurophysiology there is hyperactivation of “alarm centers” (primarily the amygdala) and also overfunctioning of systems that lead to avoidance, low energy, and dissociation.

Indeed, in the differential diagnosis of this condition, dissociative states have to be ruled out, as they often are the result of unresolved traumatic experiences and those need to be addressed for the patient to integrate different aspects of the self. The child may be “emotionally paralyzed” or manifest a sort of somatic dissociation between the mind and the body and withdraw when the condition is posttraumatic/dissociative in nature.

Resignation or Total Surrender Syndrome

This is a similar condition to pervasive refusal. It has been described in children and adolescents primarily in Sweden (Bodegård, 2005), but also in other countries which grant asylum to refugees (von Knorring & Hulcrantz, 2020) The diagnostic boundaries with pervasive refusal are unclear. The clinical picture is very similar and sometimes it is considered a form of “psychogenic catatonia” (Sallin et al., 2014). The term is used mostly to describe immigrant or refugee adolescents who have experienced persecution or chronically traumatic situations and become immigrants and “physically safe” in the new host country. After that, however, they develop a state of pervasive somnolence and difficulty to move and meet their most basic needs, including eating, drinking, and elimination functions. They tend to exhibit pervasive sleepiness and sleep for long periods of the day and night. It has been observed that as the child acquires more nutrition, is more vivacious, and there is more active refusal of many ministrations and carrying out everyday functions.

In these situations with a refugee status of the child and his or her parents, several authors have emphasized the extremely close relationship between the affected child and her or his mother, who suffers also from the loss of her country of origin, perhaps trauma related to the reasons for leaving it, and being in a strange culture where at times the refugees do not feel welcome by some of the public or they feel devalued.

The caregiver in some cases has been described as exhibiting “deadly mothering” as there is interference in the management of the child by the medical or psychological/psychiatric services and a maintenance of the belief that the child is doomed somehow. The child responds with a sort of “devaluation” (Bodegård, 2005; Jans et al., 2011). In this devaluation, there is less “active refusal” and more a tendency to “surrender,” helplessness, and disinterest in the people and surroundings.

Also, the children tend to have experienced considerable trauma themselves (physical or sexual) as well as witnessing relatives being traumatized. The main difference here is the background of trauma, anxiety, depression, and the role of the child as the repository or “representative” of the suffering of the family to which she or he belongs. The clinical picture is very similar to that of pervasive refusal, and the caregiver here is also traumatized and has also “accepted” the state of devaluation of their child.

Intervention and Outcome

A recent review of reported cases suggests improvement in around 75% of cases (Otasowie et al., 2021), but the duration tends to be of around 9 months in most cases, even with adequate treatment.

Depending on the severity, a prolonged stay in bed may lead to loss of muscle mass or “deconditioning” if it lasts for months:

Ahmed, a 16-year-old boy seen by us, manifested a partial form of this refusal syndrome. He is the only child born to his parents who were originally from Libya. He is their only child. Ahmed had been so far an extremely ambitious and obedient

child, who spoke Arabic home and English outside. His father in particular had migrated to the United States in order to flee the difficult conditions in his country and to give his son “a better life and more opportunities.” The father had worked long hours for all of Ahmed’s childhood. The mother had followed her husband, regretting enormously leaving her family behind. For years they had lived in a small apartment. Ahmed entered the “best schools” in the large city where they lived, through scholarships. However, when he turned sixteen, he suddenly refused to go to school saying he just “did not care anymore” and saw no point in devoting time to study as “one is going to die anyway in the end.” Ahmed also stopped eating normally and lost much. He sometimes refused to drink but very little. He spent many hours of the day and night in his bed, sometimes reading, hardly coming out of his room. He also refused to speak with the psychiatrist who had to see him at home. He would act very sleepy and “had nothing to say.” Ahmed recommended that we treated his father, who he perceived by the child as “obsessed with education, authoritarian and mean toward mother.” She had a severe chronic disease also, but the boy refused to speak of his feelings about that. This refusal to speak lasted about two months and the child agreed to take antidepressant and a medication for anxiety. He eventually spoke of his resentment toward his father, who had all his hopes placed on him and great expectations for his success. He was afraid of failure as school had gotten more difficult and he preferred “not to try” to succeed and fail. Only when he started speaking of his traumatic memories of losing contact with his relatives in Libya, like his grandmother, by moving to the US and the alienation he felt from other children (in part for being Muslim) and teachers, he started to get better, eating more regularly, exercising and going outside, as well as taking classes “on line.” He also started to explore his resentment toward the father’s expectations and the way he perceived the relationship with him and his mother.

In the treatment of pervasive refusal syndrome, most clinicians recommend a graded approach following the child’s ability to engage in increasing levels of activity and resume everyday life activities. In cases where there is marked hopelessness and helplessness (Boege et al., 2014), or depressive and anxiety symptoms, these can be addressed through psychotherapy and pharmacotherapy.

The treatment team treating the child is in hospital has to be very patient as the recovery often proceeds at the child’s own pace. Individual and family psychotherapy are important ele-

ments of the treatment. A striking feature of the pervasive refusal syndrome is the strong resistance of the child to engage in treatment or participate in sessions. This often creates resentment and anger in the medical team, who are accustomed to a child wanting to improve as soon as possible. In psychotherapy, the clinician may have to engage the child through nonverbal strategies as the first line of intervention rather than expecting the development of trust very quickly. The child may feel uncomfortable if she or he does not know how to “name feelings” or describe them. There has to be a component of gradual encouragement of physical activity and exercise. The pediatric team will oversee maintaining hydration, weight, and an adequate physiological state.

The condition of pervasive refusal has a number of symptoms in common with a “traditional” disorder which is catatonia. In the past, catatonia was considered in its narrow sense, as a “type of schizophrenia” and therefore a psychotic state. In recent decades, it has been diagnosed with increased frequency in children and adolescents, particularly in inpatient centers. It is described as a clearly “organic” condition. It has been argued that pervasive refusal is just a misdiagnosis of the broader problem of catatonia (Dhossche & Kellner, 2015) and catatonia should be ruled out in cases of pervasive refusal (McNicholas et al., 2012). In one report of pervasive refusal in India (Kaku et al., 2015), benzodiazepine was used as well as ECT (electroconvulsive therapy), which is basically the modern management of catatonia. Benzodiazepines, particularly lorazepam, are considered a standard intervention for the acute management of catatonia, and many clinicians consider it as a diagnostic test, i.e., if the child responds to that medication, the correct diagnosis is catatonia.

The outcome of pervasive refusal is thought to be mostly positive in about two third of cases on follow-up, with restoration of functions for the most part (Guirguis et al., 2011). However, the treatment can take many months, and it appears that rushing treatment can lead to relapses. Boege et al. (2014) published a “first person account” of a girl who was treated successfully. She was prior

to the onset of the condition a highly controlled and efficient girl. Then she “lost control of everything” but could only control her body (her intake of food, her eliminations, what she said, what she wrote) and was highly perfectionistic and expected too much of herself. She described a “compulsive” need for the avoidance maneuvers, to avoid eating, drinking, self-care, school, etc. The account shows a remarkable improvement from a quasi-disorganized thinking pattern to a more flexible state of self.

Catatonia in Children and Adolescents

As noted, the diagnosis of catatonia has seen a “come back” into the psychiatric nosology (Fink, 2013), not so much as it was traditionally seen: as a “type” of schizophrenia. Now it is a syndrome in itself that has multiple etiologies. There are many problems with this diagnostic category in the sense that there are some “pathognomonic signs” and others that overlap with different mental conditions. The diagnostic boundaries are very diffuse, and many clinicians and literature reports use a broadened definition while most clinicians stay with a narrower definition of the condition.

Catatonia, which was originally spelled *katatonia*, etymologically means “low tone” (*kata* = low, *tonia* = tonus). The term was introduced by Kahlbaum, who thought it was a disease of muscular tension, excessive tension. In German, it was also called *Spannungirrese* (insanity of tension).

In the new conception catatonia is thought to be more closely associated with mood disorders rather than with schizophrenia (Wilcox & Duffy, 2015). Nevertheless, a recent review conducted in France (Benarous et al., 2018) challenges the most frequent association with mood disorders and finds a closer correlation with schizophrenia, after reviewing multiple studies and case reports. Also these authors find that the diagnosis is made despite the presence of multiple other “organic conditions” including autoimmune encephalitis, neurodevelopmental disorders, and others. In

their view the diagnosis is mostly based on the symptomatic picture.

Also in the European perspective catatonic syndrome can be caused by traumatic experiences, as observed in some refugee children (Benarous et al., 2018). This makes a differential diagnosis with dissociative states and conversion disorders necessary. Also the category “malignant catatonia” can be diagnosed when there is fever, autonomic instability, and delirium in addition to the motor phenomena. These authors recognize that recommending high-dose benzodiazepines, and particularly electroconvulsive therapy, is very difficult for parents to accept.

However, given the morbidity of the condition, it may be the “last resort.” To complicate matters, there are forms such as “episodic catatonia” and chronic catatonia. Also, a form of catatonia has been described that is brought about by the use of neuroleptic medications.

It would appear that the most prudent approach would be to reserve the term catatonia to the “classical” psychomotor symptoms and to take into account traumatic events, dissociative states, medical conditions, side effects of medications, and neurological conditions.

Furthermore, catatonia has been described (like pervasive refusal) in children with neurodevelopmental disorders and autism. It is difficult to distinguish based on pure phenomenology certain mannerisms and stereotypies, as well as refusal to eat, drink or respond, as well as oppositional behavior. The suggestion here is to base the additional diagnosis in a drastic change in the preexisting behavior of that child.

Among the medical conditions thought to be associated with catatonia are autoimmune states, such as autoimmune encephalitis as well as PANDAS (Pediatric autoimmune response associated with streptococcal infection). Generalized autoimmune diseases such as lupus erythematosus and Hashimoto’s disease (Hashimoto’s encephalitis) are possible causes also.

Some forms of epilepsy and ictal states can resemble catatonia. Also because of a number of toxicity states which can be associated with catatonia - for example with the use of steroids, lithium (Desarkar et al., 2007), phencyclidine,

antihistaminics, antiretroviral medications, insulin, and cyclosporine - these issues have to be ruled out. It may also be caused by excessive use of cannabis or ecstasy. Some forms of porphyria and homocysteine re-methylation deficit can cause it. Therefore this is truly a syndrome with some features in common which has to be treated both etiologically, if possible, and symptomatically. The antecedents and life circumstances of the patient must be also taken into account.

Unfortunately, one of the “diagnostic confirmations” of the diagnosis of catatonia in many centers is the therapeutic response to a “challenge” of treatment with benzodiazepines, particularly lorazepam, as well as in some reports to electroconvulsive therapy.

It seems problematic to assign a proof of diagnosis to something as wide as a broad range of treatments and then work backward to affirm that after all, the condition “was catatonia” based on such a response. This is a specificity that is unwarranted, as benzodiazepines and electroconvulsive treatment have a rather wide spectrum of effects on the whole brain. This is particularly so when “high dose benzodiazepines” are recommended for some difficult cases (Dhossche & Kellner, 2015). With this clinical reasoning, if the patient improves it proves the suspected diagnosis. The same can be said after “prolonged series” of high voltage electroconvulsive treatments, eight to begin with, followed by another series of eight or even another one, leading to a gradual improvement of the condition.

From the clinical point of view, the diagnosis of catatonia privileges the psychomotor symptoms, rather than any psychological categories. As is the case with many instruments, a “catatonia checklist” is often used to diagnose the condition, and if the patient meets such criteria the diagnosis is made, based only on those criteria.

Regarding causality, the new syndrome of catatonia can be caused by numerous medications as well as medical conditions, and, of course, it can be “idiopathic,” i.e., without a known cause.

In the DSM V classification, catatonia is a syndrome that can have diverse etiologies. It encompasses twelve symptoms of which only

three are necessary to establish the diagnosis. The twelve principal symptoms are: stupor (a state near to unconsciousness and with unresponsiveness to stimuli), catalepsy (a state characterized by rigidity of the body, unresponsiveness to stimuli), waxy flexibility (maintaining a posture that another person has indicated by manipulating the affected person), mutism (not talking to in response to questions nor spontaneously), negativism (doing precisely the opposite of what is asked), posturing (assuming unusual postures that are generally difficult to maintain), mannerisms (strange movements and unusual motor expressions), stereotypies (these are more complex movement patterns that the person repeats, they not involuntary), psychomotor agitation, grimacing (making odd gestures with the face), echolalia (repeating what was just said, or “responding” with such repetition of the question or statement), and echopraxia (imitating the motor patterns or gestures of the person in front of the patient). Additionally, other symptoms are often considered suggestive, such as “automatic obedience” when something is suggested (consider that also opposition to those commands is a diagnostic sign), as well as loquacity and high levels of physical activity. A form called “episodic” catatonia has been described as well as one deemed “malignant,” which responds poorly to treatment and can lead to rhabdomyolysis (destruction of muscle cells), kidney failure, and heart failure.

With the adoption of three out of 12 criteria, it seems that the diagnosis has become more inclusive. Fink suggested a challenge with Ativan, 2 to 4 mg intravenously in adults, which leads to immediate remission of the rigidity but may only last about half an hour.

The differential diagnosis of catatonia involves multiple conditions. An important one is neuroleptic malignant syndrome, which may be of course the result of a higher dose or intolerance of neuroleptic medications. Akathisia (a side effect of the neuroleptic) can be mistaken for spontaneous agitation. Delirium (a state of diminished attention span, disorientation and agitation) can be confused with a symptom of catatonia, and rigidity is a hallmark of neuroleptic malig-

nant syndrome. In the latter syndrome, there is often fever. This is a medical emergency that requires supportive treatment in an intensive care unit and symptomatic management and close monitoring.

Catatonia itself has a competitor, so to speak, in the modern use of the term anti-N-methyl-D-aspartate receptor (NMDAR) encephalitis, a form of autoimmune encephalitis thought to lead to a similar picture as catatonia (Dhossche et al., 2011), including an agitated and a stuporous form. For this diagnosis, the requirement would be antibodies against this receptor to be found in the cerebrospinal fluid. This requirement is often not adhered to in many centers, and the antecedent of a streptococcal infection, a sudden onset, and the presence of C reactive protein elevation are considered strongly suggestive of the diagnosis, which is considered entirely as an organic brain syndrome.

References

- Bakker, N. (2010). Before Ritalin: Children and neurasthenia in the Netherlands. *Paedagogica Historica*, 46(3), 383–401.
- Barlow, J. H., & Ellard, D. R. (2004). Psycho-educational interventions for children with chronic disease, parents and siblings: An overview of the research evidence base. *Child: Care, Health & Development*, 30(6), 637–645.
- Bell, D. S., Jordan, K., & Robinson, M. (2001). Thirteen-year follow-up of children and adolescents with chronic fatigue syndrome. *Pediatrics*, 107(5), 994–998.
- Benarous, X., Raffin, M., Ferrafiat, V., Consoli, A., & Cohen, D. (2018). Catatonia in children and adolescents: New perspectives. *Schizophrenia Research*, 200, 56–67.
- Bodegård, G. (2005). Life-threatening loss of function in refugee children: Another expression of pervasive refusal syndrome? *Clinical Child Psychology and Psychiatry*, 10(3), 337–350.
- Boege, I., Möhrle, C., Fegert, J. M., & Schepker, R. (2014). „Pervasive refusal syndrome“ Wichtigkeit der diagnose für die erfolgreiche behandlung. *Psychotherapeut*, 59(5), 356–362.
- Brigden, A., Loades, M., Abbott, A., Bond-Kendall, J., & Crawley, E. (2017). Practical management of chronic fatigue syndrome or myalgic encephalomyelitis in childhood. *Archives of Disease in Childhood*, 102(10), 981–986.
- Budtz-Lilly, A., Schröder, A., Rask, M. T., Fink, P., Vestergaard, M., & Rosendal, M. (2015). Bodily dis-

- tress syndrome: A new diagnosis for functional disorders in primary care? *BMC Family Practice*, 16(1), 1–10.
- Cairns, R., & Hotopf, M. (2005). A systematic review describing the prognosis of chronic fatigue syndrome. *Occupational Medicine*, 55(1), 20–31.
- Chalder, T., Goodman, R., Wessely, S., Hotopf, M., & Meltzer, H. (2003). Epidemiology of chronic fatigue syndrome and self reported myalgic encephalomyelitis in 5–15 year olds: Cross sectional study. *British Medical Journal (BMJ)*, 327, 654–655.
- Collard, S. S., & Murphy, J. (2020). Management of chronic fatigue syndrome/myalgic encephalomyelitis in a pediatric population: A scoping review. *Journal of Child Health Care*, 24(3), 411–431.
- Crawley, E., Mills, N., Hollingworth, W., et al. (2013). Comparing specialist medical care with specialist medical care plus the lightning process® for chronic fatigue syndrome or myalgic encephalomyelitis (CFS/ME): Study protocol for a randomised controlled trial (SMILE trial). *Trials*, 14(444), 1–8.
- Desarkar, P., Das, A., Das, B., & Sinha, V. K. (2007). Lithium toxicity presenting as catatonia in an adolescent girl. *Journal of Clinical Psychopharmacology*, 27(4), 410–412.
- Dhossche, D., & Kellner, C. H. (2015). Pervasive refusal syndrome: A misnomer for catatonia. *Asian Journal of Psychiatry*, 18, 113.
- Dhossche, D., Fink, M., et al. (2011). Anti-NMDA receptor encephalitis versus pediatric catatonia (letter). *American Journal of Psychiatry*, 168(7), 749–750.
- Farmer, A., Fowler, T., Scourfield, J., & Thapar, A. (2004). Prevalence of chronic disabling fatigue in children and adolescents. *The British Journal of Psychiatry*, 184(6), 477–481.
- Fink, M. (2013). Rediscovering catatonia: The biography of a treatable syndrome. *Acta Psychiatrica Scandinavica Supplementum*, 441, 1–47.
- Fink, P. (2017). Syndromes of bodily distress or functional somatic syndromes—Where are we heading. Lecture on the occasion of receiving the Alison Creed award 2017. *Journal of Psychosomatic Research*, 97, 127–130.
- Fortes, S., Tófoli, L. F., & Gask, L. (2018). New categories of bodily stress syndrome and bodily distress disorder in ICD-11. *Jornal Brasileiro de Psiquiatria*, 67(4), 211–212.
- Gaab, J. (2019). Chronische Erschöpfung. Psychobiologische Mechanismen und Risikofaktoren chronischer Erschöpfungszustände. In U. T. Egle, C. Heirn, B. Strauss, & R. von Känel (Eds.), *Psychosomatik-neurobiologisch fundiert und evidenzbasiert* (pp. 460–466). W. Kohlhamer GmbH.
- Garralda, E., & Rangel, L. (2005). Chronic fatigue syndrome in childhood. Comparative study with emotional disorders. *European Child and Adolescent Psychiatry*, 14, 424–430.
- Gijswijt-Hofstra, M., & Porter, R. (Eds.). (2001). *Cultures of neurasthenia from beard to the First World War* (No. 63). Rodopi.
- Guirguis, S., Reid, C., Rao, S., Grahame, V., & Kaplan, C. (2011). Follow-up study of four cases of pervasive refusal syndrome. *European Child & Adolescent Psychiatry*, 20(5), 271–274.
- Häfner, R. (2004). Fibromyalgie: “alles tut weh”. *Akt Rheumatology*, 29, 142–143.
- Jans, T., Ball, J., Preiss, M., Haberhausen, M., Warnke, A., & Renner, T. J. (2011). Pervasive refusal syndrome. Three German cases provide further illustration. *Zeitschrift für Kinder und Jugendpsychiatrie und Psychotherapie*, 39(5), 351–359.
- Jason, L. A., Jordan, K., Miike, T., Bell, D. S., Lapp, C., Torres-Harding, S., Rose, K., Grwitt, A., De Meirleir, K., & Van Hoof, E. L. S. (2006). A pediatric case definition for myalgic encephalomyelitis and chronic fatigue syndrome. *Journal of Chronic Fatigue Syndrome*, 13(2–3), 1–44.
- Jaspers, T., Hanssen, G. M., Valk, J. A., van der, et al. (2009). Pervasive refusal syndrome as part of the refusal withdrawal-regression spectrum: Critical review of the literature illustrated by a case report. *European Child and Adolescent Psychiatry*, 18, 645–651.
- Jones, J. F., Nisenbaum, R., Solomon, L., Reyes, M., & Reeves, W. C. (2004). Chronic fatigue syndrome and other fatiguing illnesses in adolescents: A population-based study. *Journal of Adolescent Health*, 35, 34–40.
- Kaku, S. M., Kommu, J. V. S., Seshadri, S., Girimaji, S. C., & Srinath, S. (2015). Pervasive refusal syndrome – A clinical challenge. *Asian Journal of Psychiatry*, 17, 96–98.
- Kashikar-Zuck, S., & Ting, T. V. (2014). Juvenile fibromyalgia. Current status of research and future developments. *Nature Reviews Rheumatology*, 10, 89–96.
- Kitanishi, K., & Kondo, K. (1994). The rise and fall of neurasthenia in Japanese psychiatry. *Transcultural Psychiatric Research Review*, 31(2), 137–152.
- Kosseva, M., Schild, S., Wilhelm-Schwenk, R., Biewer, W., & Häuser, W. (2010). Comorbid depression mediates the association of childhood/adolescent maltreatment and fibromyalgia syndrome. A study with patients from different clinical settings. *Schmerz*, 24(5), 474–484.
- Lam, T. P., Goldberg, D. P., Dowell, A. C., Fortes, S., Mbatia, J. K., Minhas, F. A., & Klinkman, M. S. (2013). Proposed new diagnoses of anxious depression and bodily stress syndrome in ICD-11-PHC: An international focus group study. *Family Practice*, 30(1), 76–87.
- Lask, B. (2004). Pervasive refusal syndrome. *Advances in Psychiatric Treatment*, 10(2), 153–159.
- Lask, B., Britten, C., Kroll, L., Magagna, J., & Tranter, M. (1991). Children with pervasive refusal. *Archives of Disease of Childhood*, 66, 866–869.
- Mansiz-Kaplan, B., Ayhan, F. F., Cagli, M., Atik, F., & Ece, İ. (2020). A preliminary study of the child abuse and central sensitization in adolescent patients with chronic non-organic chest pain and an overlooked condition: Juvenile fibromyalgia syndrome. *Pediatric Rheumatology*, (1), 18, 1–18.

- May, M., Emond, A., & Crawley, E. (2010). Phenotypes of chronic fatigue syndrome in children and young people. *Archives of Disease in Childhood*, 95(4), 245–249.
- McNicholas, F., Prior, C., & Bates, G. (2012). A case of pervasive refusal syndrome: A diagnostic conundrum. *Clinical Child Psychology and Psychiatry*, 18(1), 137–150.
- Nijhof, S. L., Maijer, K., Bleijenberg, G., Uiterwaal, C. S., Kimpen, J. L., & van de Putte, E. M. (2011). Adolescent chronic fatigue syndrome: Prevalence, incidence, and morbidity. *Pediatrics*, 127(5), e1169–e1175.
- Nunn, K. P., & Thompson, S. L. (1996). The pervasive refusal syndrome: Learned helplessness and hopelessness. *Clinical Child Psychology and Psychiatry*, 1, 121–132.
- Nunn, K. P., Lask, B., & Owen, I. (2014). Pervasive refusal syndrome (PRS) 21 years on: A re-conceptualisation and a renaming. *European Child and Adolescent Psychiatry*, 23, 163–172.
- Otasowie, J., Paraiso, A., & Bates, G. (2021). Pervasive refusal syndrome: Systematic review of case reports. *European Child and Adolescent Psychiatry*, 20, 41–53.
- Peres, J. F., Gonçalves, A. L., & Peres, M. F. (2009). Psychological trauma in chronic pain: Implications of PTSD for fibromyalgia and headache disorders. *Current Pain and Headache Reports*, 13(5), 350–357.
- Rangel, L., Garralda, M. E., Levin, M., & Roberts, H. (2000). The course of severe chronic fatigue syndrome in childhood. *Journal of the Royal Society of Medicine*, 93(3), 129–134.
- Rimes, K. A., Goodman, R., Hotopf, M., Wessely, S., Meltzer, H., & Chalder, T. (2007). Incidence, prognosis, and risk factors for fatigue and chronic fatigue syndrome in adolescents: A prospective community study. *Pediatrics*, 119(3).
- Rowell, H. N. (1905). Neurasthenia in childhood. *California State Journal of Medicine*, 3(3), 74.
- Royal College of Paediatrics and Child Health. (2004). *Evidence based guideline for the management of CFS/ME (chronic fatigue syndrome/myalgic encephalopathy) in children and young people*.
- Sallin, K., Lagercrantz, H., Evers, K., Engström, I., Hjem, A., & Petrovic, P. (2014). Resignation syndrome: Catatonia? Culture bound? *Frontiers in Behavioral Neuroscience*, 10, 7–18.
- Schepker, R., Fegert, J. M., & Freyberger, H. J. (2014). Pervasive refusal syndrome. Wichtigkeit der diagnose fuer die erfolgreiche Behandlung. *Therapeutique*, 59, 356–362.
- Schieveld, J. N., & Sallin, K. (2021). Pervasive refusal syndrome revisited: A conative disorder. *European Child & Adolescent Psychiatry*, 30(1), 1–3.
- Taylor, S., Dossetor, D., Kilham, H., et al. (2000). The youngest case of pervasive refusal syndrome? *Clinical Child Psychology and Psychiatry*, 5, 23–30.
- ter Wolbeek, M., van Doornen, L. J., Kavelaars, A., & Heijnen, C. J. (2006). Severe fatigue in adolescents: A common phenomenon? *Pediatrics*, 117(6), e1078–e1086.
- Thompson, S. L., & Nunn, K. P. (1997). The pervasive refusal syndrome: The RAHS experience. *Clinical Child Psychology and Psychiatry*, 2, 145–165.
- von Knorring, A. L., & Hultcrantz, E. (2020). Asylum-seeking children with resignation syndrome: Catatonia or traumatic withdrawal syndrome? *European Child & Adolescent Psychiatry*, 29(8), 1103–1109.
- Wilcox, J. A., & Duffy, P. R. (2015). The syndrome of catatonia. *Behavioral Sciences (Basel)*, 5(4), 576–588.
- Gage Rodriguez, MD**, Child and adolescent neurologist. MD from Louisiana State University School of Medicine in New Orleans in 2016. Completed a 5 year combined residency/fellowship in pediatric neurology at Baylor College of Medicine in 2021. Pediatric Headache Fellowship at Baylor College of Medicine. Pediatric neurologist and headache specialist at Ochsner Health, New Orleans, Louisiana.



Hypochondria in Children and Adolescents

13

Solaine Perez Polanco

Hypochondria has been recognized for centuries. Indeed, the name is still used in Greek, although the recent DSM V classification uses the term “illness anxiety disorder.” Hypochondria literally means “under the cartilage,” and this name was given to a form of “neurasthenia” (meaning literally “weakness of the nervous system”) which was thought to be caused by black bile (Bound, 2006), whose pernicious influence would go to the brain and cause nervousness and depressive feeling. Generally, the term refers to a person who is constantly afraid of being sick and pays excessive attention to symptoms or sensations that most people would not notice much, ascribing to those sensations a terrible meaning, that the person is sick.

Currently, hypochondria is still quite a problem for those who suffer from it, their physician who will receive frequent visits for perceived malfunctions and symptoms, and it can be a diagnostic problem.

Patients with severe hypochondria can be dreaded by their treating physicians and other health personnel. They may call repeatedly, request additional or repetitive tests or studies, and cannot be readily reassured. In the case of children and adolescents, parents may agonize that a severe condition in their child is taken too

lightly or casually by the pediatrician or specialist and not enough is being done. The child complains repeatedly and “feels” the symptoms indeed, but the doctor finds nothing to account for the symptoms. In many cases, a referral to a psychologist, psychotherapist or a psychiatrist is taken as a great offense by the patient or the family, who may feel that the clinician is insinuating or stating that the condition is not real and is “all in the head” of the child. Parents may seek other opinions from various emergency rooms of specialists and eventually resort to groups of parents whose children have “rare diseases” and who form indeed a community of “misunderstood patients.”

This condition however can also be diagnosed too lightly, and the physician needs to rule out causes for the multiple complaints, before declaring the patient simply has hypochondria. It is thought that patients who suffer from multiple sclerosis often were diagnosed with hypochondria.

Still, the condition is frequent and affects a significant proportion of those who visit their physician for evaluation and treatment. It also occurs in children and adolescents. Children and adolescents with hypochondria account for unnecessary visits to the emergency room which are burdensome and do not help in the end, despite the reassurance provided by the emergency pediatrician (Sauer & Witthöft, 2020)

S. Perez Polanco (✉)
Psychiatrist, Texas Children’s Hospital Pediatrics
Outpatient Clinic, Houston, TX, USA
e-mail: Sol.perezpolanco@bcm.edu

Developmental Considerations

The concept that a child has of “what it is to be sick” and what are the causes of sickness has a developmental dimension, in addition to other factors described below. There is limited research on the normative beliefs of children about illness, at different ages (Koopman et al., 2004).

The preschool child has a thinking pattern that can be called “egocentric,” in which the young child may think he or she caused a certain illness due to perceived actions or lack of some other actions, like obeying parents for example. The school-age child is more likely to attribute an illness to external factors such as germs and infections, although there is some degree still of magical thinking in all ages. The adolescent has a more realistic understanding of the determinants of illness and of maintaining health.

Clinical Features

The central characteristic of the condition is the constant preoccupation, fear or anxiety that one can be sick or have a serious illness (Bleichardt & Hiller, 2005).

The person, often an adolescent, is worried that hiccups, a mole, a minor skin lesion or a light pain could be an ominous sign of a major disease. Despite reassurance from relatives, or friends or physicians, the person continues considering the possibility that something has not been thought of, overlooked or not taken seriously enough.

The Diagnostic and Statistical Manual of Mental disorders (American Psychiatric Association, 2013) has renamed hypochondria and uses the term “illness anxiety disorder” (Martin & Witthöft, 2013). This is a more inclusive term in some ways, as it just denotes the excessive worry about an illness or the absence of such an illness. In the DSM V, there is a categorical distinction, one has the disorder or does not have it. Some literature refers to hypochondria as “illness phobia,” i.e., the fear that one might be sick (Harth, 2006).

In modern times, the term “cyber-hypochondria” has been suggested (Treig, 2008)

for persons who constantly try to find the definition and clinical features of medical symptoms, syndromes or diseases in the world wide web. There are multiple sites with definitions of every possible condition, which the person preoccupied with symptoms will read anxiously and think it possible to have a number of conditions which the physician has not thought about. There is a trend for persons preoccupied with illnesses to look up symptoms and conditions and to “order online” remedies that may be ineffective, effective or dangerous (Eichenberg & Schott, 2019).

Epidemiological Issues

Since hypochondria is a “dimensional problem,” someone might have a few health anxieties while another person might have a lot. One problem in determining the frequency of hypochondria as a “disorder” of health anxiety is the definition of when it is a disorder (Long & Elpern, 2017). If one were to use questionnaires and apply them to the general population or conduct an internet survey, there may be issues with sampling (people who spend more time on the internet may be more hypochondriacal than those who do not, or they might be more prone to fill out a questionnaire). In any case, the generally agreed figure is about 1% of the population, although there are many more people who have considerable health anxiety but would not define themselves as hypochondriacal. In a recent survey with over 1300 children in Denmark (Rask et al., 2012), the authors found a prevalence in minors of 2.4% for marked health anxiety. A lighter form of health anxiety, measured with the same health anxiety questionnaire, finds a much higher frequency, although it does not reach the level of causing impairment to the child.

Determinants of Hypochondria

Biological Factors

There are families in which several family members may be very anxious about having medical

conditions (Wright et al., 2017). Indeed, there is indication that parents who experienced health anxiety as children and now as adults have offsprings with similar concerns. Whether this is a phenomenon that is in some way “genetic” or due to family influences, i.e., interaction with family members, is not entirely clear. A recent empirical study in Denmark (Thorgaard et al., 2017) found that mothers who have problems with “health anxiety” are indeed more worried about their children’s health and are more dissatisfied than other mothers with their children’s visits to the child’s doctor. They called this health anxiety by proxy. The finding illustrates the phenomenon but points to the possibility of a contagion of anxieties between family members.

There is evidence, however, that having some medical conditions, for example, a duodenal ulcer, may lead to an altered perception of the sensations in the gut, so that the person will be more attentive to the possibility of pain in the future even when there is no ulcer (Wilhelmsen, 2015). This has been called a “reduced gateway” phenomenon, in which an actual medical condition changes the psychological perception of the body and produces increased worry and perception of some symptoms. The same has been found, i.e., illness anxiety, in children who had a congenital heart malformation that had been treated with surgery and afterward developed a high level of worry about being sick or having something terribly wrong in the heart or elsewhere (Oliver et al., 2020).

Psychological and Interpersonal Factors

It seems quite clear that the patient afflicted by hypochondria pays exquisite attention to the “messages of his or her body,” i.e., there is a constant preoccupation with what could be the ominous meaning of hiccups, a slight pain, some joint pain, a discomfort in the abdominal area. The patient may have fantasies of having an undiagnosed cancer or can engage in catastrophic fantasies that something terrible is happening and has not been detected.

Several authors have emphasized the “narcissistic investment” of energy in the body of oneself as a way of coping, for instance, with losses. The individual does not necessarily depend on others but has to “take care of him or herself,” and therefore the “turning inwards” of the attention and energy to invest in the body and its processes with great importance, at times taking over a great space in psychic life (Fishbein, 2008). It has been hypothesized that the “investment in one’s own body” from the point of view of the energy and interest in physiological processes becomes a sort of “substitute satisfaction” instead of relating to other people, like family members or friends.

In the classical psychoanalytic literature, for instance, in the writings of Ferenczi, the patient with hypochondria was considered incurable by psychoanalysis (Burloux, 2004) primarily because the patient was thought incapable of developing a transference, i.e., to invest emotionally in the person of the psychoanalyst. The patient invests enormous amounts of time describing his inner workings, the minutiae of the symptoms, and presenting “his or her body” to the therapist. If one contradicts the patient, there is conflict and a sort of retreat of the patient into the further consideration of diseases and the like.

Juan, a 14-year-old adolescent of Hispanic origin exhibited these features. He has been, for a long time, preoccupied about his appearance, his body, his face, his hair appearance and invests an enormous amount of time to “look good.” He covers half of his face with his hair, which he perceives as very stylish. Also, he only would wear certain “cool” clothes, T shirts and pants, etc. Also, he has multiple preoccupations with “being sick.” He has frequent pruritus in different parts of his body, pain in the neck, shoulders, arms and legs, as well as frequent headaches, throat pain, and at times pain during urination. He has gastroesophageal reflux, and abdominal pains at times. When we explored his family relationships, we realize his father is almost always complaining of pains in various parts of his body. Also, he has spent much time by himself as his parents work long hours and he has been under the care of a nanny for most of his childhood. He seems lonely and to have built a self that is “very focused on himself” and who does not need friends. He claims to have many friends, but when asked to name some he says he has forgotten their names.

There may be a reassuring effect of “investing in oneself” and not risking further losses or pain in the interaction with other people. Such preoccupations may of course acquire a compulsive characteristic which may be very difficult to change. Those affected with hypochondria may indeed have heightened attention to certain areas of the body, its sensations and an elevated perception of discomfort (Emmelkamp et al., 2009). This also has been conceptualized as “somatosensory amplification,” a concept proposed by Barsky and colleagues (Emmelkamp et al., 2009). In this concept, there are three main components: hypervigilance to somatic sensations of a negative character; a difficulty to focus on alternative messages, that the organs are functioning well or are healthy; and finally, an emotional negative interpretation of sensations as ominous and dangerous, which only amplifies the bodily perceptions further (Lipsitt, 2001). There is evidence, from studies of functional magnetic resonance, that the expectation of having a symptom may lead to an actual activation of a center related to that part of the body (RIef & Broadbent, 2007).

Other factors that have been described are a feeling of doubt (Belling, 2012) and also the need for control. Doubt that cannot be assuaged is one of the characteristics of all obsessive concerns. In this case, the obsession is with the possibility of having a major illness. The young person has an augmented perception of the symptoms, which once noticed lead to the “difficult to reassure” ideation that something might be terribly wrong.

From the cognitive point of view, there is evidence that patients with hypochondria tend indeed to misinterpret bodily sensations and discomforts with a distorted interpretation: catastrophic thinking and generation of fear of a terrible disease.

Another issue is the sense of control. The hypochondriac person may have a constant battle to “stay healthy” in a sea of germs, pathogens, carcinogens and radiations and may engage in behaviors that are geared toward protection against those threats, as well as taking “cleansing remedies,” protective chemicals, vitamins, etc. to help in that constant battle, which is renewed every day.

The child or adolescent may become so centered in his or her body that it becomes a “way of life,” an adaption that is invested with great energy and satisfaction, even the process of the “disease in itself,” e.g., having gastritis, colitis, etc. in a way even the person who is seeking constantly tests or the “right doctor” has an investment in remaining sick as a “*raison d’etre*.”

From a psychoanalytic point of view, some authors (Derzelle, 2014) consider hypochondria as a lack of elaboration, verbalization or mentalization of emotions and interpersonal situations. This lack of elaboration or realization leads to an exclusive focus on the possibility of medical illnesses, instead of what is underlying, depression, or a defense against other painful feelings. In other words, it is considered as an “*impasse* pathology.” The *impasse* consists of the great difficulty in reassuring the patient. Shortly after being reassured that there is no heart condition, no cancer, the patient thinks of a further possible condition that could be underlying and is being overlooked. Underlying the anxieties about the body and the difficulty to feel reassured, there may be feelings of loneliness and depression as well.

Interpersonal Factors

A concept that may be useful in understanding hypochondria and its determinants from interpersonal relationships is “anxiety sensitivity.” Hypochondria in itself is an anxiety about having a medical disorder that has been overlooked, not properly diagnosed or recognized. Anxiety sensitivity refers to the meaning the child or adolescent pays to phenomena like palpitations, tachycardia, breathing changes, sweating or pain. Any minimal alteration can be perceived with anxiety that there might be something terribly wrong with the body, such as an excessive interpretation of painful sensations. It has been suggested that this sensitivity to anxiety, like anxiety, can be transmitted from one generation to the next, through parent–child interactions (Coppola et al., 2018). In fact, it has been suggested that when parents are very anxious, particularly with

possible illnesses in their child, they may “teach” the child to focus on somatic symptoms and to worry about their ominous meaning. There may be selective attention to signals from the body that are magnified and interpreted as worrisome. There may be families that are “hypochondriacal” indeed.

Another interpersonal dimension is the “wish to control others” (Dalrymple, 2010) through one’s illness behavior. A young person may learn that certain symptoms cause a reaction in mother, father, siblings or others and somehow these symptoms occur at certain times: the child may wish to be shown affection, tenderness, consideration or attention. In a family where there is a lot of stress, being sick may be one of the few dignified ways in which a mother or a father treat a person in a “special” way and with certain considerations

Yet, a further determinant of hypochondria may be antecedents of severe stress chronically or chronically going through traumatic experiences. This predisposes the body to develop “alarm responses” when there are additional events that might cause some worry in other children or adolescents, but which in the individual who is “on edge all the time” may bring about a cascade of worries and concerns that may be very hard to contain, due to the tendency to engage in repetitive thoughts of terrible illnesses.

A 16-year-old adolescent was brought to evaluation by his mother (his parents were divorced) due to his panic attacks and constant state of tension and worry. He worries about intruders, home invasions, his mother dying and being separated from her. Additionally, his mother says he is always worried that he might have a terrible disease. Manuel confirms that recently he had a mild cold and he had “the sniffles” he started suspecting that he might have cancer of the nose and started looking up information about this issue. He also has many worries about his stomach pains and “bloating” of the stomach. During the evaluation process, it was revealed that he had experienced a lot of domestic violence between his parents and had to intervene physically to try to protect his mother from the father, when the father was drunk and was trying to hurt his mother with a machete. This was only one of the several occasions in which he agonized with worry about whether his mother was going to survive those violent fights brought about

in part by the father’s drunkenness. The hypochondriacal worries, always recurring, were a part of a general state of hyper alertness and alarm regarding many possible negative events that “might happen.”

In another instance, a young patient diagnosed himself as “having hypochondria” as well as panic attacks and many other worries about what might happen (catastrophes, illnesses, robberies, home invasions, etc.). He asked to go to the emergency room from time to time as he felt that when he exerted himself his “heart started to lose pressure.” He had a feeling in his chest that this was happening and would happen more readily if “he developed tachycardia” from exercising, which he wanted to do because he was overweight. Therefore, he could not exercise, and hated not to be able to do it. Also, if he felt better, without anxiety, for instance after he was taught a relaxation technique and to not go to the emergency room in the interim. He started to feel calm. Then he started to develop an anxiety of “sleeping on his laurels,” i.e., to be fooled by this calm, as he might be missing the symptoms of a major disease. He had also a history of multiple traumatic events, including physical abuse by his mother. He hardly remembered the episodes, but had a general impression that his mother had “been very mean” to him.

Social and Cultural Factors

In many urbanized areas throughout the world, there is easy access to media, including television, cable and internet. There are many popular television series that depict the work of doctors, emergency room physicians, surgeons and the work in hospitals treating diverse conditions, including rare diseases. As a result, the public is increasingly aware of laboratory and imaging studies, diagnostic procedures and therapies for multiple diseases. The practice of modern medicine in many centers relies little on the experience of the physician and much more on sophisticated imaging and laboratory studies that the patient or his or her family may demand (Baloh, 2021). In the media, physicians and nurses generally are presented in a favorable light with exceptions. In countries like the United States, medication companies are allowed to advertise their products. At times, these encourage to “ask your doctor about...a certain medicine” and urge patients or families to advocate

with their doctors informing them of the newest available drugs. Also, the public, and this includes adolescents, has ready access to various medical sites and famous clinics which offer information about numerous diseases and their treatments. Members of the public feel increasingly confident to “do their own research” about medical problems and their treatments and seek information on these issues. Many adolescents believe they “might have” a certain severe condition and worry about their symptoms. If an adolescent experiences a symptom, like pain, he or she may look it up in a search engine and obtain the results of multiple possible diseases that might explain that pain. There is increasingly less trust in physicians or the experience of the physician (Baloh, 2021). All of this “culture of medicalization” can foster and promote hypochondriacal tendencies, in which a person believes they are afflicted by a condition and seek the corresponding treatments.

A 14-year-old girl was described by her mother as a “google doctor” as she would constantly look up her own symptoms in that search engine and believed to have a terrible cancer, a degenerative disease and wanted to have numerous diagnostic studies. The child said that she would be happy to go “everyday to the emergency room to be checked” as the normal results for yesterday could change overnight and “today she might be sick. She was afflicted by vague pains in many parts of her body, stomach pains and constant anxiety of illness. She also had social phobia and was depressed. On further exploration of her emotional health, it became obvious that she had felt very lonely as a younger child because her parents “were always at work” and she was looked after by a grandfather who died a few years ago. She never felt cared for by her parents. It seemed that her constant illnesses were a way to licit tenderness and concerns from them.

The quality of the doctor–patient relationship is often not emphasized in medical training. It is assumed that one doctor may be the same as any other, ignoring the powerful role that “a” specific physician may have in reassuring a child, adolescent or family. The demeanor of physician, if he or she listens, the tone in which the doctor speaks have an impact. Empathy and a reassuring and confident/concern demeanor, his or her attire, etc. may go a long way in reassuring patients and

families (Baloh, 2021). In many modern hospitals in highly specialized medical centers, doctors rotate in short course taking care of patients. In a cardiology unit, for instance, a cardiologist may take care of a hospitalized child for a few days, only to rotate out and leave the patient to a colleague, who in turn will last a few days due to the expectations of physicians and the demands of outpatient work. This may leave the patient and family feeling they have to take care of the situation more by themselves or strongly advocate with each new physician.

Common Scenarios of Hypochondria

Hypochondria with Dermatological Manifestations

The skin as a very large organ with very high visibility to the subject, is a frequent scenario for hypochondriacal concerns. This includes normal features of the skin, areas of “different color” and excessive concerns with temperature, perceptions (cenesthetic) and “infections, toxins, parasites,” etc. The patient may become obsessed with these changes.

A 15-year-old boy was brought by his parents because he was very anxious and considered himself as very ugly and stupid. Karl, the boy, was in fact an intelligent child with red hair and very fair skin. He had some of the common anxieties of adolescents about how “unacceptable” very mild acne might make him look (as if the rest of the students would make fun of him for this) and was very worried about having “something wrong with him.” When he developed a trusting relationship with the psychiatrist he revealed a “secret worry.” He was wondering why he had “bumps in his scrotum.” He had not told anybody about this and he thought this was a severe anomaly. The pediatrician was advised, and he examined Karl. The “affected area” involved only the normal capillary follicles of the pubic hair at the child was thinking were “very abnormal.” He was reassured when the physician told him that this was not a disease but the follicles of the hairs. He had felt he “could never have sex” as no woman would accept that he saw as unseemly bumps. We reassured him in that respect. He continued to be a somewhat anxious person, but improved his functioning and concerns

remarkably once this “secret disease” was discussed.

The concern may be also about the distribution of the hair in the body. For instance, balding and hair loss in adolescents due to the effect of testosterone. A frequent concern is the discomfort with hairiness on the arms and legs which at times leads to teasing from peers who may designate the child as a “gorilla” or with similar nicknames.

A 14-year-old boy seen at our clinic exhibited a lot of doubts about his physical appearance. He thought he was particularly ugly, with a “flat head” on the occipital area, and “weird hair” (curly hair) on the head, as well as mild acne. He had become frightened when he discovered that he had hair “between the buttocks.” He was so alarmed that he asked his mother to discuss this with us, as he had started psychotherapy for his anxiety. When the issue was discussed the child was advised that hair between the buttocks was a normal feature of many men and not a sign of a terrible condition. He was mildly reassured. The boy was very tense and anxious all the time. He revealed that he could not have any friends or see anyone after school because his job was to stay home after school to “ensure his mother would not have too many beers.” His mother had asked him to admonish her when she drank more than two or three beers. The boy could not socialize because he feared his mother would then get drunk “like before.” This issue was addressed in family therapy and the mother sought treatment for herself, which relieved the boy from this responsibility.

On the basis of the search for “a perfect look,” the absence of “any blemishes” or “unseemly features” on the skin many young people, adolescents and young adults primarily, suffer terribly because of their lack of resemblance to “ideal beauties” and “influencers” who are perfect or beautiful. This has led to increased requests for “lifestyle drugs” which often present to the dermatologist. This includes the use of hormones or hormone suppressants (to prevent hair loss for example, finasteride to treat androgenic alopecia), as well as prescriptions for very minor acne or request for surgeries or procedures like laser treatments when they are not medically indicated (Harth et al., 2002). The areas of primary concern in the skin are the face, the scalp, the breasts and

the genitals. There is of course a tension between “deformity” and “perfection” as two opposite poles. Many youngsters with body dysmorphic features have a disorder of “shame” and hope to achieve perfection and nothing less than that is acceptable. Also, a young man or woman mortified by hyperhidrosis, i.e., excessive sweating due to anxiety, may request to be treated with botulinum toxin to reduce or eliminate the sweating which is considered embarrassing by the youngster and could be treated with strategies to reduce interpersonal anxiety.

Another frequent concern in adolescents is bromosis, or the preoccupation that one exudes a disgusting smell or bad odor in general, from the body. This is also called olfactory reference syndrome (Doshi et al., 2014). The minor in question, usually an adolescent, believes that he or she exudes a foul odor, coming from the mouth, the anus, the genitals or the skin in general, when such belief is unjustified and clearly exaggerated. It may be more common in children in whose cultures there is great fear of offending others in any way, like in many Asian cultures and other traditional societies. The problem may lead to strenuous efforts to “conceal” the foul smell or to inhibition of going to school or outside at all. In other cases, the overvalued idea described above, or the preoccupation with bad odor, can reach delusional proportions.

Illness Anxiety and the Digestive System

Orthorexia Nervosa

In many countries, particularly in rich countries in the Western world, there is an interest in improving eating habits and eating healthy foods, as there is an epidemic of obesity and urban life promotes a lifestyle often leading to sedentary behavior, viewing television and spending much time before screens. As with other normal concerns, the worry about “eating healthy” can be exaggerated, and the term orthorexia nervosa has been used to describe such preoccupation (Koven & Abry, 2015). Here again there is a continuum

between the wish to “eat better” and an obsessive and crippling preoccupation with “eating food as though it were medicine,” reading every label, taking several vitamin supplements at every meal, being frightened of what the youngsters put “inside the body” (food and chemicals) and implementing exotic diets to a degree that one can hardly eat anything more than two or three things. The line between the normal asceticism of adolescence, the concerns for the environment and eating less processed foods on one hand, and an impairment in the ability to eat has not been defined adequately, as this is also a dimensional problem. The most severe cases are what should concern the clinician, in which the child is losing weight, eats only two or three things and has developed obsessions and ritualized behaviors at every meal. The food is perceived as a minefield that could damage the body irreparably and which is dangerous and not to be enjoyed but feared. The mind might be overtaken with concretized metaphors about the “effects of food inside the body.” It is necessary to remark that different cultures have various “food taboos” or foods that are considered impure or harmful. For example in some cultures in India, it is prescribed not to eat any meats and to be a vegetarian. So the excessive concern with foods and their prohibitions has to be considered against this background or the embrace of a certain religion or cultural group by the adolescent. Perhaps a useful criterion for the identification of this condition as problematic is considerable loss of weight, not gaining weight at all, and being impaired by the preoccupations regarding foods (Dunn & Bratman, 2016). If there are important symptoms of obsessive-compulsive disorder, a need to control every aspect of one’s life, then similar principles to the treatment of that condition apply to the “rational restrictions” as opposed to the “irrational fears of food” in the treatment of this condition.

Treatment

The main approaches to treatment in the literature refer to cognitive and behavioral psychotherapy, psychodynamic psychotherapy (Lipsitt,

2014), and interpersonal psychotherapy. Our approach would be multimodal, including elements of these approaches in a specific case, plus a systemic perspective as children are embedded in a family system and relationships, as well as pharmacotherapy in cases where the obsession or preoccupations are crippling or seriously affect the capacity of the youngster to feel reassured even for short periods of time. This affects obviously the child but also the family as a whole.

Psychodynamic considerations may have important implications in terms of the treatment. It has been suggested that through a psychotherapeutic process, i.e., establishing that relationship (or other relationships that allow the person to be in a social interaction or group), the subject with hypochondria is able to “start reinvesting” in people, becoming attached to others and deviate the focus from him or herself to having feelings for others. This movement is a risk in the person who has been traumatized, or has had traumatic losses or simply a pathological mourning process, particularly in early childhood. This relationship can be constructed in a psychotherapeutic process in which the therapist, first of all, empathizes with the patient, but also helps him or her to consider alternatives to the excessive preoccupation with illnesses, symptoms and the body to “open up” the person to other interests and interactions.

One of the difficulties in the interpersonal treatment of a youngster with hypochondria is the lack of trust in the other and a feeling of defiance. The patient or family may come to treatment saying “we were referred to you because the doctors say our child worries unnecessarily about illnesses, can you help?” And as the clinician tries to intervene or make recommendations, immediately mistrust may appear: Would this help? What if I get worse? Or I read about your recommendations on the internet, and they do not seem to be the best approach.

From a psychodynamic framework, the therapist would be interested in exploring the role, if any, of feelings of guilt the patient may have and which could lead to a need for punishing oneself, never relaxing or feeling reassured and tormenting oneself constantly, feeling doomed to be sick and without a right to enjoy life. A further con-

tributor may be the secondary gains of “clinging to symptoms” and what life would look like if the child were “not always sick,” i.e., the exposure to school, to relationships with friends, and in the adolescent to sexual attractions, tensions and “growing up.” The therapy has to be individualized to the actual themes and beliefs expressed by the patient or inferred by the psychotherapist.

The most researched psychotherapies are the cognitive and behavioral approaches which may be very effective. However, there is no firm evidence that such therapies improve the interpersonal functioning of the child, or the long-term psychological distress (Scott, 2014). The psychodynamic, the interpersonal and the “attachment based approaches” use a further tool in the psychotherapeutic process which is the relationship between the child or adolescent and the psychotherapist. How does the patient affect or impact the psychotherapist? Often the feelings elicited by the clinician may assist in understanding what might be happening in the mind of the patient. For instance, the resistance to engage in alternative behaviors, or to “give up the constant anxiety” may cause a feeling of frustration in the therapist, which is a clue to the patient’s need to suffer, punish him or herself or “defeating the therapist” for example. Also, the interpersonal approach refers to the effects of constant worry and concern on the patient’s interpersonal life. This includes what might be some of the factors involved in the “withdrawal into disease” as opposed to taking risks and interacting with others, for example at school.

Some patients, once they are distracted from their constant preoccupation with diseases, and notice this is the case, feel alarmed that they “forgot to check themselves” and redouble their worry that they might have missed some clues or signs about which they should worry. In other words, the normal state is worrying and they would be concerned if they do not worry for a period of time.

From the point of view of the clinician, it is important to take into account the reaction of the physician or the psychotherapist who listens to an endless litany of worries time after time, which may lead to exasperation. This is perhaps

an important clue about the psychodynamic of the symptoms: eliciting worry and concern, caregiving responses from the caregiver and then not being reassured by those ministrations. This is a form of “narcissism” so to say in the sense that the patient cannot be reassured by the “expert” and has to rely on him or herself only. Remedying this “loneliness” from an attachment perspective may take a longstanding effort and patience in the clinician.

Some of the somatic symptoms can be eliminated through suggestions and strategies like hypnosis. Sometimes this takes the tone of a “physical intervention.”

A hypochondriac young man was always worried about having a “weight over his eyes.” This was a feeling of heaviness above the eyes and he felt vague headache. He compared it to a piece of iron above his eyes weighing heavily over them. This was only one of his complaints. There were others about blood pressure, pulse, urinary symptoms, difficulty breathing and a “knot in the throat.” As the clinician tried to help the patient find a “moment of solace” or “safe place in the mind” accomplished this through hypnosis. As the clinician helped the patient find this “safe place” he suggested to “take off the iron above the eyes” and touched the patient’s forehead indicating he had removed the piece of iron from its place. The patient experienced relief and immediately started to sob. He said that he had done something bad in the past, stealing a considerable amount of money, and had “gotten away with it”. He seemed to be punishing himself constantly with the feeling of something “weighing heavily on his conscience” so to speak. As this weight was removed the patient and the therapist were able to talk about how he could perhaps “atone” for the theft by doing other “good deeds”. The patient felt relieved and many of his symptoms became much less prominent.

Something similar was attempted when a patient who complained of “not being able to breathe properly” and had multiple somatic complaints was assisted with hypnosis. He felt that there were “chains around his chest” that impeded the full expansion of the cavity so that he could get enough air he felt completely constrained. This was related to his grandfather, who had raised the youngster, constantly “breathing down his neck,” catching him doing the wrong thing and criticizing him cruelly for years. In the hypnotic session, the clinician indicated he would

remove “the chains” by touching the patient’s thorax areas and saying the chains were taken off. The patient felt that he could breathe better and the therapeutic work continued trying to help the patient alleviate the constant sense of guilt and tension as though someone were always watching him and criticizing his every move.

A significant pitfall in working with people who exhibit these multiple symptoms is to overlook situations in which the child or adolescent actually has a medical condition. This should be kept in mind by the clinician so not to attribute every symptom to mental health proper.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). American Psychiatric Press.
- Baloh, R. W. (2021). *Medically unexplained symptoms. A brain centered approach*. Springer.
- Belling, C. (2012). *A condition of doubt: The meanings of hypochondria*. Oxford University Press.
- Bleichhardt, G., & Hiller, W. (2005). Hypochondrie und krankheitsbezogene Ängste. *PiD-Psychotherapie im Dialog*, 6(4), 431–435.
- Bound, F. (2006). Hypochondria. *The Lancet*, 367(9505), 105.
- Burloux, G. (2004). Une douleur fossile: l’hypocondrie. In G. Burloux (Ed.), *Le corp et sa douleur*. Dunod.
- Coppola, G., Barbaro, M. G. F., Curci, A., Simeone, M., Costantini, A., Goffredo, M., Latrofa, A., Di Liso, D., & Silverman, W. K. (2018). The associations of parents’ and children’s anxiety sensitivity with child anxiety and somatic-hypochondriac symptoms. *Child & Youth Care Forum*, 47(6), 845–861.
- Dalrymple, T. (2010). Hypochondria as control. *British Medical Journal*, 341(777), 837.
- Derzelle, M. (2014). *Towards a psychosomatic conception of hypochondria*. Springer.
- Doshi, T., Karia, S., De Sousa, A., Sonavane, S., & Shah, N. (2014). Olfactory reference syndrome in an adolescent: A case report. *International Journal of Medical and Applied Science*, 3(1), 122–124.
- Dunn, T. M., & Bratman, S. (2016). On orthorexia nervosa: A review of the literature and proposed diagnostic criteria. *Eating Behaviors*, 21, 11–17.
- Eichenberg, & Schott, M. (2019). Use of Web-based health services in individuals with and without symptoms of hypochondria: Survey study. *Journal of Medical Internet Research*, 21. <https://doi.org/10.2196/10980>
- Emmelkamp, P. M. G., Bowman, T. K., & Visser, S. (2009). *Angstoornissen en hypochondrie. Diagnostiek en behandeling*. Bohn Stafleu van Longhug.
- Fishbein, J. E. (2008). Patología del duelo y somatización (Pathology of mourning and somatization). In G. Fiorini (Ed.), *El cuerpo: lenguajes y silencios* (pp. 111–129). APA Editorial.
- Harth, W. (2006). Hypochondrische Störung. In U. Gieler (Ed.), *Harth, W.* (pp. 47–49). Springer.
- Harth, W., Wendler, M., & Linse, R. (2002). Lifestyle drugs and body dysmorphic disorder: Overview on a new phenomenon in dermatology. *Dermatology and Psychosomatics/Dermatologie und Psychosomatik*, 3(2), 72–76.
- Koopman, H. M., Baars, R. M., Chaplin, J., & Zwinderman, K. H. (2004). Illness through the eyes of the child: the development of children’s understanding of the causes of illness. *Patient Education and Counseling*, 55(3), 363–370.
- Koven, N. S., & Abry, A. W. (2015). The clinical basis of orthorexia nervosa: Emerging perspectives. *Neuropsychiatric Disease and Treatment*, 11, 385–394.
- Lipsitt, D. R. (2001). Hypochondriasis: Modern perspectives on an ancient malady. In V. Starcevic & D. Lipsitt (Eds.), *Psychodynamic perspectives on hypochondriasis* (pp. 183–201). Oxford University Press.
- Lipsitt, D. R. (2014). Psychodynamic models and therapeutic approaches to hypochondriasis. In V. Starcevic & R. Noyes (Eds.), *Hypochondriasis and health anxiety* (pp. 222–240). Oxford University Press.
- Long, V., & Elpern, D. J. (2017). Health anxiety in dermatology. *International Journal of Dermatology*, 56, 968.
- Martin, A., & Witthöft, M. (2013). Krankheitsangst und hypochondrie. *Psychotherapeut*, 58, 529–530.
- Oliver, A. M., Wright, K. D., Kakadekar, A., Pharis, S., Pockett, C., Bradley, T. J., et al. (2020). Health anxiety and associated constructs in children and adolescents with congenital heart disease: A CHAMPS cohort study. *Journal of Health Psychology*, 25(10–11), 1355–1365.
- Rask, C. U., Elberling, H., Skovgaard, A. M., Thomsen, P. H., & Fink, P. (2012). Parental-reported health anxiety symptoms in 5- to 7-year-old children: The Copenhagen Child Cohort CCC 2000. *Psychosomatics*, 53(1), 58–67.
- Rief, W., & Broadbent, E. (2007). Explaining medically unexplained symptoms- models and mechanisms. *Clinical Psychology Review*, 27(7), 821–841.
- Sauer, K. S., & Witthöft, M. (2020). Krankheitsängste und Hypochondrische Störung. *PSYCH up2date*, 14, 2.151-166.
- Scott, S. (2014). Interpersonal psychotherapy for hypochondriasis and related disorders: An attachment based approach. In V. Starcevic & R. Noyes (Eds.), *Hypochondriasis and health anxiety* (pp. 199–221). Oxford University Press.
- Thorgaard, M. V., Frostholm, L., Walker, L., Jensen, J. S., Morina, B., Lindegaard, H., Salomonsen, L., & Rask, C. U. (2017). Health anxiety by proxy in women with severe health anxiety: A case control study. *Journal of Anxiety Disorders*, 52, 8–14.

- Treig, J. (2008). *Well enough alone: A cultural history of my hypochondria*. Riverhead.
- Wilhelmsen, I. (2015). Biological sensitization and psychological amplification: Gateway to subjective health complaints and somatoform disorders. *Psychoneuroendocrinology*, 30, 990–995.
- Wright, K. D., Reiser, S. J., & Delparte, C. A. (2017). The relationship between childhood health anxiety, parent health anxiety, and associated constructs. *Journal of Health Psychology*, 22(5), 617–626.
- Solaine Perez Polanco** MD Medical studies at the University of Puerto Rico School of Medicine, with Neurology and Psychiatry electives at the University of Buenos Aires, Argentina. General Psychiatry Residency, University of South Florida Tampa, Florida. Child and Adolescent Psychiatry Fellowship, Baylor College of Medicine Houston, Texas.
- Currently works as a psychiatrist at Texas Children's Hospital Pediatrics Outpatient Clinic and serves as Assistant Professor for Baylor College of Medicine.



Functional or “Psychogenic” Neurological Symptoms in Children and Adolescents

Andres Jimenez-Gomez and Kristen S. Fisher

Introduction

From the onset of modern history, the brain and nervous system have been a source of intrigue and mysticism, curiosity, and fear, particularly in the phenomenology that affects its normal performance. Early scholars in ancient Greece would debate the importance of the brain in relation to the heart as the origin of man’s abilities with Aristotle most notably proposing the brain as nothing but a sort of “radiator” to the heart’s emission of heated blood (Longo, 1996) in contrast to the early physician Hippocrates’ proposal of the brain as the source of thought and emotion (Breitenfeld et al., 2014). As science has evolved, the progressive discovery of the functioning of the brain in relation to all aspects of the self—from movement to sensation/sensory input, to coordination, speech, and into the functioning of advanced cognitive skills and social skills—evolved, as did its pathology. The scientist-philosophers of the renaissance devised elementary mechanistic theories of brain func-

tion. It was not until the nineteenth century that furious study of brain physiology took root as the anatomical, microscopical, and electrophysiological detail became a subject of study as it correlated to the resulting changes in function, encountered in the European laboratories and clinics of those whose names are now synonymous with modern neurology (Santiago Ramon y Cajal, Korbinian Brodmann, Camillo Golgi, Jean-Martin Charcot, William Richard Gowers, or Joseph Jules Dejerine, among others).

However, the interphase between brain and mind remained the subject of exploration and mysticism, a perennial trait evidenced in early writings and fables (e.g., Heracles), all through to contemporary cinema and popular culture (Eler, 2016).

The progressive development of modern neurology (as considered from the late eighteenth century and onward) outlined the function of the nervous system, understood as predominantly an electrochemical system. This however brought about the understanding of the relationship between brain “health” and that of “mind-body” well-being, wherein one is dependent on the other (bidirectionally). Thus, it was often the early descriptions of neurologists-turned-psychiatrists that permitted the initial descriptions of conditions that were neurologic in their expression but not necessarily so in their origin. It was in the descriptions of early neurologists such as J.-M. Charcot that emerge conditions such as “hysteria” and its ramifications, evolving beyond the absurd linkages to the uterus (and the

A. Jimenez-Gomez (✉)
Joe DiMaggio Children’s Hospital,
Hollywood, FL, USA

Stiles-Nicholson Brain Institute, Florida Atlantic
University, FL, Jupiter, USA
e-mail: ajimenezgomez@fau.edu

K. S. Fisher
Department of Pediatrics, Baylor College of
Medicine, Houston, TX, USA

treatments therein suggested, such as the “hysterical paroxysm” or induced orgasm), to the recognition that in the brain lies the pathology and the cure (and thus early use of hypnosis, for example (Walusinski, 2020).

However, early (and still, subsequent) analysis of the etiology of many of these conditions still was inherently attributed to some form of “damage” to the neurologic system proper, even as attributed by the taxonomy therein originated (e.g., hysteria as a degenerative process, or schizophrenia as *dementia praecox*) (Kendler, 2020). It was with the introduction of Freud’s postulates on the origins of mental illness that further understanding on the *nonorganic* origin of ultimate physical manifestations of mental illness first emerged (Brainsky, 2003). With this, the proverbial pendulum would “swing the other way” and invite heavy attribution of illness, wherein early diagnostic techniques would be unable to identify cause, to “mental illness.” This, in turn, brought about significant mislabeling and even institutionalization of individuals with frank but unrecognized organic diseases well into the twentieth century.

With the advent of modern science—particularly neurodiagnostic and genetic—the role of clinical evaluation has been substantially complemented with advanced imaging, precise molecular and genetic analyses, among others. The understanding of the aforementioned mind-brain (and body) dyad has evolved quite substantially. Knowledge of occult and inexplicable conditions, or those in which the individual does not improve with evidence-based interventions, has much evolved. The neurobiological correlates of underlying mental illness (for example, depression and the role of serotonin) (Krishnan & Nestler, 2008) and their cyclical-interdependent nature continue to be heavily researched; the genetic risk factors that influence neuropsychiatric illness becoming ever elucidated (Sanders et al., 2019). It is in fact thus that the general realm of “unexplained” or “psychogenic” neurological disorders has also evolved significantly in recent years, away from the absolutes in neurology or psychiatry. The descriptions of phenomenology endorsed to a clear psychiatric origin

have suffered important revision over the past years as scientific understanding of the underlying pathophysiology through advanced technology has evidenced the possibility of findings that are not attributable outright (or exclusively) to either neurologic or clear psychiatric phenomena. Functional imaging has unveiled clear neurobiological underpinnings within this realm offering not only insight into the pathophysiology but into potential treatment avenues (Hallet, 2022, Chutko & Surushkina, 2021). The terminology has also suffered review in regard to the implications perceived about the diagnosis, causes, and treatment for all stakeholders. Albeit controversial still, the common usage (particularly in the English-speaking world) of “functional neurological disorder” has permeated into the medical jargon and particularly into the most recent iteration of the Diagnostic and Statistical Manual from the American Psychiatric Association, albeit not that of the international diagnostic classification, the ICD-11 (Kanaan, 2022; Edwards et al., 2014).

In this chapter, we describe and explore the main neuropsychogenic or “functional” neurologic conditions encountered in pediatric clinics and wards. We have categorized the conditions based on the main functional changes present, but these may often be overlapping or coexisting. Certain conditions are intentionally omitted as they are addressed elsewhere in this book. Lastly, it is important to note, many books could be written about this subject and each of these. We intend not for a comprehensive review but for a practical description of symptomology and their clinical approach to serve the clinician in practice.

Paroxysmal Movements and Functional Movement Disorders

Psychogenic Nonepileptic Seizures

Perhaps, the quintessential paroxysm, psychogenic nonepileptic seizures (PNES) have taken on many names historically as conditioned by the

social regard (and acceptance) of their very existence. Epileptic paroxysms are in themselves, of course, the subject of much fear and scandal across cultures (taking on religious and mystic undertones), despite the evidence of their biological nature. Perhaps it is in this spirit that PNES take on such an important role in society. Despite their fame, PNES are relatively uncommon, occurring in around 1.5/100,000 persons per year, indeed corresponding to 4% of the incidence of epilepsy (Bodde et al., 2009). While a preponderance of female presentations is more common in adults, this does not appear as readily in children.

The “seizure” paroxysm may take on many forms, from violent and generalized movements to discrete sensory changes, to an arrest in behavior and altered mentation; often the findings are in fact a combination of the above. However, the findings often are difficult to ascertain from the description and the ultimate diagnosis may be challenging, to the point of misdiagnosis of, and medication for, epilepsy (Patel et al., 2021).

As with most other psychogenic disorders, a strong suspicion for PNES can be substantially elucidated from a thorough history-taking. Often semiologic elements offer discrepancies with the physiologic and anatomic “logic” expected of different seizure types. Of particular import are events of waxing and waning intensity, fluctuating and “migrating” between body parts, variable phenomenology (dystonic postures accompanied by clonic events, variable frequency tonic-clonic or clonic movements, or coexisting athetosis), bizarre midline phenomenology (pelvic thrusting, head shaking). More discrete findings can also raise suspicion (forceful eye closure, moaning or screaming, crying, intentional biting of the tip of the tongue). Personal and family history should also raise awareness and suspicion. Occasionally, a direct and clear correlation to prior abuse or prior psychiatric diagnosis is easily unveiled, although the clear correlates/precipitants in children may be more discrete than those in adults (for example, anxiety surrounding school exams, as opposed to sexual abuse) (Reilly et al., 2013). Most often, however, one encounters a certain

“stressed perfectionism,” of individuals entering adolescence who are deemed by their parents to have exceptional qualities, academic and extracurricular, often presenting a sudden or recent change to their demeanor and “perfectionism.” It is quite important to note that, in contrast, PNES is also highly prevalent among those who have borderline to mild cognitive/intellectual disability (Popkirov et al., 2019), and among individuals with known epilepsy undergoing treatment (the latter presenting a particular diagnostic challenge).

One often encounters the challenge of history taking as dominated by an anxious parent, vis-à-vis a relatively placid patient who often appears quite indifferent to the severity of the phenomenology described before—and about—them. At the bedside, one may encounter the possibility to evoke one such seizure, by attempting to “suggest” the event occur on the basis of requesting the patient remember or place themselves before whatever purported “trigger” may have brought about the event. With the advent of advanced consumer technology, it is often that the caregiver may capture a video of the event for the clinician to review in search of the above findings. Yet, if one is able to elicit an event at bedside, clues—beyond the semiology described above—may help differentiate epileptic from psychogenic. These include resistance to eye-opening during the event; resistance to the insertion of a cotton swab into the nostrils (which can be quite uncomfortable, but rather safe), or evidently fighting the clinician at any attempt to restrain (opposing movements); the absence of a frank postictal period, despite apparently confused lucidity (e.g., immediately following the cessation of movements, asking questions such as “what happened?”). Of course, with medical technology, the “gold standard” diagnostic is to capture events while the patient is undergoing prolonged electroencephalography (EEG). It is often feasible and ethical to inform the patient that the EEG may “induce” any such events, in the interest of capturing them (and proving an absence of an electrical correlate). Prior use of placebo techniques, such as saline injections to “induce” or “control” events, has fallen out of

favor. The major caveats during EEG include the need for prolonged monitoring (based on the frequency of events), or the incidental discovery of coexisting interictal epileptiform activity (despite clear electroclinical documentation of nonepileptic events). The latter often poses a management challenge in those with both epileptic and nonepileptic events, both in medication adjustments as in family/patient counseling.

Tics, Chorea, and Stereotypies

Tics are a relatively common condition encountered in the pediatric realm, with a prevalence of around 6–12% (Singer et al., 2016a, b). Most frequently, tics tend to emerge in the school-age child and display a slowly progressive nature, in which children often begin with discrete elements such as grimacing or blinking, and further progress onto having distinct simple or complex motor and vocal elements. The phenomenology often entails abrupt movements preceded by an *urge* and followed by *relief* upon completion. The waxing-waning nature of tics is characteristic, in which often children have varying intensity and semiology as they grow, thus presenting challenges to the child in their schooling as in their social relationships (as the complexity of interactions increases as does self-awareness, the events may progressively become *ego dystonic*). (Singer et al., 2016a, b). The prolonged duration and combined nature of these events have been denominated Tourette syndrome, an eponym to Georges Gilles de la Tourette's nineteenth-century descriptions of “tic douloureux” (Gilles de La Tourette, 1896), albeit similar descriptions existed prior and contemporary to his own (Walusinski, 2018).

A wealth of research has been carried out to elucidate the potential origins and neurobiological mechanisms of organic tics. Indeed many discoveries about potential etiologic mechanisms and the pathophysiologic circuitry have been developed (Singer et al., 2016a, b, Schrag et al., 2022)

An otherwise healthy and developmentally appropriate 14yo male presents to the emergency department for pronounced and sudden onset events of

marked facial grimacing and right shoulder jerks that appear near continually. The evaluation in the emergency department is non-contributory, other than for the described movements. The child is admitted for further evaluation. A more detailed history reveals the young man had no prior conditions nor utilized any medications. The patient denies using any drugs or other psychoactive substances. He was a reportedly average student in a regular public school setting, presenting some discrete difficulties in mathematics. The onset of the COVID-19 pandemic provided for the patient to be restricted to home schooling for the prior 3 months, and his academic performance, particularly in maths, progressively declined. Further interrogation also revealed that this young man was isolated from physical contact with friends and peers due to fear of infection, and given his academic decline, access to other avenues for communication (mobile phone, gaming platforms) were punitively restricted thus further limiting his contact with the outside world. During interrogation, violent unilateral shoulder shrugging and erratic facial grimacing (blinking, hemifacial jerking) are evidenced, and these appear to fluctuate in intensity. The patient denies any urge to perform, or relief thereafter; During examination, distraction maneuvers (alternating finger movements) offer some relief in intensity, whereas attention brought upon events brings intensification. Given intensity and degree of impairment, medication management (alpha-two adrenergic agonist medication) is offered, and psychiatry and psychology are consulted during inpatient admission.

The distinction between nonorganic vs. organic tics is difficult. The nature of events—erratic, sudden but somewhat predictable in their semiology—is one that is often indistinguishable from a descriptive standpoint. Often the child is unable to ascertain aspects such as the reported *urge-relief* dyad that the adolescent may better describe. Notwithstanding, some clinical clues may aid the process of distinguishing. An important element is the sudden or explosive onset of severe events. Interestingly, the COVID-19 pandemic has brought about a substantial increase in such presentation, hypothesized to emerge not from the viral illness proper, but rather from psychosocial stressors and even exposure to social media as an avenue for a collective sociological phenomenon or psychosis. Pringsheim and Martino (2021) described this phenomenology from a multicentric perspective, coinciding in the spike in cases and prototypical presentation in teenage females

across cultures, including in the Americas, Europe, and Oceania. The distinction is clear, in establishing a more abrupt nature with a tendency toward complex motor/vocal events (including more complex vocal phenomena such as odd/obscene words), or larger amplitude movements. The intriguing phenomenology of social media-induced nonorganic tics is even more complex and has had a wealth of recent descriptions surrounding their emergence due to the popular app TikTok. The observation of videos by content generators reporting their diagnosis of Tourette Syndrome (whether by a specialist or not), has led to an increase of these explosive phenomena, yet riddled with extremely atypical features, such as coprophenomena, very long sentences, context-dependent variation, and even aggression (Hull & Parnes, 2021; Zea Vera et al., 2022).

Of course, in view of any such severe phenomena, the social-emotional distress observed by the patient and parents is indistinguishable from those of progressively more severe Tourette’s syndrome. An additional clue resides in the presence of comorbidities, such as mood disorders. These are not typically what is observed in children with organic tics, who instead tend to display coexisting symptoms most akin to attention deficit/hyperactivity disorder (ADHD) (El Malhany et al., 2015). In addition, classic management measures tailored to the neurobiology of organic tics, such as the use of alpha-two adrenergic agonists (clonidine, guanfacine) may not be impactful in the control of nonorganic events.

Other Movement Disorders: Chorea, Tremors, Dystonia, Catatonia

Frequently uncovered in childhood patients with movement disorders are a combination of “positive” symptoms without obvious or plausible neuroanatomical correlate. Beyond tics as described above, a wealth of neuromuscular phenomena may become present in a focal, or more generalized manner. In fact, it is not uncommon for these events to display a certain progression: for example, a focal upper extremity dystonia

eventually progressing to involve ipsi- or contralateral lower extremity; tremor initiating in one part of the body and then extending onto the contralateral side. Dystonia, tremor, and myoclonus are perhaps the commonest and appear most frequently in the adolescent female (Schwingenschuh et al., 2008). The clinical evaluation and assessment often bring about important clues, much like with other conditions. In certain cases, precipitant factors or coexisting conditions or tendencies (perfectionistic tendencies, anxiety, or other mood disorders) may be evidenced (Chouskey & Pandey, 2020; Singer et al., 2016a, b). The onset may be explosive, and while static, the course may fluctuate significantly. The examination often evidences imprecisions, such as inconsistent patterns of tremor/dystonia, coexisting inexplicable symptoms (false weakness, sensory disturbances), indifference, distractibility or suggestibility, and unresponsiveness to typical care strategies (Kirsch & Mink, 2004). It is important, however, to remember that in children and young adults there too may be traits that may prompt the clinician to (wrongfully) consider a nonorganic etiology, such as the presence of very high-frequency tremors, varied movements in dystonia, variability with activating gestures or relieving gestures (*geste antagoniste*).

Astasia-Abasia and Other Gait Abnormalities

Another relatively common presentation of non-organic neurologic disturbances is that of gait abnormalities, amounting to around one-fifth to one-quarter of pediatric functional movement disorders (Singer et al., 2016a, b). The broader spectrum of these abnormalities includes challenges to either balance/equilibrium or locomotion proper (Demartini, 2022). Although the gait abnormalities span a wealth of presentations (dystonic, ataxic, etc.), perhaps one of the most appealing is that of *astasia-abasia*, a combination in the above impairments despite appropriate/integral neuromuscular function, often accompanied by fear of standing (stasophobia) falling (basophobia) and other phobias. Across

presentations, the common denominator in evaluation is identifying aspects to the examination that are incompatible with a frank pattern of neurologic disorder. Besides some described peculiarities (e.g., ability to walk backward only, assuming unusual positions), common historical and observed findings include disproportionate movements/odd movements in other body areas despite narrow gait; or knee-buckling and falls without hurting oneself (Kirsch & Mink, 2004). A few additional signs anecdotally or of limited specific reports suggest variations to the examination related to undue or inconsistent effort, or inappropriate dystonic posturing (Sokol & Espay, 2016).

“Functional” Weakness: Stroke-like Manifestations, Gait Failure, and Pseudoparalysis

A 15-year-old healthy male is brought by ambulance to the emergency department for presumed stroke. The child was last seen in his usual state some 4 hours prior, upon going to bed. He awoke her parents in the middle of the night, crying and screaming that he was unable to move his right leg and thus collapsed to the ground when attempting to go to the bathroom. This young man is previously healthy; he is typically an honor roll student, and a high performance athlete participating in the school’s football squad, as well as in the basketball and volleyball teams. His parents are frequently supportive of his leadership in the teams (where no less than captainship is expected), and stress the importance of sports excellence as the “ticket to a scholarship” as they are otherwise unable to support “his” aspirations of becoming an attorney like his father. Upon arrival, he is promptly evaluated by the hospital “stroke team” who verify the presence of a well circumscribed flaccidity emerging from the very hip. The patient appears distressed. On attempts to evaluate the strength on his lower extremity, there is absolute flaccidity and no apparent effort. When the leg is passively raised and support removed, it collapses immediately. When the child is asked to raise the leg while supine, the examiner places his hand below the opposite heel. Despite the patient’s distressed attempts, there is no contralateral heel pressure. There is no withdrawal to pain along the extremity, nor does the patient assert feeling any sensation whatsoever. The child is promptly taken for MRI, brain and spine, where no evidence of ischemic injury is

observed. Private interview during admission reveals that the young man has failed to secure a position in the football team this year (apparently his forte). He has yet to reveal the news to his father who otherwise celebrates all the young man’s victories as his own. He fears the repercussions of such news, as when any such disappointment last occurred his parents were severely punitive.

Functional weakness is an often-encountered neurologic presentation in children and adults. Cerebrovascular accidents (stroke), as well as acute-onset weakness in any context (for example, related to spinal cord injury), constitute a frank medical emergency; thus, early interventions to salvage ischemic brain tissue have become the gold standard of care across medical societies. Of course, while highly occurring in the adult population given specific age- and lifestyle-related risk factors, stroke, and vascular-related weakness is a rather rare event in the pediatric population, with an incidence of 1-2/100.000 (Ferreiro et al., 2019). Pediatric populations affected by stroke typically present with specific risk factors, such as vascular malformations or underlying cardiac pathology, or inborn errors of metabolism such as MELAS (Mitochondrial encephalomyelopathy, lactic acidosis, and stroke-like symptoms). In other cases, specific triggers have been aptly described, such as trivial trauma in the toddler (Madaan et al., 2019), chiropractic manipulations or sudden neck trauma (i.e., during gymnastics) in older children (Ghanim et al., 2020; Stence et al., 2011).

Functional weakness may have different presentations in the pediatric patient. Often, the symptoms display a sudden and absolute flaccid weakness, opposite a more acute but gradual paresis. Symptoms often may have unusual topography (e.g., monoparesis or tripareisis), and are accompanied by other unusual symptoms (for example, pain). In some cases, these symptoms have been collectively observed following specific “trigger” phenomena, such as vaccinations (Riu & Baik, 2010). One common feature remains the *belle indifferance* to the symptomatology at hand, despite the severity of findings. A wealth of clinical features in the examination can be extrapolated from adult observations into

the pediatric (especially adolescent) clinical experience (Aybek & Perez, 2022). These include aspects such as distractibility, give-way weakness, arm drop over the face, upper extremity drift without pronation, and other motor inconsistencies that may be passively or actively elicited (knee buckling or different specific tests for muscular groups). Notwithstanding the sometimes obvious elements of implausibility, it is difficult for the clinician in the acute setting to make do without emergent imaging, as outlined below.

Sensory Disturbances and Other Neurologic Manifestations

Considering the depth and complexity of the nervous system in mentation, sensorimotor function, and others, a very broad range of other manifestations are encountered on occasion in pediatric practice. A number of these are quite nonspecific and have very limited research in the pediatric realm, or are addressed elsewhere in this book, including other sensory affectations (loss of vision or hearing, pain, headache and dysesthesias, and dysautonomic events such as loss of posture and syncope). Equally so, nonorganic impairments of language/speech (stutter or others) are addressed to an extent in the corresponding chapters related to the different developmental stages of the child. Other alterations of the sensorium (amnesia, disorientation, inattention) appearing in isolation are not the subject of this chapter, but rather their emergence in the context of other presentations is discussed as relevant.

Diagnostic Challenges and Treatment Modalities

At the helm of neurology practice remains the performance of a thorough history and patient, dedicated examination. It is often then that the clinician finds important clues to the phenomenology that invite suspicion about the neurobiological origin, as has been outlined extensively above. Notwithstanding—and similar to the context where ascertainment is not possible (for example,

a past suspected seizure)—clinical practice has evolved to require a wealth of confirmatory (or exclusionary) paraclinical tests. This necessity has not only emerged from the uncertainty of the diagnosis, or the ethical interest of precision diagnoses; from perverse incentives (reimbursement) to modern-day fears of malpractice liability, additional testing has become a norm.

Classic Diagnostic Technology

Testing modalities often allude to the underlying presentation. One important example is radiologic imaging in weakness. It is not uncommon in modern-day specialized pediatric hospitals to have so-called “stroke protocols” that activate upon the arrival of an afflicted individual. Opposite adult resources where the process of such protocols demands fast computed tomography (CT) technology to rule-out hemorrhagic elements quickly (to allow for thrombolytic interventions), pediatric imaging is often reliant on fast magnetic resonance imaging protocols which, through advanced sequencing can precisely determine the presence of early ischemia (diffusion-weighted imaging or DWI and apparent diffusion coefficient or ADC), hemorrhage (gradient echo or GRE, or susceptibility-weighted imaging, SWI), or other changes, including vascular changes (Kamalian & Lev, 2019). Vital on-the-spot information that is radiation-sparing can provide reassurance to the medical team and the family regarding the absence of a “medical” emergency that may warrant acute intervention.

Intracranial imaging, however, is often exploited in the acute and nonacute care setting without regard for implied risks, costs, and resource utilization. Anxious families of children and young adults presenting with a wealth of symptoms from headaches to confusion, to tics and stereotypies may demand imaging (or clinicians offer it, without clear indication). The implications in furthering anxiety over “incidental” findings, resource utilization, continued sedation, or risks of repeated IV contrast exposure should not be undermined (Gulani et al., 2017; Warner et al., 2018).

Opposite imaging—where the most plausible role is to exclude causes of weakness—neurophysiological studies are often a diagnostic aid in the characterization of abnormal movements. Quintessential among these, the electroencephalogram (EEG) records cerebral electrical activity in real time from a series of electrodes, placed topographically. Almost universally, EEG nowadays allows accompanying video to provide extensive electro-clinical data to inform the evaluator. Often, the trained technologists utilize techniques to elicit electro-clinical changes (for example, hyperventilation or repeated photic stimulation), or for suggestibility (for example, invite individuals with suspected nonepileptic events to produce one such event with the aid of the equipment). Capturing clinical events on video, while correlating with precise electrographic data, provides valuable characterization that informs discussion.

Among its benefits, EEG technology allows for continued recording despite patient activity; in addition, its use can be extended from “routine” (typically 30–60 min) to significantly extended placement and recording (several days at a time, with the interest of capturing a suspected event). Notwithstanding, EEG technology is not without its hindrances. Chief among these should an event not be captured during recording, the value of the data obtained is limited as it provides no retrospective information about the phenomenon. It is also not uncommon for patients with epilepsy to present with nonepileptic events as well, thus posing a diagnostic challenge to the value of the recorded activity. Equally so, the topographic measurements of “scalp” EEG (routine technology placed over one’s hair or scalp) may lack depth and sensitivity to capture minor seizure foci embedded deep in the brain, and thus provide false negative results. Finally, it is also not uncommon that otherwise healthy individuals may display “epileptiform” discharges spontaneously and sporadically (Stowe & Glaze, 2019). Such findings in short recordings (and without capturing an event of interest), may heighten anxiety for individual and family (suggesting an organic cause for “abnormal” brain function) or lead to false-posi-

tive findings, extended evaluations, and medication courses.

There is relatively limited application in the pediatric realm for nerve-conduction and electromyographic studies, other common electrophysiologic techniques. This, in particular, with the advent of robust neurogenetic technology (best discussed below), strong advances in the detail, accessibility, and speed of imaging technology such as MRI, but also because of the technique itself (described generally as uncomfortable or painful). Measurement of the speed, amplitude of electrical conduction along peripheral nerve circuitry may nonetheless offer important information about integrity of these pathways when, for example, monoparesis or monomelic phenomena (motor and sensory) are present. Electromyographic tracings may provide insight into the integrity of the neuromuscular junction and muscular function proper, often of assistance in cases of asthenia/adynamia, fatigability, unexplained spasms, or weakness.

Advent of Neurogenetics and Neuroimmunology

A parallel and unprecedented growth in the understanding of human genetics and neuroimmunology has heavily influenced practice during the twenty-first century. Such shift has been further assisted by a change in perception over certain traits of “mental illness” (for example, the interest in exploring potentially treatable etiologies, rather than automatic institutionalization and symptomatic care), as well as the ready accessibility to these technologies (e.g., free genetic panels, rapid exome sequencing, autoimmune encephalitis antibody panels). Thus, practice in more complex phenomenology has evolved into a “rule-out first” paradigm.

Historical prototypical examples of neurogenetic/neurometabolic changes leading to considerable psychiatric manifestations included conditions such as acute intermittent porphyria and Huntington’s disease. In the modern day, and particularly in pediatric practice, interesting examples beg highlighting. One such example

stems from the presence of intermittent hemiparetic/hemiplegic attacks that may or may not be accompanied by other elements (headaches, seizures), and may resolve relatively spontaneously. In the case of Alternating Hemiplegia of Childhood, which is often accompanied by other neurodevelopmental symptoms, the presence of weakness—which tends to vary in localization—may even resolve during sleep (further inviting suspicion). Notwithstanding, given the degree of disability, often complex and advanced diagnostic testing is required, and the discovery of pathogenic variants to (most often) the *ATP1A3* gene encoding for a sodium–potassium–ATP channel appears (Brashear et al., 2018). Along a similar spectrum, several forms of paroxysmal hemiplegic migraines are now related to a wealth of genetic changes (*ATP1A2*, *CACNA1A*, *SCN1A*) (Di Stefano et al., 2020). One quite interesting phenomenon emerges from gait changes almost akin to the psychogenic astasia-abasia described above, present in a small number of individuals with a mild form of GLUT-1 deficiency, a genetically mediated deficiency of a cerebral glucose transporter, most often associated with severe and refractory neonatal/infantile epilepsies. Over the past 10–15 years, a broader description of the movement disturbances in this community has been explored, including tremors, dyspraxia, and most notoriously, “criss-cross gait” (Blumenschine et al., 2016; Magrinelli et al., 2020; Pons et al., 2010). GLUT1 deficiency is known to arise from mutations to the *SCL2A1* gene.

The growth of the field of neuroimmunology has also been remarkable, particularly in the growing awareness and visibility of otherwise “unexplained” neurologic symptoms. The varied clinical presentation of multiple sclerosis has enjoyed long-standing recognition among adult and pediatric specialties, with well-defined clinico-radiologic-immunologic diagnostic criteria (Thompson et al., 2018), including frank imaging changes, and known inflammatory markers in cerebrospinal fluid (oligoclonal bands, Immunoglobulin synthesis). However, other conditions of emerging interest have less well-defined clinical and paraclinical diagnostic criteria. Among these, perhaps most abundantly,

are the autoimmune encephalitides, with the quintessential examples being limbic encephalitis and anti-N-methyl-D-aspartate (NMDA) receptor encephalitis. Both conditions display a wealth of erratic and nonspecific neurologic symptoms that may vary by age (for example, in NMDAr encephalitis with extrapyramidal symptoms in younger children vs. seizures and hallucinations in adolescents), and far fewer outright pathognomonic signs (no consistent imaging or routine CSF analysis findings). Thus, the emergence of deeper characterization of the immunologic profile has allowed the discovery of receptor-specific antibodies to these (and other conditions), now more routinely tested in both serum and CSF. One final and quite interesting neuroimmunologic condition often in the realm of the “unexplained” is Isaacs’ syndrome, presenting often in the adolescent as a wealth of nonspecific neuropsychiatric symptoms, of which the most remarkable is continuous and erratic “twitching” (myokymia); it is often also accompanied by ataxia and others. Autoimmune source to this condition in fact overalls other such neuroimmunologic conditions, including those mediating limbic encephalitis (Park et al., 2020).

Thus, considering the above “rule-out” aphorism, a broad number of genetic panels and next-generation sequencing technologies have been developed that allow for testing even sourced from serum, saliva, or buccal epithelium in a simple, high-yield, and inexpensive manner. Equally, the neuroimmunologic testing landscape has evolved to include almost routine immunologic and paraneoplastic antibody panels as part of the collected serum or CSF.

Psychotherapy and Medication

Much as is the case for most ailments in the pediatric mind-body continuum, psychotherapy interventions are a mainstay in management, and the details of such techniques are best addressed elsewhere in this book.

The first major challenge in management, as recognized across the literature, is communicat-

ing the findings and making an accurate diagnosis that is equally accepted by the family. Given the pervasive stigmatization of mental illness, classic terminology such as “psychogenic” has fallen out of use, favoring a more descriptive approach and a recognition of the interphase between mind and brain frankly impacting neurobiological processes. It is wise to document and discuss the findings with patient and family, making tactful observations about their inconsistency with organic disease, and the necessity for a multimodal approach to care. Trust becomes a cornerstone for care.

The multimodal management requires consultation with different services including neurology, psychology, psychiatry, and other therapy services (physical medicine and rehabilitation, language therapy, occupational and physical therapy). Detailing the individual level of cognitive function is important to determine the plausible therapeutic approaches. A biopsychosocial evaluation will assist in elucidating environmental stressors (home, school) and thus even assist therapy (i.e., family therapy) or environmental modifications (i.e., changes to school placement). Psychiatric medication may be required to address the underlying aspects.

It is important to recognize in these symptoms the sincere and uncontained impairment they cause, and the need for functional recovery. It is thus that aspects of dystonia or focal afflictions may require outpatient physical or occupational therapies, while patients with gait failure or hemiparesis may be candidates for more intensive, inpatient rehabilitation. In this same frame of thought, severity of impairment may still require plausible symptomatic medication management. For example, patients with severe nonorganic tics may still benefit from an alpha-two adrenergic agonist such as clonidine, as perhaps would an individual with Tourette syndrome. Equally so, it is impossible to disregard comorbidities including epilepsy in patients with nonepileptic seizures that still require appropriate management.

Outcomes may be heterogeneous and dependent on the form of presentation, underlying cognitive reserve, environmental stressors, and

adherence to management. Overall, the course in children tends to be more “benign” than that of adults. However, while certain conditions may present spontaneous remission (e.g., functional movement disorders), others may present a more challenging and long-standing course with fewer individuals achieving sustained remission (i.e., nonepileptic seizures).

References

- Aybek, S., & Perez, D. L. (2022). Diagnosis and management of functional neurological disorder. *British Medical Journal (BMJ)*, *376*, 64.
- Blumenschine, M., Montes, J., Rao, A. K., Engelstad, K., & De Vivo, D. C. (2016). Analysis of gait disturbance in Glut 1 deficiency syndrome. *Journal of Child Neurology*, *31*(13), 1483–1488.
- Bodde, N. M., Brooks, J. L., Baker, G. A., Boon, P. A., Hendriksen, J. G., Mulder, O. G., & Aldenkamp, A. P. (2009). Psychogenic non-epileptic seizures – definition, etiology, treatment and prognostic issues: a critical review. *Seizure*, *18*(8), 543–553.
- Brainsky, S. (2003). *Manual de psicología y psicopatología dinámicas: Fundamentos de psicoanálisis* (3rd ed.). El Ancora Editores/3R Editores Bogota.
- Brashear, A., Sweadner, K. J., Cook, J. F., Swoboda, K. J., & Ozelius, L. (2018). ATP1A3-related neurologic disorders. 2008 Feb 7 [updated 2018 Feb 22]. In M. P. Adam, H. H. Ardinger, R. A. Pagon, S. E. Wallace, B. L. J. H., K. W. Gripp, G. M. Mirzaa, & A. Amemiya (Eds.), *GeneReviews® [Internet]*. University of Washington. 1993–2022.
- Breitenfeld, T., Jurassic, M. J., & Breitenfeld, D. (2014). Hippocrates: The forefather of neurology. *Neurological Sciences*, *35*(9), 1349–1352.
- Chouksey, A., & Pandey, S. (2020). Functional movement disorders in children. *Frontiers in Neurology*, *11*, 570151.
- Chutko, L. S., & Surushkina, S. Y. (2021). Functional neurological disorders. *Neuroscience and Behavioral Physiology*, *51*(9), 1228.
- Demartini, B. (2022). Functional gait disorder. In LaFaver et al. (Eds.), *Functional movement disorder, current clinical neurology* (1st ed.). Springer.
- Di Stefano, V., Rispoli, M. G., Pellegrino, N., Graziosi, A., Rotondo, E., Napoli, C., Pietrobon, D., Brighina, F., & Parisi, P. (2020). Diagnostic and therapeutic aspects of hemiplegic migraine. *Journal of Neurology, Neurosurgery, and Psychiatry*, *91*(7), 764–771.
- Edwards, M. J., Stone, J., Lang, A. E. (2014). From psychogenic movement disorder to functional movement disorder: It's time to change the name. *Movement Disorders*, *29*(7), 849–852.
- El Malhany, N., Gulisano, M., Rizzo, R., & Curatolo, P. (2015). Tourette syndrome and comorbid ADHD:

- Causes and consequences. *European Journal of Pediatrics*, 174(3), 279–288.
- Eler, A. (2016). *A history of hysteria in art, film, and literature*. KCET December 1, 2016. Available at: <https://www.kcet.org/shows/artbound/a-history-of-hysteria-in-art-film-and-literature>. Accessed 20 Mar 2022
- Ferriero, D. M., Fullerton, H. J., Bernard, T. J., Billingham, L., Daniels, S. R., DeBaun, M. R., et al. (2019). American Heart Association stroke council and council on cardiovascular and stroke nursing. Management of stroke in neonates and children: A scientific statement from the American Heart Association/American Stroke Association. *Stroke*, 50(3), e51–e96.
- Ghanim, M. T., Bergmann, S., Turner, R. D., Eskandari, R., & Mahajerin, A. (2020). Recurrent stroke in a child with atlantoaxial instability following chiropractic manipulation. *Journal of Pediatric Hematology/Oncology*, 42(6), e518–e520.
- Gilles de la Tourette G. (1896). Diagnostic et traitement du tic douloureux de la face et de la migraine. *La Semaine Medicale*, 16, 221.
- Gulani, V., Calamante, F., Shellock, F. G., Kanal, E., & Reeder, S. B. (2017). International Society for Magnetic Resonance in Medicine. Gadolinium deposition in the brain: Summary of evidence and recommendations. *Lancet Neurology*, 16(7), 564–570.
- Hallett, M. (2022). Free will, emotions and agency: Pathophysiology of functional movement disorder. In LaFaver et al. (Eds.), *Functional movement disorder, current clinical neurology* (1st ed.). Springer.
- Hull, M., & Parnes, M. (2021). Tics and TikTok: Functional tics spread through social media. *Movement Disorders Clinical Practice*, 8(8), 1248–1252.
- Kamalian, S., & Lev, M. H. (2019). Stroke Imaging. *Radiologic Clinics of North America*, 57(4), 717–732.
- Kanaan, R. A. A. (2022). A historical perspective on functional neurological disorder. In LaFaver et al. (Eds.), *Functional movement disorder, current clinical neurology* (1st ed.). Springer.
- Kendler, K. S. (2020). The development of Kraepelin's concept of dementia praecox: A close Reading of relevant texts. *JAMA Psychiatry*, 77(11), 1181–1187.
- Kirsch, D. B., & Mink, J. W. (2004). Psychogenic movement disorders in children. *Pediatric Neurology*, 30(1), 1–6.
- Krishnan, V., & Nestler, E. J. (2008). The molecular neurobiology of depression. *Nature*, 455(7215), 894–902.
- Longo, O. (1996). Hot heads and cold brains: Aristotle, Galen and the “radiator theory”. *Physis; Rivista Internazionale di Storia della Scienza*, 33(1–3), 259–266.
- Madaan, P., Swamy, D., & Saini, L. (2019). Stroke following trivial trauma. *Pediatric Neurology*, 96, 83.
- Magrinelli, F., Mulroy, E., Schneider, S. A., Latorre, A., Di Lazzaro, G., Hennig, A., et al. (2020). Criss-cross gait: A clue to glucose transporter type 1 deficiency syndrome. *Neurology*, 95(11), 500–501.
- Park, S. B., & Thurbon, R. (2020). Kiernan MCIIsacs syndrome: The frontier of neurology, psychiatry, immunology and cancer journal of neurology. *Neurosurgery & Psychiatry*, 91, 1243–1244.
- Patel, H., Blake, H., & Dunn, D. (2021). Psychogenic nonepileptic seizures in children and adolescents. *Indian Pediatrics*, 58(3), 259–265.
- Pons, R., Collins, A., Rotstein, M., Engelstad, K., & De Vivo, D. C. (2010). The spectrum of movement disorders in Glut-1 deficiency. *Movement Disorders*, 25, 275–281.
- Popkirov, S., Asadi-Pooya, A. A., Duncan, R., Gigineishvili, D., Hingray, C., Miguel Kanner, A., LaFrance, W. C., Jr., Pretorius, C., & Reuber, M. (2019). The aetiology of psychogenic non-epileptic seizures: Risk factors and comorbidities. *Epileptic Disorders*, 21(6), 529–547.
- Pringsheim, T., & Martino, D. (2021). Rapid onset of functional tic-like behaviors in young adults during the COVID-19 pandemic. *European Journal of Neurology*, 28(11), 3805–3808.
- Reilly, C., Menlove, L., Fenton, V., & Das, K. B. (2013). Psychogenic nonepileptic seizures in children: A review. *Epilepsia*, 54(10), 1715–1724.
- Ryu, J. H., & Baik, J. S. (2010). Psychogenic gait disorders after mass school vaccination of influenza A. *Journal of Movement Disorders*, 3(1), 15–17.
- Sanders, S. J., Sahin, M., Hostyk, J., Thurm, A., Jacquemont, S., Avillach, P., et al. (2019). A framework for the investigation of rare genetic disorders in neuropsychiatry. *Nature Medicine*, 25(10), 1477–1487.
- Schrag, A. E., Martino, D., Wang, H., Ambler, G., Benaroya-Milstein, N., Buttiglione, M., et al. (2022). Lack of association of Group A Streptococcal infection and onset of tics. *Neurology*, 98(11), e1175–e1183.
- Schwingsenschuh, P., Pont-Sunyer, C., Surtees, R., Edwards, M. J., & Bhatia, K. P. (2008). Psychogenic movement disorders in children: A report of 15 cases and a review of the literature. *Movement Disorders*, 23(13), 1882–1888.
- Singer, H. S., Mink, J. W., Gilbert, D. K., & Jankovic, J. (2016a). Tics and Tourette Syndrome. In Singer et al. (Eds.), *Movement disorders in childhood* (2nd ed.). Elsevier.
- Singer, H. S., Mink, J. W., Gilbert, D. L., & Jankovic, J. (2016b). Functional (psychogenic) movement disorders. In Singer et al. (Eds.), *Movement disorders in childhood* (2nd ed.). Elsevier.
- Sokol, L. L., & Espay, A. J. (2016). Clinical signs in functional (psychogenic) gait disorders: A brief survey. *Journal of Clinical Movement Disorders*, 12(3), 3.
- Stence, N. V., Fenton, L. Z., Goldenberg, N. A., Armstrong-Wells, J., & Bernard, T. J. (2011). Craniocervical arterial dissection in children: Diagnosis and treatment. *Current Treatment Options in Neurology*, 13(6), 636–648.
- Stowe, R. C., & Glaze, D. G. (2019). Electroencephalographic patterns during routine polysomnography in childhood and association with future epilepsy diagnosis. *Journal of Clinical Sleep Medicine*, 15(4), 553–562.

- Thompson, A. J., Banwell, B. L., Barkhof, F., Carroll, W. M., Coetzee, T., Comi, G., et al. (2018). Diagnosis of multiple sclerosis: 2017 revisions of the McDonald criteria. *Lancet Neurology*, *17*(2), 162–173.
- Walusinski, O. (2018). *Georges Gilles de la Tourette: Beyond the eponym* (1st ed.). Oxford University Press.
- Walusinski, O., & Bogousslavsky, J. (2020). Charcot, Janet, and French models of psychopathology. *European Neurology*, *83*, 333–340.
- Warner, D. O., Zaccariello, M. J., Katusic, S. K., Schroeder, D. R., Hanson, A. C., Schulte, P. J., et al. (2018). Neuropsychological and behavioral outcomes after exposure of young children to procedures requiring general anesthesia: The Mayo Anesthesia Safety in Kids (MASK) study. *Anesthesiology*, *129*(1), 89–105.
- Zea Vera, A., Bruce, A., Garris, J., Tochen, L., Bhatia, P., Lehman, R. K., Lopez, W., Wu, S. W., & Gilbert, D. L. (2022). The phenomenology of tics and tic-like behavior in TikTok. *Pediatric Neurology*, *130*, 14–20.

Andres Jimenez-Gomez is a pediatric neurologist and neurodevelopmental disabilities specialist at Joe DiMaggio Children’s Hospital in South Florida, where he

leads the autism and complex neurodevelopment program, as well as the neurogenetics and developmental and epileptic encephalopathies clinics. He has written numerous research articles addressing aspects of pediatric neurology, genetics and disability, as well as pediatric education and global health. Dr Jimenez is also co-editor of the “Clinical Handbook of Transcultural Infant Mental Health” (Springer). He is invested in the longitudinal transcultural care for complex neurologic, neurodevelopmental and behavioral conditions mainly across the Americas).

Dr Kristen S. Fisher is a child Neurologist and neurodevelopmental disabilities specialist with subspecialty training in neuroimmunology and multiple sclerosis. Her special interests include cognitive and behavioral impact of immunologic diseases of the central nervous system. She currently attends the neuroimmunology program at Texas Children’s Hospital and is an assistant professor in the department of pediatrics at Baylor College of Medicine in Houston, Texas.



Functional Ophthalmological Symptoms in Children and Adolescents

15

Vinh-Son Nguyen and Shankar Nandakumar

The perception of objects in the visual sensory field is of course the product of physiological and anatomical mechanisms that lead to the conversion of a light signal into an electrical impulse transmitted into the brain for elementary and complex interpretation.

All perceptions are heavily influenced by the conscious and the unconscious mind. It has often been said that we see what we want to see or what we expect to see. Also, that beauty is in the eye of the beholder. The same could be said of ugliness or any other visual perception.

When the child or adolescent is burdened with emotional difficulties, or with multiple stressors, this produces a state of mind which may make it possible to develop visual alterations, which need to be identified for what they are, in contrast to frank structural or neurobiological change.

Medically unexplained symptoms in the ophthalmological area are thought to be a frequent presentation for the corresponding professionals, i.e., pediatricians and pediatric ophthalmologists (Porteus & Clarke, 2009). These problems can be observed perhaps more frequently in the adolescent.

There are several common presentations. The correct diagnosis of the problem can help avoid engaging in unnecessary or complex medical procedures and in the provision of more suitable—and timely—psychosocial interventions.

At times, the diagnosis is made complicated by antecedents of other diseases as well as due to possible overlap with previously known ophthalmological or visual problems.

The child develops further symptoms, so to speak, in the same arena as previous medical difficulties. The new symptoms, however, are out of proportion or cannot be explained by the previous alteration, which typically is static or very slowly progressive, vis-a-vis the sudden emergence of novel symptoms.

In the adult ophthalmology clinic, it is thought that around 5% to 12% of patients will have some degree of unexplained visual loss, likely related to individual life circumstances and the difficulty to acknowledge the toll of those conditions on the body and the mind (Mursch-Edlmayr et al., 2017). Of course, there are patients in which a psychogenic or nonmedical condition is the strongest consideration in the absence of any medical condition.

V.-S. Nguyen (✉) · S. Nandakumar
Menninger Department of Psychiatry and Behavioral
Sciences, Baylor College of Medicine,
Houston, TX, USA
e-mail: Vinh-son.nguyen@bcm.edu; Shankar.nandakumar@bcm.edu

Diagnosis

The fundamental practice of ophthalmologists and optometrists is to diagnose impediments in refraction and in the field of vision of the child. The process to do so relies upon the assessment of “visual acuity” which is given as a proportion of accuracy or the correction necessary for adequate perception of the object ahead. Determined by the age of the child, this could be short or long distance. The field of vision, or visual campimetry, is measured in an angle of perception, as an arc of varying amplitude.

Often in the practice of the pediatric ophthalmologist, but especially in that of the neuro-ophthalmologist, the most important element is the evaluation of visual behavior, which is dependent and heavily influenced by neurodevelopment and integrity in eye–brain circuitry (Swaminathan, 2019). For example, it may not be unusual to observe a newborn who intermittently becomes “cross-eyed” (esophoria) as is expected of the very immature eye–brain–muscle coordination demanded of binocular conjugate gaze. The same occurrence, however, in the older child brings about concern for pathway immaturity and additional difficulties in binocular vision (namely, amblyopia, or double vision).

Another important consideration in the evaluation of vision is the degree of functional impairment that the child displays, for instance at school or at home. Some children, despite claiming considerable diplopia, show little alteration in their behavior at home, but greater difficulty at school when faced with stressful circumstances or with more specific tasks, such as reading, writing, copying shapes, etc.

As in other medical fields, a detailed history may raise the suspicion of a psychogenic problem, for instance in the presence of a marked degree of stress in the life of the child, family discord or conflict, as well as difficulties at school, be it interpersonal or academic. In some cases, the child expresses his or her great distress in the form of symptoms, which may lead to the discovery of traumatic experiences in the past or maltreatment in the present.

As with the other conditions, it is necessary for the physician to rule out several medical conditions or difficulties that could cause the symptoms. This could consist of rare diseases that may affect vision, visual symptoms associated with episodes of migraine or with seizures, as well as the effects of medications which could impair vision, like some anticoagulants.

The “medical rule-out” may require specialized technology or techniques to diagnose “occult” problems, such as macular pathology in the retina (which requires multifocal retinography and ocular coherence tomography). Cortical or cerebral visual impairments may also need to be ruled out, considering the evidence for their mounting incidence and prevalence even in otherwise unimpaired school-aged children (Griffiths & Ali, 2009; Williams, 2021).

Computer Vision Syndrome

This condition (also called digital eye strain) is seen in youngsters who spend hours in front of a computer screen, telephones, tablets, etc. each day. It is not a “psychogenic condition” but a result of prolonged exposure to the light and images appearing on the screen (Munshi et al., 2017), that is the lifestyle of the child and his or her habits. It should be considered in the differential diagnosis of visual alterations in patients who seek consultation with the neurologist, optometrist, ophthalmologist or pediatrician (Kozeis, 2009). The symptoms may consist of transient blurring of vision or actual transient painless vision loss, suggesting a transient ischemic attack, or retinal artery occlusion encountered in *amaurosis fugax*. These phenomena last only some seconds and the vision then returns to normal. The eyes may feel irritated. Often there are complaints of pain in the neck and shoulders as well as headaches.

The syndrome is more likely to occur if the young person is closer to the computer. The computer screen emits ionizing and nonionizing radiation, and constant exposure to them is not recommended. The amount of lighting around the computer, the angle of vision, and the

continuous eye fixation on the screen are contributing factors.

The central recommendations are to take breaks from the stimulation, to light the room enough to minimize the light coming from the computer, as well as positioning the computer for a down-vision of about 14 degrees down gaze.

Medically Unexplained Visual Loss

Other terms to refer to this condition are used in other contexts, such as “hysterical blindness,” nonorganic visual loss, functional visual loss, or conversion visual loss. The pediatrician or adolescent medicine physician may not see this condition often, but the family will certainly consult an ophthalmologist. It is estimated that around 5% of the consultations for visual loss will consist of patients that have a medically unexplained condition (Bruce & Newman, 2010; Toldo et al., 2010). Unexplained visual loss has been reported with a prevalence of 1.7% among children (Chung et al., 2017). Oftentimes it is not blindness that is presented but diminished visual capacity which is not substantiated by any objective test or measurement as having an anatomical basis.

There are some dramatic cases, in which there is a sudden loss of vision, either monocular (Kluxen, 1995) or binocular (Mulugeta et al., 2015). The first example described in the literature was reportedly in a young soldier, due to a command to kill civilians. The young man manifested an internal conflict to do this and suddenly lost his vision in the right eye, from one day to the next, and recuperated it 35 years later. Indeed, at times of war and armed conflict, there are multiple reports of unexplained blindness in soldiers and also in persons exposed to violence or fire. In California, during the 1980s, there were many refugees from Cambodia who escaped atrocities there, and there was a higher incidence of cases of unexplained blindness (Hustvedt, 2014; Rozee, 1990).

Another other case is of a very young woman in Ethiopia who was facing severe stressors and had a sudden loss of vision in both eyes. These

are cases of what used to be called “hysterical blindness” and which are due to a severe inner conflict in the person affected.

There is much interest currently in the neurophysiology of all conversion disorders or somatoform conditions. There are new methods to assess what happens in the functioning of the brain, but this research has only started. Some researchers have suggested that conversion disorders, such as blindness (or deafness, or other functional impairment) might be related neurophysiologically to what happens during hypnotic states (Guerit, 2014). This would be an alteration in the subjective access to sensory representations in the brain, or a fault in the sensory representation of the self in the brain.

There is controversy on the question of whether this should be a diagnosis of “exclusion” (Villegas & Ilsen, 2007), i.e., one which can be entertained only after a number of examinations and explorations fail to find any organic pathology (Moore et al., 2012; Munoz-Hernandez et al., 2012). Some of these explorations are described below in further detail, and one such example is the inability of the child to touch the tips of both index fingers in front of him or her, suggesting functional pathology, given that truly blind individuals are in fact able to do this quite well.

As in the case of some epileptic individuals in whom seizures coexist with nonepileptic events (pseudoseizures), herein there may also be a known “organic” condition that ultimately coexists with a functional one (Bruce & Newman, 2010; Scott & Egan, 2003). Indeed, the diagnosis of nonorganic disturbance is strengthened when the physiological tests of vision prove positively that there is intact functioning.

Generally, the clinical picture is one of relatively quick onset, which can progress over minutes to days and is often bilateral and symmetrical in nature.

The vision loss is often not complete, but rather begins as a narrowing of the visual field, starting from the periphery and into the central, macular vision. The most frequent presentation in vision loss is the development of tunnel vision, rather than complete blindness. The youngster is often referred to a neuro-ophthalmologist once

the primary ophthalmic and optometric evaluations prove unrevealing and are unable to explain the visual loss.

Unexplained visual loss is more commonly seen in girls in general, particularly if they have antecedents of emotional difficulties or face them at the time of presentation. Also, they are more frequent in younger children, around age 11 (Beaty, 1999; Somers et al., 2015). The affective children are thought to be generally very suggestible.

Often, no major organic or ophthalmological conditions are found in follow-up studies (Griffiths & Ediyshaw, 2004). The recovery rate may be lower than originally assumed (Daniel et al., 2017) particularly without addressing emotional issues or stressors underpinning the clinical presentation. This is often paired with the reluctance to accept a nonorganic, psychiatric/psychological diagnosis as the cause, prompting parents to pursue multiple and often delayed evaluations, effectively “shopping” for a satisfactory organic diagnosis.

There are several assessments the clinician can pursue to rule out organic causes of visual field loss, such as craniopharyngioma and also idiopathic intracranial hypertension (Griffiths & Eddyshaw, 2004).

The evaluation should include an assessment of visual acuity and visual fields (which can be performed at bedside or with advanced campimetry), and refraction examination, objective and subjective, visual behavior observation, testing of the visual field and of color vision (Ishihara charts) for the latter.

The clinician looks for inconsistencies in the testing results. The Goldmann field test is a special examination. It contains isopters that can be detected by the patient at different parts of the visual field and are both mobile and static. The most common visual pattern in unexplained visual loss is the progressive development of tunnel-like patterns in the visual field. The term isopter, in the determination of visual fields, is the contour line representing the limits of equal retinal sensitivity to a given test target.

An additional piece of evidence is an assessment of the visual field of the patient, described

as the “tangent screen test.” In a patient with organic visual loss, the visual field is extended or amplified when the patient is tested farther from the screen. In a patient with nonorganic condition, the visual field does not change at any distance between the patient and the screen.

Additional clues provide insight into possible nonorganic, functional causes of vision loss. It is important to remember that organic conditions respect a number of anatomical rules, which are not intuitively understood by patients (Bruce & Newman, 2010), and thus the topographical inconsistencies may be quite revealing. A first suggested rule is to determine if the loss of vision is binocular or monocular. Then, whether it is central (i.e., visual acuity) or peripheral (i.e., visual field).

Additional clues are these: The adolescent who has functional blindness walks with his or her arms extended, while organically blind people do not do that (Reddy & Backhouse, 2005). When asked to look at his or her hand, the patient will look elsewhere. Also, the patient may not be able to touch the tips of fingers together when asked (either with eyes closed or open as detailed above), which in reality is an evaluation of *proprioception* and not vision.

Also, the patient with functional blindness will unwittingly avoid crashing into objects placed in front of him or her. The person may also dislike a strong light placed in front of the “blind” eye. If the clinician unexpectedly drops a light object to the ground, the patient may look at it on the floor (the object should not make intense noise on falling). Another maneuver is to ask the child to perform “distraction” movements, like wiggling his fingers, alternating movements such as opening and closing fists, etc. Simultaneously, the clinician is also performing these movements, but will also perform another quick movement. The patient with a functional inability may unwittingly “slip” and imitate such movement, not a priori requested or described verbally.

During the acuity assessments, the patient may suddenly stop being able to see the “letters below a certain line” in a Snellen or Teller chart (this is the usual chart with progressive smaller lines with characters in the visual test). Patients

with organic diminished vision usually can see a few of the lines below the “last good line.” Another clue emerges with dysgraphia. In the older child, penmanship should not be affected: if the adolescent writes bizarrely, it also suggests a nonorganic problem. It has been observed that patients with functional loss of vision often wear sunglasses, even when there is no physiological reason for this.

Neurologists and neuro-ophthalmologists pursue additional strategies to detect nonorganic vision loss. Simple bedside techniques include the mirror test, which evokes the inevitable interest to pursue one’s moving reflection. In the mirror test, the examiner moves a mirror in a rotating way in front of the patient, the child will unavoidably perform pursuing movements with the eyes, if the problem is functional. Another test is eliciting optokinetic nystagmus with either an optokinetic tape or drum (Beatty, 1999). An optokinetic tape is a band on which several different shapes are represented in red. The clinician moves the tape presenting one image at a time, but moving it fairly fast. Unavoidably the subject with vision will develop at least a mild nystagmus (bilateral involuntary movement of both eyes). Regarding optokinetic nystagmus with a “drum,” in reality, this is a cylinder presented in front of the patient, the cylinder is white with vertical thick black bands. As the drum rotates at different speeds, if the patient can see, this elicits nystagmus.

Bagolini glasses (glasses with striated glass used to detect binocular vision) and Worth lights (four dots in front of the patient, two green, one red, and one white) are both used to detect binocular vision. Depending if Bagolini glasses or Worth lights are used, there are inconsistencies in the vision when the patient has functional visual loss.

Other tests are more commonly used by ophthalmologists. For instance, placing a red and a green lens in front of each eye and then presenting green or red letters in front of the patient. He or she should only see the ones of the corresponding same color.

There are other more specialized tests, based on the fact that much of the visual system can be seen directly and measured, and inconsistencies

and strange phenomena can be detected with relative ease. For instance, in the evaluation of the visual fields, there appear “unusual patterns” of the visual perimeter which do not conform to anatomical structures, such as “spikes” and odd shapes in the visual field detected by electronic means. Also on repeated tests, the perimeter changes (Frisen, 2014). Some neuro-ophthalmological tests include visual evoked potentials, which if normal, suggest a functional visual loss. Multifocal electroretinograms can be also used to demonstrate the integrity of vision, if it is present.

Coexisting Phenomena and Intervention

As in other psychosomatic conditions, there is no uniform psychopathology or psychological mechanisms that “cause” the visual loss. There is evidence of a higher degree of psychopathology in these patients as a whole, and also of more stress factors. However, there is no “one pathway” that leads from a certain personality type or emotional difficulty to functional blindness. A recent study of patients with functional visual loss, which included children and adolescents (Lim et al., 2005) found antecedents of emotional and behavioral disturbance in about 18% of children, and “facing current stressful circumstances” in a third of the minors. A further study by Taich et al. (2004) found similar frequencies. This indicates that conversion or somatization in the ophthalmological area is a manifestation of something, but not necessarily of a “psychiatric disturbance” and it may or may not be in response to stressors.

A recent study conducted in Korea (Kyung et al., 2014), with a small sample of children with “functional visual loss” and a comparison group, using the Achenbach child behavior checklist and a personality inventory, found a significantly higher prevalence of symptoms of somatic complaints, social problems, aggressiveness, somatization, hyperactivity, and overall higher total scores. Many clinicians consider the patients very suggestible (Lim et al., 2005) reporting a

recovery in more than half the patients, with a variety of interventions, including reassurance. A Japanese article with a few case reports highlights pressures for sports performance in several adolescents as a contributor to unexplained vision loss (Susuki et al., 2007).

Regarding the prognosis of the condition, some series report over 50% recovery on follow-up. One Italian study with 58 children (Toldo et al., 2010) found a much higher recovery, 93%. To explain such an outlier, authors highlight the absence of major psychopathology, and stressors were endorsed as being the main suspected determinant. This may inherently affect the interpretation of these results. In general, it can be said that if the blindness appears to be related to a predominant stress factor, removing this may lead to improvement.

Functional Diplopia or Amblyopia

The definition of amblyopia is somewhat controversial, like many other conditions. A commonly accepted definition (Ohlson, 2005) is a reduction of visual acuity for which no organic explanation can be found. Other additional criteria are often used in the definition, such as: subnormal visual acuity in one eye (rarely in both). In cases of unilateral amblyopia, there is an interocular difference in visual acuity. Despite the absence of an organic cause, amblyopia is treatable. The reduction in vision does not include refraction errors as the cause, and the reduction in vision should be considered only after the best correction lenses are used. In the case of children and adolescents, the age of the child must be taken into account considering the trajectory of normal maturation of visual acuity, which peaks at age 25.

Diplopia or amblyopia without an anatomical/physiological explanation is another frequent complaint of children brought to an ophthalmology clinic. The estimated prevalence is around 1.75% of children; of which more than 50% tend to be female (Kyung et al., 2014).

Diplopia is the “double vision” or the nonconvergence of visual images to convey the usual spatially accurate image of the objects in front of the child. Normally, each eye obtains a somewhat different image of the object ahead. When integrated in the visual cortex, these images are perceived in the third dimension, with volume, at a certain distance, with color, etc. At times, this fails, and the child has more diverse images or the images do not correspond so the vision becomes blurry as the images are “separated” to some degree.

Diplopia can be vertical or horizontal. Vertical refers to the “double image” in the vertical axis and correspondingly horizontal in the horizontal axis.

In the usual presentation of “functional diplopia,” the child or adolescent complains of double vision (also called amblyopia) either in the vertical or horizontal planes. However, this often does not correlate with the usual impairment in navigation ability of obstacles in the child’s home or common environments, although it may interfere with schoolwork, for example.

Studies of refraction and eye movements and convergence do not explain the symptoms in the child. In this situation, a psychosocial determinant may be explored, but if such suggestion and referral are made, they are often declined or contested by the family or child (Porteus & Clarke, 2009).

At times, the conversion symptom of diplopia appears only intermittently when the child is faced with specific unpleasant tasks and no ameliorating.

Intervention

Many cases of monocular amblyopia in young children are treated with occlusion therapy, i.e., patching the “good eye,” which forces the use of the affected eye. In the case of functional amblyopia, the clinician is encouraged to provide some interventions along the lines of vision exercises, while trying to address the underlying stressors or difficult circumstances the child might be facing.

Scotomata

A scotoma or scotomata are an area of central vision loss surrounded by normal, well-preserved vision. Every normal mammalian eye has a scotoma in its field of vision, usually termed “blind spot.” Common causes of scotomata include demyelinating diseases such as multiple sclerosis, toxic substances (methyl alcohol, ethambutol, and quinine), nutritional deficiencies, and vascular blockages either in the retina or in the optic nerve. Scintillating scotoma is a common visual aura in migraine (Gardner-Medwin, 1981). Usually presenting as a unilateral pathology, scotoma can rarely present as bilateral, most notably if a pituitary tumor compresses on the optic chiasm and produces a bitemporal hemicentral scotomatous hemianopia. Scotomata caused by tumors are less common, but sometimes reversible or curable by surgery.

Alice in Wonderland Syndrome

Alice in Wonderland Syndrome consists of distortions in the visual perception of objects and one’s own body, similar to the unexplained experiences of Alice, the main character in the children’s tale. Alice in Wonderland often would appear as though becoming bigger and smaller (i.e., temporary distortion of the perception of the body image).

This syndrome is included here as it is a complaint particularly seen in younger children, of preschool and school age (ages five to twelve). It is not thought to be of psychogenic origin per se, although anecdotal cases, like the artist Kate Kollowitz (Drysdale, 2009) refer to states of fright associated with these distortions of visual phenomena at bedtime. In many cases of younger children, no etiology can be found. A recent review of many studies of the syndrome found that it can occur without any clinical implications, or diagnosis, in up to 30% of adolescents (Blom, 2016).

The phenomenon was first described by Lippman in the 1950s of the twentieth century (Lippman, 1952). In this syndrome, the child

may perceive him or herself as bigger or smaller than reality. Other manifestations are micropsia (objects appear smaller than they are) and macropsias (objects appear bigger). Objects also may appear closer than they really are (pelopsia) or farther (teleopsia). Palinopsia refers to the recurrence of the image of an object sometime after it has been removed from vision (as in the smile of the Cheshire cat). Metamorphopsia refers to the distortion of images from their original shape (Hamed, 2010). Other possible visual distortions are the lack of perception of movement, not recognizing faces temporarily (akin to prosopagnosia), and no perception of colors, all temporary or intermittent. These events often occur, during the aura of a migraine episode. At times, there are symptoms like a perception of levitation, as well as feelings of derealization and depersonalization.

The phenomenon tends to be episodic. It has been associated with migraine, particularly abdominal migraine, and with infection by the Epstein-Barr virus. It has been reported with a frequency as high as 15% of patients who suffer from migraine (Blom, 2016). However, in about 50% of cases, no etiology may be found (Liu et al., 2014). The exploration of the phenomena requires ruling out disorders like encephalitis, epilepsy, and of course migraine.

In terms of medications, topiramate (an anti-convulsant) has been associated with the syndrome. There is little information about the outcome of this condition. A very small follow-up study with 9 children (Weidenfeld & Borusiak, 2011) suggested that on follow-up 3 or 4 years after the initial presentation, the phenomena were now absent.

Visual-Perceptual Alterations

Visual alterations can be the side effects of some medications. These can be minor or severe. Recently a case resembling *delirium tremens* with multiple visual hallucinations was described in a child who was treated with phenytoin. The hallucinations and agitation stopped after discontinuation of this drug used to treat seizures (Lopez

Marin et al., 2010). Aside from hallucinations, phenytoin (a medication still used at times to treat seizures) can cause other visual abnormalities, like diplopia, oscillopsia, altered convergence, and even ophthalmoplegia. There may also be an alteration of color discrimination, and also lateral nystagmus. Visual alterations have also been reported with carbamazepine, another anticonvulsant drug. Such visual alterations can also occur even on lower doses of the medications.

Abnormal Eye Movements and Functional Strabismus

There are a number of difficulties with eye movements, some of which are “functional,” i.e., without any organic finding after careful exploration (Kaski & Bronstein, 2017). The most common one among functional eye movement disturbances is functional strabismus (Scopetta & Gennaro, 2017) or convergent strabismus. “Psychogenic strabismus” can be manifested with the convergence of one or both eyes (Fekete et al., 2012) in the medial direction, i.e., both eyes fixated toward the midline. If left untreated it may lead to amblyopia as well. The child or adolescent may be brought because of strabismus, oscillopsia (oscillating images) or blurred vision, or other movement disorders such as “voluntary nystagmus,” i.e., oscillation of the eyes to one side and the other in the horizontal axis.

There is no information on the prevalence of these conditions, as they are often not reported or they are even overlooked in the neurological examination when the difficulty is not severe (Kaski & Bronstein, 2017).

Clinically, the patient will present with an eye (or both) looking toward the central axis, i.e., the nose in a fixed pattern, and this is often denominated convergent spasm. The onset is often fairly acute.

However, patients can be distracted during the examination and then the fixation of the eye disappears, only to return when attention is focused on it. The problem can fluctuate or be quite severe in some patients. Other clinical maneuvers con-

sist of observing the eye when it is in convergent spasm. The presence of miosis or pupillary constriction should only occur in the “functional” spasm. When eliciting vestibulo-ocular responses through the “doll’s eye maneuver,” the clinician moves the patient’s head to one side or the other, and the spasm disappears. These maneuvers would be unsuccessful in the case of frank paralysis of the abducens muscle (or dysfunction in the cranial nerve pathways that exert its movement) (Kaski et al., 2016). Nonetheless, it is important to rule out organic causes of this sort of spasm or gaze deviation. Examples of organic causes include: medication side effects such as those of phenytoin, lesions in the diencephalic–mesencephalic junction, cranial nerve palsies associated with increased intracranial pressure, oculogyric crises in inborn errors of metabolism, and Wernicke’s encephalopathy as resulting from thiamine deficiency in the malnourished child.

Another contemporary and important consideration to be ruled out in the differential diagnosis of eye movement (and visual acuity) problems is the early manifestation of demyelinating conditions such as multiple sclerosis. This diagnosis is most often made in the young adult and is increasingly recognized in adolescents or younger children. The manifestations of the disease depend on where the inflammatory-demyelinating process may arise in the brain or optic nerve (Charlier, 2016). Similarly, myasthenia gravis (particularly ocular myasthenia gravis) is an important consideration in this context (Fisher & Shah, 2019; Scopetta & Gennaro, 2017). The last two authors reported a case of a girl who was misdiagnosed as having myasthenia gravis following a presentation for monocular strabismus. She responded to treatment with pyridostigmine and intravenous immunoglobulin. In retrospect, the girl had had a positive placebo response. This suggests the caveat that a response to an intervention does not “confirm the diagnosis.” The girl in question would have relapses and positive responses to various interventions. In the mind of the clinician, this “confirms” the diagnosis. A careful examination of the child confirmed that she had been diagnosed inaccurately. Only when the child was asked if she had had any

previous stressors, she responded crying that her dear uncle had died in a motorcycle accident and subsequently she felt neglected.

Treatment

Obviously, this will depend on the individual child or family. Ideally, the treatment should be tailored to the difficulties detected, for example, stressors, fears, tensions, and family conflicts. A psychotherapeutic intervention could be attempted *a propos* of those problems. A uniform set of interventions is unlikely to fit all patients. Previous studies of follow-up have not been optimistic in terms of the proportion of patients who recover.

A less frequent functional disorder is called “functional nystagmus” in which no cause for the nystagmus can be found (Kaski & Bronstein, 2017).

Opposite the paralytic, or dystonic events described previously, nystagmus implies rapid and repetitive eye movements involving one or both eyes that can have distinct patterns in vector (vertical, horizontal, circular), and semiology (slow, fast, pendular, and square wave jerks, among others). It is often a frank marker of an organic condition, resulting from structural damage or biochemical influence to areas in the mid-brain and hindbrain that control eye movements and balance. Thus, it often results in association with other severe symptoms such as vertigo, nausea, and imbalance. It is important to rule out the presence of inner ear dysfunction, brain stem or cerebellar cerebrovascular accidents or tumors. Otherwise, the presence of inducing factors, such as anticonvulsants, lithium, or others, must be ruled out. Typically, the presence of nystagmus is sustained, and predictable in its pattern. It varies in its intensity but would not typically spontaneously remit. Thus, its presence as a functional disorder is relatively uncommon.

Functional Blepharospasm

Functional blepharospasm refers to the intense and forceful closure of the eyes (blepharos in Greek means eyelids), that has no neurological basis. Organic blepharospasm is a form of muscle dystonia, localized to the periorbital muscles. In certain situations when eyelid spasms occur in only one side, the condition has been called “psychogenic pseudoptosis”. Anatomically the eye closure is due to contraction of the *orbicularis oculis* muscle, either on one or both sides.

Blepharospasm in itself can be a neurological condition related to “facial dystonias” or facial spasms. These conditions generally are under-recognized and under-diagnosed by many clinicians who are not neurologists (Fasano & Tinazzi, 2016), and even among neurologists, as they tend to be rare in children. In the case of functional blepharospasm, repeated closure of the eyes, there are multiple accompanying phenomena. It often coexists with vision loss and with other psychosomatic symptoms, such as migraine, atypical facial pain, and others.

Diagnosis

There are strategies to distinguish the nonorganic form of blepharospasm from the organic form. In functional bilateral spasm, the adolescent manifests the repeated closure of the eyes. However, he or she can be distracted from this and the spasms disappear or diminish, for instance, while one gives the patient a mathematical task. Also, these spasms tend to appear rather suddenly, and they can change in phenomenology, disappearing altogether or returning. There is an absence of the so-called “Charcot’s sign.” This consists of narrowing of the eyelid fissure and frowning with both eyebrows during the spasms. Those are not observed when the spasm is functional. Other suggestive signs are that the spasm is not the

same in both eyes in its presentation or intensity, or when there are changes in the predominant closure of one eye or the other.

Often there are, in the functional blepharospasm, changes in vision as well, such as vision loss, oculogyric movements (unusual movements of the eyes) or bilateral eye convergence (Fasano & Tinazzi, 2016). The “blinking rate” can change with the distraction of the patient, which does not occur in the neurological blepharospasm (Bentivoglio et al., 2006).

If the eyelid spasms are very repetitive, this can practically impede the vision of the affected eye. It is in reality a form of dystonia, as the movement is not voluntary and occurs spontaneously, not with a defensive or lubricating purpose. It is much more frequent in people after their fifties, and less common in children.

Intervention

After the diagnosis has been established, several treatment options are possible. One is a “frank discussion” with the patient about the nature of the problem, not based on a neurological disorder. Biofeedback has also been used to promote muscle relaxation and diminished tension and anxiety. Medical management analogous to botulinum injections, using a placebo-like saline water, can effectively alleviate the movements. This presumes an intent to mimic the effect of botulinum toxin in order to paralyze the periorbital muscles and therefore prevent repeated contractions. It has to be administered periodically. Lastly, a surgical approach is possible in severe cases (Molho, 2019).

Conclusions

This chapter offers a brief overview of broad variations in the vision of psychologic and psychiatric origin, their organic counterparts, and strategies intended to provide the reader-clinician with tools to discern between the events and establish a diagnosis and treatment plan. The distinction between motor-movement phenomena

and perceptual phenomena is often a blurred and overlapping one, and thus attention must be paid to the multitude of elements in the ophthalmic exam from acuity, to movement, to behavior.

References

- Beatty, S. (1999). Non-organic visual loss. *Postgraduate Medical Journal*, 75(882), 201–207.
- Bentivoglio, A. R., Daniele, A., Albanese, A., Tonali, P. A., & Fasano, A. (2006). Analysis of blink rate in patients with blepharospasm. *Movement Disorders*, 21(8), 1225–1229.
- Blom, J. D. (2016). Alice in wonderland syndrome: A systematic review. *Neurology: Clinical Practice*, 6(3), 259–270.
- Bruce, B. B., & Newman, N. J. (2010). Functional visual loss. *Neurologic Clinics*, 28, 789–802.
- Charlier, N. (2016). *Somatische Differentialdiagnosen Psychischer Symptome in Kindes und Jugendalter [Somatic differential diagnosis of psychic symptoms in children and adolescents]* (pp. 20–23). Springer.
- Chung, J., Jin, K. H., Kang, J., & Kim, T. G. (2017). An atypical presentation of functional visual loss: A case report. *Medicine*, 96(41), 1–6.
- Daniel, M. C., Coughtrey, A., Heyman, I., & Dahlmann-Noor, A. H. (2017). Medically unexplained visual loss in children and young people: An observational single site study of incidence and outcomes. *Eye*, 31(7), 1068–1073.
- Drysdale, G. R. (2009). Kaethe Kollwitz (1867–1945): The artist who may have suffered from Alice in Wonderland Syndrome. *Journal of Medical Biography*, 17(2), 106–110.
- Fasano, A., & Tinazzi, S. (2016). Functional facial and tongue movement disorders. In M. Hallett, J. Stone, & A. Carson (Eds.), *Handbook of clinical neurology* (pp. 353–365). Elsevier.
- Fekete, R., Baizabal-Carvallo, J. F., Ha, A. D., Davidson, A., & Jankovic, J. (2012). Convergence spasm in conversion disorders: Prevalence in psychogenic and other movement disorders compared with controls. *Journal of Neurology, Neurosurgery, and Psychiatry*, 83, 202–204.
- Fisher, K., & Shah, V. (2019). Pediatric ocular myasthenia gravis. *Current Treatment Options in Neurology*, 21, 10–46.
- Frisen, L. (2014). Identification of functional visual field loss by automated static perimeter. *Acta Ophthalmologica*, 92, 805–809.
- Gardner-Medwin, A. R. (1981). Possible roles of vertebrate neuroglia in potassium dynamics, spreading depression and migraine. *The Journal of Experimental Biology*, 95, 111–127.
- Griffiths, P. G., & Ali, N. (2009). Medically unexplained visual loss in adult patients. *Current Opinion in Neurology*, 22(1), 41–45.

- Griffiths, P. G., & Eddyshaw, D. (2004). Medically unexplained visual loss in adult patients. *Eye*, 18(9), 917–922.
- Guérit, J.-M. (2014). Neurophysiology of convergent disorders. *Neurophysiologie Clinique/Clinical Neurophysiology*, 44(4), 301–304.
- Hamed, S. A. (2010). A migraine variant with abdominal colic and Alice in wonderland syndrome: A case report and review. *BMC Neurology*, 10, 1–5.
- Hustvedt, S. (2014). I wept for four years and when I stopped I was blind. *Neurophysiologie Clinique/Clinical Neurophysiology*, 44(4), 305–313.
- Kaski, D., & Bronstein, A. M. (2017). Functional eye movement disorders. In M. Hallet, J. Stone, & A. Carson (Eds.), *Handbook of clinical neurology* (pp. 343–351). 139 (third series). Elsevier.
- Kaski, D., Pradhan, V., & Bronstein, A. (2016). The clinical features of functional (psychogenic) eye movements. *Journal of Neurology, Neurosurgery & Psychiatry*, 87(12), e1–e6.
- Kluxen, G. (1995). Psychogenic blindness caused by a command to kill. *Psychotherapie, Psychosomatik, Medizinische Psychologie*, 45(3–4), 131–133.
- Kozeis, N. (2009). Impact of computer use on children’s vision. *Hippokratia*, 13, 230–231.
- Kyung, S. E., Lee, S. M., & Lim, M. H. (2014). Child behavior checklist and Korean personality inventory for children with functional visual loss. *International Journal of Psychiatry in Clinical Practice*, 18, 197–202.
- Lim, S. A., Siatkowski, R. M., & Farris, B. K. (2005). Functional visual loss in adults and children: Patient characteristics, management, and outcomes. *Ophthalmology*, 112(10), 1821–1828.
- Lippman, C. W. (1952). Certain hallucinations peculiar to migraine. *The Journal of Nervous and Mental Disease*, 116, 346.
- Liu, A. M., Liu, J. G., Liu, G. W., & Liu, G. T. (2014). “Alice in wonderland” syndrome: Presenting and follow-up characteristics. *Pediatric Neurology*, 51(3), 317–320.
- Lopez Martin, L., Garcia-Penas, J. J., Lara Herguedas, L., Gonzalez Gutierrez-Solana, L., Ruiz-Falco, M., Duat Rodriguez, A., & Cantarin Extremera, V. (2010). Phenytoin-induced visual disturbances mimicking Delirium Tremens in a child. *European Journal of Pediatric Neurology*, 14, 460–463.
- Molho, E. S. (2019). Treatment of blepharospasm. In S. Reich & S. Factor (Eds.), *Therapy of movement disorders* (pp. 197–199). Current Clinical Neurology. Humana.
- Moore, Q., Al-Zubidi, N., Yalamanchili, S., & Lee, A. G. (2012). Nonorganic visual loss in children. *International Ophthalmology Clinics*, 52, 107–123.
- Mulugeta, S., Tesfay, K., Frank, R., & Gruber-Frank, C. (2015). Acute loss of vision in a young woman: A case report on psychogenic blindness. *Ethiopian Journal of Health Sciences*, 25(1), 99–104.
- Munoz-Hernandez, A. M., Santos-Bueso, E., Saenz-Frances, F., Mendez-Hernandez, C. D., Garcia-Feijoo, J., Gegundez-Fernandez, J. A., & Garcia-Sanchez, J. (2012). Nonorganic visual loss and associated psychopathology in children. *European Journal of Ophthalmology*, 22, 269–273.
- Munshi, S., Varghese, A., & Dhar-Munshi, S. (2017). Computer vision syndrome—A common cause of unexplained visual symptoms in the modern era. *International Journal of Clinical Practice*, 71(7), e12962–e12967.
- Mursch-Edlmayr, A. S., Mojon, D., & Bolz, M. (2017). Prüfung und Vorgehen bei Verdacht auf nichtorganische Sehstörung. *Der Ophthalmologe*, 115(1), 77–87.
- Ohlsson, J. (2005). Defining amblyopia: The need for a joint classification. *Strabismus*, 13(1), 15–20.
- Porteus, A. M., & Clarke, M. P. (2009). Medically unexplained visual symptoms in children and adolescents: An indicator of abuse or adversity? *Eye*, 23, 1866–1867.
- Reddy, A. R., & Backhouse, O. C. (2005). Medically unexplained visual loss. *Eye*, 20, 859–860.
- Rozée, P. D., & Van Boemel, G. (1990). The psychological effects of war trauma and abuse on older Cambodian refugee women. *Women & Therapy*, 8(4), 23–50.
- Scoppetta, C., & Di Gennaro, G. (2017). Psychogenic convergence spasm mimicking ocular myasthenia. *European Review for Medical and Pharmacological Sciences*, 21(5), 1088–1090.
- Scott, J. A., & Egan, R. A. (2003). Prevalence of organic neuro-ophthalmologic disease in patients with functional visual loss. *American Journal of Ophthalmology*, 135(5), 670–675.
- Somers, A., Casteels, K., Van Roie, E., Spileers, W., & Casteels, I. (2015). Non-organic visual loss in children: Prospective and retrospective analysis of associated psychosocial problems and stress factors. *Acta Ophthalmologica*, 94(5), e312–e316.
- Susuki, T., Segawa, A., Uchino, Y., Nishio, M., & Chikuda, M. (2007). Functional visual loss associated with trauma and Athletic club membership in high school. *Neuro-Ophthalmology*, 31, 187–190.
- Swaminathan, M., Jayaraman, D., & Jacob, N. (2019). Visual function assessment, ocular examination, and intervention in children with developmental delay: A systematic approach. Part 1. *Indian Journal of Ophthalmology*, 67(2), 196–203.
- Taich, A., Crowe, S., Kosmorsky, G. S., & Traboulsi, E. I. (2004). Prevalence of psychosocial disturbances in children with nonorganic visual loss. *Journal of American Association for Pediatric Ophthalmology and Strabismus*, 8(5), 457–461.
- Toldo, I., Pinello, L., Suppiej, A., Ermani, M., Cermakova, I., Zanin, E., et al. (2010). Nonorganic (psychogenic) visual loss in children: A retrospective series. *Journal of Neuro-Ophthalmology*, 30(1), 26–30.
- Villegas, R. B., & Ilsen, P. F. (2007). Functional vision loss: A diagnosis of exclusion. *Optometry*, 78, 523–533.
- Weidenfeld, A., & Burusiak, P. (2011). Alice in wonderland syndrome. A case based update and long-term

outcome in nine children. *Childrens Nervous System*, 27, 893–896.

Williams, C., Pease, A., Warnes, P., Harrison, S., Pilon, F., Hyvarinen, L., West, S., Self, J., Ferris, J., & CVI Prevalence Study Group. (2021). Cerebral visual impairment-related vision problems in primary school children: A cross-sectional survey. *Developmental Medicine and Child Neurology*, 63(6), 683–689.

Vinh-Son Nguyen is a resident physician at the Baylor College of Medicine Menninger Department of Psychiatry and Behavioral Sciences and member of the Clinician Educator Track. He is an American Psychiatric Association/ Substance Abuse and Mental Health Services Administration Minority Fellow. Chair of the Texas Society of Psychiatric Physicians Resident and Fellow

Member Section. He is a former University of Texas System Archer Fellow. He serves as an Advisor for The Understanding Initiative: Vietnamese American Mental Health Resource Center and Brainy Bunch Helping Hands Grant Project. His interests include global mental health, minority mental health advocacy, and reducing the effects of adverse childhood experiences.

Shankar Nandakumar is a Psychiatry Resident at Baylor College of Medicine. He studied Neurobiology at the University of Texas at Austin. Medical School University of Texas Health San Antonio. Master in Public Health at the University of Texas School of Public Health. He is part of the Clinician Educator Track at Baylor College of Medicine, which is focused on furthering educational pursuits in academic careers.



Functional Ear, Nose, and Throat Disturbances in Children and Adolescents

16

Karthik Cherukupally

Many general physicians and pediatricians are familiar with several “classical” conversion disorders, which may include issues like psychogenic pain or a form of limb paralysis or loss of perception. It is less common to think of functional disorders in the ears, nose, and throat in the pediatric arena.

In the diagnosis of “psychogenic,” functional, or unexplained medical conditions, it is important to listen to the affected person’s own words, i.e., their description of their symptoms. It is less useful to hear “I have vertigo” than “I feel dizzy every time I get up suddenly,” for example. The choice of words and the characteristics of the symptoms, when they occur, their duration, and the description provide clues to the underlying problem (Decot, 2005). This is a general recommendation to guide the clinician into the possible factors that may be involved in the symptoms presented by the young patient. Here we focus only on the most common conditions likely to be encountered in the pediatrician’s office and referred to the child psychiatrist or mental health clinician (Caulley et al. 2018).

Functional Hearing Loss: Pseudohypoacusis

This is not a frequent condition, although given the seriousness of hearing loss and the subsequent investigations it is worth taking into account. It can be underdiagnosed. In many centers, the diagnosis is missed, and even a hearing aid has already been adjusted before the correct diagnosis is established. When the problem occurs clearly in relation to major stress, such as conflict at school or in the family it is necessary to recognize those issues to help the child.

A child can present sudden loss of hearing in both or only one ear (Rotenberg et al., 2005). The paradoxical situation is that the child or parents report diminished hearing, and this can be found also in the audiometric testing, but no cause can be found to explain it (Kothe et al. 2003; Lin & Staecker, 2006).

At times, this condition can occur in response to a relatively small health alteration, such as minor head trauma. The child will be referred for an examination by a specialist. Another association is knowing someone who has deafness. In most cases, the hearing loss is bilateral, but in some cases it is unilateral.

One of the diagnostic strategies is the Weber test. This consists of putting a tuning fork on top of the head and thus detecting unilateral hearing loss. The Rinne test consists of the tuning fork being placed near the ear (to test regular hearing

K. Cherukupally (✉)
Baylor College of Medicine, Houston, TX, USA

perception) and the tuning fork on the mastoid area (to detect nonconductive hearing loss), as the child should detect the sound and vibration, if there is no conduction hearing loss (which would be caused by a middle ear dysfunction). Other tests to rule out a physical or major pathological condition are negative. The hearing test may reveal a worse subjective perception of sound than the objective findings support (Balatsouras et al., 2003).

The hearing loss is often in the hearing range between 40 and 60 decibels (Holenweg & Kompis, 2010). The frequency of the sound is reported in Hertz. A pure tone audiogram in cases of unexplained hearing loss shows a predominantly “sensorineural” pattern, independent of the frequency of the sound. Typically, tests like otoacoustic emissions and auditory evoked potential measurement are within the normal range.

Functional hearing loss seems more frequent in children between the ages of eight and twelve and is predominant in girls. The existing literature consists mostly of case reports. Many ear specialists will encounter the problem regularly, but the literature consists of reports of a few hundred patients.

The child may develop hypoacusis as a response to intense marital difficulties in the parents, suggesting the tempting notion of “not wanting to hear” the fights. Indeed, many children “cover their ears” when they start hearing parents argue or yell. Functional hypoacusis would be a way to “tune out” what is stressful to hear.

Despite the hearing impairment, affected children are often able to maintain a conversation, mostly outside of a testing situation.

In their review of psychotherapeutic intervention with 31 children with psychogenic hearing loss (Ashitani & Ino, 2003), the authors emphasize as a determining psychological motivation in the children, a “need to shield themselves from the negative interactions” with caregivers or others. Another factor was the need to get adults to focus on the child and, so to speak, “listen to them” and their concerns, or demand for care. The child being perceived as sick by the parents

is the object of attention and visits to the doctor, tests, etc.

Often, there are also stressors at school and perhaps a history of conversion disorders in the family. In many cases, there is evidence of parents having very high expectations of a child or adolescent, such as excellent grades, performing every duty, and high sensitivity to criticism. Suppression of aggression and feelings of guilt are frequent contributors as well.

An audiometric test can be normal or abnormal. The typical pattern in cases of psychogenic hearing loss is a “saucer-shaped curve.” This indicates diminished hearing in the middle range of the hearing span.

The general recommendation in these situations is to avoid exploratory surgeries or very prolonged further tests and to manage the situation conservatively. Psychotherapeutic interventions may help the child identify or resolve the possible psychological determinant or trigger. In some cases, the need to “not hear” would be removed if the marital relationship improved and the fighting diminished.

Hyperacusis and Phonophobia

Hyperacusis consists of high sensitivity to the perception of sound and noise in particular. It often exists in children, but it is easily overlooked. Many children react adversely to intense sounds, such as motorcycles, blenders, vacuum cleaners, people clapping in public places, etc. the child, often of preschool age will cover his or her ears in response. Later, it can become more specific to sounds of people eating, cutting food with metal utensils, or intense breathing (Potgieter et al., 2020). When the child is anxious and tense, the condition is more pronounced (Schaaf et al., 2003). The prevalence is really not known, as there is no agreement of what is the threshold for “hyperacusis” A recent survey estimated a prevalence that is too wide, between 3% and about 17% (Rosing et al., 2016).

The condition may cause significant difficulty even in infants. The young child can be easily overstimulated by toys that play music by pushing

a button or are loud in general. Electronic devices may play videos that are also too stimulating. The same can be said of a “very noisy household” in which the television may be blaring constantly, a dog may be barking, and other children make noise. In the young child or preschooler, this may lead to excessive irritability or crying, which parents may struggle to understand as the child is not hungry or sleepy, but still is crying. In the preschool years, and later, a child may run away from a room where the vacuum cleaner is noisy, a blender is running, etc. and may cover his or her ears or appear scared. In the school years, the child may become irritated or overstimulated by the noisiness in a normal classroom. A boy or girl may request to sit more distant from peers due to the annoyance provoked by chewing, utensils, or conversations. The same can occur during regular class noisiness. It is well known that hyperacusis is more common in children with Williams’ syndrome, autism spectrum disorder, and in children with attention deficit (Khalifa et al., 2004). Also, there is a sort of “acquired form” in children or adolescents who have been exposed to prolonged traumatic situations.

In those situations, allowing the child to regulate their level of exposure to loud noise, using earplugs or mufflers to diminish the perception and behavioral training to tolerate this and monitor levels of discomfort may be helpful. The child can have accommodations at school suggested by the physician, like being in a quiet place during examinations or avoiding exposure to fire drills and the like. Audio perception retraining and perception management have been designed to improve these conditions.

Unexplained Voice Disorder, Dysphonia, or Paradoxical Vocal Cord Motion

Just like with the eyes and the face, it has often been said that the voice is a reflection of the soul (Duffy, 2013). Also, emotion becomes apparent in the quality of the voice, as in expressions such as “tremulous voice” to denote fear, or “authori-

tarian voice” to project dominance, or whispering to denote secrecy.

The voice is “not just the voice” or the spoken words themselves, but also the tone in which they are said, the tempo of the speech, its modulation, the pauses between words and sentences. Other variables are the strength and the emotionality conveyed in the voice. These are all important messages that are sent and received unconsciously, but which have a definite emotional content.

Alterations of the voice due to emotional or psychological factors comprehend unexplained pain when speaking, with no obvious sign of any pathology in the throat or vocal cords (Rosanowski & Eysholdt, 2000). Also, changes in the voice: a weakened voice, or the total incapacity to speak. Often these are phenomena of quick onset and at times there is an obvious stressor or difficult circumstance that seems to cause much distress to the person whose voice is altered (Baker, 2016; Spahn & Voltmer, 2011). It can be accompanied by pain in the throat. A child singer may be unable to enter a competition or to express what he or she thinks verbally due to anxiety or tension, or difficult interpersonal circumstances.

The most frequent voice disturbances that have a strong emotional underpinning and which are assumed to be determined by it are aphonia, dysphonia (hoarseness), unexplained falsetto (high pitch), inappropriate loudness, and abductor spasmodic dysphonia. Then there are “infantile” voices (speaking like a younger child or an infant), psychogenic stuttering, and selective mutism. Some features of these conditions are commonly seen in children who experience a lot of stress, who have had traumatic experiences or have much anxiety about speaking in public, having their voice heard, or who are afraid of people in general. Of course, there are many cases in which mixed disturbances occur. The most frequent ones appear to be dysphonia and aphonia, as well as psychogenic stuttering (Duffy, 2013).

A 16-year-old girl, Mara, whose parents were originally from Northern India, developed in a few days an inability to eat and swallow due to pain, and difficulty speaking also due to pain, her voice had become “very weak.” The medical explorations

had proven negative, and she was sent to the hospital simply to help her gain some weight, as she had lost ten pounds in a few weeks.

Mara in the hospital, appeared very meek and inhibited. She spoke and behaved almost like a little girl, who was very evasive and spoke in very general terms, while saying it hurt to talk. She had no idea of what had happened to her, and she simply could hardly talk or eat due to pain. One of her pediatricians while an outpatient had reproached her "why are you doing this?" as if it were an act she was putting on purposefully and she felt very offended and hurt by that. Another doctor had told her that it was "all in her head."

The exploration of the symptoms and their origin took several hours of interviews over a few days. Mara was very evasive and spoke almost whispering, making enormous efforts to suppress her emotions. She spoke in very vague terms and never admitted to any strong emotions, saying for instance "I was a bit disturbed" or "I might have felt a little angry" even when describing an event or experience that would have enraged anyone.

As the family was interviewed, Mara's older sister revealed there were severe tensions in the marriage between the parents. The father was considered by the two sisters and his wife as a "pretender" who wanted to impress everyone with his wealth and success when in reality he was neither wealthy nor successful, but quite the opposite.

Later it was discovered that the child felt she had to always be with her mother, to protect her from domestic violence, which had taken place before and it was a big family secret. After that revelation, Mara started to eat more despite the pain.

Mara said she was "asexual." As she gained trust in the clinicians, she revealed that she had been molested sexually by a cousin several times but she did not want to say anything for fear of disturbing the extended family harmony. She had kept this secret and felt disgusted by any mention of sexuality. When she spoke about this with much emotion, her voice started to flow more readily.

Mara had felt a great deal of pressure to perform, as she was a singer, a soprano. After not getting the first place in a state competition, she felt humiliated, and it was shortly after this that she had lost her voice.

This case illustrates a multidetermined set of problems: the need to "keep quiet" and not open up in order to keep her anger and shame suppressed and not acknowledge any other intense negative feelings. After she was encouraged to discuss the sexual molestation with her mother and speak to the father about her anger, her voice fully came back, and her pain diminished. She

was able to say that she just wanted to sing, but not to be in all these voice competitions.

It is important to underline that these gradual revelations were obtained after prolonged discussions with the patient over several days and several hours, and the negative experiences were denied by the girl during the first interviews.

As this case would suggest, the recovery of the voice is a welcome sign but it is scarcely a cure. Much psychotherapeutic work with the child and the family needed to be conducted further to help with the child's anger and resentment toward men, her fear of sexuality, and her post-traumatic memories. Also, family therapy would be necessary to diminish the constant fear of domestic violence.

Psychogenic mutism has been recognized for over a century as one of the possible manifestations of distress or traumatic effects in children and adults (Baizabal-Carvalho & Jankovic, 2015). Like the foreign accent syndrome, it tends to start suddenly. There can be distractibility in the presentation of the disturbance. This means that when the patient is distracted, he or she may say things inadvertently. Also, there can be periods of improvement and worsening of the problem and the association with other manifestations of somatoform problems. Psychogenic mutism refers to the ability to speak at home, with relatives and familiar people, but not outside the home, at school, or in certain stressful settings. It is known to be more frequent in children of immigrants and is a form of "social phobia" or a manifestation of shyness. The treatment requires helping the child to reduce her anxiety when she is with strangers or not with the immediate attachment figures.

Psychogenic Stuttering

This condition is characterized by excessive repetition of a sound, a syllable, or a monosyllabic word. Also, by sound prolongations and complete voice blocks.

In evaluating stuttering, most experts consider the possibility of a developmental difficulty in

speech production, another possibility is a neurogenic causality, and, finally, psychogenic stuttering. When the speech improves in the child or adolescent, if there is less tension or psychological pressure, this may suggest a neurogenic origin. However, when the stuttering aggravates when certain difficult topics or stressors are mentioned, this suggests a psychogenic problem.

Palilalia is the repetition of the last syllable uttered, and this suggests developmental stuttering, but it may also represent neurological involvement, although it may occur in psychogenic stuttering too. It is frequent to observe palilalia in Prader–Willi syndrome, Tourette’s syndrome, and also in autistic spectrum disorders.

A five-year-old, David, evaluated by our team, was referred because of multiple fears, and nightmares. He was in foster care. He was in the care of foster parents, in his sixth placement. He was a “high needs” child who was afraid of the dark, of sleeping alone, and he needed constant reassurance and company. During the evaluation sessions, the team observed abnormal movements as well, in a picture that resembled choreiform movements. He had a very tremulous voice, frequently stuttered, and could not articulate what he meant to say. He was referred to a neurologist who ruled out the diagnosis of some form of chorea. The child indeed had problems with attachment (disorganized style) as well as multiple symptoms of a posttraumatic nature. We engaged the family in parent-child psychotherapy. With the help of the foster parents, we were able to help the boy, over months, to be reassured and calmer. The foster parents were encouraged to treat him like a younger child, in the sense that his dependency was a sign of fear of abandonment and wanting to be constantly reassured that this time he would not be sent away. The foster parents patiently would allow him to sleep with them, to ask them to do things for him, which David could have done for himself, but he was experiencing for the first time being able to depend on others. He had been grossly neglected and maltreated by his biological parents who were drug users. In other foster homes, he was thought to be too needy and intractable. After about a year, he was adopted. We worked on the

narrative of his placement and his placement disruptions. As he became calmer, the stuttering and the tremulousness disappeared, as well as the abnormal movements in the rest of the body.

Foreign Accent Syndrome

Several entities can be associated with a child or adolescent speaking with a “foreign accent.” These can be divided into a mostly neurological condition on one extreme of the spectrum, to several psychogenic causes, including dissociative states on the other end of that gamut.

Foreign Language Syndrome

This condition has been described mostly in adults (Blumstein & Kurowski, 2006; Keulen et al., 2016b; Verhoeven & Mariën, 2010), but it can occur in adolescents and children (Keulen et al., 2016a). In adults, most frequently it is due to vascular lesions in the language areas of the brain. It has also been described in children as a developmental motor/language difficulty (Marien et al., 2009). It also has been found as another symptom in patients with psychogenic movement disorders (Baizabal-Carvallo & Jankovic, 2015). In children with developmental disorders, such as Asperger syndrome, there can be changes in the speech pattern which resemble a foreign accent (Tantam, 2012). The child can have a mechanical voice or speech pattern, with little inflection for emotions, and the speech sounds stilted and odd.

Young children at times adopt a more “infantile” speech pattern than it would be common for a child of their age. This is observed in children who want to be treated like a baby or a very young child, for a reason related to family dynamics or fear of growing up. For example, after the birth of a sibling, many preschool children might start using a more “immature” speech pattern. The same is with other stressful events. This is usually only a temporary phenomenon that disappears in a few weeks if the child is reassured that his or her parents are still emotionally available.

Adolescents at times mimic the accent of other youngsters with whom they are acquainted. They may consider that as more interesting or more sophisticated. A 17-year-old treated by us in Texas (he originally had a Texas accent) had a very difficult family situation and devalued his relatives. He developed an online relationship with a girl from Australia and after a few months started speaking everywhere with an Australian accent and using some words used in Australian English, but not in American English. When asked about this change, he said he was “simply adopted the accent due to his love.” However, there was a general feeling that his family and himself were devalued because they were of Hispanic background.

Children with antecedents of trauma and who manifest dissociative disorders can have different speech patterns according to the “state of self” that one encounters at different times. There can be a deeper voice, a more infantile one, or a foreign accent, or a voice pattern of the opposite gender.

A 16-year-old boy treated by us, had a dissociative identity disorder. He was seen when he had gone into foster care. His parents were addicted to drugs and were thought unable to supervise him and provide for his essential needs. When he was seen, he brought drawings of different personas which existed within him. He said that he had a different persona who “took over” his mind according to the situations he faced. He displayed several accents, each one corresponding to a stereotypical pattern of a person from a different background: Boris with a Russian accent, Donald with a Scottish accent, Fritz with a German accent. He would transition from one to the other depending on what was necessary to face his life situations. If he had to fight or defend himself Boris would come out, as he would fight and be fearless, if he had to do science work or experiments, Fritz would do them, etc. During the sessions he at times would perform these “switches” by looking at an amulet he had brought from the home of his biological parents, whom he missed very much. He seemed to have developed these states of self for a long time and indeed his impressions of different accents and even some foreign words were remarkable. He was very bright and read extensively about different cultures.

In these situations, the problem is clearly not the accent per se, but what leads to the adoption

of these patterns of speech. The underlying difficulty, such as anxiety, adjustment to difficult circumstances, or posttraumatic/dissociative phenomena, has to be addressed before the child can give up those symptoms.

Globus Hystericus

Another name for this condition is psychogenic dysphagia, as well as *globus pharyngeus*. The description of the phenomenon has existed since the time of Hippocrates, although the term and clinical description of globus hystericus were introduced by John Purcell in 1704 (Harar et al., 2004). This condition is most commonly seen in adolescents (and young adults). It consists of a sensation of an obstruction or an object stuck in the throat, i.e., a “feeling of a lump” or “a foreign body” in the throat, the esophagus, or the respiratory airways.

This sensation can cause difficulty in swallowing or discomfort during deglutition.

The persistent sensation often leads to consultation with the pediatrician or the ear, nose, and throat specialist. It has been reported that about 4% of referrals to ear, nose, and throat specialists are due to this condition (Finkenbine & Miele, 2004).

The actual feeling of each patient is varied. It can be the sensation of a hair stuck in the throat, a small bone of a fish, or an actual feeling of a lump that hurts the throat and may cause dysphonia (Lee & Kim, 2012). The appearance of this sensation tends to be sudden, and it may be long-lasting. It may lead to dietary restriction or constant discomfort. The adolescent or child can report a feeling that there is a portion of food not going down, or not being able to get it unstuck or dislodged.

The physical examination of the child will reveal that there is nothing there and often that there are tensions and worries in the child’s emotional life. The following is an account written by a 10 year-old boy about his experiences:

I feel I am choking, that I cannot breathe in enough air. It is a horrible feeling that comes over me at night. I am in my room, scared of what might

happen. Then I can feel my whole body trembling and I start to panic. I feel lonely and feel something terrible might happen to me, since I am alone nobody could help me. I would die alone.

I often feel that there is something stuck in my throat. I try to swallow hard, over and over. This also happens more often at night. It is as though I could not swallow or breathe properly. I feel so scared. I call for my mom night after night. At times, the one who comes is my dad. That does not help me. He tells me first “everything will be fine, nothing is happening, you are completely well”, but he is not in my body and has no idea how I feel. The fear and loneliness paralyzes my mind. I just give in to pure fear. Something is terribly wrong and there is nothing I can do. The only one that can help me is my mother. She is a nervous person too. She works a lot, sometimes she cries when she holds me. She hopes my fear is going to go away. I am afraid of dying asphyxiated, not enough air; perhaps I should have an oxygen tank next to my bed, just in case.

These episodes of asphyxia got much worse after my parents went on a trip by themselves. I had never been far away from my mother for three days in a row. My grandparents were in charge of me, they are old-school and they just tell me to stay in my room as I am “just fine.” Maybe they are the reason why my mother is so nervous, they do not believe in giving in, in cuddling children and everybody has to stay in their place. My mother understands how I feel and tries to help me not to be scared. My dad criticizes my mom, but he does not say anything about that to me. He lets her do what she thinks is best.

The differential diagnosis, in this case, should be geared to rule out an anatomical alteration or a medical condition. The clinician should not rush to diagnose *globus hystericus* as some cases have been reported to subsequently have an organic cause for the discomfort.

The reassurance that there is no object stuck may contribute importantly to improvement (Millichap et al., 2005), as well as learning strategies to deal with stress, relaxing, and “mentalizing,” i.e., acknowledging when something is bothering the child and it cannot be swallowed. Like in the case of voice difficulties, anxiety can lead to constant muscular tension and cause the sensation of something stuck there. This implies that reducing stress and emotional tension should be a part of the treatment for longstanding improvement.

The condition is often recurrent, and in many cases it is brief, but in others long-lasting. For the diagnosis, a thorough examination of a nasal laryngological nature is useful.

Achalasia is an important differential diagnosis. This is the actual “backing up” of food in the esophagus due to a dysfunction in the lower esophageal sphincter, which normally opens to let the food go into the stomach. Other possible sources of the symptoms of *globus hystericus* may be hyperthyroidism and laryngopharyngeal reflux (Penović, 2018).

Management

There is an association between *globus pharyngeus* and gastroesophageal reflux. Many clinicians prefer to treat the patient with medications such as proton pump inhibitors (like famotidine) as the first line of treatment. Reassurance also may be useful for the patient, who realizes that this is related to emotional tension and might attempt to explore what might be contributing to this tension. In more severe, chronic, or persistent cases, strategies to reduce anxieties such as cognitive and behavioral therapies, psychodynamic psychotherapies and family therapy may be useful.

Choking Phobia

This condition consists of persistent fear of choking after having had a previous episode of choking or near choking in a child or adolescent (Bailly & de Chouly de Lenclave, 2005; de Roos & de Jongh, 2008). It can lead to a fear of eating altogether in infants, as was described by Chatoor et al. (1988), who called it a “posttraumatic feeding disorder.” It is a special case of the general traumatic experiences that a young child may undergo. It may be more common in children who have difficulties with processing food, such as those who have difficulty with tongue movements or learning to chew (Wanzek & Holihan, 2008). Some foods are more difficult to process

in the mouth, like meat. At times, the child delays swallowing the food by “storing” it in the cheeks, so to speak, i.e., in the space between the teeth and the cheek, sometimes for several hours at a time, and then spitting the bolus later.

It is not uncommon for young children to attempt to swallow a large bolus or to have a portion of the food touching the respiratory airway, leading to a violent cough episode and possibly vomiting eventually. The persistent fear of choking again can lead to dietary restrictions and fear of foods.

The intense fear may lead to an avoidance of eating in front of others, saving the food in the area between the teeth and the cheeks for extended periods, or spitting the food when nobody is watching. The condition may also occur from witnessing another person choking when the experience is rather traumatic. The process is a memory association between a particular experience and the food involved, but it may extend to other foods.

The intervention would require reassuring the child, and processing the traumatic event. Also, a gradual approximation approach, in which the child attempts to swallow higher consistencies of food, from very small to larger portions and gradually gaining confidence in the food processing through chewing, can be helpful.

Psychogenic (Functional) Vertigo

Vertigo is a sensation that one is spinning or that things are moving around the person (a feeling of environmental motion), leading to a disorienting feeling that the child is about to fall or cannot maintain his or her balance. It may last from a few minutes to days, creating sometimes an inability to leave the house or to go to school, when it is severe.

Dizziness and vertigo are not rare in the general population of children and adolescents. They are estimated to occur in between 5% and 8% of them in the general population of minors (Davitt et al., 2017; Ketola et al., 2009; Niemensivu et al., 2006).

Psychogenic vertigo is frequent in specialized ears, nose, and throat medical practices (Batu et al., 2015). In a survey conducted in Finland, a review of 119 cases of vertigo found nine children whose vertigo was diagnosed as psychogenic (Ketola et al., 2009), and a similar result was obtained in a review of a series of cases in a study in Turkey (Erbek et al., 2006).

During childhood, vertigo is often diagnosed as benign paroxysmal vertigo, migraine-associated vertigo (a migraine equivalent or vestibular migraine), vestibular neuronitis, and otitis media-related vertigo (Choung et al., 2003). The two first-mentioned conditions are the most frequent causes of vertigo in childhood (Davitt et al., 2017).

The comorbidities often are headaches and general distress in the child, including interpersonal conflict at school and home. In the series reported by Ketola et al. (2009), the researchers found depression as an important correlate of psychogenic vertigo, as well as interpersonal conflict at home or school. Vertigo may prevent the child from going to school and facing stressors there. School absence was the result of the more severe cases. The children also tended to have other symptoms of “somatization” and there was a strong correlation with headaches.

Phenomenologically, there may be a sort of “postural vertigo” or “phobic postural vertigo” which occurs only in certain positions or after specific movements by the child. In other children, there is a chronic feeling of unsteadiness and dizziness (Bisdorff et al., 2009). For the latter form, the term “persistent postural perceptual dizziness” is often used.

In phobic postural vertigo, the child complains of feeling unsteady or about to fall, but the observer does not see any signs of that unsteadiness.

The tests of functioning of the vestibular system are normal. The feeling of fear of falling is only subjective. This state is often episodic and not constant. It may be triggered by certain situations, like big heights, crossing a bridge, being in a crowded space, or during visual stimulation, but not at other times. Curiously those symptoms

tend to disappear when the patient is in movement or activity, such as running. In addition to vertigo, the child may report feeling scared or anxious that he or she might fall. There may have been a preexisting condition such as a cold or a sore throat.

The child may exhibit certain personality traits such as being very self-controlled and controlling, as well as perfectionistic or with obsessive-compulsive features. Studies like video-oculography, neuroimaging, and caloric irrigation of the middle external ear are all normal. Even specialists may misdiagnose the condition as something else, for example, “Cervicogenic vertigo” or “Recurrent vertebrobasilar ischemia.”

There are functional relationships between strong emotions, scary cognitions, and the brain mechanisms associated with posture and vestibular function. Understandably, some emotions and fears may bring about a “feeling of unsteadiness” or that one unable to stay standing, about to fall, or that everything around one is turning. In many languages, there are expressions about “head-turning” or “being unsteady” or the floor moving from under a person to denote a feeling of shock and surprise, as well as fear, or when circumstances are overwhelming and everything is circling around the person, so to speak.

All of this leads to the conclusion that vertigo is a complex and multidetermined symptom which may have several contributing causes. Despite this, it is possible to detect positive signs that the vertigo is “functional” and not due to structural vestibular problems. Also, eye movements are strongly related to the sensation of vertigo, and sometimes these are altered in conditions of high levels of stress or anxiety, such as hypervigilance and dissociative experiences. The danger detection centers of the brain, such as the amygdala and the limbic system have connections with the cortex and the vestibular pathways that connect with locomotion, maintaining balance, and eye movements (Staab, 2013).

The most frequent emotional difficulties associated with vertigo are anxiety, posttraumatic stress disorder (i.e., anxiety which may include

panic attacks and flashbacks) as well as dissociative experiences (particularly derealization and depersonalization). In derealization, the child or adolescent feels that whatever is happening around him or her is like a movie and not real; it may be dizzyingly moving too fast. In depersonalization, the subject feels he or she is not inside their body and may see the self “from outside.”

The differential diagnosis of phobic postural vertigo should include vestibular migraine, orthostatic dysregulation, bilateral vestibulopathy, episodic ataxia type 2, vestibular paroxysmia, and posttraumatic otolith dizziness as well as central vestibular syndrome. There is some evidence that the feedback mechanisms that inform the body that one is just moving one’s head and not the whole body, or changing posture, are altered in children with postural vertigo (Wuehr et al., 2013).

This suggests that the patient’s anxiety and hypervigilance lead to the wrong feedback being perceived by the brain and also an over-correction of posture, leading to fear of vertigo due to anticipation of having vertigo. The patient with those fears of falling may stiffen up the body and “overcorrect” the posture, perpetuating thus the fear of falling.

The treatment may consist of vestibular rehabilitation, psychotherapy, be it, individual and/or family, particularly as we are dealing with children, and pharmacological as well. As the following case will illustrate, rarely in the clinical setting, the patient has “only one problem” and often there are other symptoms of a psychosomatic nature; as well as several psychosocial problems, all of which can be addressed to help the young person.

Exposure therapy is recommended for phobic postural vertigo so that the child does not avoid the situations and activities that lead to vertigo. Also, for some patients cognitive and behavioral psychotherapy for anxiety problems may be sufficient, while for others a more in-depth individual and family therapy may be necessary, depending on the nature of the psychosocial issues observed (Best et al., 2015).

Functional Dizziness

Carlos is a young man 17 years old, who is originally from Venezuela, who came to the US as a 12-year-old, due to the difficult situation in his country, mainly in terms of insecurity.

The family experienced a home invasion in which several robbers came into the house. They threatened the father's life with a gun, and they stole many things. The father could have been killed. They counted themselves lucky to have remained alive after the episode.

The father is an engineer. The family, particularly his mother, is strongly Catholic. Carlos is the oldest of his siblings, his younger sister suffered from intense separation anxiety. The mother brought Carlos because he had been diagnosed with vertigo. His doctor told him to see a therapist.

Carlos said the name of his condition was PPPD: persistent postural perceptual dizziness. In reading about it, he realized it meant psychogenic vertigo.

Like the sister, Carlos seemed very anxious. He presented himself as a sportsman. Prior to the vertigo, he used to play soccer with much success and was recruited by several teams. The dizziness is brought about by certain movements of the head and sometimes it lasts several minutes at a time. He explains that he is a hypochondriac and he's always afraid of any sign in his body that he might be sick.

Carlos takes very seriously any pain or discomfort and starts worrying about what it might mean. He wonders if he should go to the emergency room or see the doctor as soon as possible. He has already been taken to three doctors because of the dizziness. He eventually got an MRI of the brain and other studies, and then was told that everything was normal. The advice from the clinicians was to see a psychotherapist.

Carlos tries to quiet his mind but it is hard for him. He says that he hears a tiny voice that comes from within him. It is a small voice that more or less reminds him that he should not be happy. "You cannot be happy." He feels that the voice reminds him of what he has done wrong and must pay for. The clinician suggested he undertake a relaxation technique. He said he would like to try hypnosis although he was very afraid of it. Eventually after understanding the roots of his constant fears of "being sick" as punishment for previous transgressions, he starts feeling better.

Diagnosis and Management

Several authors (Dieterich et al., 2016) highlight the importance to keep in mind "functional" causes of vertigo, as there is often an emphasis on

multiple tests and imaging studies to establish the cause of the symptoms. Dieterich and colleagues suggest from the beginning using a "three-pronged approach": to consider pathological damage in the vestibular system, as well as functional causes and the possible comorbidity with psychosocial problems or syndromes. In this way, from the beginning, the mind-body separation is not the focus, and the patient can be prepared for psychological interventions if these are required.

The other form of psychogenic vertigo that is commonly encountered is chronic and persistent vertigo, called "chronic subjective dizziness." In this condition, there is a trigger from visual cues, and this could consist of being in a crowded space with lots of visual stimulation, such as a supermarket or a mall. There is not a phobic nature, i.e. to avoid certain postures, but there is an avoidance of those places due to the persistence of vertigo without specific postures. There is often a high sensitivity to the movement of one's own body as well as the movement of objects around, all of this in the absence of pathology in the vestibular or otological system. The syndrome can be a sequela of an acute episode of vertigo due to labyrinthitis or another condition. The child or adolescent with generalized anxiety or panic disorder is more prone to this form of vertigo.

There are often anxious and avoidant features in the patient who experience this symptom (Dieterich et al., 2016).

In the treatment, a combination of mind-body approaches may be useful. There is a procedure of vestibular habituation exercises so the person may normalize the feeling of movement around and not interpret it as instability. The clinician must be ready to identify stressors of personality traits that may interfere with a better emotional adaptation, like constant anticipation of vertigo and fear of walking.

References

- Ashitani, M., & Ino, C. (2003). Psychotherapy for psychogenic hearing loss. *Practica Oto-Rhino-Laryngologica*, 96(12), 1037–1043.
- Bailly, D., & de Chouly de Lenclave, M. B. (2005). Choking phobia in children and adolescents: Rarely

- described but worth studying. In P. Swain (Ed.), *Adolescent eating disorders* (pp. 163–188). Hauppauge.
- Baizabal-Carvalho, J. F., & Jankovic, J. (2015). Speech and voice disorders in patients with psychogenic movement disorders. *Journal of Neurology*, *262*(11), 2420–2424.
- Baker, J. (2016). Functional voice disorders: Clinical presentations and differential diagnosis. In M. Hallet, J. Stone, & A. Carson (Eds.), *Functional neurologic disorders* (pp. 389–405). Elsevier.
- Balatsouras, D. G., Kaberos, A., Korres, S., Kandiloros, D., Ferekidis, E., & Ecoumou, C. (2003). Detection of pseudohypacusis: a prospective, randomized study of the use of otoacoustic emissions. *Ear and Hearing*, *24*, 518–527.
- Batu, E. D., Anlar, B., Topcu, M., Turanli, G., & Aysun, S. (2015). Vertigo in childhood: a retrospective series of 100 children. *European Journal of Pediatric Neurology*, *19*(2), 226–232.
- Best, C., Tschan, R., Stieber, N., Beutel, M. E., Eckhardt-Henn, A., & Dieterich, M. (2015). STEADFAST: Psychotherapeutic intervention improves postural strategy of somatoform vertigo and dizziness (SVD). *Behavioral Neurology*, *2015*, 1–10.
- Bisdorff, A., Von Bevern, M., Lempert, T., & Newman-Toker, D. E. (2009). Classification of vestibular symptoms: Toward an international classification of vestibular disorders. *Journal of Vestibular Research*, *19*, 1–13.
- Blumstein, S. E., & Kurowski, K. (2006). The foreign accent syndrome: A perspective. *Journal of Neurolinguistics*, *19*(5), 346–355.
- Caulley, L., Kohlert, S., Gandy, H., Olds, J., & Bromwich, M. (2018). When symptoms don't fit: A case series of conversion disorder in the pediatric otolaryngology practice. *Journal of Otolaryngology, Head and Neck Surgery*, *47*, 39–44.
- Chatoor, I., Conley, C., & Dickson, L. (1988). Food refusal after an incident of choking. A posttraumatic eating disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, *27*, 105–110.
- Choung, Y. H., Park, K., Moon, S. K., Kim, C. H., & Ryu, S. J. (2003). Various causes and clinical characteristics in vertigo in children with normal eardrums. *International Journal of Pediatric Otorhinolaryngology*, *67*(8), 889–894.
- Davitt, M., DelVecchio, M. T., & Aronoff, S. C. (2017). The differential diagnosis of vertigo in children. A systematic review of 2726 cases. *Pediatric Emergency Care*, *10*, 1–4.
- De Roos, C. J. A. M., & de Jongh, A. (2008). EMDR treatment of children and adolescents with a choking phobia. *Journal of EMDR Practice and Research*, *2*(3), 201–211.
- Decot, E. (2005). Therapeutic methods for psychosomatic disorders in Oto-rhino-laryngology. *GMS Current Topics Otorhinolaryngology Head and Neck Surgery*, *4*, –Doc 21.
- Dieterich, M., Staab, J. P., & Brandt, A. (2016). Functional (psychogenic) dizziness. In M. Hallet, J. Stone, & A. Carson (Eds.), *Handbook of clinical neurology* (Functional neurologic disorders) (Vol. 139, pp. 447–468). Amsterdam.
- Duffy, J. R. (2013). Acquired psychogenic and related nonorganic speech disorders. In J. R. Duffy (Ed.), *Motor speech disorders. Substrates, differential diagnosis and management* (pp. 710–719). Elsevier, Mosby.
- Erbek, S. H., Erbek, S. S., Yilmaz, I., Topal, O., Ozgirgin, N., Ozluoglu, L. N., & Alehan, F. (2006). Vertigo in childhood: A clinical experience. *International Journal of Pediatric Otorhinolaryngology*, *70*(9), 1547–1554.
- Finkenbine, R., & Miele, V. J. (2004). Globus hystericus: A brief review. *General Hospital Psychiatry*, *26*(1), 78–82.
- Harar, R. P. S., Kumar, S., Saeed, M. A., & Gatland, D. J. (2004). Management of globus pharyngeus: Review of 699 cases. *The Journal of Laryngology & Otolaryngology*, *118*(7), 522–527.
- Holenweg, A., & Kompis, M. (2010). Non-organic hearing loss: New and confirmed findings. *European Archives of Otorhinolaryngology*, *267*, 1213–1219.
- Ketola, S., Niemensivu, R., Henttonen, A., Appelberg, B., & Kentala, E. (2009). Somatoform disorders in vertiginous children and adolescents. *International Journal of Pediatric Otorhinolaryngology*, *73*(7), 933–936.
- Keulen, S., Mariën, P., Wackenier, P., Jonkers, R., Bastiaanse, R., & Verhoeven, J. (2016a). Developmental foreign accent syndrome: Report of a new case. *Frontiers in Human Neuroscience*, *10*, 65.
- Keulen, S., Verhoeven, J., De Witte, E., De Page, L., Bastiaanse, R., & Marien, P. (2016b). Foreign accent syndrome as a psychogenic disorder: A review. *Frontiers in Human Neuroscience*, *10*(168), 1–16.
- Khalfa, S., Bruneau, N., Rogé, B., Georgieff, N., Veuillet, E., Adrien, J. L., Barthélémy, C., & Collet, L. (2004). Increased perception of loudness in autism. *Hearing Research*, *98*(1–2), 87–92.
- Kothe, C., Fleischer, S., Breitfuß, A., & Hess, M. (2003). Diagnostik von psychogenen Hörstörungen im Kindesalter. *HNO*, *51*, 915–920.
- Lee, B. E., & Kim, G. H. (2012). Globus pharyngeus: A review of its etiology, diagnosis and treatment. *World Journal of Gastroenterology*, *18*(20), 2462–2471.
- Lin, J., & Staecker, H. (2006). Nonorganic hearing loss. *Seminars in Neurology*, *26*, 321–330.
- Marien, P., Verhoeven, J., Wackenier, P., Engelborghs, S., & De Deyn, P. P. (2009). Foreign accent syndrome as a developmental motor speech disorder. *Cortex*, *45*(7), 870–878.
- Millichap, F., Lee, M., & Pring, T. (2005). A lump in the throat: should speech and language therapists treat globus pharyngeus? *Disability and Rehabilitation*, *27*(3), 124–130.
- Niemensivu, R., Pyykko, I., Wiener-Vacher, S. R., & Kentala, E. (2006). Vertigo and balance problems in children – An epidemiological study

- in Finland. *International Journal of Pediatric Otorhinolaryngology*, 70, 259–265.
- Penović, S. (2018). Globus Pharyngeus: A symptom of increased thyroid or laryngopharyngeal reflux? *Acta Clinica Croatica*, 57(1), 110–115.
- Potgieter, I., Fackrell, K., Kennedy, V., Crunkhorn, R., & Hoare, D. J. (2020). Hyperacusis in children: A scoping review. *BMC Pediatrics*, 20(1), 1–13.
- Rosanowski, F., & Eysholdt, U. (2000). When the voice becomes weaker. Functional causes of dysphonia. *MMW Fortschritte der Medizin*, 142, 30–37.
- Rosing, S. N., Schmidt, J. H., Wedderkopp, N., & Baguley, D. M. (2016). Prevalence of tinnitus and hyperacusis in children and adolescents: a systematic review. *BMJ Open*, 6(6), e010596.
- Rotenberg, B. W., Makhija, M., & Papsin, B. C. (2005). Conversion disorder in a child presenting as sudden sensorineural hearing loss. *International Journal of Pediatric Otorhinolaryngology*, 69, 1261–1264.
- Schaaf, H., Klofat, B., & Hesse, G. (2003). Hyperakusis, Phonophobie und Recruitment. Mit Geräuschempfindlichkeit assoziierte Hörabweichungen. *HNO*, 51, 1005–1011.
- Spahn, C., & Voltmer, E. (2011). Psychosomatische Aspekte bei der Behandlung der Sängerstimme. *Hals Nasen Ohren*, 59, 563–567.
- Staab, J. P. (2013). Behavioral neuro-otology. In A. Bronstein (Ed.), *Oxford textbook of vertigo and imbalance* (pp. 333–346). Oxford University Press.
- Tantam, D. (2012). *Autism spectrum disorders through the lifespan*. Jessica Kingsley Publishers.
- Verhoeven, J., & Mariën, P. (2010). Neurogenic foreign accent syndrome: Articulatory setting, segments and prosody in a Dutch speaker. *Journal of Neurolinguistics*, 23, 599–614.
- Wanzek, J., & Holihan, D. (2008). Choking phobia in school-age children. *Journal of Behavior Analysis in Health, Sports, Fitness and Behavioral Medicine*, 1(2), 91–96.
- Wuehr, M., Pradhan, C., Novozhilov, S., Krafczyk, S., Brandt, T., Jahn, K., & Schniepp, R. (2013). Inadequate interaction between open- and closed-loop postural control in phobic postural vertigo. *Journal of Neurology*, 260(5), 1314–1323.
- Karthik Cherukupally MD., MPH**, Child and Adolescent Psychiatry Fellow and Co-chief fellow for Wellness at Baylor College of Medicine. As a wellness co-chief, he is actively involved in coordinating fellow wellness activities. He has coauthored several research papers and case reports and presented posters at the state level and national level. His other interests are stress reduction through mindful meditation.



Functional Respiratory Conditions in Children and Adolescents

17

Luis F. Pérez-Martini
and J. Martin Maldonado-Duran

These conditions are thought to be frequent in the practice of pediatricians and respiratory specialists. The conditions described below are quite frequent in children and adolescents (Butani & O'Connell, 1997). They can lead to unnecessary diagnostic tests, or repeated ones, as well as ineffective treatments, which may be frustrating and time-consuming. These conditions have a higher prevalence in children, adolescents, and young adults.

There may be a coexistence of medically diagnosed breathing problems and a psychogenic disorder. A patient may have persistent cough and “throat clearing cough,” leading to a sort of vicious cycle, in which one exacerbates the other. This is the case with other “somatization” conditions, such as psychogenic rashes and many others.

The main strategy in the diagnosis of this gamut of conditions is a detailed and meticulous clinical history, in order to understand the nature of the presenting symptoms. Experienced clinicians notice that “the way the patient talks” (or the parents) about the symptoms may have significance. For instance, “I can never get enough air,” “I cannot breathe in the house,” etc. may be

symbolizations of additional concerns for the patient, for instance, they may stand for an oppressive family environment, or a feeling of “being smothered” or feeling asphyxiated somehow. This may be in part determined by family relationships, stressful circumstances, or a difficult school situation

The clinician is wise to notice variations in tone of voice and in facial expression as the child or adolescent describes the symptoms. For instance, if someone feels they might not get enough air, one would not generally expect the child to laugh about it. The clinician listens to the language produced by the patient with voice, but also the body language, the language of emotions. Additional questions may be if there are any particular parts of the day when symptoms occur (for instance, before going to school, before a performance, when there is going to be a separation from the parents) and if the symptoms occur also during sleep. This last symptom is an important one as asthma and related conditions tend to be exacerbated at night.

Another issue is whether there is a “typical trigger,” for instance, intense exercise, being in a certain place or with specific people, which could raise the level of emotional tension for the child and therefore exacerbate the symptoms. However, many times, asthma or bronchospasm are triggered by exercise. A test of pulmonary function before, during, and after exercise could demonstrate bronchial spasm. If the child reports

L. F. Pérez-Martini (✉)
Edificio Centro Médico,
Ciudad de Guatemala, Guatemala

J. M. Maldonado-Duran
Menninger Department of Psychiatry, Baylor College
of Medicine, Houston, TX, USA

difficulty breathing but the exercise tests do not show alterations, the problem is probably functional or psychogenic.

The issue of “speech during the symptoms” may be an important differentiating one. If a child has an asthma attack, usually he or she has to interrupt the speech to talk. This is not the case with psychogenic breathing problems.

Other important characteristics to observe are: the phenomena do not happen at night, and there may be no “typical” triggering factors. Also the symptoms may occur “suddenly” and also at rest. Another peculiarity may be that even during the episodes there are normal results in various diagnostic tests. In many of the disturbances described below, the presentation occurs primarily in certain triggering situations, like tension, fear, or the presence of a particular person, like the mother or father.

A further issue is what is the effect of the symptoms on others, like family members, peers at school, etc. Some symptoms may elicit a more positive response from caregivers, such as caregiving behaviors or tenderness. An episode of “respiratory difficulty” may make both parents worry about the child and stop fighting. The episode may require a trip to an emergency room or a hospital which may be a strong desire on the part of the child. This episode would allow the child to avoid some activities which are stressful and may be behind the wish for hospitalization.

The question of distractibility. If the patient is distracted watching television or focused otherwise, do the symptoms improve or disappear? If they disappear, this suggests a conversion phenomenon. Some authors have suggested to ask the family if they think their child is healthy or ill, and many parents – when the child with psychogenic problems is not having symptoms-, consider the child as healthy, as opposed to the parents of youngsters with other conditions, who clearly realize there is a chronic health condition.

A thorough physical examination could help with the diagnosis. Increasingly, in recent times a physical examination of the child has been relegated in favor of “instrumental diagnostics.” However, the clinician can benefit from evaluat-

ing the patient’s posture, observing for signs of anxiety or tension, the child’s way of dealing with difficult circumstances, assessing the passageways of the upper respiratory tract, and auscultation of the lower respiratory system can be valuable. Many clinicians find that the child often has some signs of stress or nervousness, such as when the finger nails have been reduced due to intense nail-biting. Also, the palms of the child may be cold and sweaty. The physical examination of the thorax does not reveal any major signs of pathology.

Part of the evaluation team, particularly in these uncertain cases may be a mental health professional and a physical therapist.

Many times, parents demand or expect instrumental diagnostic tests in order to be “convinced” that the child does not have a serious respiratory condition. There is a line between “reasonable” diagnostic tests and excessive and unnecessary explorations, even when these may be requested by the family. An oximetric assessment of the patient, as well as evaluation of lung functioning and assessment of breath frequency can be considered routine. Others should be determined by the clinical picture of the child or adolescent,

Tussis nervosa and throat clearing tic often start after an episode of throat irritation or infection, as if “left from that original condition”. At times, it can be difficult to distinguish between a tic consisting of throat clearing and *tussis nervosa* (Ishizaki et al., 2008). The latter tends to consist of a loud “barking” cough and is not associated with other tics, as is the case with vocal tics, which are often associated with other vocal and motor tics.

***Tussis Nervosa* or Psychogenic Cough**

It may be useful to start with a definition of cough itself. According to the European Society for Respiratory Medicine (Morice et al., 2007) cough is a “forced expulsive maneuver or maneuvers against a closed glottis that are associated with a characteristic sound or sounds.” This is a technical definition that supplements what everyone

knows as cough from hearing it and having experienced it.

In normal circumstances, the cough reflex is initiated by some irritation in the receptors in the upper part of the esophagus, the trachea, the upper part of the bronchi, larynx, and pharynx. These stimulate the upper laryngeal nerve, which in turn stimulates the nucleus called solitary nucleus, which is the “cough center” located in the *medulla oblongata* (Bonnet et al., 2015). From this center, the raphe nucleus is stimulated (*raphe obscurus* and *raphe magnus nuclei*), which leads to the cough reflex, this in turn is thought to be the result of stimulation of the Böttinger complex expiratory neurons. This elicits a response consisting of the cough which attempts to eliminate the irritant (Bonnet et al., 2015). The reflex is thought to be influenced by upper nervous structures, including the cerebral cortex and to have links to other areas including those involved in processing emotions.

In the case of *tussis nervosa*, there is a persistent cough that does not appear to be caused by any particular infection or medical condition that can be diagnosed through multiple studies. Then a “psychological cause” is suspected or inferred. A cough is defined as chronic if it lasts more than four weeks. In *tussis nervosa*, the cough is “non-productive,” which indicates that hardly any phlegm is produced by the cough (Oliveira et al., 2015).

The term refers to the symptom of chronic and persistent cough in a child or adolescent, which is not due to any major medical condition and is assumed to be related to emotional and psychological difficulties. It is now also called habit cough and “somatic cough syndrome” as suggested by the American College of Chest Physicians (Vertigan, 2017)

Chronic cough from multiple causes in children and adolescents is a frequent complaint. It has been estimated it affects between 5% and 13% of children (Faniran et al., 1999). It has been determined that of all the cases of children with chronic cough of unknown cause, 3% to 10% will be diagnosed as having psychogenic cough (Irwin et al., 2006). A meta-analytic review of psychogenic cough reports an overall prevalence of

above 3% in the general population (Wei et al., 2016).

Therefore, an accurate diagnosis is important, as to the underlying problems, which would determine what treatment would be recommended.

Psychogenic cough occurs in adults of course, but its manifestations are most commonly seen in children and adolescents (McGarvey et al., 2003; Haydour et al., 2014), and most of the reported cases occur in people under 18 years of age.

The diagnosis of psychogenic cough is often a diagnosis of exclusion. That is, only until an important organic condition has been ruled out, can the diagnosis be made more confidently, for instance, asthma, bronchitis, foreign bodies, gastroesophageal reflux, or other conditions. This exclusion process is the one recommended by the American College of Chest Physicians (Vertigan et al., 2015).

One of the diagnostic clues is that the cough diminishes considerably or disappears entirely during sleep. This should not be the case with other conditions, although it is observed that in asthma and other forms of chronic cough, it persists during the night although the coughing itself may be of lesser frequency. Also if the child is highly distracted, there may be a lesser frequency of cough. Also, during a hypnotic trance cough does not occur. The coughing may become intensified in the presence of a specific person in the child’s circle and when the child thinks he or she is being observed. The cough is not exacerbated by intense laughter, or crying, exercise, or environmental changes. It does not improve with the usual medications used for cough suppression. Regarding the nature of the cough itself, many clinicians think that there is a characteristic “chin on chest” position of the child in psychogenic cough (Butani & O’Connell, 1997).

Little is known about the psychodynamic mechanisms of cough. The diagnosis can be challenging. Regarding the psychodynamic factors that have been reported to be possibly associated with cases of psychogenic cough, the main ones are anxiety and anger. Anxiety can assume the form of separation anxiety, facing a difficult situation, having tension at home or undergoing

harsh parenting (Jakati et al., 2017). Other factors have been the presence of another family member with chronic illness, particularly a respiratory condition, as well as the need to be noticed by caregivers at least for being “sick.”

In a case seen by the authors, a 17-year-old girl was very anxious and had multiple worries, school, marital tension between the parents, finances, etc. She felt that she could not be at home as there was much tension there. The girl was brought because of her anxiety and the constant cough that had been studied carefully by a pneumologist and no cause for the cough could be found. She did not have tics of any kind. The cough was nonproductive, quite loud and impeded her communication for significant periods of time. She seemed to have a lot of unexpressed anger and resentment, particularly toward her parents.

In psychotherapy the girl revealed feeling between “a rock and a hard place.” She preferred to spend as much time in the house of her boyfriend because she was not in the middle of family conflicts. The boyfriend however, pressured her to engage in sexual activities and particularly wanted her to perform fellatio. She felt very disgusted by this and had tried to please the boyfriend so as to be able to keep going to his house. When during a session she spoke of these activities her cough exacerbated to such a degree that she hardly could continue talking for minutes. She felt utterly disgusted and “dirty” because she did not like to engage in that activity. Hypnosis was used to help the patient to relax and to find a “place in her mind” in which she could feel calm and less tense. She liked these episodes as she felt relaxed. Her cough would disappear entirely during the episodes of relaxation. She was also encouraged to be frank with her boyfriend about her true feelings regarding their sexual activities and, contrary to her expectations, the boyfriend agreed to stop pressuring her to do this. Her cough subsided remarkably and she had only episodic bouts when she was under severe stress, mostly at home. Family therapy helped the parents to diminish, to some degree, their constant demands and harsh discipline on the girl.

Other reasons for chronic cough should be ruled out such as bronchial asthma (Gedik et al, 2015), gastroesophageal reflux, rhinosinusitis, and less common ones like tracheomalacia. Flexible bronchoscopy may be useful in the case of gastroesophageal reflux, as this causes redness and irritation in the vocal cords and other areas of the larynx. This procedure is also useful to rule out the presence of a foreign body as a cause of chronic cough. Due to all this possibilities, this

complicates the question of whether *tussis nervosa* should be a diagnosis of exclusion or then can be definitive signs of a psychogenic mechanism underlying the cough.

It is important for the clinician to keep in mind while evaluating the results of flexible bronchoscopy, that vocal cords and other areas associated with the cough (like the laryngeal and the tracheal mucosae) may be reddened (or swollen) as an effect of the persistent accesses of cough, rather than being the cause of the cough itself.

One difficult distinction is “tic cough” or “habit cough.” (Karakaya and Sismanlar 2015). In these situations, the cough may be suppressible if the child attempts to do it, at least for short periods of time. Also, there may be other tics of a vocal or motor nature. The tic cough can change over time, disappearing and coming back, and it can also disappear during distraction (Vertigan, 2017). The child under more stress will have an exacerbation of the tic. It can be then part of a general tic disorder or Tourette’s disorder. The absence of the tic once the child is asleep is a *sine qua non* for the diagnosis of habit cough syndrome (Hurvitz & Weinberger, 2021).

Interventions

A recent review of available studies (Haydour et al., 2014) in *tussis nervosa*, habit cough, and tic cough found that the majority of reports refer to psychogenic cough (*tussis nervosa*). Therapies used were primarily hypnosis, which led to a high rate of success above 75% of cases in the studies reviewed. A related intervention is “suggestion therapy,” which is conducted while the patient is in the regular state of consciousness and then is given reassurance and counseling. All of them led to a high rate of reduction in the cough.

Other authors (Hurvitz & Weinberger, 2021) have suggested an approach denominated “suggestion therapy” as an intervention. It consists of convincing the patient that the cough itself is the problem and that the more the child coughs, the more irritation this might bring to the upper respiratory airways, prolonging the problem.

They recommend attempts at voluntary and progressive suppression of the cough, accompanied by reassurance that the child is not ominously sick.

Sighing Dyspnea

Sighing is a normal respiratory phenomenon that occurs in humans and all mammals (Li & Yackle, 2017). It is a form of “deep breath” or prolonged respiration, which occurs several times per hour (about 12 in adults) in normal conditions. It has a higher frequency per hour in infants than in older children. It is much more frequent in the newborn and it is thought to lead to increased arousal, therefore preventing phenomena like sudden death.

It is often associated with resting, but also with stress, tension, sadness, or relief. The function of sighing is not totally understood but it is thought to be a form of “lung expansion” to prevent the collapse of distant alveoli in the lungs. A sort of replenishment of air prevents such collapse. It generally consists of a normal inspiration followed immediately by a longer inspiration or an inspiration on top of another inspiration. When the respiratory frequency becomes dysregulated, it can lead to increase sighing and therefore hyperarousal. This hyperarousal is a factor in causing anxiety and even a panic attack (Ramirez, 2014).

Sighing is produced by activation in the respiratory center of a group of cells called the pre-Bötzinger cells.

Sighing has the physiological dimension just discussed but there is also a social dimension. Many people may associate sighing with a somewhat negative emotion, like mild exasperation or frustration (Hoey, 2014). Also it is associated with fatigue and the feeling of a burden. Therefore, sighing has a communicational dimension, denoting something for the person with whom one is sighing (Teigen, 2008).

Sighing dyspnea has been described most frequently in children (Wong et al., 2009) although there are very few systematic studies as to its nature. It is a form of respiratory discomfort

involving a sensation of “not getting enough air” and with frequent sighing as if to compensate for the discomfort. It does not imply an increased respiratory rate, just more sighing than normal. One of the causes of sighing dyspnea is anxiety and distress, constant worry and tension. The child often reports a sensation of weight on the chest or tightness in the chest, as well as aerophagia (swallowing air) and belching.

It is a frequent observation that when a child has an “organic” dyspnea the child points to the chest as the site where he or she cannot “catch enough air,” while the child with psychogenic dyspnea often points to the throat as the site which impedes him or her from inhaling enough air. When the clinician assures the child and the family about the benign and transitory nature of the problem, as well as the fact that it is self-limiting, will give comfort and reassurance to the child and family.

Hyperventilation Syndrome

The central features of this condition are difficulty getting “enough air” or labored breathing or the sensation of being uncomfortable by breathing as well as intense anxiety. There are no universally established criteria to diagnose this condition. Presently, it is often a diagnosis of exclusion when other medical conditions have been eliminated (Baranes et al., 2005). Dyspnea or difficulty breathing can occur in asthma, in rhinitis, emphysema, cystic fibrosis, interstitial lung disease, and other pulmonary disorders. If these are not found in a given patient, dysfunctional breathing can be entertained. In the general category of “dysfunctional breathing,” hyperventilation syndrome as well as vocal cord dysfunction are noticed. The clinician should keep in mind that even when there is a medical condition leading to dyspnea or breathlessness this by itself will cause anxiety, the fear of not breathing is the essence of the word “anguish,” and in those cases, the anxiety is a consequence of the original medical condition.

Excessive breathing, which is the essence of this condition, leads to a reduction in PaCO₂ and

this is associated with physiological changes. These can include chest pain, a feeling of breathlessness, dizziness, and tachycardia. Also to dry throat, swallowing difficulties, tremors, and sweating.

This condition is often not diagnosed in children, as they may not know to complain of this problem or the parents may not notice. It is often associated with symptoms of anxiety and other somatic complaints in minors, as in adults. A similar condition is named “dysfunctional breathing” both in children and adults (DeGroot, 2011; Niggemann, 2002; 2010).

One of the core problems in this syndrome is anxiety, the fear of not breathing enough air, and a constant state of tension leading to hyperventilation. The diagnosis of the condition is often not achieved early enough, leading to the patient being possibly misdiagnosed as having asthma (Martinez-Moragon et al., 2005). Another problem is frequent visits to the physician or even the emergency room in which no “diseases can be found,” leading to discharge until the next emergency visit (Baranes et al., 2005). This also prolongs the time at which the person can be treated, often reaching adulthood without the anxiety, source of the problem, being recognized.

In the general population of adults, the prevalence of hyperventilation syndrome is estimated around 6–10% (Baranes et al., 2005). Its prevalence is unknown in children, although a recent study in France (Gridina et al., 2013) found close to 20% of children had an assortment of symptoms that allow this diagnosis, this was a study with 350 students, in an open population. There are very few studies evaluating the prevalence of this syndrome in children and adolescents. The clinical wisdom of specialized centers is that it is more frequent in girls than in boys.

Hyperventilation syndrome is a condition in which the child or adolescent is indeed hyperventilating due to a sensation of “not getting enough air” or due to tensions and fears. This hyperventilation tends to be accompanied by physiological symptoms related to hyperventilation, leading to hypocapnia. There may be tingling in the arms and legs, a feeling of coldness and tension in the

muscles (which some have called peripheral tetania).

The Nijmegen hyperventilation test (1985) is a questionnaire that can aid in the diagnosis of this condition. In France and elsewhere, an instrument called Childhood Hyperventilation syndrome Ambroise Pare has been used (Gridina et al., 2013). This questionnaire consists of 17 questions which include respiratory and nonrespiratory symptoms which are most frequently seen in children with the syndrome. Among the respiratory symptoms: scrappiness in the throat, cough during the day, cough at bedtime, a feeling of a mass in the throat, blocking of breathing, difficulty to inhale, and frequent sighing. Among the nonrespiratory symptoms, a feeling of anxiety, difficulty to fall asleep, headaches, cramps, abdominal bloating, joint pains, changing locations of pains, nocturnal waking episodes, and itching of the skin.

A very important diagnostic issue is that the additional symptoms may be multiple and in many organ systems, or confined to one or two central ones, like recurrent cephalgia. However, in most cases, the symptoms are the result of the hyperventilation itself, and they can be reproduced by asking the child or adolescent to hyperventilate in the office, which will bring about many of the symptoms which affect the patient at home. The child or adolescent can then realize that the hyperventilation itself may be inducing symptoms.

There is a chronic form and an acute one. The chronic form may have lasted several years before the correct diagnosis being achieved. It may encompass a multitude of symptoms, but the primary one is anxiety. The child may complain of symptoms as diverse as “cold sweats,” dryness of the mouth, itching on the skin, tremors and pain or paresthesia on the limbs, biting of lips, biting the fingernails, as well as intestinal problems (pain, diarrhea). Also, there may be comorbidity with true asthma. About a third of children with asthma may exhibit hyperventilation syndrome also. The patient can experience pain in the chest particularly in the chronic forms due to the respiratory effort.

As in other conditions without “respiratory medical conditions” the question remains as to what might be causing this feeling of “need to breathe,” not getting enough air, fear of being very sick or of dying. There may be multiple determinants. A central one is anxiety, fear of “what might happen,” and also a need to be reassured that one is not going to die imminently. Often, despite repeated calming statements from medical professionals or personnel in the emergency room, neither the child nor the family can be reassured, leading to frequent visits to the emergency room. The child (or the family) may fear that something was missed, that the present one is a true emergency, and that one might die imminently. In one case treated by us, there were several determinants, including anger at parents that was not possible to express directly. In these circumstances, it may be useful for the child to have a “peak flow” measurement device at home, so that when the child and family note that the values are normal, this could contribute to calming them.

Berta, a 16 year old African American girl, was brought for psychiatric consultation because of frequent visits to the emergency room with a complaint of not being able to breathe and “nothing had been found.” She had had gone to the emergency room or the emergency service for several consecutive days, mostly at night. She said that she used to suffer from asthma when she was younger and thought that perhaps she was having a heart problem or a major physical disease that might cause her death. The patient’s parents were also extremely worried about the symptoms of the patient and feared that she might “crash” suddenly.

The respiratory symptoms of the patient involved a feeling that something in her throat is constricting and she has been told that she has numerous allergies. She cannot eat numerous foods. She enumerated all the foods that she is allergic to. As she mentioned them one had to wonder which foods she could eat. Her allergies involved a number of fruits, vegetables, bread, and a number of artificial or preservative substances. She feels constantly in danger because she might ingest “the wrong thing” and die. Her mother mentioned the name of the allergist and said that the physician had confirmed that she had multiple of such allergies.

The allergies also manifest in the form of shortness of breath and the feeling that she cannot get enough air as she breaths. This causes even more anxiety, and the patient is in constant worry and

fear. Her parents have been told that there is an emotional component to the symptoms. Numerous radiographies, ultrasounds, heart studies and laboratory studies have all been normal and nothing has been shown to be dangerous. In fact the various emergency physicians and in the urgent care settings have advised the family to seek mental health treatment for their child.

The patient seemed quite tormented and troubled. However she denied any major problems or stressors. Only upon questioning she was able to talk about some of the problems that might affect her. However, this was very difficult and the family also saw no major stressors. This is mentioned because in the family it seems some topics are not talked about or addressed at all. For instance, the patient said that she had been “a little bullied” before, when she was 9 or 10 years old and that this had been largely forgotten. The parents wished to protect all their children from such possible maltreatment and kept them all at home. Another issue is that several years ago the family became “Israelite” in religion and this led to a negative reaction in the extended family who started to “shun them out.” As a result the nuclear family has been rather cut off from other relatives, which is a major concern for the patient. Third, her older brother “rebelled” against all the religious beliefs and practices. The patient seems very tormented that her brother “has been lost,” or “expelled from the family” because of his tendency to have sexual relations with his girlfriend, to drink, and he has questioned the dietetic prohibitions, etc. etc. the patient knows her parents suffer and she suffers also.

Several hours after our initial session the patient’s family called the clinician through a video conference. They were on their way to an emergency service again. She was hyperventilating, very nervous and crouched over. She was in tachypnea. The clinician managed to advise her to relax, to think she was calm, she was not going to die and that she was going to be well. During the videoconference, he taught her a breathing technique and she tried it, but was in tears. When she was calm she mentioned that she had suffered the loss of a dear uncle, a brother of the patient’s paternal grandfather. This uncle died by shooting himself with a gun, he had reportedly a terminal illness. Still this was a major blow to the whole family and the patient’s father had cried extensively at the time. The patient was very impressed by all this and attended the funeral. Then she started to fear that her own parents might die.

The clinician got the impression that the patient was not allowed to have any negative thoughts or to question her religion in any way. Her parents emphasized that they do everything as a family, the nuclear family that is, minus the oldest child now. They “go to Disney World” when they can, they

said. During the relaxation exercise, the patient had imagined a “safe place” in her mind as being at Disney world. The psychiatrist had the impression that the patient, so to speak, “cannot breathe” in her family. This is in the sense that she has no friends, she is always at home, and she cannot question all the prescriptions and proscriptions or else she would be expelled from the family like the older brother. This notion might be at the bottom of the feeling of not being able to breathe and the anguish. To the surprise of the parents, the psychiatrist told the girl that perhaps she feels she cannot breathe in her family. She became quiet and so did the parents. The episodes improved remarkably after that event and the family did not report more trips to the emergency room. They allowed her to take yoga lessons and to go to a mindfulness training session, which seemed very helpful to her. They declined further sessions to process the patient’s losses and the issue of the “shunned brother.”

The treatment must include a psychoeducational component, about the effects of hyperventilation and the management of anxiety, which is at the root of the hyperventilation. The child should have a “respiratory re-education,” i.e., to learn to breathe anew and to monitor for signs of hyperventilation. The child often has engaged in “paradoxical breathing” and needs to engage in “costo-diaphragmatic breathing.” In common parlance, this can be described as “abdominal breathing” or the breathing that is typically used in practicing yoga. Another useful device in the acute phase is to teach the child to “breathe into a bag.” This can help increase the amount of CO₂ that is inhaled, covering mouth and nose while breathing with the bag. This maneuver diminishes the respiratory-induced alkalosis from the hyperventilation and will help the child to calm. The child can breathe in a small plastic bag, like a ziplock one, and adjust it around nose and mouth and breathe. A paper bag can be useful, but it allows more air to escape. This helps in an acute crisis.

Functional or Unexplained Chest Pain

Chest pain is another common complaint in the consulting room of pediatricians and pneumologists, particularly in its chronic and less intense

presentation. When it is of acute onset and intense, the child is often taken to a pediatric emergency room.

A central issue to be ascertained is what might cause the chest pain and then this should lead to attempts at remediation of the problem (Cava and Sayger, 2004). The features of the pain, its onset, its intensity and accompanying signs are important elements on whether an immediate study should be ordered, or one could wait for tests and further explorations. It is an alarming sign for parents, who are familiar with issues of chest pain related to heart conditions (Gilleland et al., 2009; Kaltenbach 2000). Despite that, it is uncommon for chronic chest pain in children to be caused by cardiac conditions (Hambrook et al., 2010).

Chest pain in children and adolescents can have multiple causes, among the main ones are esophageal pain, and more rarely heart difficulties, and inflammatory processes affecting the chest or heart. It can be a manifestation of Marfan’s disease and many other conditions. One of them is called “spontaneous pneumothorax,” the first sign of this may be thoracic pain. It can develop over days or weeks. A simple thoracic x-ray would rule out this cause. Incidentally, this condition also has been associated with increased levels of stress and tension.

One issue that is often not thought about is the effects of some medications the child might be taking, for instance, for attention deficit, such as psychostimulants and atomoxetine (Reading, 2010) and beta agonist medications such as those used to treat asthma. Regarding chest pain due to the esophagus, the problem may be hyperalgesia and of motor dysfunction of the esophagus (Rao et al., 2001). Other possibilities are costal chondritis, as well as pleuritis, and undiagnosed heart conditions, as well as neuropathies (Görge et al., 2014).

One type of unexplained chest pain is called “idiopathic,” i.e., for which no cause or diagnosis can be found (Diethelm, 2005; Jordan et al., 2017; McDonnell and White, 2010; Patel, 2012). This may be quite different from “psychogenic” or functional pain disorder whose features clearly suggest that the child or adolescent is unwittingly

manifesting emotional difficulties through the pain symptom

There are many cases in which the chest pain source cannot be “unexplained” and are diagnosed as idiopathic, i.e. of undermined origin. This is different from “psychogenic” or somatoform pain, in which very often there is an event to experience that precedes the onset of the pain: this could be a competition, a difficult examination, or bullying at school. There may be determinants such as “emotional pain” which is manifested through chest pain, in response to marital conflict, sibling rivalry, domestic violence or inability to express anger or hardly any emotion. In these cases, the pain is often not so severe, and not of sudden appearance, but there may be a chronological relationship with unpleasant or scary events, as a way to avoid experiencing fear or anger or as a “language of distress.”

A sixteen year old Hispanic boy “Rocky” was seen at our mental health clinic. The pediatrician was baffled by Rocky’s constant complain of chest pain and also of back pain. The boy had autistic disorder, but was able to communicate and learn at school. However, he was convinced that his disorders needed numerous studies like x rays or surgery. The chest and back pain had been going on for about 10 months and several studies had not revealed any medical condition. During the interview Rocky appeared very sad and walked with his trunk pushed forward, his father had given him a cane to help him in walking. The child said that his “heart was broken” and also that his “spine was broken.” He would point to the sternal area and to the “whole back” hurting. He also seemed extremely anxious and worried about whether he should die or not, and said also that he “was already dead,” lying on the couch and pretending he was dead. A cousin of the mother’s had died during the COVID19 pandemic and this had affected the boy very much, although he was not very close to him. Rocky was told that his uncle was “in heaven” and he also wanted to be in heaven. Rocky looked indeed fairly depressed and dejected as well as sweating. He seemed to be very anxious, just like his mother and particularly his father. Eventually the child, interviewed alone, spoke of his worries that his parents might find out that he had been looking at “sex things” in the internet. He spoke of his curiosity about “sexual parts” and then showed a video of “the reproductive system.” He seemed very conflicted and at the same time appeared enticed to talk more and more about this. He spoke of his guilt about masturba-

tion and feared that we would tell this to his father. Later on, we discussed the fact that his curiosity was normal as well as his “desire to know more.” We advised him that his parents would not be “angry” that he was so curious. During our interactions with him we gave him the suggestion that we were going to “fix his back and his heart.” With a hand puppet we performed a massage of his back and the chest was also touched and “Fixed” by the puppet who “could do this.” The child seemed extremely relieved, he started to smile and when standing was no longer curved forward. He told his mother later on that “his back was fixed” and “his heart was not broken anymore” and he could be alive. His mother heard the child’s sexual worries and curiosity and told her she could understand the boy was curious and that he “was not a bad boy.” Eventually other family issues were addressed, like the frequent arguments between the parents and the father’s constant criticism of Rocky, who would tell him over and over that he “should not be fat” and should eat healthy food and exercise, which the boy disliked very much, although he was not obese at all.

Paroxysmal Sneezing

In principle, normal sneezing is a reflexive activity meant to protect the airway from noxious stimuli, like some chemicals or mechanical stimulants (Seijo-Martinez et al., 2006). It starts with an irritation of nerves on the nasal mucosa, which leads to trigeminal ganglion stimulation and activation of the “sneeze center” thought to be in the *medulla oblongata*. This leads to an intense response consisting of closing of the glottis, closing of the eyes, and deep inspiration followed, by a sudden opening of the glottis with intense air expulsion which clears the mucosa of irritants and debris. Ordinary sneezing can be suppressed by application of topical anesthesia (Bhatia et al., 2004).

This condition is relatively rare in general pediatric settings and more often seen in the clinic of the respiratory medicine physician or the otolaryngologist. It consists of episodes of intense sneezing which last several minutes at a time, occur multiple times a day, and which may last several days. In some cases, each bout may last for hours. Its clinical features include that it disappears during the child’s sleep. During the sneezing, the child keeps his or her eyes open and

there is no indication of any allergy or other “organic” cause to explain the sneezing. Sometimes the sneezing is not present while the child is alone. It can also disappear momentarily while the child is talking, only to return when she or he is finished.

It has been most often reported in girls, of pre- and post-pubertal age (Gopalan & Browning, 2002; Lin et al., 2003). The sneezing does not improve even with the application of local anesthetic to the mucosa. Usually there are no antecedents of previous allergies to pollens, pet dandruff or other common allergens. On examination of the nasal mucosa, there is no evidence of nasal congestion, which can be a part of states like menstruation or sexual arousal.

Repetitive sneezing can be caused by a form of seizure disorder, as well as by a parathyroid adenoma, which impinges on the laryngeal nerve. Other conditions in the nose itself may be turbinate hypertrophy, a foreign body stuck in the nose, as well as an infectious condition. There are autonomic reflexes that produce sneezing, such as in response to sunlight, intense odors, and irritants, as well as a very full stomach (Gopalan & Browning, 2002), and the sneezing can be a part of a repertoire of tics in Tourette’s disorder. Sexual arousal can be another precipitant (Songu & Cingi, 2009). There are also reports of pathology in the *medulla oblongata*, where the “sneeze center” has been hypothesized to reside, which may be caused by various conditions, and this has been reported mostly in adults (Swenson & Leira, 2007). In such cases, there are usually multiple other neurological symptoms (Seijo-Martinez et al., 2006). It can also be a manifestation of posterior inferior cerebellar artery syndrome (Songu & Cingi, 2009).

Most examples of psychogenic paroxysmal sneezing consist of case reports and usually family tension, bullying, or fear of competition are considered as triggering mechanisms (Bhatia et al., 2004), others are the identification with a sick family member, perhaps who has allergies and other respiratory maladies.

There is no established or uniformly effective therapy for the condition. Hypnosis, if possible, should make the sneezing disappear, and during

the trance, a suggestion could be made as to how to resolve the sneezing, perhaps suggesting pleasant smells and calmness of the mind. If there are stressors or precipitating events psychotherapy should be attempted to solve them. At times, clinicians have also used small doses of neuroleptics.

Psychogenic Stridor or Vocal Cord Dysfunction

This condition, also called nonorganic stridor (Powell et al., 2007), was described by Osler in 1902. It consists of the inappropriate adduction of the vocal cords during inspiration. This leads to a “wheezing” noise which is very different from the one observed in asthma, which occurs during exhalation. In the clinical presentation, one can hear wheezing or even stridor, as well as dyspnea, coughing and a sensation of choking, as well as tightness of the throat or the chest. Other terms for this symptom which the child, adolescent family may use are “raspiness”, a squeak or gasping (Anbar & Hall, 2012). If the condition has an acute onset and is severe, the child may be taken to the emergency room. In other cases, the problem is intermittent and has lasted several weeks. It is thought to occur more frequently in girls.

One of the features that helps differentiate an “organic” cause of the stridor is that the child with psychogenic stridor can produce words or still speak in a normal way, despite the inspiratory tightening of the vocal cords, while this is not the case when the cause of the stridor is different. That is, the child is able to converse and answer questions, which require the voice to go through the vocal cords. However, there are intermittent episodes of stridor. This would be unexpected in an “organic” cause of stridor.

Two types have been encountered clinically. One occurs spontaneously (inspiratory stridor) in unpredictable fashion. The other is triggered and only occurs during exercise, and it is called exercise-induced vocal cord dysfunction.

In these situations, flexible nasal endoscopy is useful in detecting the status of the vocal cords

and ruling out some local pathology as well as a foreign object located there. Sometimes an exercise test can lead to the discovery of exercise-induced vocal cord dysfunction. This can also lead to panic attacks. The physician will have to exclude a number of possible medical conditions including infections and mechanical obstruction.

General Interventions

From the beginning, the participation of a mental health specialist versed in these problems and also a physiotherapist could be helpful. This may lead to greater acceptance of those referrals from the start, as a matter of good practice rather than because the clinician “does not know what else to do” or because there is no “real” disease and all is in the patient’s mind. It is also a good idea to introduce from the beginning the notion of using a “team approach” to solving problems rather than just one treatment or one medication.

The physiotherapist can assist in modifying even subtly abnormal breathing patterns.

In the acute state of hyperventilation syndrome, the clinician can recommend to “breathe into a paper bag” to increase the arterial CO₂ tension will alleviate symptoms. This strategy can be used to terminate a panic attack.

For the long-term treatment of hyperventilation syndrome and vocal cord dysfunction, the clinician can add to the physiotherapy other interventions such as biofeedback (for relaxation techniques) as well as hypnosis and psychotherapy (DeGroot, 2011).

The general management of these conditions also requires close involvement with the pediatric pulmonologist. He or she can be kept abreast of the mental health issues involved, and if the patient’s pulmonary functioning is preserved, the specialist can limit the interventions to radiological studies and assessment of respiratory functioning without further complicated invasive or surgical interventions.

References

- Anbar, R. D., & Hall, H. R. (2012). What is a functional respiratory disorder? In R. D. Anbar (Ed.), *Functional respiratory disorders* (pp. 3–18). Humana Press/Springer.
- Baranes, T., Rossignol, C. S., Stheneur, C., & Bidat, E. (2005). Le syndrome d’hyperventilation pulmonaire chez l’enfant. *Revue de la littérature. Archives de Pédiatrie, 12*, 1742–1747.
- Bhatia, M. S., Khandpal, M., Srivastava, S., & Kohli, G. S. (2004). Intractable psychogenic sneezing: Two case reports. *Indian Pediatrics, 41*(5), 503–504.
- Bonnet, U., Ossowski, A., Schubert, M., Gall, H., Seinkamp, I., Richter, L. E., Khalil-Boutros, P., Nefedev, A., & Kuhlmann, R. (2015). Zur Differentialdiagnose des quälendem psychogenen chronischen Hustens: neuropathischer Larynx irritable–Gabapentin als Antitussivum. *Fortschritte der Neurologie und Psychiatrie, 83*, 568–577.
- Butani, L., & O’Connell, E. J. (1997). Functional respiratory disorders. *Annals of Allergy, Asthma & Immunology, 79*(2), 91–101.
- Cava, J. R., & Sayger, P. L. (2004). Chest pain in children and adolescents. *Pediatric Clinics of North America, 51*(6), 1553–1568.
- DeGroot, E. P. (2011). Breathing abnormalities in children with breathlessness. *Pediatric Respiratory Reviews, 12*, 83–87.
- Diethelm, M. (2005). Brustschmerz nicht vom Herz. *Swiss Medical Forum, 5*, 51–58.
- Faniran, A. O., Peat, J. K., & Woolcock, A. J. (1999). Measuring persistent cough in children in epidemiological studies: development of a questionnaire and assessment of prevalence in two countries. *Chest, 115*(2), 434–439.
- Gedik, A. H., Cakir, E., Torun, E., et al. (2015). Evaluation of 563 children with chronic cough accompanied by a new clinical algorithm. *Italian Journal of Pediatrics, 41*(73), 17.
- Gilleland, J., Blount, R. L., Campbell, R. M., Johnson, G. L., Dooley, K. J., & Simpson, P. (2009). Brief report: Psychosocial factors and pediatric noncardiac chest pain. *Journal of Pediatric Psychology, 34*(10), 1170–1174.
- Gopalan, P., & Browning, S. T. (2002). Intractable paroxysmal sneezing. *The Journal of Laryngology & Otology, 116*(11), 958–959.
- Görge, G., Grandt, D., & Häuser, W. (2014). Chronischer Brustschmerz. *Der Schmerz, 28*(3), 282–288.
- Gridina, I., Bidat, E., Chevallier, B., & Stheneur, C. (2013). Prevalence du syndrome d’hyperventilation chronique chez les enfants et les adolescents. *Archives de Pédiatrie, 320*, 265–268.

- Hambrook, J. T., Kimball, T. R., Khoury, P., & Cnota, J. (2010). Disparities exist in the emergency department evaluation of pediatric chest pain. *Congenital Heart Disease*, 5(3), 285–291.
- Haydour, Q., Alahdab, F., Farah, M., Barrionuevo, P., Vertigan, A. E., Newcombe, P. A., Pringsheim, T., Chang, A., Rubin, B., McGarvey, L., Weir, K., Altman, K., Feinstein, A., Murad, M. H., & Irwin, R. S. (2014). Management and diagnosis of psychogenic cough, habit cough, and tic cough: A systematic review. *Chest*, 146(2), 355–372.
- Hoey, E. M. (2014). Sighing in interaction: somatic, semi-otic and social. *Research on Language and Social Interaction*, 47(2), 175–200.
- Hurvitz, M., & Weinberger, M. (2021). Functional respiratory disorders in children. In N. L. Turcios (Ed.), *Pulmonary manifestations of pediatric diseases*. *Pediatric Clinics of North America*, 68(1), 223–238.
- Irwin, R. S., Glomb, W. B., & Chang, A. B. (2006). Habit cough, tic cough, and psychogenic cough in adult and pediatric populations: ACCP evidence-based clinical practice guidelines. *Chest*, 129(1 Suppl), 174S–179S.
- Ishizaki, Y., Kobayashi, Y., & Kino, M. (2008). Chronic and persistent cough related to vulnerability to psychological stress: Tic or psychogenic? *Pediatrics International*, 50, 392–394.
- Jakati, P. K., Naskar, S., & Khanna, A. (2017). “The barking girl”: A case report of psychogenic cough in a child with a review of the literature. *Indian Journal of Psychological Medicine*, 39, 542–545.
- Jordan, K. P., Timmis, A., Croft, P., van der Windt, D. A., Denaxas, S., González-Izquierdo, A., Hayward, R. A., Perel, P., & Hemingway, H. (2017). Prognosis of undiagnosed chest pain: Linked electronic health record cohort study. *British Medical Journal*, 357, 1194.
- Kaltenbach, M. (2000). Kreislaufregulationsstörungen. In *Kardiologie kompakt* (pp. 277–282). Steinkopff, Heidelberg.
- Karakaya, I., & Sismanlar, S. G. (2015). Tic disorders in the differential diagnosis of chronic cough in children in relation to four cases. *Turkish Archives of Pediatrics*, 50(176–9), 16.
- Li, P., & Yackle, K. (2017). Sighing. *Current Biology*, 27(3), R88–R89.
- Lin, T. J., Maccia, C. A., & Turnier, C. G. (2003). Psychogenic intractable sneezing: Case reports and a review of treatment options. *Annals of Allergy, Asthma & Immunology*, 91, 575–578.
- Martinez-Moragon, E., Perpina, M., Belloc, A., & de Diego, A. (2005). Prevalence of hyperventilation syndrome in patients treated for asthma in a pulmonary clinic. *Archivos de Bronconeumología*, 41, 267–271.
- McDonnell, C. J., & White, K. S. (2010). Assessment and treatment of psychological factors in pediatric chest pain. *Pediatric Clinics of North America*, 57(6), 1235–1260. <https://doi.org/10.1016/j.pcl.2010.09.010>
- McGarvey, L. P. A., Warke, T. J., McNiff, C., Heaney, L. G., & MacMahon, J. (2003). Psychogenic cough in a schoolboy: Evaluation using an ambulatory cough recorder. *Pediatric Pulmonology*, 36, 73–75.
- Morice, A. H., Fontana, G. A., Belvisi, M. G., Birring, S. S., Chung, K. F., Dicpinigaitis, P. V., Kastelik, J. A., McGarvey, L. P., Smith, J. A., Tatar, M., & Widdicombe, J. (2007). European Respiratory Society’s guidelines on the assessment of cough. *European Respiratory Journal*, 29, 1256–1276.
- Niggemann, B. (2002). Functional symptoms confused with allergic disorders in children and adolescents. *Pediatric Allergy and Immunology*, 13(5), 312–318.
- Niggemann, B. (2010). How to diagnose psychogenic breathing disorders in children and adolescents. *Pediatric Allergy and Immunology*, 21, 895–899.
- Oliveira, R., Martins, V., & Moreira, C. (2015). Psychogenic cough: A rare cause of chronic cough. *Archivos de Bronconeumología*, 51(604-5), 18.
- Patel, D. R. (2012). Chest pain. In R. D. Anbar (Ed.), *Functional respiratory disorders* (pp. 51–65). Humana Press/Springer.
- Powell, S. A., Nguyen, C. T., Graziano, J., Lewis, V., Lockey, R. F., & Padhya, T. A. (2007). Mass psychogenic illness presenting as acute stridor in an adolescent female cohort. *Annals of Otolaryngology, Rhinology and Laryngology*, 116(7), 525–531.
- Ramirez, J. M. (2014). The Integrative role of the sigh in psychology, physiology, pathology, and neurobiology. *The Central Nervous System Control of Respiration Progress in Brain Research*, 209, 91–129.
- Rao, S. S. C., Hayek, B., & Summers, R. S. (2001). Functional chest pain of esophageal origin: Hyperalgesia or motor dysfunction. *American Journal of Gastroenterology*, 96(9), 2584–2589.
- Reading, R. (2010). Recurrent chest pain in the well child. *Child: Care, Health and Development*, 36, 598–599.
- Seijo-Martinez, M., Varela-Freijanes, A., Grandes, J., & Vazquez, F. (2006). Sneeze related area in the medulla: Localisation of the human sneezing centre? *Journal of Neurology, Neurosurgery & Psychiatry*, 77(4), 559–561.
- Songu, M., & Cingi, C. (2009). Sneeze reflex: Facts and fiction. *Therapeutic Advances in Respiratory Disease*, 3(3), 131–141.
- Swenson, A. J., & Leira, E. C. (2007). Paroxysmal sneezing at the onset of lateral medullary syndrome: cause or consequence?. *European Journal of Neurology*, 14(4), 461–463.
- Teigen, K. H. (2008). Is a sigh “just a sigh”? sighs as emotional signals and responses to a difficult task. *Scandinavian Journal of Psychology*, 49, 49–50.
- Vertigan, A. E. (2017). Somatic cough syndrome or psychogenic cough—What is the difference? *Journal of Thoracic Disease*, 9(3), 831.
- Vertigan, A. E., Murad, M. H., Pringsheim, T., Feinstein, A., Chang, A. B., Newcombe, P. A., Rubin, B. K., McGarvey, L. P., Weir, K., Altman, K. W., & Weinberger, M. (2015). Somatic cough syndrome (Previously referred to as psychogenic cough) and tic

cough (Previously referred to as habit cough) in adults and children: CHEST guideline and expert panel report. *Chest*, 148, 24–31.

Wei, W., Zhangtong, Y., Li, H., Hou, J., Lv, H., & Li, C. (2016). Detection rate of psychogenic cough in patients with chronic cough in Chinese hospital: A meta analysis. *International Journal of Clinical and Experimental Medicine*, 9, 504–514.

Wong, K.-S., Chiu, C.-Y., Huang, Y.-H., & Huang, L.-J. (2009). Plethysmographic lung volumes in children with sighing dyspnea. *Pediatrics International*, 51(3), 405–408.

Luis F. Pérez-Martini MD. Pediatric Pulmonologist. Universidad de San Carlos de Guatemala. Universidad Nacional Autónoma de Mexico. Private Practice, Guatemala City, Guatemala. Collaborator Member of Global Asthma Network. Active member of Guatemalan Association of Pulmonology and Thoracic Surgery.

Guatemalan Pediatric Association. Latin American Thorax Association. European Respiratory Society. International member of Spanish Society of Pneumology and Thoracic Surgery. American Thoracic Society. American College of Chest Physicians.

J. Martin Maldonado-Duran, M.D., is an infant, child, and adolescent psychiatrist and family therapist. He is Associate Professor of Psychiatry at the Menninger Department of Psychiatry, Baylor College and works at the complex care service in the Texas Children’s Hospital. He edited the book *Infant and Toddler Mental Health*, published by American Psychiatric Press, and has coedited or edited five additional books in Spanish on topics of child and infant mental health. Coeditor of the book “*Clinical Handbook of Transcultural Infant Mental Health*” (Springer). He has written numerous papers and book chapters on topics of child development and psychopathology in several countries.



Functional Gastrointestinal Conditions in Children and Adolescents (Gut–Brain Interaction Disturbances)

Kenia L. Gomez and Jessica DiCarlo

Introduction

Like other organ systems, the digestive system, starting at the mouth and ending at the anus, is a very long system; it is also the setting in which a number of emotional and behavioral difficulties can be expressed.

Of course, this system's primary function is to maintain the supply of energetic material for the subject to survive, grow, and function. The individual must continue to ingest necessary food and eliminate the residues in some way. It is a very long system in terms of its sheer measurements. It is also richly innervated by the sympathetic and parasympathetic nervous systems which make it very responsive to the emotional life of the child.

The digestive system additionally contains multiple symbolic mental representations associated with the intake and digestion of food, nutrition, and growth of the body, as well as the elimination of waste.

Sigmund Freud placed great emphasis on the oral phase of the development of the child as an erogenous zone with primal importance in the infant. Then, Freud and many other psychoanalysts assigned great importance to the control of the anal sphincter around the second birthday. The ability to control defecation represents control of oneself as the child eliminates feces in acceptable places. Often, conflict arises between parents and children around issues of cleanliness; therefore, management of aggression, social acceptability, and socialization are associated with the tension between retaining versus releasing feces. To the dismay of parents, feces, like food, can be used by the child as a “weapon” to express anger and disgust.

All cultures invest foods with very important symbolic meanings. Food is the subject of various taboos, such as ingesting certain meats (e.g., the ban on pork in Islam and Judaism and on beef in Hinduism). Certain foods can or cannot be mixed; they “should” be ingested cold, hot, or cooked in specific prescribed ways. Food and its consumption are also invested with individual meanings, depending on the experience of each child. In addition, practices of feeding children vary across cultures, from force-feeding certain foods to the young child, to vegetarianism, to eating only organic foods, on the rule-bound end of the spectrum, to a very permissive attitude in which children may be allowed to eat what they like, alone or in a communal feeding (family or group meal).

K. L. Gomez (✉)

Department of Pediatric Newborn Medicine, Brigham and Women Hospital/Massachusetts General Hospital, Boston, MA, USA
e-mail: kgomez7@bwh.harvard.edu

J. DiCarlo

Psychiatry and Behavioral Sciences, The University of Texas Health Science Center at Houston (UTHealth), Houston, TX, USA
e-mail: Jessica.dicarlo@uth.tmc.edu

The functioning of the gastrointestinal system of their son or daughter is of great interest to parents, such as whether the child exhibits adequate appetite, ingests the food, digests it properly, and then eliminates regularly and in the right place. Many vicissitudes can occur in these situations. Food, digestion, and feces have multiple individual and cultural representations which will be reflected in the sorts of conditions described here.

In this chapter, we focus on a number of conditions that worry parents, cause suffering to the child, and can have a powerful impact on the quality of life of the subject and those surrounding him or her. We will predominantly describe situations in which the child has symptoms of gastrointestinal dysfunction but no biochemical or anatomical evidence of any known disease (Benninga et al., 2016). These conditions are strongly related to emotional, behavioral, maturational, and interpersonal factors in the life of the child or adolescent.

Background

The gastrointestinal system is a richly innervated part of the organism. The normal function of the gastrointestinal apparatus (from one end to the other) requires the coordination of multiple factors, starting with the availability of nutrients, which cannot be guaranteed in our modern world to everyone. For optimal growth in children and adolescents, an adequate intake of calories, protein, fat, as well as vitamins, minerals, and micronutrients is required. These elements must be available, and in an ample number of sectors around the world, they are not, due to poverty, famine, and other causes.

Another factor in the intake of food is appetite, or a hunger signal, which determines the desire to eat and the child's interest in food. Which items are considered edible is an issue strongly influenced by the environment and by culture; there is much diversity in approach among human cultures to various insects, fishes, crustaceans, etc., as well as to a whole variety of vegetables cooked in a myriad of ways. With rapid globalization since the Industrial

Revolution, in many urban areas, there is more availability of different cuisines; children may be exposed to a greater variety of tastes and styles than was the case for the hundreds of thousands of preceding years during which *Homo sapiens* and our ancestors were relatively separated by culture.

After appetite (the desire for specific foods) and hunger (the need to eat), comes the capacity to ingest food, contain food inside the body, and then to digest it. First, it is processed in the mouth, then it is swallowed. All of these functions can be altered due to multiple mechanical, physiological, and psychological factors. The same can be said about the processing of the food in the stomach and then in the small intestine, and eventually, the large intestine. Then, there must be a process of elimination. All these functions can be slowed, accelerated, or altered in some way. Of course, this is a cyclical process that occurs several times per day in some of its phases.

The gastrointestinal system is enriched with much innervation and neurotransmitters resembling those of the central nervous system. It is therefore highly sensitive to psychosocial factors, such as tensions, anxieties and worry, or stress in general, as well as anger. Increasingly, there is an awareness that the sensitivity of the gastrointestinal system to emotional experiences is determined in part by innervation and neurotransmitters, which determine motility (Noejovich et al., 2020), rather than purely by quality and quantity of what is ingested (Faure et al., 2017).

The central nervous system impacts the digestive system through the autonomous nervous system (sympathetic and parasympathetic systems) and the hypothalamic-pituitary-adrenal (HPA) axis, which influence intestinal motility (Mayer et al., 2008), secretion of fluids in the gut, and immune function (Elenkov & Chrousos, 2006). These factors affect the combination of microbes which perennially inhabit the gut. Of interest to us in this chapter, Kerr et al. (2014) proposed that early negative life events can also alter the "consortium" of bacteria in the digestive system, diminishing the resilience of the microflora, and thus can change the metabolic function of the individual.

What Are Functional Gastrointestinal Conditions?

The “Rome Criteria” for functional gastrointestinal disorders is an enumeration of conditions which a group of international experts periodically reviews and updates. The group initially convened in Rome under professor Aldo Torsoli (Drossman et al., 1990; Schmulson & Drossman, 2017). There have now been several revisions. In the latest one, to the long list of names for “functional disorders,” a new one is proposed: “disorders of gut–brain interaction.” The general idea is similar to unexplained gastrointestinal symptoms, functional symptoms, somatoform conditions, or “somatic symptom disorder” as referred to in the DSM V. Of note, there are other consensus groups—the main ones are the Lyon consensus group and the Montreal consensus group—which have also addressed several gastrointestinal conditions from different perspectives (Katzka et al., 2020).

The term Rome Criteria for gut–brain interaction refers to disorders that are commonly seen in clinical practice, manifest in the form of gastrointestinal symptoms, have no known relation to structural or other biological, “organic” damage, but still do affect the function of the system. Currently, the Rome IV Criteria (Drossman & Hasler, 2016; Schmulson & Drossman, 2017; Sood & Ford, 2016) depict nine main conditions in children and adolescents. This system, based also on symptoms (like The Diagnostic and Statistical Manual for Mental Disorders), has been criticized (Sood & Ford) as excessively complicated and not of great use for the clinician in actual practice. In the “real clinical world,” clinicians often do not make the minuscule distinctions recommended by the classification; physicians diagnose and treat the patient in their uniqueness, as each patient is different from others in many particulars. Based on the criteria alone, patients may even have several conditions, or they may have a disease based on known organic abnormalities, but with superimposed functional symptoms. These disturbances are divided according to regions of the gastrointestinal system: esophageal, gastroduodenal, intesti-

nal, biliary tract, and the anorectal area. Clearly, one same child can have two or more of these conditions.

An important aspect of the new criteria for “gut–brain interaction” disturbances is the issue of multiculturalism and transcultural aspects of distress. Different languages describe symptoms of anxiety and “nerves” in different ways. Some phrases clearly reflect the feeling of distress in the gastrointestinal system. “That makes me sick” describes nausea or disgust. “Butterflies in the stomach” depicts anxiety—an expression used in the English language. A “punch in the stomach” refers to a shocking, unpleasant surprise. There are more obscene expressions to refer to the notion of defecating due to being frightened or surprised. Other languages have similar and different expressions. In Spanish, people talk about having a “hole in the stomach” when they feel worried or anxious or of having “a lot of bile” when they are angry. Clearly, patients in different cultures in non-Westernized countries attribute gastrointestinal symptoms to “something they ate” which was not adequate. The way people refer to their symptoms is related to different cultural representations.

The Rome IV criteria include conditions that are not strictly functional, like opioid-induced gastrointestinal hyperalgesia, opioid-induced constipation, and cannabinoid hyperemesis. Of these drug-related conditions, only the latter is reviewed here, as it is likely to be seen in adolescents who consume marijuana routinely.

These disorders are not rare at all, particularly in the young infant and toddlers, but continue to be quite frequent in school-age children and adolescents. In a recent survey in the United States, 1255 mothers of children were interviewed (Robin et al., 2018); it was estimated that based on the Rome IV criteria, 24% of infants and toddlers from zero to three years of age, and 25% of all children in the preschool, school, and adolescent years have a functional gastrointestinal disorder. Regurgitation is the most frequent gastrointestinal problem in infants (around 24%) and functional constipation is the most prevalent in both toddlers (18%) and children and adolescents (14%). Similar rates have been reported in other

surveys in El Salvador (Zablah et al., 2015) and in Colombia (Saps et al., 2014). Studies reveal a higher prevalence in girls than in boys. An internet survey in the United States (Lewis et al., 2016) of around 25% of all children from preschool age to adolescence found similar rates of functional gastrointestinal disorders.

In a majority of children with recurrent abdominal pain, no “physical” cause can be found (Devanarayana et al., 2008).

When these conditions are severe, they may lead to hospitalization or repeated hospitalizations. The main reason for hospitalization in all minors is abdominal pain and constipation. In the group of children 5 to 9 years of age, the most common problems are constipation and fecal incontinence (Park et al., 2015).

Some of the conditions can hardly be considered a “disorder,” as they tend to be extremely prevalent in infants, for example, regurgitation and colic (Benninga et al., 2016). These troubles are often worrisome to parents, but the issues tend to run their course as the infant’s body becomes more coordinated as she or he develops.

Here, we are not going to discuss all of the numerous conditions within the gastrointestinal system that different consensus groups have described, but we will focus on the problems most commonly found in clinical practice in children and adolescents. We focus not so much on the criteria, but on the mind–body interaction issues and on the management strategies that apply.

Cyclic Vomiting Syndrome

Cyclic vomiting syndrome (CVS) is an often undiagnosed condition in children and adolescents; it is very complex in its etiology, although fairly typical in its clinical presentation. It can only be diagnosed after other causes for vomiting have been ruled out. CVS occurs more frequently in children than in adults.

The current Rome Criteria for CVS are as follows: (1) a history of two or more periods of intense, unremitting nausea and paroxysmal vomiting, lasting hours to days within a six-

month period, (2) episodes are stereotypical in each patient, (3) episodes are separated by weeks to months with return to baseline health between episodes, and (4) after appropriate medical evaluation, the symptoms cannot be attributed to another condition.

CVS generally begins in the preschool age and affects 1–3% of children (McOmer & Shulman, 2008). In a series of 181 consecutive cases in Shiraz, Iran (Haghighat et al., 2007), most cases started around five years of age. The mean lapse between the onset of the vomiting and its diagnosis as cyclic vomiting was around two years. A few patients had episodes since early infancy. Also, almost half the children had antecedents of motion sickness (or high sensitivity to movement in space leading to nausea) and more than half (58%) of the children had vomiting episodes that included headache. Other associated symptoms are excessive salivation and abdominal pain. The frequency of vomiting varies but is typically consistent among episodes for each child. The frequency can peak at six times per hour (Li, 2001).

Cyclic vomiting syndrome can have a familial determinant (Haan et al., 2002), as well as a genetic marker in some cases (a mitochondrial DNA alteration). It is often associated with migraines, which has led to the conclusion that this type of vomiting is a form of “migraine,” and should be treated and prevented as such. However, it has not been demonstrated in any way that CVS is indeed a form of migraine (Haghighat et al., 2007). There are often psychosocial factors associated with cyclic vomiting, as tension and high levels of emotional stress (Keller et al., 2013) often precipitate the episodes.

Stephanie, a 17-year-old girl with no past medical history, presented three times within six months to the emergency room with unremitting vomiting. Several diagnostic studies, including an endoscopy, were performed, with negative results. While hospitalized, Stephanie was forthcoming that she occasionally smokes marijuana, but has not had access to it lately. It was discovered during her hospitalization that Stephanie was experiencing significant conflict over growing older and soon leaving for college. She was surprised to find herself in tears over her parents’ divorce from several years ago, and the effects of her parentification in her being

asked to emotionally support her mom and her younger sister. All the while, she felt “not good enough.” She also commonly experienced symptoms of anxiety including fear of the worst happening, being unable to relax, feeling unsteady or shaky, heart racing, difficulty breathing, and hot spells. To address her anxiety, fluoxetine was initiated. Since therapeutic effects of this medication take a few weeks and she required immediate relief of her vomiting in the hospital, propranolol was also initiated. Within four days, as was typical for Stephanie’s previous two episodes, her vomiting had stopped and she felt like herself again. Maintenance intravenous fluids were discontinued and the next day, she was discharged home with close psychiatric follow-up to continue to address her worries in a more in-depth psychodynamic manner.

Differential Diagnosis

It is necessary to distinguish an acute from a chronic presentation. If the patient has a short history of episodes of vomiting, it is important to rule out metabolic causes, as well as disorders in the gastrointestinal tract which may require surgical interventions, such as volvulus, intestinal obstruction, and the like. When the course is chronic, the physician must balance conducting a number of important tests to rule out organic causes versus avoiding unnecessary studies which are not going to be of use in terms of the treatment or outcome of the vomiting.

Although the episodes are self-limiting, supportive measures may be necessary to prevent dehydration and electrolyte imbalance. Frequent vomiting can lead to metabolic complications. Many children have multiple visits to an emergency room and initially, many are first diagnosed with food poisoning, peptic ulcer disease, or a metabolic disorder in the absence of any endoscopic findings explaining the condition.

Psychological Manifestations and Treatment

Generally, for cyclic vomiting, physicians recommend to avoid meals with high protein content, avoid fasting, and to diminish the level of stress of the child.

Medications like cyproheptadine in children younger than 5 years of age and amitriptyline in children older than 5 years of age are often recommended. Moreover, prophylaxis with propranolol for children of all ages can be tried (Hyams et al., 2016). Topiramate and valproic acid can also be used preventively. Several trials suggest that all of these can be effective. In addition to the preventative treatment of vomiting, these medications have psychotropic properties that may promote mood regulation and alleviation of distress. Some children may require a combination of medication and cognitive-behavioral therapy (Slutsker et al., 2010) or psychodynamic psychotherapy to help control their symptoms. If a multidisciplinary evaluation suggests that there are important tensions in the child, family difficulties, problems in the preschool or school setting, these stresses could be addressed as a way to deal with the problem thoroughly. For example, if the child is very anxious, sensitive, and emotionally fragile, cognitive or behavioral strategies may be useful to help reduce his or her anxiety. Family therapy may be helpful if the home atmosphere contains tension and conflict.

Cannabinoid Hyperemesis Syndrome (CHS)

This is a condition that has recently been recognized as a syndrome that can be caused by a number of cannabinoids, when they are used regularly. Cannabinoid products are the street drugs most frequently used all over the world (Simonetto et al., 2012). It is estimated that almost 5% of the world population has used cannabinoid products (Sorensen et al., 2017). The three cannabinoids found in the actual cannabis plant are cannabidiol, tetrahydrocannabinol, and cannabigerol, which may all lead to the syndrome. Nowadays there are a variety of “synthetic cannabinoids” that could be similarly associated.

Cannabinoid hyperemesis syndrome is seen most often in young adults and adolescents who use cannabinoids regularly. The vomiting effect is paradoxical, as normally cannabinoids have an antiemetic effect. It is characterized by episodes

of intense vomiting which last two or three days and may improve spontaneously (Galli et al., 2011). It is thought that the affected youngster may learn through experience that taking repeated hot baths improves the feeling of nausea and vomiting (Allen et al., 2004). Clinical improvement after frequent hot baths or showers is so characteristic that this is considered a diagnostic indicator. The syndrome also includes abdominal pain. If the vomiting is severe, it may require hospitalization to correct the electrolyte balance. It can be misdiagnosed as cyclic vomiting. The repeated episodes of emesis can also lead to abdominal pain.

The syndrome often includes a prodromal phase, then the actual vomiting which may last 48 h, followed by a recovery phase. During the vomiting stage, the patient may require medication to diminish vomiting and intravenous liquids to compensate for the loss of fluid.

There is little information as to which adolescents or adults who chronically consume cannabinoid products will develop the syndrome. Generally, when the use of the cannabinoid ceases, the syndrome disappears. Otherwise, it has a cyclical pattern too, repeating its occurrence every few months. A case series of almost 100 patients with the syndrome found that most affected patients have used cannabis more than once per week for at least two years (Simonetto et al., 2012). A systematic review of cases found that around 70% of patients are male (Sorensen et al., 2017).

Psychological Manifestations and Treatment

Here, the central strategy for intervention is to reduce or cease the use of marijuana products. This may be a difficult endeavor for some adolescents and families. Clearly, there are multiple societal and cultural factors involved, which may include exposure to role models, peers who use cannabinoids, and the wish to belong to a peer group. At the individual level, there may be a need to alleviate tension, to “escape” difficult circumstances through the effects of the drug, as

well as at times, dealing with intolerable mental states, such as dissociative experiences or post-traumatic symptoms. A combination of a program to reduce drug use (drug rehabilitation) with a psychotherapeutic approach directed to the child and/or family is desirable.

Aerophagia

Aerophagia is increasingly being recognized and diagnosed in children and adolescents (as well as adults). It consists of excessive air swallowing and its introduction in the gastrointestinal system. It leads to a feeling of being bloated and repeated belching (Chitkara et al., 2006). It is often associated also with abdominal distension and flatulence (Morabito et al., 2014). If it is intense, it can lead to abdominal cramps, diminished appetite, and frequent burping. The symptom of abdominal distention is important because it can lead to abdominal pain, discomfort, and it can be associated with constipation.

The Rome IV criteria for aerophagia are as follows: (1) excessive air swallowing, (2) abdominal distension due to intraluminal air which increases during the day, (3) repetitive belching and/or increased flatus, (4) symptoms cannot be fully explained by another medical condition, and (5) symptoms must be present at least two months before diagnosis.

Signs of functional aerophagia include a child who feels well in the morning, but as the day progresses, his abdominal distension increases. The child can be seen and heard swallowing or gulping air, which at times is done loudly. There is then excessive flatulence, particularly during the night (Hwang et al., 2005). Some authors call functional aerophagia “pathological” when it is associated with frequent burping, abdominal pain, and intense flatulence.

The condition is thought to be more frequent in children with intellectual handicap. It has been estimated to have a prevalence of more than 8% in the population with neurocognitive disabilities (Loeing-Baucke, 2000).

In terms of pathophysiology, aerophagia has been associated with an involuntary and paroxys-

mal opening of the cricopharyngeal sphincter; this opening is then followed by air swallowing but without cricopharyngeal swallowing movement sequences (Hwang et al., 2005).

Differential Diagnosis

A reason to recognize this condition is to avoid unnecessary and costly studies that could be performed to rule out more serious conditions. The studies themselves may lead to complications (Caplan et al., 2005; Drossman & Dumitrascu, 2005; Drossman & Hasler, 2016).

The clinical picture of aerophagia should be distinguished from “motility disorders” in the gastrointestinal tract, which are multiple: gastroparesis, megacolon, and intestinal pseudo-obstruction. For children who have obstructive sleep apnea and sleep with a CPAP (continuous positive air pressure) machine, significant aerophagia may occur due to the pressure of the machine during the night.

Psychological Manifestations

Anxiety can increase aerophagia. Self-stimulation may be involved, such as in cases of rumination, deliberate regurgitation of food, and other self-stimulating behaviors such as head-banging and hair-pulling. The child may learn that through performing certain behaviors, he has some agency, and he may enjoy the sensation of swallowing repeatedly. Also, it can be calming for the child to engage in what is repetitive and familiar; it may help him cope with distress, loneliness, or lack of attention from caregivers.

Treatment

Treatment can include behavioral therapy to teach the child a different way to express distress or anxiety, and if necessary, a psychotherapeutic intervention tailored to the issues faced by the child or family. The child may be taught to use other means to soothe himself, such as breathing, engaging the mind in some manual activity, changing the scenery, or engaging in interper-

sonal activities with a caregiver. The “learned behaviors” used for purposes of self-soothing are not easily abandoned if there is nothing else—more adaptive and pleasurable behaviors—with which to substitute them.

Reflux Hypersensitivity Syndrome

This condition is a new one in the Rome IV classification of brain–gut conditions. It was previously called “functional heartburn”. Gastroesophageal reflux is a very common condition that is diagnosed from infancy through the oldest adult. It is a frequent reason for presentation to a physician. In the infant, reflux can lead to pain and excessive crying. In the older child or adolescent, it seems to lead to intense pain in the epigastric and retrosternal areas. Gastroesophageal reflux can be “erosive” due to the effect of gastric acid, or “non-erosive” if there is no damage to the esophageal mucosa. In fact, in the case of reflux hypersensitivity syndrome, there is no actual reflux and no dysfunction of the lower esophageal sphincter. So the problem here is the sensation of pain and discomfort without a physical cause for it. However, there is a heightened perception of pain in the esophagus which resembles that felt with gastroesophageal reflux.

Psychological Manifestations and Treatment

Several authors (Katzka et al., 2020) have emphasized the influence of anxiety, hypervigilance, and stress in reflux hypersensitivity. The central nervous system and visceral hypersensitivity are associated.

If the child or adolescent is overly focused on the functioning of the digestive system and is hyper-aware of these signals, so to speak, the question arises as to why. The child may experience an unstimulating environment, or not have much activity or engagement with others. Alternatively, her worry about her body may be a learned behavior from caregivers who have similar concerns. If her anxiety and concern are very

intense leading to a lot of discomfort, cognitive and behavioral strategies may be useful to deal with the persistent thoughts of illness or “being in danger of getting sick.” Other interventions to focus her mind, find amusement, or to relax, such as meditation and yoga, may be helpful.

Functional Dyspepsia

Functional dyspepsia is a fairly frequent condition in children. The frequency has been estimated in a very high range—between 2% and 17% of children in different surveys (Ganesh & Nurko, 2014). Its main feature is abdominal pain or abdominal discomfort in the child or adolescent, particularly pain localized above the umbilical area. The associated decreased gastric motility can be felt as a sensation of fullness for a long time after eating. There can also be early satiation after barely having begun eating. The pain or discomfort is not alleviated by defecation. Also, there is no demonstrable organic pathology that can be identified as the cause of the pain. It has quite a negative impact on the quality of life of the child and family. It can account for a considerable difficulty in attending school or other social activities, depending on the frequency and severity of the discomfort or pain.

The Rome IV diagnostic criteria for functional dyspepsia are as follows: (1) postprandial fullness (an excessive feeling of fullness in the abdomen after eating), (2) early satiation, (3) epigastric pain or burning not associated with defecation, and (4) symptoms must be experienced for at least two months before diagnosis. Of note, the term “discomfort” is not included in the latest classification as it has different meanings in different cultural groups and it is difficult to characterize.

Differential Diagnosis

Contrary to public perception, *Helicobacter pylori* is not a frequent cause of functional dyspepsia. Common accompanying findings in the

diagnosis of functional dyspepsia are delayed gastric emptying, a hypersensitivity to distension of the stomach, as well as antral hypomotility and gastric dysrhythmia (Ganesh & Nurko, 2014).

Psychological Manifestations

Depression and anxiety often correlate with functional dyspepsia, according to various studies. Features of perfectionism and alexithymia have also been associated (Shoji et al., 2018). In other words, the child—even a young child—may be excessively sensitive or a worrier. He may have separation anxiety, for instance, in the mornings before school or on Sundays before the school week starts. He may worry excessively, which manifests in uncomfortable sensations in the abdomen. Also, other children who do not experience their emotions may “bottle up” their feelings—fear, tension, and anger—which seemingly only manifest in the form of gastric symptoms.

Other possible contributors are anxiety and constant tension from family emotional or environment difficulties, school difficulties, or other interpersonal problems. Some children with academic difficulties may struggle to accept that they need additional help, and instead, prefer to avoid schoolwork, or may refuse to go to school altogether, or they may feel the pain when they are faced with difficult tasks.

Treatment

The treatment should be multimodal and multidisciplinary. Proton-pump inhibitor medications are recommended when there is a predominance of pain, and gastric motility accelerator medications are suggested for postprandial fullness or early satiety. Emotional factors such as tension, irritability, and anger may need to be taken into account depending on the child. On school days, there may be more reflux, pain, and avoidance behaviors. This should be addressed as a part of a comprehensive program of intervention.

Abdominal Migraine

The Rome criteria for abdominal migraine are as follows:

1. In the preceding 12 months, three or more paroxysmal episodes of intense, acute, mid-line abdominal pain lasting two hours to several days, with intervening symptom-free intervals lasting weeks to months. The pain is severe enough to interfere with normal activities.
2. Evidence of metabolic, gastrointestinal, or central nervous system structural or biochemical diseases is absent.
3. Two of the following features are present:

Headache, anorexia, nausea, vomiting, photophobia (sensitivity to light), or pallor.

There is often a family history of migraines. If headaches are present, they are confined to only one side of the head. There may be an aura (i.e., abnormal perceptions before the pain), or visual alterations such as blurred vision or a temporarily restricted visual field. There may also be motor abnormalities (inability to speak, slurred speech, or transient paralysis). There is also an association with limb pain.

Psychological Manifestations and Treatment

It is known that under conditions of more stress, migraines are more likely to occur.

The intervention for the actual pain is similar to the treatment of migraine headaches, for instance with the use of sumatriptan or another “triptan” medication, as well as propranolol, cyproheptadine, and pizotifen, which is an antagonist of 5-hydroxytryptamine. These medications sometimes abort the pain. The second phase of treatment is prophylactic or preventive. It may include the use of medications also used for the prevention of migraine headaches, such as propranolol, some anticonvulsants like topiramate, among others. Some physicians recommend lifestyle changes. A regular routine for sleep and wake may be useful. Some recommend dietary changes, like avoiding chocolate, cold-cured meats, and other foods which may provoke an episode.

This issue of sensitivity to stress may need to be emphasized. A very apprehensive child with catastrophic thoughts, who worries about many possible things that can go wrong, might benefit from a cognitive approach or an approach to diminish his or her exposure to family stressors and adverse circumstances, or if possible, the resolution of family conflicts and struggles.

Unexplained Abdominal Pain, Functional Abdominal Pain, or Centrally Mediated Abdominal Pain Syndrome

Abdominal pain is one of the most common complaints of children leading to consultations with the pediatrician (Korterink et al., 2015), and often eventually, with the pediatric gastroenterologist.

Among the diagnostic criteria of chronic abdominal pain is recurrent pain that lasts more than three months.

The Rome criteria for functional abdominal pain syndrome are:

At least twelve months of (1) continuous or nearly continuous abdominal pain in a school/age child or adolescent, (2) no or only occasional relation of pain with physiologic events (e.g., eating, menses, or defecation), (3) some loss of daily functioning, (4) the pain is not feigned (e.g., malingering), and (5) the child does not meet required criteria for other functional gastrointestinal disorders that would explain the abdominal pain.

The Rome consensus considers other diagnoses involving abdominal pain, such as functional dyspepsia. In functional dyspepsia, the pain can be persistent or recurrent, but it is centered in the upper abdomen (above the umbilicus). In both functional dyspepsia and functional abdominal pain, the pain is not relieved by defecation nor is it associated with changes in stool frequency or form, as opposed to irritable bowel syndrome, which will be discussed in the next section.

If other conditions are less likely, “*functional abdominal pain syndrome*” should be considered, which should include functional abdominal pain at least 25% of the time, as well as additional somatic complaints such as limb pains, head-

aches, or difficulties with sleep, and loss of daily psychosocial functioning to some degree. The pain should occur at least once per week, lasting more than two months before the diagnosis can be made (Rasquin-Weber et al., 1999).

A 9-year-old girl, Celia, was referred to the psychiatric clinic due to unexplained abdominal pain. She had had extensive studies including imaging and endoscopies. She had abdominal pain almost every day or several times per week, and took analgesics regularly to relieve the pain. She also had difficulty eating because her stomach would “bloat” and then she would have more pain. She also had constipation, but that did not explain the abdominal pain. She denied wanting to be “thin” or other features of anorexia nervosa or bulimia.

During family therapy sessions it turned out she wanted to know about her father, who was in prison, but this was a taboo topic that could not be mentioned. The girl said she fantasized her father had robbed houses and said she would like to see him “to slap him thirty times” for not being a part of her life. Her mother was unable to go to work because she wanted to tend to her daughter. Her mother notably viewed Celia in an ambivalent light. The girl “controlled her family” with her symptoms. Celia was very strong-willed, and if she wanted to go somewhere and her mother said, “no,” she would say, “I just lost my appetite,” or, “I am not eating,” or, “my stomach is hurting.” She did not seem to be lying, but was very emotional and angry. Her mother was able to see, when the therapists pointed this out, that the child had “a lot of power” “in the relationships at home and also would “use her pain as a weapon.” Celia harbored much resentment toward her mother, who had several serial romantic partners who would then leave them. As the mutual anger between the patient and her mother was made more explicit, they could talk about it. Her abdominal pain began to decrease and the child started to eat more normally. Before treatment, she would “chug water” to become full and then “lose her appetite.” Celia stopped all this when she discussed her resentment toward her mother, father, and siblings, and the interventions addressed her fear of going to school. Eventually, her pain disappeared completely and her nasogastric tube was removed since she had gained weight.

Differential Diagnosis

The differential diagnosis requires a number of investigations. The mind–body connection is important and there is clearly an intimate rela-

tionship between some mental states, such as anxiety and tension, and increased activity of the gastrointestinal tract.

In the current thinking about functional abdominal pain, multiple factors are thought to be involved, including stressful life circumstances which may be associated with visceral hypersensitivity and dysmotility.

One of the differential diagnoses that should be kept in mind is “abdominal epilepsy” which may manifest as episodes of pain and can be misdiagnosed as “psychogenic pain.” Another one is brucellosis as well as chronic intermittent porphyria, which can easily go undiagnosed (Scheer, 2008). Other conditions that need to be diagnosed adequately are lactose and gluten intolerances.

Psychological Manifestations and Treatment:

Specific difficult life events or chronic psychosocial stressors may be important determinants (Miranda, 2008), for instance, previous surgery for pyloric stenosis (Saps & Bonilla, 2011). Many children experience discomfort in the abdomen when presented with the prospect of a scary situation, such as going to school, separating from parents, or facing a difficult examination or competition of some kind. In the normal child, this may feel like “butterflies in the stomach,” but this sensation may go beyond that to actual pain, which may be quite intense. Treatment involves addressing the underlying precipitating factors, as demonstrated in Celia’s case.

Irritable Bowel Syndrome

Irritable bowel syndrome (IBS) is a condition that tests the possibility of collaboration between the pediatrician or gastroenterologist and the mental health professional. A category called “interface disorders” (Heningsen & Herzog, 2008) has been suggested as a “common ground” in which there is less discussion or disagreement on whether the presentation is “purely organic”

or “purely psychogenic” in nature. In clinical practice, this may be difficult to delineate with such precision as many patients best fit into this “interface” state.

In the modern view, irritable bowel is a diagnosis that does not necessarily imply etiological assumptions as to psychological or organic factors, but it is seen as a phenomenon by itself. Physicians often recognize there are other “extra-gastrointestinal” factors in the affected patient (Heningsen & Herzog, 2008).

The Rome IV criteria for irritable bowel syndrome are applied for children old enough to provide an accurate pain history. At least 12 weeks of symptoms, which need not be consecutive, are required for diagnosis. In the preceding 12 months, the child meets these criteria:

1. Abdominal discomfort or pain with at least two of these three features: (a) relieved by defecation or associated with bowel movements, (b) onset is associated with a change in frequency of bowel movements, and (c) onset is associated with a change in form (appearance) of stool.
2. There are no structural or metabolic abnormalities to explain the symptoms.

Generally, there are episodes of abdominal pain or just a sensation of abdominal discomfort, which may or may not be associated with a sensation of bloating. There are changes in the nature of the stools, which are termed “irregularities” in the stool. It appears that the “irritable bowel” condition can have several subtypes, and different presentations may constitute groups with different etiologies and phenomenology. Subtypes include a predominance of abdominal pain/discomfort, constipation, diarrhea, mixed, and an “undifferentiated” type. The Rome IV criteria, however, consider that the previously differentiated “types” of irritable syndrome as predominantly with diarrhea, and predominantly with constipation, or a mixed pattern, exist in a continuum and are no longer considered as different entities. To support this, studies that find a certain vulnerability in a group of patients fail to show the same in a second similar group of patients, such as variation in the intestinal flora, history of the previous infection, or biometric markers.

The movement of the bowel is determined by multiple factors. For instance, the visceral sensations (which are affected by the mucosal barrier in the intestine), the quantity and quality of microbiota in the gut, antigens present in food and bile acids, and other factors can all contribute to the excessive irritability and altered motility in IBS. These factors lead to dysregulation in the sensorimotor function of the gut, as well as alterations in the hypothalamic-pituitary-adrenal axis, the immune system, brain–gut axis, and enteric nervous system. It is also clear that emotions influence the function of the gastrointestinal tract, particularly in this condition.

It is clear that in subgroups of patients, there is an altered immune response, greater permeability of the gut mucosa (leading to diarrhea), as well as abnormalities in the inflammatory response. What is not clear is whether or not, and to what degree, these are the underlying mechanisms producing the symptoms (pain, diarrhea, sensitivities), or rather, to what extent environmental and emotional factors are at play. There may be bidirectional effects. Many patients with irritable bowel syndrome have higher levels of 5-hydroxytryptamine in the gut where the majority of it is produced anyway (90% of 5-hydroxytryptamine in our body is produced in the endocrine cells in the bowels, which is necessary for the growth of certain bacteria).

The prevalence in the general population of adults has been estimated fairly high, around 11% of adults (Enck et al., 2015. Lovell & Ford, 2012), with a similar prevalence in children and adolescents (Dong et al., 2005). However, there was a much higher prevalence in Korean girls at 18% (Son et al., 2009). Having the syndrome in childhood does not necessarily mean persistence into adulthood (Goodwin et al., 2013).

Most experts currently recommend to base the diagnosis of irritable bowel syndrome on the symptoms described above, and not to engage in an endless process of imaging and other studies (Longstreth et al., 2006). There is no specific biomarker to confirm the diagnosis. The pattern of “irregularity” in the frequencies of defecations is an important criterion. This can be described as more than three stools per 24-h period for diarrhea and less than three stools per week for

constipation. In many patients, there is alternation between too loose and too hard stools. Also, the youngster may report urgency (needing to go to the toilet very soon) as well as a feeling of not having completed the evacuation (tenesmus), as well as the presence of mucus in the stools. None of these are pathognomonic symptoms, however. The patient may also report other gastrointestinal alterations that are comorbid. She or he may experience other somatic complaints, such as headaches, pain, fatigue, as well as depression and/or anxiety which all support the diagnosis. There are a number of “alarm symptoms,” including very severe symptoms, and abnormal findings in laboratory tests or on physical examination that may necessitate further studies such as a colonoscopy and tests to rule out celiac disease and carbohydrate malabsorption. Other alarm signs are unintended weight loss, loss of more than 10% of body weight in a 3-month period, blood in stools (not from hemorrhoids or anal fissures), symptoms that awaken the patient at night, fever, and a family history of colorectal cancer, inflammatory bowel disease, or celiac disease.

Psychological Manifestations

There seems to be a strong association between emotional difficulties, such as anxiety, depression, a tendency to “somatization” in affected patients, as well as “neuroticism” in general. Also, there is a co-occurrence with other conditions such as gastroesophageal reflux, functional dyspepsia, nausea, and other gastrointestinal symptoms. Patients may not fit neatly in one “strict classification” but have a variety of complaints. As in all children and adolescents, we find interpersonal influences and stressors from school, family, and peer groups as important contributing factors.

Many young people who suffer from irritable bowel syndrome are quite anxious. There is a tendency to a “catastrophic thinking” pattern upon the perception of movement in the gut, or a “hypersensitivity” to the intestines, particularly toward the perception of pain and maximizing

that perception (Lackner & Gurtman, 2004). It has also been shown that the brain, through the autonomous nervous system and the HPA axis, has an influence on gut motility, the quality of the microbial composition in it, as well as the permeability of the epithelial membrane.

Treatment

The clinician should consider “three arms” in the management of irritable bowel syndrome: nutritional, pharmacological, and complementary and alternative interventions (Chiou & Nurko, 2010. Bollom & Lembo, 2015). Serotonin reuptake inhibitor antidepressants (SRIs) and tricyclic antidepressants (TCAs) are used in other conditions at low doses to treat chronic pain. They are not approved officially for use in abdominal pain associated with irritable bowel syndrome, but physicians use them at times “off-label.”

Regarding psychological management, the general principles of reducing stress, anxious cognitions, catastrophic thinking, learning to relax, and resolving interpersonal problems should be helpful. The treatment must be individualized, as there may be factors like bullying, academic problems, interpersonal difficulties, family tensions, and discord, among many other possibilities which may require a complex multimodal approach. The four most used therapeutic strategies are the following: cognitive-behavioral therapy, psychodynamic psychotherapy, gut-directed hypnosis, and mindfulness-based psychotherapy.

Regarding hypnosis, the therapist should prepare the patient as to what hypnosis is, and once accepted, provide metaphors during the trance in which the patient visualizes calm images and thus promotes normal movement of the intestines and a feeling of relaxation. Yoga has also been suggested as a useful intervention (Kuttner et al., 2006; Evans et al., 2014). Acupuncture also has been used as a complementary intervention. There are a number of alternative strategies including the use of some spices like turmeric extract, artichoke leaf extract, Iberogast (which is a combination of several extracts), ginger root,

and an infusion of ginger, primrose oil, and peppermint oil, among many others. Probiotics and prebiotics also can be used in an attempt to stabilize the intestinal flora. For instance, *Bifidobacterium infantis* has been demonstrated to improve symptoms (Bollom & Lembo, 2015).

Functional Constipation

The Rome III criteria for functional constipation are as follows:

In infants and preschool children, at least two weeks of:

1. Scybalous, pebble-like hard stools for a majority of stools.
2. Firm stools two or three times per week.
3. There is no evidence of structural, endocrine, or metabolic disease.

Functional Fecal Retention

In the young child, functional fecal retention may be the result of painful evacuations, as a learned response to such pain. Therefore, the child fears defecating, which only perpetuates the problem (Hyman et al., 2006).

The Rome III criteria for functional fecal retention are as follows:

From infancy to 16 years old, a history of 12 or more weeks of:

1. Passage of large-diameter stools at intervals less than two times per week.
2. Retentive posturing, avoidance of defecation by purposeful contraction of the pelvic floor, and consequential pelvic floor muscle fatigue as the child uses the gluteal muscles to squeeze the buttocks together.

Functional Encopresis

The Rome III criteria for non-retentive fecal soiling are:

A history of the following symptoms in a child four years or older at least once per week:

1. Defecation in inappropriate places or social contexts.
2. There is an absence of structural or inflammatory disease.

The child with encopresis at times first tries to retain the feces or control the defecation for long periods of time. When he retains feces, the feces in the large bowel above the rectum can “leak” around the compact feces and produce leakage and soiling of the underwear.

Psychological Manifestations and Treatment

There are multiple reviews of the frequency and mechanisms leading to the encopretic phenomena, which can persist into adolescence. Here we mostly highlight the psychodynamic issues which we have frequently encountered when dealing with multiple children or teenagers who have encopresis.

One scenario is the desire to be a younger child. This can occur because the child is afraid of becoming older, after the birth of a sibling or after a major stressor. Not controlling the feces is a mechanism by which the child conveys the message of needing diapers and not being a “big boy” or a “big girl,” or saying that he wants to grow, but the body functioning suggests the opposite as with the frequent fecal “accidents.” Often a therapist is consulted by parents of a four or 5-year-old child who is perfectly capable of defecating in a toilet or potty chair, but prefers to do so in his diaper. The child may actually verbalize the wish to continue to do so because he does not want to give up his diaper and it is more comfortable this way. The therapist may then wish to work on persuading the child to want to act like a child of his age. Perhaps one can point to the advantages of being older and explore his fears of getting older in more detail.

Another mechanism in encopresis is traumatic experiences around toileting. This could include falling in the toilet, having had an “accident” in the toilet, being afraid that one might “fall inside” the toilet, or that an animal can come out of it to bite the child. These fears are common in pre-

school children and may persist for a long time, if unaddressed. Other children with sensory integration difficulties dislike the toilet seat because it is “too cold” or because of the scary noise that the water makes when the toilet is flushed. Here there may be alternatives such as warming the toilet seat first, using ear plugs to minimize the intensity of the noise, or waiting for the child to leave the toilet to flush it.

Another common scenario is the wish for the child to “feel special” in a group of many siblings or with parents who are very busy with their own affairs. The child becomes, so to speak, a “specialized person” in defecating in his or her pants. The child may sense that when the parents start to smell the feces, they notice her and start asking questions about what happened. Her parents may take their child to the doctor, worry about giving her a special diet, etc., and all of this can make the child feel important, particularly if there are few other reasons for the child to feel special or noticed. Of course, another scenario of encopresis involves the covert expression of resentment and passive aggression toward caregivers. A battle of wills, so to speak, may be present. The child may compete with siblings or show anger toward the parents through the inappropriate defecations. The child may feel that he does not have a voice in his family and may feel very angry at his parents, or one parent, but be unable to express this directly due to the parenting strategies of his caregivers, who may be very strict and punish the child often. One way to “counterattack,” so to speak, is the fecal accidents that lead to intense reactions by the parents, for instance, having to clean the bathroom and dealing with feces in the underwear. Some children go to great lengths to attack their parents with feces, for instance, depositing or concealing the soiled underwear in the mother’s purse, the father’s clean clothes, or inside the ventilation system of the house (air conditioner ducts, etc.). This comes close to an “attack with feces,” which of course many animals use as a defense against predators.

The intervention in these circumstances is to address the “central” problem or problems, for example, improve the parent–child relationship,

diminish the fears of an accident in the toilet, or make the child feel special in other ways, so that she can give up the underlying reason for her behavior. A purely behavioral system with positive rewards or with “negative consequences” often fails if the child has a stronger motivation to maintain the undesired action.

Burning Mouth Syndrome

As the name implies, the affected person experiences a sensation of constant burning in the mucosa of the mouth and tongue (Mignogna et al., 2011). The sensation may also be one of “sand” texture of the mucosa and the feeling that there is a foreign body in the affected areas. The problem has no medical explanation and is often associated with problems like anxiety, depression, and other symptoms of somatization. It also has been associated with chronic fatigue syndrome and with irritable bowel syndrome.

References

- Allen, J. H., De Moore, G. M., Heddle, R., & Twartz, J. (2004). Cannabinoid hyperemesis: Cyclical hyperemesis in association with chronic cannabis abuse. *Gut*, 53(11), 1566–1570.
- Benninga, M. A., Nurko, S., Faure, C., Hyman, P. E., Roberts, I. S. J., & Schechter, N. L. (2016). Childhood functional gastrointestinal disorders: Neonate/toddler. *Gastroenterology*, 150(6), 1443–1455.
- Bollom, A., & Lembo, A. (2015). Complementary and alternative management strategies in irritable bowel syndrome. In B. E. Lacy, D. M. Crowell, & J. K. DiBaise (Eds.), *Functional and motility disorders of the gastrointestinal tract* (pp. 253–259). Springer.
- Caplan, A., Walker, L., & Rasquin, A. (2005). Validation of the pediatric Rome II criteria for functional gastrointestinal disorders using the questionnaire on pediatric gastrointestinal symptoms. *Journal of Pediatric Gastroenterology and Nutrition*, 41(3), 305–316.
- Chiou, E., & Nurko, S. (2010). Management of functional abdominal pain and irritable bowel syndrome in children and adolescents. *Expert Review of Gastroenterology & Hepatology*, 4(3), 293–304.
- Chitkara, D. K., Bredenoord, A. J., Talley, N. J., & Whitehead, W. E. (2006). Aerophagia and rumination: Recognition and therapy. *Current Treatment Options in Gastroenterology*, 9, 305–313.

- Devanarayana, N. M., de Silva, D. G., & de Silva, H. J. (2008). Aetiology of recurrent abdominal pain in a cohort of Sri Lankan children. *Journal of Paediatrics and Child Health*, *44*, 195–200.
- Dong, L., Dingguo, L., Xiaoxing, X., & Hanming, L. (2005). An epidemiologic study of irritable bowel syndrome in adolescents and children in China: A school-based study. *Pediatrics*, *116*(3), e393–e396.
- Drossman, D. A., & Dumitrascu, D. L. (2005). Rome III: New standard for functional gastrointestinal disorders. *Journal of Gastrointestinal and Liver Diseases*, *15*(3), 237–241.
- Drossman, D. A., & Hasler, W. L. (2016). Rome IV-functional GI disorders: Disorders of gut-brain interaction. *Gastroenterology*, *150*, 1257–1261.
- Drossman, D. A., Thompson, W. G., Talley, N. J., Funch-Jensen, P., & Janssens, J. (1990). Identification of subgroups of functional bowel disorders. *Gastroenterology International*, *3*, 159–172.
- Elenkov, I. J., & Chrousos, G. P. (2006). Stress system—Organization, physiology and immunoregulation. *Neuroimmunomodulation*, *13*, 257–267.
- Enck, P., Aziz, Q., Barbara, G., Farmer, A. D., Fukuda, S., Mayer, E. A., Eamonn, M., Quigley, M., Rajilic-Stojanovic, M., Schemann, M., Schwille-Kiunthe, J., Simren, M., Zipfel, S., & Spiller. (2015). Irritable bowel syndrome. *Nature Reviews. Disease Primers*, *2*, 1–24.
- Evans, S., Lung, K. C., Seidman, L. C., Sternlieb, B., Zeltzer, L. K., & Tsao, J. C. (2014). Iyengar yoga for adolescents and young adults with irritable bowel syndrome. *Journal of Pediatric Gastroenterology and Nutrition*, *59*(2), 244.
- Faure, C., Thapar, N., & Di Lorenzo, C. (eds.) (2017). Pediatric Neurogastroenterology. Gastrointestinal motility and functional disorders in children.
- Galli, J. A., Andari Sawaya, R., & Friedenber, F. K. (2011). Cannabinoid hyperemesis syndrome. *Current Drug Abuse Reviews*, *4*(4), 241–249.
- Ganesh, M., & Nurko, S. (2014). Functional dyspepsia in children. *Pediatric Annals*, *43*(4), e101–e105.
- Goodwin, L., White, P. D., Hotopf, M., Stansfeld, S. A., & Clark, C. (2013). Life course study of the etiology of self-reported irritable bowel syndrome in the 1958 British birth cohort. *Psychosomatic Medicine*, *75*, 202–210.
- Haan, J., Kors, E. E., & Ferrari, M. D. (2002). Familial cyclic vomiting syndrome. *Cephalalgia*, *22*(7), 552–554.
- Haghighat, M., Rafie, S., Dehghani, S. M., Fallahi, G. H., & Nejabat, M. (2007). Cyclic vomiting syndrome in children: Experience with 181 cases from southern Iran. *World Journal of Gastroenterology*, *13*(12), 1833–1836.
- Heningsen, P., & Herzog, W. (2008). Irritable bowel syndrome and somatoform disorders. *Journal of Psychosomatic Research*, *64*, 625–629.
- Hwang, J. B., Choi, W. J., Kim, J. S., Lee, S. Y., Jung, C. H., Lee, Y. H., & Kam, S. (2005). Clinical features of pathologic childhood aerophagia: Early recognition and essential diagnostic criteria. *Journal of Pediatric Gastroenterology and Nutrition*, *41*, 612–616.
- Hyams, J. S., Di Lorenzo, C., Saps, M., Shulman, A. S., & Van Tilburg, M. (2016). Childhood functional gastrointestinal disorders: Child/adolescent. *Gastroenterology*, *150*, 1456–1468.
- Hyman, P. E., Milla, P. J., Benninga, M. A., Davidson, G. P., Fleisher, D. F., & Taminiou, J. (2006). Childhood functional gastrointestinal disorders: Neonate/toddler. *Gastroenterology*, *130*, 1519–1526.
- Katzka, D. A., Pandolfino, J. E., & Kahrilas, P. J. (2020). Phenotypes of gastroesophageal reflux disease: Where Rome, Lyon, and Montreal meet. *Clinical Gastroenterology and Hepatology*, *18*(4), 767–776.
- Keller, K., Beule, J., & Dippold, W. (2013). Cyclic vomiting syndrome in adults. *Wiener Medizinische Wochenschrift*, *163*, 514–516.
- Kerr, C. A., Grice, D. M., Tran, C. D., Bauer, D. C., Li, D., Hendry, P., & Hannan, G. N. (2014). Early life events influence whole-of-life metabolic health via gut microflora and gut permeability. *Critical Reviews in Microbiology*, *41*(3), 326–340.
- Korterink, J., Devanarayana, N. M., Rajindrajith, S., Vlieger, A., & Benninga, M. A. (2015). Childhood functional abdominal pain: Mechanisms and management. *Nature Reviews Gastroenterology & Hepatology*, *12*(3), 159–171.
- Kuttner, L., Chambers, C. T., Hardial, J., Israel, D. M., Jacobson, K., & Evans, K. (2006). A randomized trial of yoga for adolescents with irritable bowel syndrome. *Pain Research & Management*, *11*(4), 217–223.
- Lackner, J. M., & Gurtman, M. B. (2004). Pain catastrophizing and interpersonal problems: A circumplex analysis of the communal coping model. *Pain*, *110*, 597–604.
- Lewis, M. L., Palsson, O. S., Whitehead, W. E., & van Tilburg, M. A. L. (2016). Prevalence of functional gastrointestinal disorders in children and adolescents. *The Journal of Pediatrics*, *177*, 39–43.
- Li, B. U. K. (2001). Cyclic vomiting. Age-old syndrome and new insights. *Seminars in Pediatric Neurology*, *8*(1), 13–21.
- Loeing-Baucke, V. (2000). Aerophagia as cause of gaseous abdominal distension in a toddler. *Gastroenterology and Nutrition*, *31*, 204–207.
- Longstreth, G. F., Thompson, W. G., Chey, W., Houghton, L. A., Mearin, F., & Spiller, R. C. (2006). Functional bowel disorders. *Gastroenterology*, *130*, 1480–1491.
- Lovell, R. M., & Ford, A. C. (2012). Global prevalence of and risk factors for irritable bowel syndrome: A meta-analysis. *Clinical Gastroenterology and Hepatology*, *10*, 712–721.
- Mayer, E. A., Bradesi, S., Chang, L., Spiegel, B. M., Bueller, J. A., & Naliboff, B. D. (2008). Functional GI

- disorders: From animal models to drug development. *Gut*, 57, 384–404.
- McOmber, M. A., & Shulman, R. J. (2008). Pediatric functional gastrointestinal disorders. *Nutrition in Clinical Practice*, 23(3), 268–274.
- Mignogna, M. D., Pollio, A., Fortuna, G., Leuci, S., Ruoppo, E., Adamo, D., & Zarrelli, C. (2011). Unexplained somatic comorbidities in patients with burning mouth syndrome: A controlled clinical study. *Journal of Orofacial Pain*, 25(2), 131–140.
- Miranda, A. (2008). Early life events and the development of visceral hyperalgesia. *Journal of Pediatric Gastroenterology and Nutrition*, 47, 682–684.
- Morabito, G. L., Romeo, C., & Romano, C. (2014). Functional aerophagia in children: A frequent, atypical disorder. *Case Reports in Gastroenterology*, 8, 123–128.
- Noejovich, C. V., Miranda, P. M., Collins, S. M., Verdu, E., Pinto-Sanchez, M. I., & Bercik, P. (2020). Adverse early life events are common in patients with functional and organic gastrointestinal disorders. *Journal of the Canadian Association of Gastroenterology*, 3(Suppl.1), 26–27.
- Park, R., Mikami, S., Leclair, J., Bollom, A., Lembo, C., Seth, S., Lembo, A., Jones, M., Cheng, V., Friedlander, E., & Nurko, S. (2015). Inpatient burden of childhood functional GI disorders in the USA: An analysis of national trends in the USA from 1997 to 2009. *Neurogastroenterology and Motility*, 27, 684–692.
- Rasquin-Weber, A., Hyman, P. E., Cucchiara, S., Fleisher, D. R., Hyams, J. S., Milla, P. J., & Staiano, A. (1999). Childhood functional gastrointestinal disorders. *Gut*, 45(suppl 2), II60–II68.
- Robin, S. G., Keller, C., Zwiener, R., Hyman, P. E., Nurko, S., Saps, M., Di Lorenzo, C., Shulman, R. J., Hyams, J. S., Patsson, O., & Van Tilburg, M. A. L. (2018). Pediatric functional gastrointestinal disorders utilizing the Rome IV criteria. *The Journal of Pediatrics*, 195, 134–139.
- Saps, M., & Bonilla, S. (2011). Early life events: Infants with pyloric stenosis have a higher risk of developing chronic abdominal pain in childhood. *The Journal of Pediatrics*, 159(4), 551–554.
- Saps, M., Nichols-Vinueza, D. X., Rosen, J. M., & Velasco-Benítez, C. A. (2014). Prevalence of functional gastrointestinal disorders in preschool children. *The Journal of Pediatrics*, 130(5), 1527–1537.
- Scheer, P. (2008). Funktionelle Bauchschmerzen aus der Sicht der pädiatrischen Psychosomatik. *Pädiatrie und Pädologie*, 3, 30–31.
- Schmulson, M. J., & Drossman, D. A. (2017). What is new in Rome IV. *Journal of Neurogastroenterology and Motility*, 23(2), 151–163.
- Shoji, T., Endo, Y., & Fukudo, S. (2018). Psychogastroenterology. In K. Tominaga & H. Kusunoki (Eds.), *Functional dyspepsia* (pp. 105–116). Singapore.
- Simonetto, D. A., Oxentenko, A. S., Herman, M. L., & Szostek, J. H. (2012). Cannabinoid hyperemesis: A case series of 98 patients. *Mayo Clinic Proceedings*, 87(2), 114–119.
- Slutsker, B., Konichezky, A., & Gothelf, D. (2010). Breaking the cycle: Cognitive behavioral therapy and biofeedback training in a case of cyclic vomiting syndrome. *Psychology, Health & Medicine*, 15, 625–631.
- Son, Y. J., Jun, E. Y., & Park, J. H. (2009). Prevalence and risk factors of irritable bowel syndrome in Korean adolescent girls: A school-based study. *International Journal of Nursing Studies*, 46(1), 77–85.
- Sood, R., & Ford, A. C. (2016). Rome IV criteria for FGIDs—An improvement or more of the same? *Nature Reviews Gastroenterology & Hepatology*, 13(9), 501–507.
- Sorensen, C. J., DeSanto, K., Borgelt, L., Phillips, K. T., & Monte, A. A. (2017). Cannabinoid hyperemesis syndrome: Diagnosis, pathophysiology, and treatment—A systematic review. *Journal of Medical Toxicology*, 13(1), 71–87.
- Zablah, R., Velasco-Benitez, C. A., Merlos, I., Bonilla, S., & Saps, M. (2015). Prevalencia de trastornos funcionales gastrointestinales en niños en edad escolar en El Salvador. *Revista de Gastroenterología de México*, 80(3), 186–191.
- Kenia L. Gomez**, PhD Clinical and developmental psychologist in the Department of Pediatric Newborn Medicine at Brigham and Women Hospital/Massachusetts General Brigham and an instructor of psychology at Harvard Medical School. She evaluates the developmental trajectory of babies who graduate from the NICU and is involved in the early detection of neurodevelopment disabilities, evaluation, care-coordination, and family support. She has extensive clinical experience in the area of perinatal mental health and infant parent attachment. PhD in counseling psychology at Loyola University Chicago, where she studied the relationship between subjective well-being, ethnic identity, and family satisfaction among Latin children.
- Jessica DiCarlo**, MD Assistant Professor of Psychiatry and Behavioral Sciences at the University of Texas Health Science Center at Houston (UTHealth). She works with children and adolescents who have complex medical problems and co-occurring emotional issues. She completed a pediatrics internship and psychiatry residency at Tufts Medical Center followed by a child and adolescent psychiatry fellowship at Baylor College of Medicine. Dr. DiCarlo is interested in medical humanities. She is board-certified in general and child/adolescent psychiatry.



Functional Dermatological Conditions in Children and Adolescents

19

Matthew Koller

The skin is embryologically, anatomically, and therefore also psychologically very closely related to the central and peripheral nervous system. Both originate from the ectodermic layer of the embryo and have very similar peptide neurotransmitters.

The skin is the largest organ in terms of its sheer surface, as well as the heaviest “organ” in the human body (Peters & Gieler, 2020). It also has a very rich innervation. It should not be surprising that the skin is largely influenced or impacted by intense or forbidden emotions, stress or internal emotional conflict. Some authors refer to the skin as the “mirror of the soul” (Jung, 2005). As children and adolescents at times face difficult circumstances, constant stress or tension, or traumatic situations, normal “grooming” behaviors may be exacerbated, and lead to “skin picking” or hair pulling, etc. Also, intense emotions can be “expressed through the skin.” The phrases “he is irritating” or “I am itching for a fight” or “someone is thin-skinned” may have a representation in the body as well as in the psyche. Blushing of the skin may occur when a person is embarrassed or ashamed, it can be so intense and frequent that it may constitute a barrier to socialization in a shy or very sensitive child or adolescent.

Children are markedly dependent and have a strong emotional connection with people around them, first the family, but also peers and the wider psychosocial milieu, school, and other social systems in which they interact. Generally, it is acknowledged that dermatological conditions have a very high correlation with psychosocial stressors including traumatic experiences (Balieva et al., 2017)

In the past, psychoanalytic views now abandoned, hypothesized that conditions like eczema were determined mostly by psychological factors, such as an unconscious feeling of rejection by the mother of the child (Spitz, 1951). These views are superseded now and they were incorrect.

However, it is clear that the skin in the fetus and infant is a predominant “feeling” system, which is strongly associated with comfort, calm, as well as pain and distress. In psychodynamic terms, the first “ego” is a “skin-ego,” as described by Didier Anzieu (Anzieu, 1995), i.e., how the baby is contained and “defined” by caregivers who contain the baby and therefore alleviate distress. It is also a “multisensory organ”, touch, pressure, pain and also in the sense that it contains several orifices with different sensitivities. It provides a barrier between the “inside” of the body and the outside world, an envelope and a barrier.

Psychotherapists specialized in skin conditions describe some of them as “the language of

M. Koller (✉)
San Antonio, TX, USA

the skin” (Detig-Kohler, 2001) and in some of these conditions describe internal conflicts between distance and closeness to others. Others describe the skin as a “psychic wrapping” in which the conflicts and problems, internalized and external, manifest themselves (Brosig & Gieler, 2017). We often see markers of inflammation become prevalent in disorders of the skin, which are also components of the chemical response to stress and at times become chronically elevated in some emotional disturbances, like in treatment-resistant depression.

Skin disturbances can have an enormous impact on the quality of life of the child and his or her self-esteem. In adolescence, when social acceptability, beauty, and a self-identity are paramount issues, any condition that affect the skin can have negative consequences on the emotional life of the child. Some conditions can have such negative impact on vulnerable individuals that they can lead to avoid social situations or even to suicidal ideation.

In adolescents in particular, issues of self-image and social acceptability achieve maximum importance and may make the early or middle adolescent extremely self-conscious, lead to feelings of inferiority, to feeling ugly, disgusting or repulsive and to social isolation. Children develop coping skills to mitigate these negative experiences including avoidance and wearing more conservative or less revealing clothing, which can affect their attendance at school and extracurricular activities (Kelly et al., 2021). In the field of dermatology, there is a section devoted to “psychodermatology” (Harth, 2008; Orion et al., 2012) which deals with biological, psychological, and social aspects of dermatological diseases. The field is very broad and includes psychological consequences of skin conditions, such as multiple dermatoses, psoriasis, etc. which have a strong psychosocial component, even though not “caused” by psychological factors. However, those conditions can be aggravated by the patient’s emotional response to the skin problems.

Previously those conditions were called psychosomatic and somatopsychic, depending on the direction of effect one was describing. It is

estimated that around 30–40% of all dermatological patients have an associated, well-established emotional difficulty (Orion and Wolf, 2013; Orion et al., 2012; Picardi et al., 2000). It would be reasonable to consider a dermatologic visit as a “gateway” opportunity to explore mental health concerns, given the significant risk factors that impact children with skin conditions.

It has been estimated that around 18% of requests for evaluation to a consultation service for dermatological conditions would lead to a diagnosis of a “somatoform” skin condition (Harth & Gieler, 2006). Additionally, around 30% of all conditions would have an important psychosomatic component that should be addressed. This can mean that the dermatological condition causes distress, anxiety, depression, etc. or that the dermatological condition is strongly affected by emotional difficulties in the patient.

Emotional factors can have an impact also on the level of compliance with treatment, or worsening of the condition due to psychological factors involved. This is the case with neurodermatitis and psoriasis, for example. Follow-up studies of subjects with chronic skin conditions in general have suggested that when psychotherapy is part of the treatment plan, there is a better prognosis (Franz et al., 2000).

In what follows a number of skin conditions strongly associated with emotional difficulties will be described, we restrict our description to the most frequent or clearly psychogenic ones.

Functional Itch Disorder

Pruritus can be described as an “unpleasant sensation leading to scratch,” which is an old definition proposed by Hafenreffer in 1660 (Misery, 2008). A more recent definition suggests a poorly localized unpleasant sensation, usually distressing, that leads to an intense desire to scratch (Metz et al., 2013). When it is chronic and intense, there will be consequences for the quality of life of the affected child and his or her family.

Itching is the most frequent symptom in dermatological clinics in general (Metz et al., 2013) and it can be triggered by stress, exercise, sweating, certain foods, and xerosis (dryness) of the skin.

The sensation of itching is mediated by multiple chemical transmitters including histamine, proteases, gastrin-releasing peptide, mu opioids, substance P, and interleukin 31. Substance P is an undecapeptide which is a member of the tachykinin family of neuropeptides. Interleukin 31 is a protein that is an inflammatory cytokine which contributes to creating a cell-mediated immune response.

Also, it appears that there are nerve endings specialized with itch receptors (gastrin-releasing peptide receptor), so there is a suggestion of pruritus-specific pathways.

There is some debate in the dermatological literature as to whether pruritus can be “psychogenic” or functional, i.e., to exist without any skin lesion or insult and originate “from the brain,” so to speak (Misery, 2008). There is a predominant view that this is so, and it would be important to diagnose it adequately to give an adequate intervention that takes into account the emotional or psychological factors involved.

Like pain, itching is strongly influenced by the perception of that sensation in the brain. There are specific centers in the brain associated with identifying the itching and its location. This leads usually to the motor act of scratching. Scratching can be a pleasurable sensation. If a cycle is repeated many times, a vicious cycle can be established: the scratching leads to more itching, this to more scratching, etc.

There is no global consensus on what constitutes adequate diagnostic guidelines for functional itching, but most experts would agree on three important or essential criteria: (1) localized or generalized pruritus *sine materia* (i.e., without primary skin lesion), (2) chronic pruritus (over six weeks in duration), and (3) there is no somatic cause.

Some criteria have been proposed by the French Psychodermatology Group (Misery et al., 2007), including the following:

- A chronological relationship of the pruritus with one specific or several life events which could have psychological repercussions
- Variations in intensity of pruritus associated with stress
- Nycthemeral variations (diminished during the night)
- Predominance during rest or inaction
- Associated emotional or psychological disturbance
- The pruritus could be improved by psychotropic drugs
- The pruritus could be improved by psychotherapies

The diagnosis of the condition depends on the absence of any anatomical skin lesion that might explain the pruritus. Of course, when the pruritus is chronic, then there may be secondary lesions due to the scratching.

In this condition, the interventions would include diminishing attention to the possible appearance of pruritus, reassuring the patient that there is no major disease causing it, and teaching the patient to use touch or pressure instead of scratching. Of course it is paramount to address the underlying anxiety, stressor, tension, or emotional burden of the child or adolescents. Keeping the skin lubricated may also be helpful.

Chronic Pruritus

Chronic pruritus (from any cause) is estimated to have a prevalence of around 7% in the adult population (Ständer et al., 2012). Medical conditions in children often associated with pruritus are atopic dermatitis and chronic spontaneous urticaria (Metz et al., 2013). However, chronic pruritus can be caused by other diseases that are not primarily dermatological, for instance, liver and kidney diseases, as well as genetic disorders. The most common causes are kidney failure requiring hemodialysis, cholestasis, polycythemia *vera*, and Hodgkin’s disease.

Even in those cases, a multidisciplinary evaluation and treatment approach are recommended,

which would include a mental health approach in appraisal and treatment.

In terms of detecting the etiology of the pruritus, the clinician should take a detailed history of medications the child or adolescence has used or is using at present, as some may cause pruritus (Niemeier & Höring, 2013).

Clinical Features

When there is atopic dermatitis, the pruritus is described as a sharp stinging sensation, or burning, tickling and or prickling itch, which tends to peak in the evening or at night, and affects 30% and up to 90% of the skin, clearly an extensive problem with frequent onset during early childhood.

Likely without harmful intent, children are frequently reminded by caregivers to stop itching, and being unable to meet those parental expectations can be internalized and embodied as feeling “dirty” or “disgusting” or feeling hatred toward their own skin (Kelly et al., 2021). Children may cover their skin in various ways at school (to conceal areas of irritation). The shame or anguish associated with having a skin condition may exacerbate the already existing academic pressures. All of this may lead to constant anguish, poor self-esteem, and strain on their personal identity and interpersonal relationships.

It is known that high level of stress in general can be associated with pruritus (Gupta & Gupta, 2004). In unexplained pruritus, the itching can be generalized, i.e., to all skin, or localized to the scalp or the genital/anal area. A significant proportion of patients with dermatological lesions secondary to the pruritus have been found to have anxiety symptoms as well as depression. There is a bi-directional relationship between the scratching and the emotional problem, each exacerbating the other.

Management

Since chronic pruritus is a significant problem that affects the quality of life of children, adolescents, and the family, several groups have pro-

duced management recommendations, including some for psychogenic pruritus. A group called CALM-it (Cause for Advanced Learning and Management of Itch) (Metz et al., 2013) has proposed to institute a multimodal approach. The guidelines include medications to deal with chronic itching, as well as “pruritus management” and psychotherapeutic interventions. The pruritus management includes skin care, being aware of the consequences of scratching, and using physical measures such as cold compresses to diminish the itching. Relaxation strategies, recognizing the emotions that lead to increased itching, and engaging the attention on interesting subjects may be additional strategies. Recognizing difficult emotions such as anxiety or anger may help to process previous experiences or current stressors and thus diminish the focus on pruritus (El Hachem et al., 2020). Clinicians should also be wary of their own counter-transference or negative reactions and how this may lead to excessive or damaging expectations for both parent and child.

Urticaria

Urticaria (etymologically *Urtica* in Latin means nettle), in common parlance “hives,” is a general term to describe the appearance on the skin of “welts” or “wheals” which are reddened areas of the skin, these are elevated, and which produce considerable itching on the specific area. The latter phenomena are the manifestation of angioedema.

Urticaria can be acute (which clears in less than six weeks) or chronic, which lasts longer (Raap et al., 2004). After the disappearance, no lesions on the skin are found. The phenomenon consists of edema of the upper dermis, with reddening of the skin all of which cause itching. Sometimes, the urticaria consists only of “hives” or reddened spots which disappear in less than 24 h; in other cases there is also a localized angioedema (Gupta, 2009). Angioedema is the swelling of the area below the dermis itself.

Urticaria can be considered a psychosomatic condition *par excellence*, in the sense that there are forms that are clearly in reaction to external

physical stimuli, and others that are a response to intense stress and emotions, but it is a multifactorial condition. In about half the cases, there is important stress or emotional tension. Chronic urticaria is strongly associated with stressors and anxiety (Raap et al., 2004).

Urticaria is widespread among the general population, with a prevalence of 7–15%. Also, it has been estimated that 25% of people have experienced urticaria at least once in their lifetime (Harth and Gieler, 2006)

From the physio-pathological point of view, the temporary skin changes consist of the liberation of “mediator substances” like histamine, serotonin, prostaglandins, leukotrienes, and other similar ones. These cause vasodilatation. They are released by the local mast cells (Gauger et al., 2000). These mediators lead to increased permeability of the blood vessels and the exit of plasma into the skin layers, while they also cause pruritus.

The causes leading to these reactions are multiple, including physical causes such as cold, heat, or pressure on the skin, other causes can be just light vibration and even by water. It can be caused by allergenic substances like medicines or some foods. There are also non-allergenic factors like intolerance to some medicines (like acetylsalicylic acid). There is also an autoimmune urticaria, which can be brought about by autologous injection of serum into the skin. There are tests with cold objects, hot ones, pressure, etc. to determine the causality of these physical factors. Also, there can be subclinical infections as the cause of chronic urticaria. Streptococci, *Helicobacter pylori*, Staphylococci, and *Yersinia* can be the cause.

In most cases, up to 65% of them, a causal factor cannot be specified. There is a form called chronic idiopathic urticaria, in which no specific or reliable trigger can be found.

In acute urticaria, there is considerable agreement that psychic factors play a very significant role for a subgroup of patients (Gupta, 2009). In some, with post-traumatic memories (Gupta et al., 2005), the mere remembrance of traumatic events can bring about an episode of acute urticaria, for instance, this can occur with events

recalling sexual trauma (Brosig et al., 2000). This is an immediate response to a traumatic memory that can be a form of “reexperiencing” and manifesting the anxiety through the skin, the feeling of being unprotected and frightened.

A frequently ignored issue in traumatic experiences is a feeling of repressed rage. In a traumatic situation, the child or adolescent may have wished to retaliate and get rid of the perpetrator of the abuse, but being unable to do so. However, the repressed rage sometimes is expressed in the form of symptoms in the body, such as pains and in this case, urticarial reactions. Also, it is possible that certain “associations” may be created, for example, eating certain food may remind the child or adolescent of a certain traumatic experience and this “triggers” a reaction in the skin that later is related to the food or other offending factor per se (Gupta, 2009).

The above gives some clues as to the psychotherapeutic interventions that may be necessary: first, express the fear, achieve a feeling of safety, and then work on the prohibited expression of anger or rage that has been repressed for a long time.

A flexible psychotherapeutic intervention along psychodynamic lines is perhaps the most suitable to work on the resolution of repressed affects, forbidden thoughts, and wishes that are a consequence of the feelings of fear, horror, or anger which is not possible to be even make conscious. As in all forms of conversion, there is a “somatic dissociation” between the mind-emotions and the body. Through the body, a child or adolescent expresses feelings that are unacceptable and they can be perceived as communications from the “inner self.” As in other conditions strongly associated with anxiety, relaxation strategies, biofeedback, and hypnosis could be useful. In posttraumatic stress-associated urticaria, in addition to those strategies, eye movement desensitization and reprocessing could be helpful (Abasq-Thomas et al, 2016).

In the immediate treatment of the urticarial process, antihistaminic medications are the cornerstone, as well as medicines like fexofenadine which tend to diminish allergic responses. Corticosteroids can be used to reduce the

inflammatory response itself and shorten the duration and reappearance of the reactions. These medicines are preferred for the treatment of chronic and recidivist urticaria. When antihistaminic medicines have a strong sedating effect, hydroxyzine can be useful, as well as small doses of neuroleptics.

Erythrophobia

This condition is also characterized as a psychogenic state related to the autonomous nervous system. It consists of the tendency to blush and the anxiety that blushing causes in the person who has the face reddening. When it happens occasionally it would be acceptable, but some youngsters find it intolerable that the slightest emotion of shame, discomfort, or shyness leads to the blushing of the face and a feeling of shame.

It makes the child or adolescent more self-conscious and has a negative impact on his or her self-esteem. The embarrassment and the fear of blushing tend to exacerbate the problem and may lead to social avoidance or trying to minimize social contacts. A gradual approximation technique, cognitive and behavioral strategies and dealing with underlying feelings of anxiety in social situations, understanding the fear of others and of negative self-evaluation can help in the long run.

Hyperhidrosis

Hyperhidrosis consists of excessive sweating most of the time, and more so in social or tense situations. Although sweating per se is a normal response to heat, in hyperhidrosis the sweating becomes a problem due to its intensity. This can be a generalized problem or predominantly localized to the extremities. There is an "emotional hyperhidrosis" which is the most common variety. The excessive sweating occurs when there is intense emotional distress.

Sometimes excessive sweating can occur without obvious psychological causes, but most commonly it is worse under special conditions,

such as when one has to give a presentation, talk in public, or perform some activity in front of others.

There is a form of generalized hyperhidrosis that is determined by multiple medical conditions, which may include neoplasms, metabolic disturbance, use of drugs, and the effects of poisons, as well as infections (Ghali & Fine, 2000). All of these have to be eliminated as a cause before saying the condition is due to intense anxiety.

The child or adolescent can feel embarrassed by wet spots under the armpits or in other areas of the torso. Also, the hands can be practically wet, which reduces the possibility of shaking hands due to the shame factor. It is obviously associated with states of tension and anxiety, particularly in social situations. If it predominates in the extremities, this form of hyperhidrosis is referred to as palmoplantar hyperhidrosis (Yamashita et al., 2009).

Robert is a child born in Somalia, whose parents emigrated to the US when he was nine years old, He is 16 years old and is brought due to social phobia and general refusal to go to school. He denies feeling anxiety or fear of rejection. However on successive interviews it becomes clear that the move was very traumatic for him and he felt ostracized and criticized by peers. He denies his feelings and generally pretends that "He is feeling great." However, he says school is just boring and does not offer anything to him. One of his greatest fears has to do with hyperhidrosis. When the clinician tries to shake hands with him, he warns that his hands are wet all the time. He seems extremely embarrassed and rubs the palms on his clothes several times before shaking the hand. He says this always happens at school and he feels weird and strange, as he also sweats a lot from the axillary area and on the back. We explored his anxieties over time, and he was able articulate his feelings of inferiority when he was young in school and other children would call him "pirate" and would say "go back to Africa." He was taught a relaxation technique which improved the sweating, but it took much longer to help him process in psychotherapy his feelings of inferiority and "being different."

The recommended psychological interventions are those that reduce anxiety, which can be psychodynamic psychotherapy, cognitive therapies, as well as biofeedback and autogenic training for relaxation.

One of the more recent strategies in the management of this condition is the injection of botulin toxin or botox (Harth, 2008). However, this is mostly a symptomatic relief treatment that may not address important underlying factors such as constant tension or anxiety, or social phobia.

Two related conditions are bromhidrosis and chromhidrosis. In the first one, the patient has the notion that his or her body has an excessive foul odor, and in the second that it is colored (Harth et al., 2009).

Goosebumps

Goosebumps are the raising of hair follicles in the skin as the corresponding muscles are contracted. These result as an involuntary reaction to perceptions of extreme circumstances, predominantly fear, and activation of the sympathetic nervous system. We see this response in a more dramatic fashion in other animal species, such as in response to a threat (consider a porcupine flaring its quills as it reacts to danger). This is a universal manifestation, in which one can see the strong connection between our psyche and physical body. In some children and adolescents, however, it becomes so pervasive, frequent, and intense that it leads to embarrassment and more fear.

In the animal world, we often associate goosebumps with an understanding that the hairs can trap heat when the subject is cold. However, these also appear in circumstances tied to our emotions. Goosebumps are present in response to the distinct feeling of “shivers” or “chills”. However, they seem to be intimately connected to a full range of our emotional experience, including shock, awe, joy, and fear. When we hear unexpectedly great news, our skin often reacts in this way even before our thoughts do. They often are the first “open door” into our emotions.

Goosebumps, or “gooseflesh,” are also commonly associated with withdrawal from opioid use, signaling a level of “shock” and discomfort that the body is undergoing during this period. The variety of emotional states that elicit goosebumps span the entire human experience.

Goosebumps are not pathologic and do not require treatment per se. It is rather a communication of a state of feeling that can become worrisome for the child because of the constant signalization of fear or anxiety. There is no clear understanding surrounding the biological importance of goosebumps, which perhaps points to its role as an emotional marker.

Alopecia Areata

Alopecia areata means that in the skin, predominantly in the scalp, there are circumscribed areas in which there is no hair, which is an area surrounded by normal hair growth. The loss of hair remains “non-scarred” which means the hair can grow again. If the hair loss were of scarred areas the loss of hair would be permanent. There can be several patches without hair in the scalp, clearly limited by areas of normal hair growth (Hordinsky & Junqueira, 2018). The areas without hair can also appear in other parts of the body normally covered with hair.

Alopecia areata occurs in the absence of any major medical condition that could explain the hair loss, such as a fungal infection or another etiology. There is no intentional hair pulling, as the hair falling is spontaneous. In trichotillomania, there are circumscribed areas without hair which indeed are the result of intentional pulling by the child or adolescent. Obviously, this is a crucial factor in the differential diagnosis of the two conditions. The hair loss can be of the entirety of the scalp (*alopecia totalis*) and there can be loss of hair in all parts of the body and not only the scalp. When the hair is lost everywhere, it is denominated “*alopecia universalis*.”

The prevalence of *alopecia areata* is thought to be around 1% of the population (Levenson, 2008), and other estimates suggest 2% (Hordinsky & Junqueira, 2018).

The current understanding of this condition is that it is autoimmune in nature, and is often related to rheumatoid arthritis and even diabetes type 1 (Hordinsky & Junqueira, 2018). Scalp biopsies demonstrate inflammation in the peribulbar area of the hair follicle. The hair fibers that

fall off have an “exclamation mark” shape. There is a “hair pull test,” in which instead of the normal three or four hairs being extracted when one tugs the hair, the maneuver produces many more with the slight pulling of the hair. The differential diagnosis includes *tinea capitis* (fungal infection), traction alopecia (hair pulling), loose anagen syndrome, aplasia cutis congenita, and pseudopelade. Loose anagen syndrome refers to an easy shedding of hair, seen predominantly in blonde girls, although not exclusively in them. The term anagen refers to the formation of the hair follicle, the initial phase of hair growth. This can be caused by malnutrition and there are drugs that can have this effect. Pseudopelade or pseudopelade of Brocq is a condition in which there is scarring hair loss, but the cause is unknown.

An accompanying sign of the *alopecia areata* consists of nail changes, most frequently “nail pitting.” There may be longitudinal ridging, brittle nails, onychomadesis (shedding of nails), and periungual erythema (redness around the nail).

A significant proportion of patients with *alopecia areata* have antecedents of stressful experiences prior to the symptoms (Harth, 2008) and there is often a coexistence with depressive and anxiety conditions. This has been found in children and adolescents, as well as in family conflict.

The more detailed the anamnesis of the patient is (Gieler & Taube, 1999) and exploration of family dynamics, the more it is likely to find stressful current conditions or problematic life experiences in the patients affected by it.

Many clinicians find that the patient with *alopecia areata* has antecedents of stressful situations, negative events, or anxiety and depression (Levenson, 2008). Perhaps one could not say that stress “causes” the condition but it is certainly one of its factors. Also, some of the problems associated with alopecia may be a consequence of it; in girls and boys at school, the areas without hair can attract unwanted attention, teasing, and embarrassment, which should not be underestimated.

There is no established “medical” treatment for alopecia that is uniformly beneficial and many dermatologists suggest to wait, and to use a wig

temporarily if the problem is marked. However, there are topical treatments such as corticosteroid cream (or orally) as well as “sensitizing agents” diphenylcyclopropenone and dinitrochlorobenzene. These medications are applied to the skin and are a form of contact immunotherapy.

Psychodynamic psychotherapy as well as cognitive and behavioral therapies can be useful in treating the condition. In terms of psychopharmacology, tricyclic antidepressants are thought to help these states as well as the growth of new hair. Relaxation techniques are recommended to deal with anxiety or stress, this can also take the form of hypnotic treatment (Willemsen et al., 2006) to help the person “quiet their body and their mind.” The patient can be trained to achieve these states through relaxation, or self-hypnosis eventually (Willemsen et al., 2006).

The differential diagnosis besides hair-pulling (trichotillomania) should also exclude fungal infections as well as metabolic conditions that could cause these areas without hair. The prognosis is excellent in many cases, but it can be a recurrent problem. Alopecia areata can have spontaneous recovery after weeks or months, in about a third of the patients

The following repetitive behavior disorders such as trichotillomania, skin picking disorder, acne *excoriée*, and onychophagia (nail biting or eating the nails) can be considered as “separate entities,” or also as a manifestation of anxiety or an obsessive-compulsive behavior. There is a suggestion to consider them in the future diagnostic classifications as “body-focused repetitive behavior disorders” (Grant & Stein, 2014). In the current American Psychiatric classification, (DSM V) trichotillomania and skin picking disorders are included in the section of obsessive-compulsive disorder.

From the evolutionary point of view, the skin-picking behavior is related to grooming behavior that is typical of primates and many other mammals. Indeed, some authors consider several of these disorders as a form of pathological grooming (Khumalo et al., 2016). It must be kept in mind that the behavior not only may be due to anxiety but that the actual acts, such as hair pulling, nail biting, or picking at the skin may pro-

duce relief or pleasure in the child or adolescent, at least temporarily.

There is controversy as to whether these conditions should be “impulse control disorders” or are more related to obsessive-compulsive disorders. Also, from the neurocognitive point of view, there is often an impaired capacity for inhibition of motor responses, shown in a task called stop-signal task.

Trichotillomania

Trichotillomania (from the Greek *trichos*= hair, *tillos*= pulling, *mania*=habit) or intentional hair-pulling leading to areas of alopecia, consists of the deliberate pulling of the hair by the child or adolescent.

It is thought to have a prevalence of about 1–3% of children and its age of onset on average is 5–10 years. However, it can be observed in infants and older children. A national sampling study in Israel found a similar prevalence in adolescents (King et al., 1995).

The condition has been strongly associated with stress and anxiety conditions, such as obsessive-compulsive disorder. In younger children, it can be associated with less attention devoted to the child, who finds the hair pulling as soothing and calming. In the first case, dealing with anxiety-provoking situations and changing the habit for a less maladaptive one can be useful. In the second, of the younger child, engaging him or her in pleasurable interactions, teaching other ways to soothe oneself, and relying on people more than in one’s own body to seek relief from anxiety and loneliness may be useful.

Psychogenic Excoriations, “Skin-Picking Disorder” or *Prurigo Nodularis*

This condition is one of the “psychodermatosis” and rather than a symptom of a “larger disorder,” it is considered a separate condition in DSM V where it is classified as an emotional/behavioral disorder in itself. It also has been denominated

dermatillomania (Misery et al., 2012) and neurotic excoriation (Westphal & Malik, 2014).

The definition is that a child or adolescent might experience a persistent urge to scratch, pick, or squeeze areas of the skin that are otherwise healthy, causing lesions and then having to continue to do the same. No general medical illness can be determined to cause pruritus, and there is no other dermatological illness. When the pruritus and the consequent scratching are severe, there may be scarring of the local lesions leading to “nodules” of scar tissue; this is the case in *prurigo nodularis*.

Generally, the condition has been considered as strongly associated not only with anxiety but also with alexithymia and with unexpressed anger (Calikusu et al., 2002). The person in question may place excessive attention on the state of the skin, and the lesions themselves and there may be a “concretization” of worry or channeling of worry into one avenue, one’s appearance, instead of general worry. This happens also in conditions like excessive concern about weight, body shape, thinness, etc. The affected adolescent may spend hours examining the skin and trying to “improve it” through picking and managing the lesions. One should highlight not only the possible causes of this condition but also its consequences. It can lead to a feeling of being odd and unusual, troubled, a feeling of shame, social isolation, or ostracism.

The treatment should be flexible and adapted to the specific needs of the patient, optimally multi-modal (Ginandes, 2002).

Acne excoriée

Acne excoriée (also called *Acne excoriée des filles*) really is a mild or moderate case of *acne vulgaris* which secondarily leads to a repetitive behavior of “picking” or scratching on the lesions insistently, which compounds the problem and leads to major excoriations, hyperpigmentation, hypopigmentation, or scarring of the affected areas. This condition was originally described in 1898 as a condition affecting mostly adolescent women (*jeunes filles*) (Brocq, 1898).

It is associated with anxiety and intense worry about one's physical appearance as occurs in social phobia or simply adolescence. The actual picking or scratching may be a form of soothing behavior or the difficulty to "let go" of worry and excessive focus on the condition of the skin. Acne in social contextualization is important because of its commonality. Even at first impression, those youngsters with acne are inherently seen as being more likely to be bullied and with negative self-perceptions compared to peers (Kelly et al., 2021).

One of the treatment approaches is "habit reversal," which generally consists of: making the patient aware of the maladaptive behavior and paying attention to it, then offering an alternative response (competing response and motivating the patient to engage in the new behavior with positive reinforcement).

Onychophagia

Onychophagia is another "habit" that may or may not be related to other repetitive behaviors such as trichotillomania and skin picking. When it is severe, it may cause difficulties with the growth of the fingernails, bleeding, superimposed infections and embarrassment in the affected child or adolescent. It has generally been associated with anxiety, as a repetitive behavior in which the person engages when stressed or as a "self-soothing" behavior that involves a buccal/dental mechanism in addition to the nails. It can be a lifelong problem when untreated or have periods of exacerbation and improvement depending on life and family circumstances.

Gardner Diamond Syndrome, Painful Bruising Syndrome, or Psychogenic Purpura

This condition, now also called auto-erythrocyte sensitization, was described in the middle of the twentieth century (Gardner & Diamond, 1955). It is described here even though it is very rare, because of the possible intense association between mind and body to the point of inducing

bleeding on the skin. This had already been described in 1927 by Rudolf Schindler in Germany (Schindler, 1927). He described cases of psychogenic bleeding and argued that the bleeding could be induced by hypnosis and also be removed by this means. Also in the literature, there have been occasional cases of "stigmata" similar to the lesions of Christ on hands and feet, including a child evaluated by one of our colleagues in Mexico (Sauceda García et al., 1999). In this case, the parents discovered the "stigmata" (similar to those which were thought to have appeared in Saint Francis of Assisi) on their daughter's hands, which led them to be convinced that she was a child saint.

Various authors have posited a psychophysiological mechanism as the patients they described had intense emotional difficulties associated with the cutaneous bleedings, at the same time as they proposed an immune mechanism against one's own erythrocytes. The condition consists of the appearance of bruises without apparent cause and the bruises can be painful. There may be also itchiness on the site of the ecchymoses. The affected child may also manifest abdominal pain, diarrhea, nausea, and vomiting at the time of the bruising, together with possibly headaches. This condition is one concrete example of psycho-immunological interactions.

The affected areas may last several days or weeks. An autoimmune mechanism has been established: auto erythrocyte sensitization (Ivanov et al., 2009). The diagnosis of this immune reaction can be proven with the injection on the skin of autologous washed erythrocytes, leading to the painful bruises. The bruises tend to occur mostly in the limbs but can occur in any part of the body (Siddi & Montesu, 2006).

What is also remarkable is the high comorbidity with anxiety disturbances (Harth, 2008) and with depressive condition in the children and adolescents affected, as well as previous or current exposure to constant stressors or emotional trauma. The literature comprehends diverse forms of psychopathology in Diamond Gardner syndrome. They include emotional lability, depressive, and anxious features, as well as some personality disturbances associated with intense emotionality.

At times, the syndrome has its onset after a strong impression, like a loss or a fright (Cansu et al., 2008).

The mechanism of the bruises (ecchymosis) is through an immune reaction attacking a phospholipid inside the erythrocytes, specifically phosphatidylserine. Normally in this syndrome, biopsies of the skin do not show any underlying skin condition. If the child has significant bruises and is brought to the emergency room by his parents, the clinician will think first of the possibility of physical abuse, which will have to be ruled out (Hagemeier et al., 2011), particularly if more than one sibling has the same condition.

Regarding medications, this syndrome remains a “*dermatosis sine therapia*” (Ivanov et al., 2009). No pharmacological approach has been proven systematically successful. Among the main psychological treatment recommendations is reduction of anxiety, stress, or depression through various forms of psychotherapy depending on the difficulties the child or family are facing. This could include a combination of “in depth” individual psychotherapy and family therapy interventions, as well as relaxation strategies to combat anxiety, and exposure therapy if the child has marked social phobia (Karatosun et al., 2003).

Dermatitis Artefacta or Dermatitis Factitia

In these situations, the skin lesions are a result of the patient’s activity, as it was described in the “skin picking disorder.” It can be the result of anxiety states, as in the child or adolescent with compulsive washing rituals, which may lead to dryness of the skin or actual damage of the epidermis (Jacobi, 2017). There may be excessive rubbing of the skin with cleaning implements in order to eliminate “germs” or “toxins” or to “clean the pores” of the skin.

An adolescent seen by us had to invest hours on cleaning his skin, which he would do only occasionally, but the ritual would take six or seven hours, as it had to be conducted with cotton imbued in alcohol in order to be “completely cleansed” and it comprehended the whole body at one time. Then he would be relieved, only to start building

up the anxiety that he might be contaminated again until the feeling of dirtiness became unbearable, and the cleansing had to be repeated. The rubbing was so intense at times to “clean thoroughly” that it caused lesions on the skin.

In cases like these, there is an unconscious damage of the skin by maneuvers that are intended to alleviate anxiety. The same can be said if there is a repeated application of certain “cleaning products” like deodorants, sprays, or other substances. The response of the skin can mimic multiple dermatoses depending on the method of damage to the skin. These can occur for example in borderline personality disturbance or in youngsters with dissociative states, in one state of self, the damage may occur unbeknownst to the “apparently normal personality.”

There are sometimes difficulties in impulse control which secondarily lead to skin damage. In these situations, the child may have a mild skin disturbance, which then is “managed” impulsively and repetitively by the child leading to worse alterations of the skin.

Morsicatio buccarum

The Latin term (biting in the mouth) denotes the tendency on the part of the patient to suck repeatedly or bite on the mucosa inside the mouth. The habit can start in early childhood and persist for years. It can lead to lesions and scarring in the area of the mucosa which is bitten or sucked on repeatedly. This can be a form of self-soothing habit to deal with stressful situations or a calming strategy in children. Some consider it a form of impulse control disorder. It is often seen in children who find this strategy to soothe themselves, rather than through requesting assistance from parents or other caregivers.

Some Delusional Disorders in Dermatology

In patients who are not psychotic, in the formal sense of the word, there may be a delusion that they are infested with vermin. Morgellons dis-

ease is such a delusion, in which the patient systematically searches for the “vermin” and may bring as “evidence”: pieces of skin he or she has picked with tweezers or with the nails or fingers, as well as other debris which the patient interprets as the “vermin” or parasites, the debris and fibers are also called Morgellons (Lepping & Freudenmann, 2013). This is less common in adolescents and much more frequent in older women who are isolated (Jacobi, 2017).

General Considerations

Hypnosis is a treatment approach that is often not thought about when considering how to address a number of the dermatological conditions mentioned above (Shenefeld, 2004). Hypnosis can also be used for conditions that have a medical basis but which cause a lot of distress to the child or adolescent and can compound the problem as in the case of acne *excoriée*, *alopecia areata*, hyperhidrosis, excessive blushing, and others.

One hypnotic strategy could be to associate the undesired behavior (picking for example) with a certain negative concept such as the word “scar,” and this may have an inhibitory influence on the undesired behavior (Shenefeld, 2004). In patients who are very worried about “imperfections” of the skin, it has been suggested to visualize in a hypnotic trance, to be in a safe and beautiful place in nature, where there are “slight imperfections” that do not impair the beauty of the natural state.

The treatment can be a component of a multimodal strategy, which can alleviate the certain repetitive perceptions or behaviors and can supplement a psychotherapeutic approach. In general, a multidisciplinary approach or a collaboration between a dermatologist and a psychotherapist could be a minimal approach. Psychopharmacological treatment can be attempted for cases with intense anxiety, tension, and a “habit” problem, for instance, with antidepressants or some medication to diminish tension, such as an alpha-adrenergic medicine or buspirone. One should avoid benzodiazepines as

they lead to habit formation and psychological, then physical, dependency.

References

- Abasq-Thomas, C., Greco, M., & Misery, L. (2016). Pruritus in children. In L. Misery & J. Ständer (Eds.), *Pruritus* (pp. 313–328). Springer.
- Anzieu, D. (1995). *Le moi peau*. Dunod.
- Balieuva, E., Kupfer, J., Lien, L., Gieler, U., Finlay, A. Y., Thomas-Aragones, L., Poot, F., Misery, L., Sampogna, E., Van Middendorp, H., Halvorsten, J. A., Szepletowski, J. C., Lvov, A., Marron, S. E., Sale, M. S., & Dalgard, F. J. (2017). The burden of common skin diseases assessed with the EQSD: A European multicentre study in 13 countries. *The British Journal of Dermatology*, *176*, 1170–1178.
- Brocq, M. L. (1898). L'acné excoriée des jeunes filles et son traitement. *Journal des Practiciens, Revue Générale de Clinique et de Thérapeutique*, *12*, 193–197.
- Brosig, B., & Gieler, U. (2017). *Der Haut als Psychische Hülle*. Psychosozial Verlag.
- Brosig, B., Niemeier, V., Kupfer, J., & Gieler, U. (2000). Urticaria and the recall of a sexual trauma. *Dermatology and Psychosomatics*, *1*, 72–75.
- Calikusu, C., Yucel, B., Polat, A., & Baykal, C. (2002). Expression of anger and alexithymia in patients with psychogenic excoriation: A preliminary report. *International Journal of Psychiatry in Medicine*, *32*(4), 345–352.
- Cansu, D., Kaşifoğlu, T., Paşaoğlu, Ö., & Korkmaz, C. (2008). Autosensibilisation aux érythrocytes (syndrome de Gardner-Diamond) associée à une vascularite cutanée. *Revue du Rhumatisme*, *75*(12), 1264–1266.
- Detig-Kohler, C. (2001). *Hautnah. Im Psychoanalytischen Dialog mit Hautkranken*. Psychosozial Verlag.
- El Hachem, M., Di Mauro, G., Rotunno, R., Giancrisoforo, S., De Ranieri, C., Carlevaris, C. M., Verga, M. C., & Iacono, I. D. (2020). Pruritus in pediatric patients with atopic dermatitis: A multidisciplinary approach—summary document from an Italian expert group. *Italian Journal of Pediatrics*, *46*(1), 1–9.
- Franz, M., Janssen, P., Lensche, H., Schmidtke, V., Tetzlaff, M., Martin, K., ... & Heuft, G. (2000). On the effects of psychoanalytic oriented psychotherapy—an inpatient multicenter study. *Zeitschrift für Psychosomatische Medizin und Psychotherapie*, *46*(3), 242–258.
- Gardner, F. H., & Diamond, L. K. (1955). Autoerythrocyte sensitization. A form of purpura producing painful bruising following autosensitization to red blood cells in certain women. *Blood*, *10*, 675–690.
- Gauger, A., Ring, J., & Abeck, D. (2000). Puzzling urticaria. Allergies, pseudo-allergy, bacteria, fungi, parasites? *MMW Fortschritte der Medizin*, *142*(43), 41–44.

- Ghali, F. E., & Fine, J.-D. (2000). Idiopathic localized unilateral hyperhidrosis in a child. *Pediatric Dermatology*, 17(1), 25–28.
- Gieler, U., & Taube, K. M. (1999). Kommentar zum Weiterbildungsartikel von R. Hofmann und R. Happle „Alopecia Areata“. *Der Hautarzt*, 11, 816–817.
- Ginandes, C. (2002). Extended, strategic therapy for recalcitrant mind/body healing: An integrative model. *American Journal of Clinical Hypnosis*, 45(2), 91–102.
- Grant, J. E., & Stein, D. J. (2014). Body-focused repetitive behavior disorders in ICD-11. *Revista Brasileira de Psiquiatria*, 36, S59–S54.
- Gupta, M. S. (2009). Stress and urticaria. In R. D. Granstein & T. A. Luger (Eds.), *Neuroimmunology of the skin* (pp. 209–217). Springer.
- Gupta, M. A., & Gupta, A. K. (2004). Stressful major life events are associated with a higher frequency of cutaneous sensory symptoms: An empirical study of non-clinical subjects. *Journal of the European Academy of Dermatology and Venereology*, 18, 560–565.
- Gupta, M. A., Lanius, R. A., & Van der Kolk, B. A. (2005). Psychologic trauma, posttraumatic stress disorder and dermatology. *Dermatologic Clinics*, 23, 649–656.
- Hagemeyer, L., Schyma, C., Zillhardt, H., Noeker, M., Bieber, T., & Madea, B. (2011). Gardner-Diamond syndrome: A rare differential diagnosis of child abuse. *British Journal of Dermatology*, 164, 672–673.v.
- Harth, W. (2008). Psychosomatische Dermatologie. *Journal der Deutschen Dermatologischen Gesellschaft*, 6, 67–77.
- Harth, W., & Gieler, U. (2006). *Psychosomatische Dermatologie*. Springer.
- Harth, W., Gieler, U., Kusnir, D., & Tausk, F. A. (2009). *Clinical management in Psychodermatology*. Springer.
- Hordinsky, M. K., & Junqueira, A. L. (2018). Alopecia Areata. In A. J. McMichael & M. K. Hordinsky (Eds.), *Hair and scalp disorders* (pp. 99–110). CRC Press/Taylor & Francis.
- Ivanov, O. L., Lvov, A. N., Michenko, A. V., Kunzel, J., Mayer, P., & Gieler, U. (2009). Autoerythrocyte sensitization syndrome (Gardner-Diamond syndrome): Review of the literature. *Journal of the European Academy of Dermatology and Venereology*, 23(5), 499–504.
- Jacobi, A. (2017). Die Haut als Spiegel der Seele. *Ästhetische Dermatologie & Kosmetologie*, 9(4), 27–33.
- Jung, E. G. (2005). Psychodermatology. *Aktuelle Dermatologie*, 31, 425.
- Karatosun, V., Satoglu, S., Günal, I., & Alptekin, K. (2003). Autoerythrocyte sensitization (Gardner-Diamond) syndrome mimicking compartment syndrome. *Archives of Orthopaedic and Trauma Surgery*, 123(7), 370–371.
- Kelly, K., Balogh, E., Kaplan, S., & Feldman, S. (2021). Skin disease in children: Effects on quality of life, stigmatization, bullying, and suicide risk in pediatric acne, atopic dermatitis, and psoriasis patients. *Children*, 8(11), 1057.
- Khumalo, N. P., Derm, F. C., Schaboodien, G., Hemmings, S. M. J., Moolman-Smook, J. C., & Stein, D. J. (2016). Pathologic grooming (acne excoriee, trichotilomania and nail biting) in 4 generations of a single family. *Journal of the American Academy of Dermatology*, 2(1), 51–53.
- King, R. A., Zohar, A. H., Ratzoni, G., Binder, M., Kron, S., Dycian, A., et al. (1995). An epidemiological study of trichotillomania in Israeli adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, 34, 1212–1215.
- Lepping, P., & Freudenmann, R. W. (2013). 10 delusional infestations in childhood, adolescence and adulthood. In R. S. Tareen, D. E. Greydanus, M. Jefferany, D. P. Patel, Merrick, J. (Eds.), *Pediatric psychodermatology* (pp. 217–236). DeGruyter.
- Levenson, J. L. (2008). Psychiatric issues in dermatology, Part 2: Alopecia areata, urticaria, and angioedema. *Primary Psychiatry*, 15(9), 31–34.
- Metz, M., Wahn, U., Gieler, U., Stock, P., Schmitt, J., & Blume-Peytavi, U. (2013). Chronic pruritus associated with dermatologic disease in infancy and childhood: Update from an interdisciplinary group of dermatologists and pediatricians. *Pediatric Allergy and Immunology*, 24(6), 527–539.
- Misery, L. (2008). Functional itch disorder or psychogenic pruritus. *Expert Reviews in Dermatology*, 3(1), 49–53.
- Misery, L., Alexandre, S., Dutray, S., Chastaing, M., Consoll, S. G., Audra, H., Bauer, D., Bertolus, S., Callot, V., Cardinaud, F., & Corrin, E. (2007). Functional itch disorder or psychogenic pruritus: Suggested diagnostic criteria from the French psychodermatology group. *Acta Dermato-Venereologica*, 87, 341–344.
- Misery, L., Chastaing, M., Touboul, S., Callot, V., Schollhammer, M., Young, P., Fetou-Danou, N., Dutray, S., & the French psychodermatology group. (2012). Psychogenic skin excoriations: Diagnostic criteria, semiological analysis and psychiatric profiles. *Acta Dermatologica Venereologica*, 92, 416–418.
- Niemeier, V., & Höring, C. M. (2013). Somaformer pruritus in der hautärztlichen Praxis. *Der Hautarzt*, 64, 429–434.
- Orion, E., & Wolf, R. (2013). Psychological factors in skin diseases: stress and skin: facts and controversies. *Clinics in Dermatology*, 31(6), 707–711.
- Orion, E., Feldman, B., Ronni, W., & Orit, B. A. (2012). A psychodermatology clinic. *American Journal of Clinical Dermatology*, 13(2), 97–101.
- Peters, E., & Gieler, U. (2020). Dermatologische Erkrankungen. In U. T. Egle, C. Heim, B. Strauss, & R. von Känel (Eds.), *Psychosomatik-neurobiologisch fundiert und evidenzbasiert* (pp. 499–515). Verlag W. Kohlhammer.
- Picardi, A., Abeni, D., Melchi, C. F., Puddu, P., & Pasquini, P. (2000). Psychiatric morbidity in dermatological outpatients: An issue to be recognized. *British Journal of Dermatology*, 143(5), 983–991.

- Raap, U., Gieler, U., & Schmid-Ott, G. (2004). Urticaria. *Dermatology & Psychosomatics*, 5, 203–205.
- Sauceda García, J. M., Maldonado Durán, J. M., Ortiz de la Rosa, L. T., Morales Castillo, M. E., & Velásquez, E. (1999). Sangrado psicógeno con estigmatización religiosa en una prepúber. *Revista Medica del IMSS*, 267–271.
- Schindler, R. (1927). *Nervensystem und Spontane Blutungen*. S. Karger.
- Shenefeld, P. D. (2004). Using hypnosis to facilitate resolution of psychogenic excoriations in acne excoriée. *American Journal of Clinical Hypnosis*, 46(3), 239–245.
- Siddi, G., & Montesu, M. (2006). Gardner-Diamond syndrome. *Journal of the European Academy of Dermatology and Venereology*, 20(6), 736–737.
- Spitz, R. A. (1951). The psychogenic diseases in infancy: An attempt at their etiologic classification. *The Psychoanalytic Study of the Child*, 6(1), 255–275.
- Ständer, S., Darsow, U., Mettang, T., et al. (2012). Leitlinie – Chronischer Pruritus. *Journal der Deutsche Dermatologische Gessellschaft*, 10(Suppl 4), S1–S27.
- Westphal, B., & Malik, O. (2014). In A. Bewley, R. E. Taylor, J. S. Reichenberg, & M. Magid (Eds.), *Practical psychodermatology* (pp. 197–205). Blackwell Wiley.
- Willemsen, R., Vanderlinden, J., Deconinck, A., & Roseeuw, D. (2006). Hypnotherapeutic management of alopecia areata. *Journal of the American Academy of Dermatology*, 55(2), 233–237.
- Yamashita, N., Tamada, Y., Kawada, M., Mizutani, K., Watanabe, D., & Matsumoto, Y. (2009). Analysis of family history of palmoplantar hyperhidrosis in Japan. *The Journal of Dermatology*, 36(12), 628–631.

Matthew Koller MD, MPH Medical School: Doctor of Medicine from the University of Texas Health Science Center at San Antonio. Master in Public Health. Residency: Baylor College of Medicine, Chief Resident of Education. Focus on community and resident education, including implementing of mental health curriculum for local schools and finalist for Baylor's Resident Teacher Award. Future work: Staff Psychiatrist with Talkiatry.



Psychosocial Factors in Cardiovascular Conditions in Children and Adolescents

20

Antonio Gabriel Cabrera
and J. Martin Maldonado-Duran

For centuries in the history of medicine, it was thought that the seat of the soul was the heart, as well as the center for emotions. Much later it was discovered that this really occurs mostly in the brain. In common speech in many languages, the imagination of people has led to several expressions that denote the heart as the seat of difficult emotions, such as sadness, fear, and worry. One can complain of a “broken heart” when there is a great disappointment in love or intensely hurt feelings for another reason. Feeling the heart in one’s throat refers to a state of great alarm and fright. The “heart stopping” or “dropping” can be a heavy sensation of sudden anxiety. Having a heavy heart can refer to feeling burdened by sadness or loss. Many people may complain of having “something in the heart” and fear of having a heart attack. Indeed, many visits to the emergency room occur from fear of imminent death in patients who in reality are suffering from what we now call a “panic attack.”

The notion of “hearts and minds” as being connected and intertwined is very old. However, the specialty of “psycho-cardiology” is a relatively new subspecialty in the field of cardiology, which focuses on studying the possible effects of

psychological factors, emotions, and chronic stress on the functioning of the heart and particularly on their role in cardiovascular diseases (Alvarenga & Byrne, 2016; Israel et al., 2016). These involve hypertension, myocardial infarction, and the effect of personality traits on various forms of cardiovascular conditions (Esler et al., 2008). Also, it studies the effects of cardiac and circulatory problems in the quality of life and emotional status of the patient, which influence the outcome and prognosis of those conditions. Furthermore, there is increasing interest in the role of trauma and posttraumatic stress disorder in the cardiovascular system (Stanley and Burrows 2008; Vaccarino & Bremner, 2016).

In the field of psychosomatics, and in the mind of the patient, the actual physiology of symptoms is not as crucial as what the person or their family perceives could be happening. Many cardiovascular symptoms should be explored by physicians and rule out an “organic” or anatomical/physiological explanation for the symptoms that the patient experiences. In about 30% of the cases, there will be no explanation and the problem will have to be considered as related to constant worry, anxiety, stress, or other chronically stressful situations (Pallais et al., 2011). Among the possible explanations, having ruled out a dangerous medical condition, the physician notices the patient being scared of dying at any time, intense anxiety in the child and the wish to obtain relief.

A. G. Cabrera (✉)
University of Utah Health, Salt Lake City, UT, USA
e-mail: Antonio.Cabrera@hsc.Utah.edu

J. M. Maldonado-Duran
Menninger Department of Psychiatry, Baylor College
of Medicine, Houston, TX, USA

In adults, chronic stress and tension, as well as overactivation of the sympathetic system and constant worry, are strongly associated with chronic hypertension, with a predisposition to heart attacks and even to sudden death (Hering et al., 2015). There are cases in which an adult dies from a sudden heart attack due to a catastrophic event such as being robbed, an earthquake, etc. (Esler, 2009). There is also an association between depressive conditions and a higher frequency of coronary disease. This is not seen so frequently in children and adolescents.

In this chapter, we undertake a brief overview of some of the more common psychogenic or functional symptoms in the cardiovascular system that are presented to the pediatrician. These conditions also have been called cardiac neuroses in the past (Kämmerer, 2005). Now, the terms functional and somatic symptom disorder are preferred. Also, we discuss the connection between anxiety and depression and some cardiovascular complications, together with problems in lifestyle, like stressful conditions, low level of physical activity, and overweight.

Often the first diagnostic opportunity is in an emergency room (Pallais et al., 2011). These symptoms are often unexplained and the diagnostic studies do not reveal any “organic pathology” to account for the phenomena described by the patient or family. A biopsychosocial approach is required for the diagnosis of the conditions that are multidetermined, and the same applies to therapeutic interventions which optimally include a number of somatic and psychological interventions as well.

Psychogenic Syncope

In the nineteenth and early twentieth century, it was common for young and impressionable people to faint (or “swoon”) when they got an unpleasant surprise, and there was a piece of furniture in some rooms, which was described as a “fainting couch.” It was common that when young men and women were suddenly shocked by bad news or were in an utterly embarrassing situation, they would pass out for a short period of time. Often, the family possessed smelling

salts or other substances to help the young person regain consciousness and the situation was resolved, until the next episode. These smelling salts were generally a liquid that contained ammonium carbonate mixed with perfume, and they had a restorative effect, as the substance was very pungent.

The word syncope comes from a Greek term that means cutting off or interruption, as in this case, of consciousness.

Syncope is a temporary loss of consciousness accompanied by a loss of sufficient muscular tone to maintain an upright posture. The child will fall to the ground and be temporarily unresponsive. Consciousness will be regained in a very short period of time.

Syncope in the pediatric age, from multiple etiologies, is common, particularly during adolescence. Most frequently, it is caused by a vasovagal mechanism and is of organic etiology. When it occurs in the midst of the child performing strenuous or physical activity, there should be suspicion of a cardiac etiology. The peak incidence, in general, is during adolescence, and up to 25% or 30% of adolescents are thought to have experienced it (Popkirov et al., 2014; Johnsrude, 2000)

The physiology of syncope is hypoperfusion of the brain. The most common pathophysiologic mechanism is vasovagal syncope or reflex syncope. In this phenomenon, there is a temporary lowering of the blood pressure leading to the loss of consciousness (Anderson et al., 2015). When that is the case, the usual management includes hydration of the patient, adequate intake of salt and an exercise program, and positional changes when the symptoms start. Such symptoms may consist of a feeling of lightheadedness or dizziness. There may be also pallor, increased diaphoresis (sweating) as well as visual changes, such as tunnel vision or a total blackout (Anderson et al., 2015). Nevertheless, the vasovagal reflex can have multiple causes, including being emotionally upset or scared. In this case, there are no mechanical factors (like strenuous physical activity or vasovagal etiology) but a strong impression or fright that causes the sudden syncope.

Episodic fainting in adolescents and adults seems to be relatively frequent in emergency rooms, accounting for about 3% of admissions.

Determining the cause of the syncopal episodes and their nature is essential, in order not to overlook a potentially lethal condition or delay its treatment.

There is little agreement on protocols to diagnose and conduct adequate testing for pediatric syncope (Sanatani et al., 2017). The diagnosis of the nature of syncope has improved with new techniques, but still, the cause of the syncope remains unexplained in about 10% (Brignole et al., 2001) or up to 35% of cases in an emergency room (Pallais et al., 2011).

The differential diagnosis of syncope should be undertaken thoroughly, as there are reports of a misdiagnosis of “psychogenic” syncope when in reality the patients had either heart conduction defects or disorders of rhythm in the heart beat (Kanjwal et al., 2009). In the current state of diagnosis, implantable loop recorders can aid in the diagnosis of a conduction blockage leading to those episodes, undiagnosed despite extensive workup by cardiac and neurological specialists.

If the syncopal episodes are associated with hot weather, a change in position, poor hydration, and long periods of standing, it is usually vasovagal in nature. Other common situations could be the sight of blood, in the middle of a phlebotomy, as well as soft tissue injury or a bone fracture, as well as sudden pain from any cause. Other situations can be hair grooming, micturition, and defecation. As noted, a sudden emotional upset may lead to syncope of vasovagal nature. A gastrointestinal condition associated with pain can also cause syncopal episodes.

Medications can also have a role in causing syncope: any medicine which affects the heart rate, or the blood pressure may do so, such as beta-blockers (like propranolol) and medications like clonidine and guanfacine, which can lower the blood pressure. Calcium channel blockers (such as verapamil and diltiazem) which are used to treat high blood pressure can be the cause. The same can be said of some diuretic medications.

If the syncope occurs while lying down, this suggests more cardiac conditions or a psychogenic nature.

There are several neurological conditions that can cause syncope. A differential diagnosis that

should be considered is seizures. Sometimes a vasovagal syncope can lead to abnormal movements, or the so-called myoclonic variant, and be confused with seizure phenomena. The myoclonus associated with the vasovagal syndrome may include a few spasms or even myoclonus of the entire body, including the face. Typically, the movements are not rhythmic and they do not last over 30 s. However, if the movements are complex they may be mistaken for seizures. A clinical point may help in distinguishing syncope from seizures. In seizures, the loss of consciousness is simultaneous with the onset of abnormal movements, while in syncope first there is loss of consciousness and then the unusual movements occur. In children with prolonged QT and cardiac arrest, seizures might be confused with myoclonus and give the impression of the event being benign while the patient is experiencing a cardiac rhythm that requires defibrillation and possibly cardiopulmonary resuscitation.

In these cases, to try to distinguish epileptic phenomena from syncope, two tests are useful. One is called the “tilting table test,” by which the perfusion of the brain is favored by tilting a table on which the adolescent is lying down, toward a lower position of the head. The other is a video electroencephalogram, which would detect seizure activity. It is important to know about the duration of the episodes. The longer ones are more unlikely to be seizures.

Regarding the duration of the loss of consciousness, in vasovagal syncope, the loss of consciousness should last less than one minute at a time. If the loss of consciousness lasts for several minutes or more, this suggests a “conversion” reaction (Hebson et al., 2019), i.e., functional in nature.

Also, if the syncope occurs while the child is lying down, and is preceded by an aura and followed by confusion or amnesia, a seizure disorder should be suspected. An EEG may be useful in diagnosing this possibility. Nonetheless, the clinician should remember that the same child can have seizures and syncope.

There are also cardiac difficulties as a cause of syncope, there are some forms of arrhythmias that can cause loss of consciousness and even

sudden death. These include conditions like atrioventricular blockage and *torsade des pointes*. These can also be fostered by some medications in sensitive individuals such as antidepressants, neuroleptics, and other psychotropic medicines.

The clinician can suspect a cardiac problem when there is a family history of sudden death, early coronary artery disease, myocardial infarction, history of defibrillator use or heart transplantation, etc.

Exercise in some cases can lead to syncope, due to the production of heat and cardiovascular acceleration; this has been called “exertional syncope” which occurs only after the child starts exercising more or less vigorously (Paris et al., 2016). An exercise stress test can be conducted to explore this possibility. In such cases, a full cardiovascular consultation is necessary.

Hypoglycemia can be a cause of syncope. In these cases, there are usually multiple prodromal signs, such as sweating, intense hunger, a feeling of coldness, tachycardia, tremors, and a feeling of nervousness in the child.

It has been estimated that about a third of patients with syncope may have an emotional disturbance or difficulty. The main ones are anxiety disorders and being very distressed, or in difficult circumstances.

If the medical causes noted above have been ruled out, helping the child diminish the amount of emotional tension and stress should be an obvious intervention. Also, if there are prodromal signs or typical syncope episodes in certain difficult circumstances, like before going to school, when the hair is being combed, or other typical associations, the routine should be changed and made less stressful or strenuous. Helping the child and parents to diminish tension may be of great help for the child, who may be impressionable and sensitive. This can be accomplished with relaxation strategies, biofeedback, and with psychotherapy. There may be a need for school interventions if there is intense stress there, or family therapy to diminish the family conflicts or precipitating events.

Manifestations of Anxiety in the Cardiovascular System

States of intense anxiety can manifest in a number of complaints not only in various organ systems, namely, respiratory, gastrointestinal, and dermatological systems, but also in the cardiovascular area. It is not clear what predisposes some patients to manifest symptoms of anxiety in one or another of the various systems. Of course, some patients have symptoms in several systems at the same time. Here we focus on the manifestations of anxiety in the cardiovascular area (Köllner et al., 2007).

The activation of the sympathetic system, as that occasioned by anxiety, constant tension, and worries, sets in motion a number of reactions like the release of epinephrine and activation of the sympathetic system (Esler, 2010), which is often described as setting off “fight or flight” reactions. The release of epinephrine, corresponding to the increase in the tonus of the sympathetic system, leads to an increase in cardiac rate, “felt palpitations of the heart,” as well as a feeling of hyperactivation of the body in general. Although not very frequent in adolescents, with an increase of the prevalence of stress and obesity, there is now a greater prevalence of arterial hypertension in minors, which is often associated with chronic stress. This is certainly the case in adults.

When this sympathetic activation occurs repeatedly, it can lead to phenomena like complaints of unexplained tachycardia, heart pounding, the feeling of arrhythmia or skipped heart beats, and other similar complaints. These tend to be more frequent in adolescents and can lead to excessive attention and worry about the heart.

Chronic Stress in Childhood and Cardiovascular Disease in Adolescence

The association between chronic stress and depressive states and subsequent cardiovascular disease of several kinds (hypertension, cardiopa-

thy, and others) has been known for a long time in the adult population. However, there is increasing interest in the effects of childhood chronic stress, which may influence cardiovascular function, and can be identified in children and adolescents. In school-age children, there is an association between high levels of stress, depressive symptoms, and sedentary lifestyle, with cardiovascular problems later on in life (Byrne et al., 2016). For adolescents, the main issues involved seem to be arterial stiffness and altered endothelial functioning (Tomfohr et al., 2008). These two elements are considered as “markers” of future cardiovascular disease (Olive et al., 2016). It is important to stress the long-term effect of chronic stress and psychosocial difficulties during childhood on the physical health of the adolescent and later on, the adult. There are clear indications that adolescents who earlier on experienced stress, depression, or multiple difficult circumstances tend to be more likely overweight and to have, already since age 12, a higher risk of cardiovascular disease. Unfortunately, these risks do not occur in isolation. A child with more difficult circumstances, who has a higher chance of being depressed, may exhibit other risk behaviors (in cardiovascular terms) such as smoking, decreased level of physical activity, and higher frequency of obesity.

Gabriel is a 17-year-old Hispanic boy who is brought by his parents because he spends most of his time in front of the computer or watching television. He wants to eat his meals in his room and hardly talks to his three siblings or his parents. He has very few friends and prefers to undertake school online so he does not have to face other adolescents in school. He is very tall, quite overweight, and seems socially awkward. He says he does not like to be around people because “other kids are mean.” he defines himself as having autistic disorder. In reality, he does not exhibit features of this, but more of social phobia. His parents are very concerned about his fear of being hurt by other children, as he has been bullied in the past, as being “weird” and socially awkward. He hardly engages in any physical activity and is quite overweight, he has fatty liver, and his blood pressure is normal but on the higher end. The boy is very reluctant to talk, but when he talks he speaks of feeling that his parents do not like him the way he is, constantly pressuring him to do more and making feel even more inadequate. He feels his father does not like him. In family therapy the father

attempts successfully to establish a more empathic relationship with Gabriel, not criticizing him more but supporting him in going out together to walk, to speak of his fear of being judged by peers and developing social skills.

There is evidence that even children, but particularly adolescents, are likely to show a higher degree of arterial stiffness (particularly aortic stiffness) in response to exposure to chronic or intense stress (Vlachopoulos et al., 2006). A similar association has been encountered between depression in adolescence and higher degrees of arterial stiffness (Dietz & Matthews, 2011). The degree of arterial stiffness is measured with a technique called pulse wave velocity, which is measured in several arteries, often the femoral and the carotid arteries.

Another risk factor for cardiovascular disease later in life is endothelial dysfunction. This is a concept that involves a higher level of vasoconstriction than would be normal for a child of a certain age, and a longer time to recuperate to the normal arterial diameter after the constriction occurred. There have been several studies showing a higher level of endothelial dysfunction in boys and in girls with depressive symptoms (Chen et al., 2012; Tomfohr et al., 2011), even when they are not severe (Osika et al., 2011), and the same has been shown for distressing experiences or living in conditions of high stress.

Cardiac-Focused Anxiety

This form of anxiety is strongly related to cultural and folk beliefs about the importance of the heart and its relationship with difficult emotional experiences. The expressions related to broken heart, the phrase “heart attack,” infarction and others may have a great impact on children and adolescents who are prone to anxiety in the first place.

One predisposing factor is having a relative in the house or extended family who suffers from a heart condition, is delicate, has had an infarction, or has died from some cardiovascular disease.

The child will be excessively attentive and preoccupied about a possible dysfunction of the

heart and be extremely attentive to possible tachycardia, heart pounding, any chest discomfort, or shortness of breath as possible ominous signs that something terrible is happening in the heart (Boris 2018; Fischer et al., 2011; Manning et al., 2019). The excessive attention to the possible heart malfunction (Israel et al., 2016) may lead to avoidance of any exercise or other strenuous activities or efforts that could bring about the feared outcome (Eifert et al., 2006).

Chest Pain

A cardiologist is often called to consult on patients who complain of chest pain. Chest pain can have multiple causes, and patients are taken to an emergency room when they complain of intense chest pain. This is more frequent in older adults who worry they might be suffering from a heart attack. Nonetheless, it is also seen in children and adolescents who may report intense chest pain and naturally their parents worry about the cause of such pain. It is estimated that in about 50% of patients seen in an emergency room, no “organic” cause can be found (Lahman et al., 2008). At times even when the patient or family are reassured that no major heart problem is found, the worry persists, perhaps in the child or the family.

Among the causes of chest pain are chondrocostal conditions (i.e., the ribs and the cartilages adjacent to the sternum), esophageal conditions such as gastroesophageal reflux, esophageal spasm, and other serious conditions such as mediastinitis, pericarditis, and heart pathology *per se*. At times, “non-specific chest pain” is diagnosed and this is thought to be quite prevalent in the general population, with a frequency of around 20% or higher (Eslick et al., 2002; Eslick & Fass, 2003). This non-cardiac chest pain is also known as Gorlin–Likoff syndrome, Da Costa syndrome, “soldier’s heart,” and neurocirculatory asthenia. It is one of the most frequent reasons for patients of all ages to be seen in an emergency room. One of the predisposing factors to non-cardiac chest pain is heart-focused anxiety (Palsson, 2010).

About half of those patients will not benefit from the reassurance that they do not have a heart condition or a severe condition of another kind and will continue to see doctors or appearing in emergency rooms.

Blood/Injury Phobia

Blood injury phobia (Martin et al., 2010) is a condition associated with a “classical” phobia, in this case witnessing injury and blood. After an initial experience of viewing and injury with blood, the child or adolescent develops an intense reaction, fainting. It is an exaggerated form of phobic reaction.

Somatoform Autonomic Dysfunction

Alterations in the functioning of the autonomic nervous system, that is, the sympathetic and parasympathetic systems, are *par excellence* an area of mind–body interaction. It is clear that anxiety and anger lead to a state of hyperarousal in children and adolescents (as well as adults) and that activities that induce calmness or relaxation are equivalent to an increase in the functioning of the parasympathetic system (Song et al., 2004)

Pediatricians and cardiologists often deal with a condition diagnosed as POTS (Postural orthostatic tachycardia syndrome) which is the elevation of the heartrate when the child adopts the upright position (orthostatic position) due to the increased demands of the heart. Typically, this should be quickly compensated and the child should not have persistent tachycardia upon just getting up.

Takotsubo Cardiomyopathy (Broken Heart Syndrome)

This is a quite rare occurrence in younger people but is included here more to illustrate the strong connection between “heart and mind” that exists in less dramatic ways in all humans. It is also called “acute apical transient ballooning syn-

drome” (Srivastava et al., 2016) or stress cardiomyopathy. It was described first by Satoh et al. (1990). The condition can be called stress myocardiopathy and is seen from time to time in some adults as a result of strong emotional impacts and sudden traumatic experiences. It occurs with an incidence of 30 per 1,000,000 children and adolescents (Finsterer & Stöllberger, 2015). In a recent review of 153 cases of takotsubo in children and adolescents (Sendi et al., 2020), the majority of patients were adolescents and males. Almost 50% of patients had a “psychiatric condition” and 30% had a substance use problem. In the adult population, the prevalence is much higher between 1.5% and 2.2% or higher (Sealove et al., 2008).

The word takotsubo in Japanese means “octopus pot”; this is the shape of an octopus trap, with a narrow entrance and wider lower round part, used to trap octopuses (Esler, 2017). This is the shape of the ventricular area of the heart, with a contracture in the upper part and dilation in the lower part. This is thought to be secondary to a major and acute stressor (Esler, 2010). The stressor or shocking news can lead to a massive “spillover” of epinephrine and to cause the malfunction in the heart, whose ventricles can no longer pump blood effectively, leading to rapid death (Wittstein et al., 2005); however, if diagnosed promptly it can be treated successfully. The presentation can be a sudden loss of consciousness or heart failure. Generally, there is an increase in serum troponin levels and a diminished ventricular ejection fraction, which help in the diagnosis. The electrocardiogram often shows ST segment depression (Urbinati et al., 2017). It mimics many of the findings of cardiac infarction. The syndrome can be caused also by neurological conditions. The latter can be subarachnoid bleeding or other cerebral bleeding, epilepsy, migraine, infectious encephalitis, and autoimmune encephalitis. It occurs more frequently in post-menopausal women but there are reports of child cases.

A ventriculography study reveals the characteristic “octopus trap” shape of the heart. These “traps” consist of a receptacle that has a narrow entrance and is rounded and wide after the

“mouth” of the container. Once the octopus has entered, it is hard to get out. When diagnosed on time and with treatment, the prognosis is generally good.

General Principles of Intervention

As in the other areas of somatoform and conditions strongly influenced by emotions, it is necessary to individualize the intervention according to the diagnostic “picture” in a comprehensive fashion. That is, the diagnosis may not be only of “the patient,” i.e., the child or adolescent in question, but of the family, the circumstances of the child/family, and the cultural factors involved at least, including sociocultural and “*Umwelt*” (surrounding) circumstances for the child.

For example an adolescent, 17 year old Joseph, was seen by us due to his frequent complaints of chest pains and worries that he might have a heart attack or a severe heart condition, he monitored his pulse, and thought that his heart “skipped beats” and that he might have an undetected problem that might cause his death. When he was asked about how long this had occurred, the mother and Joseph said it was shortly after the death of his maternal grandfather about a year ago. The boy hardly could avoid his tears, as he was “the closest person he had, like a father figure” as the biological father was distanced from him and was very critical of Joseph. The boy was puzzled because he had “total amnesia” about the circumstances of his grandfather’s death, his funeral and the events after that for the next three months. He worried about this “erasure of memory” too. The mother explained that Joseph had been always concerned about his grandfather, who had a chronic heart condition, had tachycardias and died rather suddenly, perhaps of an infarction. During the following two sessions we engaged with the young man in hypnotic sessions. The purpose was for him to “go back to the time” when his grandfather had died. The patient participated and was able to picture himself at the time he learned of his grandfather’s death and about the funeral. As he did, he started to cry poignantly, and spoke of feeling guilty that he had not been there with his grandfather, and that he had not said goodbye to him. During a procedure called guided imagery, we spoke of him imagining that he saw his grandfather and said goodbye to him. As he did this, he said he felt relieved. We identified the guilt as perhaps at the root of his own preoccupation that he might die

from a similar condition as his grandfather. Later on, as he was seen in subsequent sessions, his memories had been recovered and the worry about the heart had diminished considerably, although much work was to be done on his general sensitivities and anxieties given his life experiences in general.

This intervention is very specific and relates to the particulars of the patient's life experience and ideas about what "is wrong with his heart." Other children might have concerns like general hypochondria, anxieties about multiple other things, etc. Additionally, a number of other techniques can be used "as required." If the child, for example, felt rather ignored and overlooked by the parents, the worry about the heart, the request for visits to the emergency room, etc., could be seen as attempts by the child "to be seen," although not consciously so. This would be a factor that could exacerbate the natural tendency of a child to worry about "perhaps being sick." If an adolescent has had a very limited set of life experiences, such as burdens from school, high expectations from parents, and little opportunity to engage in any social activities or relaxation, somatic worries are more likely. Concerns with tachycardias and chest pains might be a way to have the parents reconsider this regime, rejected unconsciously on the part of the child. The adolescent is seen now as "possibly sick" and this would likely change the parents' behavior *vis à vis* the child. In such cases, interventions such as family therapy, combined with individual sessions with the child, relaxation strategies for the child (Lahman et al., 2008) could be helpful. The intervention might include pharmacotherapy to help a child with severe anxiety, others are biofeedback, mindfulness strategies, and further psychotherapy with the child, which might be useful as well in specific cases.

References

- Alvarenga, M. E., & Byrne, D. G. (Eds.). (2016). *Handbook of Psychocardiology*. Springer. Singapore
- Anderson, J. B., Willis, M., Lancaster, H., Leonard, K., & Thomas, C. (2015). The evaluation and management of pediatric syncope. *Pediatric Neurology*, 55, 6–13.
- Boris, J. R. (2018). Postural orthostatic tachycardia syndrome in children and adolescents. *Autonomic Neuroscience*, 215, 97–101.
- Brignole, M., Alboni, P., Benditt, D. D., Bergfeldt, L., Blanc, J., Thomson, P., Van Dijk, J., et al. (2001). Guidelines on management (diagnosis and treatment) of syncope. *European Heart Journal*, 22, 1256–1306.
- Byrne, D., Olive, L., & Telford, R. (2016). Stress, depression and cardiovascular risk in children. In M. E. Alvarenga & D. G. Byrne (Eds.), *Handbook of Psychocardiology* (pp. 191–211). Singapore.
- Chen, Y., Dangardt, F., Osika, W., Berggren, K., Gronowitz, E., & Friberg, P. (2012). Age- and sex-related differences in vascular function and vascular response to mental stress. Longitudinal and cross-sectional studies in a cohort of healthy children and adolescents. *Atherosclerosis*, 220, 269–274.
- Dietz, L. J., & Matthews, K. A. (2011). Depressive symptoms and subclinical markers of cardiovascular disease in adolescents. *Journal of Adolescent Health*, 48, 579–584.
- Eifert, G. H., Zvolensky, M. J., & Lejuez, C. W. (2006). Heart-focused anxiety and chest pain: A conceptual and clinical review. *Clinical Psychology: Science and Practice*, 7(4), 403–417.
- Esler, M. (2009). Heart and mind: Psychogenic cardiovascular disease. *Journal of Hypertension*, 27, 692–695.
- Esler, M. (2010). The 2009 Carl Ludwig Lecture: pathophysiology of the human sympathetic nervous system in cardiovascular diseases: The transition from mechanisms to medical management. *Journal of Applied Physiology*, 108(2), 227–237.
- Esler, M. (2017). Mental stress and human cardiovascular disease. *Neuroscience & Biobehavioral Reviews*, 74, 269–276.
- Esler, M., Schwarz, R., & Alvarenga, M. (2008). Mental stress is a cause of cardiovascular diseases: from skepticism to certainty. *Stress Health*, 24, 175–180.
- Eslick, G. D., & Fass, R. (2003). Noncardiac chest pain: Evaluation and treatment. *Gastroenterology Clinics*, 32, 531–552.
- Eslick, G. D., Coulshed, D. S., & Talley, N. J. (2002). Review article: The burden of illness of noncardiac chest pain. *Alimentary Pharmacology and Therapeutics*, 16, 1217–1223.
- Finsterer, J., & Stöllberger, C. (2015). Neurological and non-neurological triggers of Takotsubo syndrome in the pediatric population. *International Journal of Cardiology*, 179, 345–347.
- Fischer, D., Kindermann, I., Karbach, J., Herzberg, P. Y., Ukena, C., Barth, C., et al. (2011). Heart-focused anxiety in the general population. *Clinical Research in Cardiology*, 101(2), 109–116.
- Hebson, C. L., McConnel, M. E., & Hannon. (2019). Pediatric dysautonomia: Much-maligned, often over-medicated but not as complex as you think. *Congenital Heart Disease*, 14(2), 156–161.
- Hering, D., Lachowska, K., & Schlaich, M. (2015). Role of the sympathetic nervous system in stress-mediated

- cardiovascular disease. *Current Hypertension Reports*, 17(10), 1–9.
- Israel, J. I., White, K. S., Farmer, C. C., Pardue, C. M., & Gervino, E. V. (2016). Heart-focused anxiety in patients with noncardiac chest pain. *Assessment*, 24(1), 95–103.
- Johnsrude, C. L. (2000). Current approach to pediatric syncope. *Pediatric Cardiology*, 21(6), 522–531.
- Kämmerer, W. (2005). „Ich hab’bestimmt’nen Herzinfarkt!. *Notfall & Hausarztmedizin*, 31, 572–578.
- Kanjwal, K., Kanjwal, Y., Karabin, B., & Grubb, B. P. (2009). Psychogenic syncope? A cautionary note. *Pacing and Clinical Electrophysiology*, 32, 862–865.
- Köllner, V., Berg, G., & Kindermann, I. (2007). Angststörungen und funktionelle somatische Syndrome in der Kardiologie. *DMW – Deutsche Medizinische Wochenschrift*, 132(47), 2513–2524.
- Lahman, C., Loew, T. H., Trit, K., & Nickel, M. (2008). Efficacy of functional relaxation and patient education in the treatment of somatoform heart disorders. A randomized controlled clinical investigation. *Psychosomatics*, 49, 378–385.
- Manning, K., Rogers, A. H., Bakhshai, J., Viana, A. G., Lemaire, C., Garza, M., et al. (2019). Heart-focused anxiety among Latinxs in primary care. *The Journal of Nervous and Mental Disease*, 207(8), 651–658.
- Martin, K., Bates, G., & Whitehouse, W. P. (2010). Transient loss of consciousness and syncope in children and young people: What you need to know. *Archives of Disease in Childhood Education Practice Edition*, 95, 66–72.
- Olive, L., Byrne, D., Telford, R., Abhayaratna, W., & Telford, R. (2016). Childhood stress, emotional distress and cardiovascular function in adolescents. In M. E. Alvarenga & D. G. Byrne (Eds.), *Handbook of Psychocardiology* (pp. 214–227). Singapore.
- Osika, W., Montgomery, S. M., Dangardt, F., Wahrborg, P., Gan, L. M., Tideman, E., & Friberg, P. (2011). Anger, depression and anxiety associated with endothelial function in childhood and adolescence. *Archives of Disease in Childhood*, 96, 38–43.
- Pallais, J. C., Schlozman, S. C., Puig, A., Purcell, J. J., & Stern, T. A. (2011). Fainting, swooning, and syncope. *The Primary Care Companion to CNS Disorders*, 13(4), 27.
- Palsson, O. S. (2010). Heart-focused anxiety as a mediating variable in the treatment of non-cardiac chest pain by cognitive-behavioural and psychopharmacological treatment by paroxetine. *Journal of Psychosomatic Research*, 69(3), 237–239.n.
- Popkirov, S., Grönheit, W., Schlegel, U., & Wellmer, J. (2014). Recurrent loss of consciousness despite DDD pacing: Psychogenic pseudosyncope in a 19-year-old man. *Clinical Research in Cardiology*, 103(9), 755–757.
- Paris, Y., Toro-Salazar, O. H., Gauthier, N. S., Rotondo, K. M., Arnold, L., Hamerschock, R., ... & New England Congenital Cardiology Association (NECCA). (2016). Regional implementation of a pediatric cardiology syncope algorithm using standardized clinical assessment and management plans (SCAMPS) methodology. *Journal of the American Heart Association*, 5(2), e002931.
- Sanatani, S., Cha, V., Fournier, A., Dixon, A., Blondin, R., & Sheldon, R. S. (2017). Canadian Cardiovascular Society and Canadian Pediatric Cardiology Association position statement on the approach to syncope in the pediatric patient. *Canadian Journal of Cardiology*, 33, 189–198.
- Satoh, H., Tateishi, H., & Ushida, T. (1990). Takotsubo-type cardiomyopathy due to multivessel spasm. In K. Kodama, K. Haze, & M. Hon (Eds.), *Clinical aspects of myocardial injury: From ischaemia to heart failure (in Japanese)* (pp. 56–64). Kagakuhyoironysa Co.
- Sealove, B. A., Tiyyagura, S., & Fuster, V. (2008). Takotsubo Cardiomyopathy. *Journal of General Internal Medicine*, 23(11), 1904–1908.
- Sendi, P., Martinez, P., Chegondi, M., & Totapally, B. R. (2020). Takotsubo cardiomyopathy in children. *Cardiology in the Young*, 30(11), 1711–1715.
- Song, A. Q., Niu, X. L., Du, Y., & Guo, R. M. (2004). Heart rate variability changes in children with somatoform autonomic dysfunction. *Chinese Journal of Child Health Care*, 05.
- Srivastava, N. T., Parent, J. J., & Hurwitz, R. A. (2016). Recurrent takotsubo cardiomyopathy in a child. *Cardiology in the Young*, 26(2), 410–412.
- Stanley, R. O., & Burrows, G. D. (2008). Psychogenic heart disease-stress and the heart: A historical perspective. *Stress and Health*, 24(3), 181–187.
- Tomfohr, L. M., Martin, T. M., & Miller, G. E. (2008). Symptoms of depression and impaired endothelial function in healthy adolescent women. *Journal of Behavioral Medicine*, 31, 137–143.
- Tomfohr, L. M., Murphy, M. L., Miller, G. E., & Puterman, E. (2011). Multiwave associations between depressive symptoms and endothelial function in adolescent and young adult females. *Psychosomatic Medicine*, 73, 456–461.
- Urbinati, A., Pellicori, P., Guerra, F., Capucci, A., & Clark, A. L. (2017). Takotsubo syndrome in the paediatric population: A case report and a systematic review. *Journal of Cardiovascular Medicine*, 18, 262–267.
- Vaccarino, V., & Bremner, J. D. (2016). Posttraumatic stress disorder and risk of cardiovascular disease. In M. E. Alvarenga & D. G. Byrne (Eds.), *Handbook of psychocardiology* (pp. 265–282). Singapore.
- Vlachopoulos, C., Kosmopoulou, F., Alexopoulos, N., Ioakeimidis, N., Siasos, G., & Stefanadis, C. (2006). Acute mental stress has a prolonged unfavorable effect on arterial stiffness and wave reflections. *Psychosomatic Medicine*, 68, 231–237.
- Wittstein, I. S., Thiemann, D. R., Lima, J. A., Baughman, K. L., Schulman, S. P., Gersteinblith, G., Wu, K. C., Rade, J. J., Bivalacqua, T. J., & Champion, H. C. (2005). Neurohumoral features of myocardial stunning due to sudden emotional stress. *New England Journal of Medicine*, 352, 539–548.

Antonio Gabriel Cabrera, MD, FAAP, FAHA, FACC Child and adolescent cardiologist & Cardiac Intensivist/Heart Failure Transplant Physician. L. George Veasy presidential endowed chair. Chief of Pediatric Cardiology. Co-director, Primary Children's Heart Center. Professor of Pediatrics, University of Utah Health, Salt Lake City, Utah. Editor of Rudolph's Pediatrics Textbook 24th Edition and Co-Editor of the Texas Children's Handbook of Congenital Heart Disease.

J. Martin Maldonado-Duran, M.D., is an infant, child, and adolescent psychiatrist and family therapist. He is

Associate Professor of Psychiatry at the Menninger Department of Psychiatry, Baylor College of Medicine and works at the complex care service in the Texas Children's Hospital. He edited the book *Infant and Toddler Mental Health*, published by American Psychiatric Press, and has coedited or edited five additional books in Spanish on topics of child and infant mental health. Coeditor of the book "Clinical Handbook of Transcultural Infant Mental Health" (Springer). He has written numerous papers and book chapters on topics of child development and psychopathology in several countries.



Functional Symptoms in the Genitourinary System in Children and Adolescents

Matthew Koller

Like other organ systems, the urinary tract is closely intertwined with emotional states, inner emotional conflict, beliefs about health and disease and often expresses these loaded states in the form of dysfunctions that have no basis in any known medical condition (Günther, 2013). The urinary system is also associated in the mind of children and adolescents with the genital area, privacy, or secrecy. Speaking about certain states or symptoms may be difficult for the child or adolescent and these symptoms may go unnoticed for a period of time as they may be concealed due to shame.

Intense emotional states, particularly, anxiety, may manifest in the form of urinary frequency of unusually repetitive urge to urinate, also in diurnal incontinence and even in urinary retention (Köllner et al., 2002).

In the vernacular language of many cultures, urinating, or the more domestic words can be associated with a number of emotions. One of them is anger, as in “being pissed off” or “pissing someone off” (to denote being angry or making someone angry). The expression “pissing contest” (in German “*den grössten Bogen herausgeben*”) denotes people competing with one another. Also, to signify fear of the unknown: “pissing one’s pants” expresses the bodily representation of the emotion. In some children and adolescents,

increased tension and stress, as well as angry states, unacceptable emotions, can be expressed through symptoms in the urinary system. The need or the conflict about controlling something can be expressed in this area as well. Also if a child is not acknowledged or noticed, admired or is ignored, urination is a possible pathway to be noticed and tended to, as the urination at the “wrong place or the wrong time” can elicit considerable attention from any adults around, at home or at school.

Very briefly described, the process of urination requires the coordinated function of several muscles, and the same is true for the contentment of urine in the bladder. In the urinary bladder, there is a detrusor muscle, which when contracted initiates the process of voiding the urine, while if it relaxes, this allows the accumulation of urine in the bladder. In reality the whole bladder is a muscle, the detrusor muscle. For the urination, there are two sphincters, the internal and the external ones, both of which have to relax to allow the urination, and vice versa, to maintain the urine in the bladder. The internal sphincter functions independently of the individual’s will, while the external sphincter is under voluntary control. The internal sphincter is located next to the bladder, while the external one is located in the pubococcygeal area or pelvic floor.

The activation of the sympathetic system, or “fight or flight” system promotes urination. This is sometimes involuntary in the case of children, adolescents, or adults who are utterly frightened.

M. Koller (✉)
Private Practice of Psychiatry and Work at Talkiatry,
Inc., Dallas, TX, USA

Epidemiological Issues

There is little agreement on all the features necessary for conditions to be considered “conversion” or “psychogenic” as there are cases that are “overdetermined,” i.e., that have an onset after a medical condition, or where a medical condition that should have mild symptoms is perceived by the patient as very severe, as with some pain conditions. In general, it is estimated that 5–11% of all patients attending urological clinics have a clearly “somatizing” condition (Köllner et al., 2002).

Urinary Frequency, Irritable Bladder, or Overactive Bladder

This symptom can occur in even fairly young children, such as the preschool years and later on through adolescence and adulthood. Anxiety, stress, and worry tend to augment the tension in the bladder, leading to a heightened desire to urinate. The child or adolescent may become hyper-vigilant as to the sensation of fullness in the bladder and this leads to frequent urination. If there is no bathroom available in the vicinity, this can exacerbate the fear of involuntary urination and a wish to urinate even with more urgency. The fear of an “accident” and worry of urination can produce a hyperactivation of the vegetative nervous system and lead to further tension in the bladder. The constant worry about finding a bathroom and urgent urination may cause agoraphobia so as not to face the possibility of being utterly embarrassed (Neubauer and Neubauer, 2004). It appears that traumatic situations and traumatic memories which cause increased muscular tension and anxiety in general can be also associated with this urinary frequency (Köllner et al., 2002). Frequent urination and the fear to lose control of the bladder have also been associated with attention-deficit disorder difficulties, as well as with obsessive compulsive disorder (Ng et al., 2021. Jiwanmall & Kattula, 2016).

A general state of emotional tension and worry about multiple problems can lead to an increased perception of “fullness in the bladder” when the

bladder is not really full. The result is frequent urination of small amounts of urine each time. This can be a chronic condition in which the child may request to go to the toilet every 15 or 20 min, the more so as he or she gets more anxious. It is thought that emotional tension leads to an increased perception in the brain, of distension of the urinary bladder, leading to the need to void frequently.

The constant attention to the presenting symptoms can lead to a vicious cycle of tension, pressure in the bladder, more tension, etc.

Rosa, a 16-year-old Hispanic girl was referred for consultation because of anxiety and depressive feelings, as well as urinary frequency and other somatic symptoms.

Rosa communicated quite vaguely and sometimes she was smiling even when she was talking about difficult or sad topics. When this was pointed out, she said that in her family “nobody expresses emotions” and that everyone just keep their feelings to themselves, like she does. They do not talk to each other about feelings or reactions.

Rosa spoke of the symptoms that bother her the most. One of them is “urinary urgency” and frequent urination. She can’t go about 20 minutes without urinating. She fears that she might have an “accident” at any time, for instance at school or during a short trip. She had one “urine accident” at school several years ago and still has much fear that she “might not make it to the bathroom.” Rosa often comes home running into the restroom as she feels the urine is imminently coming out and she may not be able to stop it. When she goes on car rides and they are a little long she experiences anguish that she might lose control of the bladder and has the urgency to urinate. She says that sometimes she urinates very little but has the urge to void nevertheless. This is a major problem for her, for instance, at school.

Also, she at times has stomach pains as well as chest pains. The chest pain is acute and intense. She feels it “in her heart” and also, she lives in fear that she might develop some heart infarction or a major dangerous condition and is afraid that she might die suddenly. Sometimes she asks her parents to take her to the emergency room. She has gone a few times and she is reassured that there is no major cardiac problem. Rosa struggles also with frequent abdominal pain. These episodes are intense and they occur primarily during the premenstrual times.

The child says she becomes very emotional when she is about to have her menstrual period. She later revealed that she fears ever being alone in the house, as she is afraid an animal might come out of

the dark, or an intruder. She has much separation anxiety and can never feel comfortable alone. She was helped to understand her fears and to learn strategies to relax and reassure herself.

In these situations, a multi-modal set of interventions might be a preferred approach, using strategies to diminish the anxiety through exploration of the fears the patient experiences, the source of the anxieties and what they tell about the child's past and the current circumstances. Also, strategies to promote relaxation might be useful to help the child "calm the mind" and to use them when the tension is noted and the "questions about urination" come to the fore. Any relaxation strategy such as biofeedback training, hypnotherapy and self-hypnosis, yoga, and mindfulness should be useful in these circumstances.

Psychotherapy can be useful also to help the child with repressed, unexpressed anger, and frustration. When the emotion "has nowhere to go" and particularly when there are relational factors, family psychotherapeutic interventions might be a more practical way to allow the relational dynamic to change, so that the child can "have permission" to manifest more openly a feeling of being ignored, resentment from the past, or unexpressed frustrations.

Psychogenic Urinary Retention (Paruria)

This situation consists of the fear of voiding (urinating) in a public place, or where potentially one could be seen or heard urinating, it has also been called "bashful bladder syndrome." As a result, the child or adolescent avoids strenuously to use the bathroom at school, or "holds" the urine as long as possible. In many cases, the impossibility to urinate occurs despite the desire of the child or adolescent to urinate and attempts to do it voluntarily. That is, the state of anxiety and alarm to try to urinate in public causes such anxiety that the urination is not possible, i.e., to achieve the relaxation of the internal sphincter of the bladder. At times, the affected child has a better chance to manage to urinate if he or she goes to a remote bathroom where less people are likely to go.

The child or adolescent may perceive the extreme urge to urinate and attempt to do so, but without being able to manage that in a public restroom, as in the school, a theater, etc. (Agarwal and Agarwal, 2017). These unsuccessful attempts may lead to increased anxiety, with sweating, blushing, tachycardia, hyperventilation, and salivation. This hyperarousal worsens the difficulty to urinate.

This may lead to requests to the caregivers to go home to urinate. In adolescents, it may lead to avoidance of traveling, or of invitations to other people's houses or field trips. Some adolescents may drink the smallest amount of liquid possible to avoid having to urinate later on in one of those places (Quevedo Fonseca, 2015). The condition can be considered an anxiety disorder, and has been thought to be a special case of social phobia (Vythilingum et al., 2002), as well as a specific phobia (Hammelstein et al., 2005). It can lead to significant social withdrawal or extreme reluctance to attend school or other public places.

Little is known about the prevalence among the general population of children and adolescents, and in a significant proportion of cases it goes undiagnosed as such and untreated. A survey with adult males conducted by Hammelstein et al. (2005) found a point prevalence of 2.8%, but other surveys in college students have found higher rates (Kaufman, 2005). There is also an issue of secrecy, as noted by Soifer et al. (2020) which makes epidemiological information difficult to obtain. Also, there is shame in admitting the problem and seeking treatment. This author points to millions of people all over the world suffering from paruria. It appears that most adults report the onset of the condition in early to middle adolescence. A web survey conducted in Italy found that about 85% of people who qualified as having paruresis were male (Prunas, 2012).

Obviously this symptom, the fear of urinating in public places is correlated with the nature of "public restrooms," which are relatively new inventions in the history of humanity. The water closet is about 150 years old. The design of such water closets is another interesting variable. In many European countries, the water closet is located in a completely closed space, with a door

and walls. In the USA and much of Latin America, it is common for water closets to be in more “open stalls” where the noise and the presence of the other are obvious next to the person urinating. For men in the USA and other countries, it is common to urinate while standing, while it is not so in many predominantly Muslim countries and Germany for example. In many schools and public restrooms for men, there was very little privacy for “urinals,” which could be a long recipient where several men could line up to urinate in it at the same time. All of these features will make an enormous difference to a youngster afflicted with “bladder shyness.”

In women, prolonged urinary retention can lead to more frequent urinary tract infections. There are social taboos associated with exposing genitals in public as well as touching them, which is necessary in many elimination functions (Boschen, 2008). It seems that men are more concerned about being seen urinating, while women are more with being heard (McGraw et al., 2014).

By contrast, acute urinary retention is generally an emergency situation and is rare in children. It can be due to mechanical causes, dysfunction, urinary infection, mechanical obstruction due to a tumor or another source, and needs to be investigated thoroughly.

Intervention

Like in other conditions, the treatment should be individualized to the actual symptoms and features of the adolescent or adult, who may come to treatment due to other anxiety symptoms and then paruria is discovered. Many patients never seek treatment specifically for that, perhaps half of the sufferers. In any case, like other phobias, a process of cognitive reappraisal, reframing of the fear and gradual approximation to the feared situation may be helpful. Prior to this, some clinicians recommend a “loading” of ingesting liquids to ensure the patient will need to urinate. Relaxation techniques at the time prior and during the urination may be helpful. Biofeedback and other strategies to “ground the mind” on the issue at hand without thinking of all the possible

scary scenarios may be helpful. Medications that are recommended for anxiety in general could be useful here if the problem is incapacitating, for instance alpha adrenergic stimulants (clonidine or guanfacine) as well other medications.

The Genital System and Its Discontents

The components of the genital system, internal and external, are invested with multiple emotions and meanings, having to do with the concept of the self, beauty, masculinity, femininity, and “fluidity” of sexual preferences. Elsewhere the question of the “new sexualities” in adolescence is described, namely in the embodiment of the self in adolescence. It is also very clear that children of school age also have a “sexual life” and interest in sexuality. There is scarce literature about this, the first book in the German literature (*Das Sexuelleben des Kindes*) was written by Albert Moll in 1908 (Moll, 1908), from a mostly phenomenological and descriptive point of view. Sigmund Freud described his conceptions on the psycho-sexual development of the infant and young child, which created intense adverse reactions in large segments of the population, including the psychiatric communities, in Vienna and many other parts of the world. These subjects have always been taboo and create much anxiety in many people, who would prefer that this topic were not mentioned at all, as if the sexuality of children and adolescents did not exist.

It does, however. Several surveys in North America have confirmed that even in high school students (ages 14–18), a significant proportion (more than half of boys and girls) have mostly interpersonal sexual experiences (O’Sullivan et al., 2014, 2016). Something similar was found in a survey in the Czech Republic (Kopecky, 2012). Also, of those who have experienced sexual interactions, around 50% report some concern or dysfunction in sexual functioning. In connection with this, it must be kept in mind that in different cultures, the age of consent for adolescents for sexual activity is well under 18 years of age. In the United Kingdom and in Spain, it is 16 years.

Indeed, in most European countries, it oscillates between ages 15 and 16 (Zhu & Van der Aa, 2017). In Ireland, it is 17 (Waites, 2005). In Canada, it was age 14 and it was recently changed to 16 (Bellemare, 2008). In most countries in the Western world, sexual activity between adolescents is usually not penalized, except when there is a large difference in ages, above five or six years between those involved.

In this section, we will privilege the discussion to the sexual functioning in adolescents when it is affected by psychological and emotional factors leading to dysfunction or pain.

Dyspareunia and Vaginismus

In principle, dyspareunia refers to the symptom of pain a woman experiences during sexual intercourse. Although this is most often described in adult populations, it is clear that many young women or teenagers will engage in sexual activity. Dyspareunia is a symptom that among adult women has been reported at between 15 and 20% of all women. In a recent survey in Canada with 1425 girls between 12 and 19 years of age, 20% of them reported dyspareunia, through a questionnaire. Also, many reported vaginal pain, even without sexual activity (Landry & Bergeron, 2009). Also, there was a significant association between dyspareunia and increased anxiety, antecedents of sexual abuse, and more stressful circumstances in general (Landry & Bergeron, 2011).

Vaginismus has been recognized for centuries as an issue that impedes the coitus due to an involuntary contraction of the muscular tissue in the introitus (or outer third portion) to the vagina (Özcan et al., 2015). It has often been associated with anxiety. A female adolescent who may be very ambivalent about the notion of sexual intercourse may experience this symptom, making coitus impossible and conclude that “there is something wrong with her.” Obviously, there are multiple factors that may lead to this contracture of the perivaginal muscles at the time of intercourse (Crowley et al., 2009). One of them is at times the pressure that an adolescent girl may

experience to engage in actual intercourse, which may be exacerbated by the fear of an unexpected pregnancy, a sexually transmitted disease or simply because of the multiple admonitions and advice from family members who would disapprove of the behavior. One of the factors may be antecedents of unwanted sexual experiences. Various experts recommend counseling or psychotherapy in order to explore the feelings of the minor regarding intercourse, as well as relaxation strategies and in the older teenager dilation exercises. If the problem is very severe or disturbing, botulinum injections can be used to interfere with the muscle contraction.

Unexplained Chronic Pelvic Pain

Chronic pelvic pain is not a rare condition in the special services of the gynecologist or the urologist. It is thought to be the cause of consultation for about 10–15% of all cases (Daniels & Khan, 2010.). There are multiple etiologies, but often there is no obvious medical cause of the condition or the pathological entity would not explain the intense pain. In these cases, an emotional/psychological contributor is important to consider, particularly around the excessive perception of pain (Latthe et al., 2006).

In men, there is a syndrome called “chronic pain of the pelvic floor” which is associated with prostatic congestion. This can be caused by infrequent ejaculation or by the reflux of urine into the prostatic area, which is an abnormality. There are many cases in which the pain is unexplained despite multiple studies. These conditions are more frequent in older males.

The syndrome can be reported as a feeling of “pressure” in the pelvic floor as well as a burning sensation or as if something were being stretched inside. It can also feel as increased pressure or pain in the bladder or difficulty urinating. There may be a feeling of fullness in the pelvic area in general. The problem is at times misdiagnosed in the man as “prostatitis” when in reality there may be contracture of pelvic muscles and a general tension in the muscles in the pelvic floor (Günthert, 2002. Gyang et al., 2013).

In female adolescents, there are multiple causes of chronic pelvic pain, as in endometriosis, the chronic pain can be “acyclic,” i.e., not associated with menstrual periods or “cyclic” as more intense during the premenstrual or menstrual stages (i.e., dysmenorrhea). In dysmenorrhea, the pain may be throbbing or “colic” in nature or dull and ongoing during the menstrual period.

Endometriosis refers to the presence of endometrial tissue which normally lines the uterus, but in other viscera around the pelvic area or beyond, such as the bladder, intestines, etc. Therefore, due to the influence of hormonal cycles, it can bleed and cause pain. Also, the mechanisms leading to endometriosis are not really known, but it is hypothesized that some tissue from the endometrium, which is “sloughed off” during the menstrual state, can reflux through the Fallopian tubes into the pelvic cavity itself and the tissue is implanted in surrounding organs or tissues, like the peritoneum (Song & Advincula, 2005). Also, interstitial cystitis is sometimes diagnosed, particularly in women, as a cause of chronic pelvic pain.

Another cause of chronic pelvic pain may be an ovarian cyst (or cysts). These occur as the follicles grow during ovulation. Their management should be conservative as they may improve spontaneously after some menstrual cycles. Musculoskeletal causes of chronic pain are multiple in the adolescent, but may occur due to spasm of the psoas muscle (or shortening of the muscle), as well as the abdominal muscles.

Another cause of chronic pelvic pain is irritable bowel syndrome, as well as an inflammatory process (Song & Advincula, 2005). This may be due to an infectious condition.

Unexplained pelvic pain has been associated with tension, anxiety, high levels of stress, and antecedents of traumatic experiences, particularly long-standing chronic difficult circumstances during childhood, as well as neglect.

Regarding intervention, this will depend on the diagnosis. At times, a laparotomy is necessary to rule out factors like endometriosis, pelvic inflammation, and the like. When no obvious cause can be found despite diagnostic studies, a multi-modal approach is recommended, includ-

ing analgesics, exercise, weight management if necessary, and psychotherapy. Various forms of psychological intervention including counseling, cognitive, and behavioral therapy and others have proven helpful in reducing the pain (Latthe et al., 2006).

Erectile Dysfunction

The scientific literature reveals a much higher prevalence of erectile dysfunction in younger men compared with the prevalence decades ago. This includes adolescents and young adults. In the past, it was thought to be a problem affecting mostly men above age 40. Several estimates report a prevalence of 30% in younger men according to several surveys (Park et al., 2016).

In some countries, there are andrological clinics, devoted to the healthy functioning of the reproductive system in the male (Zampieri & Camoglio, 2020). Among adolescents, there are consultations around gynecomastia (growth of the breast tissue) even though in general there are no abnormalities in prolactin levels. Some cases could be due to pharmacological side effects as with several neuroleptic medications. Other concerns are the curvature of the penis, a “webbed” penis (the penis and scrotum linked too closely by skin making erection difficult), phimosis (a very small aperture in the end of the prepuce, not allowing the prepuce to be retracted), as well as erectile dysfunction.

It is well known that adolescents often wonder about the adequacy of their genitals, particularly of the penis, in terms of overall size and acceptability, particularly when they have been exposed to pornography in which the male models have unusually large genitals. One of the diagnostic signs is that the adolescent generally does not report difficulties with erection during masturbation, but they occur during intercourse. There is often a feeling of unease, and perhaps in some cases pain. Generally, no medical pathology is encountered and the issue is associated with anxiety about performance, the adequacy of the genitals or the body of the teenager. The use of pornography is increasing very rapidly among

adolescent boys and girls. It has multiple effects, particularly exposing younger people to unusual or aggressive forms of sexuality, which are becoming more normalized and even desirable. These images may create associations in the mind of young people, which are untenable and unrealistic. Also, there is an increase in cyber sexual experiences, in which the youngster is essentially masturbating in the presence of another person, perhaps a girlfriend or boyfriend. This can become a more arousable experience and hinder the capacity for sexual functioning in a physically present relationship. Increased view of pornography has been associated with the increase in the prevalence of erectile dysfunction in male adolescents (Park et al., 2016). Another contributing factor is obesity, the prevalence of which is on the rise in adolescents and adults (Martins & Abdo, 2010).

It seems clear that depending on the causal mechanisms surmised, this will determine the appropriateness of interventions. There are a number of psychological interventions to reduce “performance anxiety” in men and to not “rush to intercourse” or feel threatened by the possibility. In fact “forbidding the intercourse” while maximizing the intimacy and emotional closeness angles may reduce the anxiety. Reduction of pornography viewing is recommended for the adolescent who is “desensitized” to the images and has to search for different and novel stimuli all the time.

Anorgasmia and Premature Ejaculation

Anorgasmia occurs in both adolescent males and females, who may experience a lot of anxiety, tension, and negative thoughts during intercourse or even masturbation, such as feelings of guilt or inadequacy, which lead to a difficulty in achieving relief through orgasm, despite being sexually aroused. Premature ejaculation is seen frequently and at times the adolescent can exhibit this com-

plaint in an andrological or pediatric clinic (Zampieri & Camoglio, 2020). Premature ejaculation refers in the male to an excessively quick achievement of ejaculation even though there has been no penetration in to the vagina or very shortly after that, it is the most common presenting symptom in andrological and urological clinics when it comes to the sexual functioning of men (Rösing et al., 2009).

At times the anorgasmia occurs only during sexual intercourse but not during masturbation, but can be a pervasive problem in both activities.

A psychological intervention is useful for the anorgasmic teenager, which may discover depression, excessive anxiety, and intrapsychic conflicts regarding sexuality and intercourse; these may include fear of infections, sexually transmitted diseases, AIDS, and fear of a pregnancy. A psychoeducational model can be the initial approach followed by addressing the other factors, the emotional ones, when they are important. The same applies for premature ejaculation. A “squeeze” technique of the penis used to reduce the possibility of imminent orgasm has been acknowledged for decades and can be used by the patient or the partner and the youngster to reduce the possibility of a premature orgasm.

Excessive Sexual Desire – Excessive Masturbation

There is very little empirical information about what is “excessive” sexual desire, or masturbation and what is the boundary between “normal” and excessive (Adelson et al., 2012). There are reports in the literature associating hypersexuality with mood disorders (particularly hypomania and mania) as well as with the use of some medicines, such as psychostimulants (commonly used for treatment of attention deficit problems). Often the clinician involved may discover the adolescent is very anxious or lonely, isolated and requires alleviation of both situations through multiple psychosocial interventions.

References

- Adelson, S., Bell, R., Graff, A., Goldenberg, D., Haase, E., Downey, J. I., & Friedman, R. C. (2012). Toward a definition of "hypersexuality" in children and adolescents. *Psychodynamic Psychiatry, 40*(3), 481–503.
- Agarwal, B. J., & Agarwal, N. (2017). Acute urinary retention in children. *International Surgery Journal, 4*(5), 1610–1613.
- Bellemare, S. (2008). Age of consent for sexual activity in Canada. *Paediatrics & Child Health, 13*(6), 475.
- Boschen, M. J. (2008). Paruresis (psychogenic inhibition of micturition): Cognitive behavioral formulation and treatment. *Depression and Anxiety, 25*(11), 903–912.
- Crowley, T., Goldmeier, D., & Hiller, J. (2009). Diagnosing and managing vaginismus. *British Medical Journal, 338*, 225–229.
- Daniels, J. P., & Khan, K. S. (2010). Chronic pelvic pain in women. *British Medical Journal, 341*, 772–775.
- Günthert, E. A. (2002). Somatisierungsstörungen im Urogenitalbereich. *Der Urologe, 41*, 602–610.
- Günthert, E. A. (2013). *Psychosomatische Urologie. Leitfaden für die Praxis*. Schattauer.
- Gyang, A., Hartman, M., & Lamvu, G. (2013). Musculoskeletal causes of chronic pelvic pain. *Obstetrics & Gynecology, 121*(3), 645–650.
- Hammelstein, P., Pietrowsky, R., Merbach, M., & Brähler, E. (2005). Psychogenic urinary retention (paruresis): Diagnosis and epidemiology in a representative male sample. *Psychotherapy and Psychosomatics, 74*(5), 308–314.
- Jiwanmall, S. A., & Kattula, D. (2016). Obsessive-compulsive disorder presenting with compulsions to urinate frequently. *Indian Journal of Psychological Medicine, 38*(4), 364–365.
- Kaufman, R. R. (2005). Monotherapy treatment of paruresis with gabapentin. *Pharmacology, 20*, 53–55.
- Köllner, V., Mück-Weymann, M., & Joraschky, P. (2002). Psychosomatische Aspekte in der Urologie. *Der Urologe, 42*, 306–313.
- Kopecky, K. (2012). Sexting among Czech preadolescents and adolescents. *New Educational Review, 28*, 39–48.
- Landry, T., & Bergeron, S. (2009). How young does vulvo-vaginal pain begin? Prevalence and characteristics of dyspareunia in adolescents. *The Journal of Sexual Medicine, 6*(4), 927–935.
- Landry, T., & Bergeron, S. (2011). Biopsychosocial factors associated with dyspareunia in a community sample of adolescent girls. *Archives of Sexual Behavior, 40*(5), 877–889.
- Latthe, P., Mignini, L., Gray, R., Hills, R. K., & Khan, K. S. (2006). Factors predisposing women to chronic pelvic pain: Systematic review. *British Medical Journal, 332*, 749–755.
- Martins, F. G., & Abdo, C. H. N. (2010). Erectile dysfunction and correlated factors in Brazilian men aged 18–40 years. *Journal of Sexual Medicine, 7*, 2166–2173.
- McGraw, M., Rothbaum, G., & Sterner, W. (2014). Paruresis: What counselors need to know about assessment and treatment of shy bladder syndrome. *Journal of Mental Health Counseling, 36*(3), 228–242.
- Moll, A. (1908). *Das Sexualleben des Kindes*. Leipzig: Vogel.
- Neubauer, H., & Neubauer, M. E. (2004). Wenn die Blase weint *Der Urologe A, 43*(3), 268–272.
- Ng, Q. X., Lim, Y. L., Loke, W., Yeo, W. S., & Chee, K. T. (2021). Obsessive-compulsive disorders and functional urinary disorders: A fortuitous association? *Behavioral Sciences, 11*, 89–95.
- O'Sullivan, L. F., Brotto, L. A., Byers, E. S., Majerovich, J. A., & Wuest, J. A. (2014). Prevalence and characteristics of sexual functioning among sexually experienced middle to late adolescents. *The Journal of Sexual Medicine, 11*(3), 630–641.
- O'Sullivan, L. F., Byers, E. S., Brotto, L. A., et al. (2016). Problems in sexual functioning and related sexual distress among middle to late adolescents. *Journal of Adolescent Health, 59*, 318–324.
- Özcan, Ö., Elbozan, C. B., Karlıdag, R., Ünal, S., Mutlu, A., & Kartalci, Ş. (2015). Attachment styles in women with vaginismus. *Anatolian Journal of Psychiatry/ Anadolu Psikiyatri Dergisi, 16*(1), 37–43.
- Park, B. Y., Wilson, G., Berger, J., Christman, M., Reina, B., Bishop, F., Klam, W. P., & Doan, A. P. (2016). Is internet pornography causing sexual dysfunctions? A review with clinical reports. *Behavioral Sciences, 6*(3), 17–42.
- Prunas, D. A. (2012). La sindrome della vescica timida: una ricerca sugli utenti del sito www. paruresis. it. *Rivista di Psichiatria*.
- Quevedo Fonseca, C. R. (2015). Paruresis. *Revista Cubana de Medicina Militar, 44*(1), 125–129.
- Rösing, D., Klebingat, K. J., Berberich, H. J., Bosinski, H. A. G., Loewit, K., & Beier, K. M. (2009). Sexualstörungen des Mannes. *Deutsches Ärzteblatt, 106*(50), 821–829.
- Soifer, S., Zgourides, G., Himle, J., & O'Brien, N. (2020). *The secret social phobia: Shy bladder syndrome (Paruresis)*. International Paruresis Association.
- Song, A. H., & Advincula, A. P. (2005). Adolescent chronic pelvic pain. *Journal of Pediatric and Adolescent Gynecology, 18*(6), 371–377.
- Vythilingum, B., Stein, D. J., & Soifer, S. (2002). Is "shy bladder syndrome" a subtype of social anxiety disorder? A survey of people with paruresis. *Depression and Anxiety, 16*(2), 84–87.
- Waites, M. (2005). *The age of consent. Young people, sexuality and citizenship*. Palgrave Macmillan.
- Zampieri, N., & Camoglio, F. (2020). Pediatric-adolescent andrology: Single Centre experience. *Archivio Italiano di Urologia e Andrologia, 92*(2).
- Zhu, G., & van der Aa, S. (2017). Trends of age of consent legislation in Europe: A comparative study of 59 jurisdictions on the European continent. *New Journal of European Criminal Law, 8*(1), 14–42.

Matthew Koller MD, MPH. Medical School: Doctor of Medicine from the University of Texas Health Science Center at San Antonio. Master in Public Health. Residency: Baylor College of Medicine, Chief Resident

of Education. Focus on community and resident education, including implementing of mental health curriculum for local schools and finalist for Baylor's Resident Teacher Award. Staff Psychiatrist with Talkiatry.



Pain in Children and Adolescents. Evaluation and Treatment

22

Muhammad Ishaq Farhan, Hirsch K. Srivastava,
and Muhammad A. Kamran

In this chapter, we describe some aspects that are particularly relevant in the evaluation and treatment of pain in children and adolescents. We emphasize several mind–body issues that can be neglected in attempts to diagnose the source of pain, particularly chronic pain, in a child who complains, and there is no obvious tissue damage to explain the level of pain involved.

Acute pain is very frequent in children and adolescents as well as persistent pain. The complaint of pain is designated by the World Health Organization as a public health concern given its high prevalence (Cooper et al., 2017). In many parts of the world, it is poorly managed due to the lack of recognition of its importance and limited access to multidisciplinary health care.

Parents are obviously very concerned when a young child or an adolescent complains of pain, particularly if it is severe (Palermo & Eccleston, 2009). The child may become desperate, and the parents may struggle to find relief for their child, while physicians may try to ascertain what is the nature of the pain.

In principle, acute pain is a signal, a very helpful and necessary signal that “something is wrong” with a part of the body, and at the moment elicits a response of protection, fleeing, or doing something to alleviate the damage, if possible. In this respect, it is like fever and other symptoms that are protective and at the same time a signal to elicit a response. Chronic pain similarly can signal that the tissue damage or inflammation persists and can elicit actions on the part of the subject to alleviate it, or to seek help. Unfortunately, sometimes the pain becomes a problem in itself, in the absence of tissue damage or injury, particularly in the chronic form.

Pain is quite inescapable at least in its acute form. Obviously at times it is the chief complaint why patients consult the physician, hoping to resolve a problem, hoping the pain will disappear or become at least tolerable depending on the cause of it.

In many hospitals and clinics, there are specialized, generally multidisciplinary, centers to help children with chronic pain. The management should be comprehensive and include an adequate assessment of the problem and not involve only pharmacological strategies.

M. I. Farhan (✉) · H. K. Srivastava
Department of Psychiatry, University of Missouri
Kansas City, Kansas City, MO, USA

M. A. Kamran
Department of Pedodontics and Orthodontics, King
Khalid University, Abha, Saudi Arabia

Liaquat College of Medicine and Dentistry,
Karachi, Pakistan

What Is Pain?

Every person reading this chapter will know what pain is, though it is much more difficult to define pain. In 1979, the International Association for the Study of Pain (IASP, 1979) defined pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.” Over the ensuing decades, there has been more attention and understanding of pain as the field has accepted that pain, as an experience, may have etiologies other than actual or potential tissue damage. Indeed, it is currently accepted that pain is both a physical and an emotional experience, along with sensory, cognitive, and social components (Williams & Craig, 2016). The IASP currently defines pain as “an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage” (Raja et al., 2020).

Therefore, one can see that pain has components of sensation and emotion, and thus inherently has a duality. To understand the less well-characterized emotional side of pain, it will be useful to first revisit the more established pathophysiology of pain.

Physiology of Pain

Essentially, pain processing includes six major components: transduction, inflammation, conduction, transmission, modulation, and perception (Whitten et al., 2005). Transduction is the “translation” of the sensation of pressure, a cut, burn, etc. into a “pain signal” that is transmitted through the nerve endings to the central nervous system. Inflammation is the biochemical response that is set in motion with the noxious stimulus, to produce a defense response locally, leading eventually to healing (or infection). Transmission obviously is the transport of information from the periphery to the spinal cord or the brain. Modulation is any modification that can take place in the “reception” of the pain stimulus, which may occur in a part of the central nervous system (including the spinal cord, medulla oblon-

gata, midbrain, and brain hemispheres). Finally, perception is the awareness that an injury or noxious stimuli is occurring, leading to some behavioral response, such as rapid withdrawal from the stimulus causing the pain, if possible. This process is extremely fast and almost instantaneous, given the speed of all these communications.

Pain can be classified in several ways, for instance, by area (headache or low back pain) or by its pathophysiological nature (i.e., nociceptive or neuropathic pain). Pain can also be classified as being acute or chronic. The term nociceptive pain refers to the sensation caused by tissue damage which is then perceived by the nerve endings and transmitted to the central nervous system. Neuropathic pain refers to pain caused by damage to the nerve tissue itself and originates in nerve terminals or the nervous system in general (Campbell & Meyer, 2006). Generally, neuropathic pain involves peripheral and central nervous system mechanisms (Galluzzi, 2005).

Acute pain is generally caused by noxious stimuli due to a disease process, injury, or abnormal function in a muscle or a viscera. Acute pain is nearly always nociceptive.

Regarding chronic pain, it is defined as pain that persists beyond the usual course of an acute disease or after a reasonable healing time has elapsed (typically 1–6 months). In contrast to acute pain, chronic pain may be neuropathic, nociceptive, or mixed.

Nociceptors are specialized sensory receptors (generally nerve endings) that respond to potentially harmful, or noxious, stimuli. Individual primary afferent nociceptors can respond to several different types of noxious stimuli such as heat, intense cold, intense mechanical stimuli (like a “pinch”), to changes in pH (particularly in acidic environments), and to the presence of chemical irritants including adenosine triphosphate (ATP), serotonin, bradykinin (BK), and histamine (Rathmell & Fields, 2018). Trauma to areas innervated by peripheral nerves releases a flood of inflammatory substances including prostaglandins, substance P (an undecapeptide that activates the nerve receptors of pain), bradykinin (a nonapeptide that is released as a part of the inflammatory process), serotonin, and histamine.

All these mediators have the effect of lowering the pain threshold on nociceptors; this results in increased numbers of action potentials and spontaneous discharges as an effect of the original stimulus (Whitten et al., 2005).

Acute Pain

Acute pain processing begins with transduction, the process by which nociceptors on the nerve endings of peripheral neurons translate or “transduce” the physical stimulus (which may be imminent or real injury from a chemical, thermal, or mechanical source) into an electrical signal which may be strong enough to trigger an action potential. These electrical signals are then conducted along nerve fibers. A-delta fibers are myelinated and carry sharp and localized pain. C-fibers are non-myelinated and carry burn and ache pain in a poorly localized fashion, such as in painful diabetic neuropathy. The electrical signals then trigger neurotransmitter release and result in the transmission of the signal along the synaptic gap. This involves several substances, including glutamate, substance P, norepinephrine, dopamine, and serotonin.

The process of modulation involves the adjustment of pain intensity. It is the next phase of pain processing and relies on an extensive antinociceptive system, incidentally, this is the process which is the target of opioid medications among others. The process of modulation is affected or modified by medications, emotions, behaviors, and thoughts which all have the ability to increase or decrease the perceived level of pain. Emotions and behaviors are important in our description of mind–body issues in pain.

Finally, when pain signals eventually enter the brain they do so through the thalamus. From there, different centers route these signals to regions of the brain involved with awareness of sensation. Additionally, the autonomic nervous system may become involved. Both may provoke a motor response or different behaviors. The brain response, in turn, is also affected by stress, and by a variety of emotions. This is a complex network of interactions that ultimately lead to the

person’s perception and his or her response to pain.

Chronic Pain

Even though it may be surprising, a recent review of chronic pain in children and adolescents found a prevalence of between 10% and 28% of minors, a wide range but one which highlights the frequent nature of this problem (King et al., 2011).

There are several varieties of chronic pain. In many cases, the primary perception of pain is consistent with clear pain-generating pathophysiology (Turk & Melzack, 2011). Examples of such cases include invasive cancer or inflamed joints such as in rheumatoid arthritis. In other conditions, such as somatoform disorder or functional neurologic disorder – previously known as conversion disorder – the primary perception of pain has no clear pain-generating pathophysiology and appears to be primarily psychological or cognitively based.

Between these two extremes lie the majority of people who suffer from chronic pain (Eccleston et al., 2004, 2008). While originally the pain is provoked by some injury, or a clearly neurologic disorder, it can also be perpetuated by a pain-processing dysfunction (Jacobson et al. 2013). In many cases of a person who suffers from chronic pain, the situation evolves so that cognitive or psychological processes may increasingly play a greater role in that person’s pain perception and perpetuation.

As more has been investigated about the specific neurological correlates of chronic pain, the lines of demarcation between psychological-based and neurological-based phenomena begin to be blurred (Coffa & Mehling, 2014, 2021; Kolacz & Porges, 2018).

In many children and adolescents (as well as adults) with chronic pain, the perception seems out of proportion to the original tissue damage, or it cannot be explained anymore by injury to any tissue or organ. Rather, it is the emotional response to the original pain that may be very intense and colors the perception and the perpetuation of the pain sensation. At times, there are

catastrophizing thoughts about how much it will last, if it will never improve or it might even represent a form of punishment, a cross to be borne, etc.

Additionally, in many cases, chronic pain is exacerbated by the person's mental state, for example, the notion of "anticipating the worst pain" or enduring it. These states may lead to a level of pain that cannot be explained by tissue damage. States like anxiety and depression tend to be associated with worse experiences of pain. Indeed many persons who have suffered some form of abuse, such as neglect, emotional, physical, or sexual maltreatment earlier on in their life, will experience unexplained chronic pain when they are older or become adults (Davis et al., 2005; Prangnell et al., 2019).

How Children and Adolescents Process and Interpret Pain

Children process and interpret pain differently from adults. Biologically, the nociceptive pathways of children are not merely diminutive versions of the adult pathways; rather the pain pathways have unique features which lead to different sensations and perceptions of pain. Additionally, various psychological and emotional factors may affect the child or adolescent's ability to comprehend the pain and further modify their response to it, for instance the attachment style to the caregiver (Kozłowska, 2009).

In the past, for example, it was assumed that neonates were unable to experience pain, this notion was abandoned several decades ago. Indeed, as early as the 20th week of gestation, the nociceptive pathways begin functioning (Lundeberg & Lundeberg, 2013; Van de Velde et al., 2006). Nociceptive pathways mature quickly throughout the first years of life but do not reach full maturity until adolescence.

Another difference with adults is that the descending inhibitory pathways are not developed by the time the child is born, and mature at a slower pace than the ascending (perceptual) pathways (Brookes et al. 2018). This translates into the fact that children feel an overall greater

intensity of pain (Fitzgerald & Beggs, 2001). In addition to differences in the nociceptive systems themselves between children and adults, the number of nociceptors per square meter of the body surface is higher in a child as compared to an adult. There is also a higher amount of neuro-mediators, which means that children have a higher sensitivity to pain (Lundeberg & Lundeberg, 2013). Furthermore, prolonged or repeated pain stimuli at an early age increase the risk of neuronal death or dysfunction in the child's future, due to the greater plasticity and other specific features of children's nervous system (Beggs et al., 2012). It appears that newborns exposed to multiple or repeated pain experiences can have a long-lasting alteration in the perception of pain, due to changes in the dorsal horn in the spinal cord, which are the "first station" of pain processing. This occurs through an alteration of the nociceptive circuitry in that horn (Fitzgerald, 2005). Pain in young infants can have far-reaching consequences. A study (Ranger et al., 2013) showed that even the thickness of the cerebral cortex can be influenced by the early experience of pain during the very early infancy, affecting the intellectual abilities of the child at age seven. Some studies have shown that this sort of early pain can have an impact on the older child, who may become aversive to novel situations and experiencing more pain in general, also feelings of anxiety can be exacerbated (Hohmeister et al., 2010).

When one attempts to measure the level of pain experienced, the most reliable strategy is the actual reporting of pain by the youngster to caregivers and clinicians. Self-report measures are considered the standard and most valid approach to pain measurement. However, it is important to note that while verbal and nonverbal (e.g., pictorial) forms of these measures exist, both require sufficient language and cognitive development in the child to understand the task of reporting and then to give an accurate response (McGrath & Gillespie, 2001). The verbal self-report measures include pain adjective descriptors, questionnaires, self-rating scales, and structured interviews (O'Rourke, 2004). Nonverbal measures include facial expression scales, drawings, and

visual analog scales. The ability of children to accurately self-report pain appears to emerge with increasing experience and age and generally follows a developmental progression, with the caveat that there is considerable variation dependent on individual differences (Harbeck & Peterson, 1992; McGrath & Gillespie, 2001). While most 3- or 4-year-old children can describe the presence, location, and intensity of pain, most 2-year-old children have not developed enough cognitively to describe pain intensity (O'Rourke, 2004). Similarly, most 3-year-old children can use a pain-rating scale including three items such as "no pain," "a little pain," or "a lot of pain," while 4-year-old children can usually manage 4- or 5-item scales.

Beyond pain intensity rating, there is also the dimension of pain affect or emotional reactions to pain. Measures of pain affect provide information about anxiety associated with pain, mood, unpleasantness, or general distress. A child's ability to rate pain affect develops at approximately age 5 or older (Shih & Von Baeyer, 1994). Children are able to rate the quality of their pain at approximately 8 years of age (Savedra et al., 1993).

Beyond self-report measures, clinicians must also use their physical exam skills and clinical acumen to assess pain through behavioral measures. This is especially important for infants, very young children, and children with severe cognitive or communicative disability. These behavioral measures include measures of crying, facial expression, body posture, movements, and impact on daily routines. Interestingly, the interpretation of crying, especially in infants where crying often represents generalized distress and children who are too ill or disabled to mount a vigorous cry as compared to their more medically robust peers, makes using this behavioral measure difficult to interpret. Other behavioral measures that involve the detailed coding of facial expressions, body postures, and movements have proved to be much more effective behavioral measures of pain.

By age 7–9 years, children are more likely to connect pain with disease processes; exhibit emotional withdrawal, bargaining, and passive

resistance to pain; and localize their pain precisely with specific body parts as well as describe intensity and type. By age 10–12, children have better understanding of the relation between disease and pain. At times children at this age will sometimes pretend to feel well to demonstrate courage; and can minimize the localization and intensity of pain. By age 13–18, adolescents have a complex understanding of pain and its reasons, with the ability to recognize qualitative and quantitative aspects; they also may try to act like adults, and not complain; but others have very complex pain descriptions.

Functional or Unexplained Pain

Physicians of various specialties are at the same time relieved when "no organic damage" can be found as the cause of pain in a child or adolescent who complains of intense, or recurrent, or constant pain (Basch et al. 2015). On the other hand, there is the reality that the child is "still in pain" and that something has to be done to address it. To our minds, the idea that the pain "is in the mind" is still readily equalized with the patient "misrepresenting," exaggerating, inventing or otherwise not having as much pain as reported. Of course, there are cases in which a child "fakes pain," for instance, when he or she wants to avoid carrying out a certain unpleasant task. However, the majority of children seen in pediatric clinics genuinely feel the pain and therefore have to be seen the same as other patients who may have a neuropathy, a burn, a gastrointestinal disease, etc.

Perhaps one way to approach this "functional pain" is to see it as a communication from the body of the child to the child/adolescent, then to the family and that has a mental representation of "what it means to be in pain." This is where the psychological and emotional factors may be crucial to ascertain. A child may experience pain which saves him or her from facing a difficult examination, a test, a stressful situation. Another one may experience pain to elicit a kinder treatment from parents, who otherwise might be very strict or punitive. Yet a different child might experience chronic pain as a "currency" that is

normal in the family, i.e., people communicate to each other through their symptoms, such as “today I woke up with intense pain in my stomach” while the mother has had “a migraine for three days,” etc., here the psychodynamic appears to be identifying with relatives who are often sick or in pain. In other circumstances, the child may experience pain in order to focus the parents on him or her, so that, one of the parents does not leave the house or the family, or they stop fighting with each other as they are tending to the sick child.

The “feeling” of the pain in the child is the same as that of a child with an organically damaging condition. Only that here the “cure” involves removing factors that cause or perpetuate the pain, and to encourage the “healthy side” of the child who may want to improve, do things freely and be healthy. In most children, one finds these “two sides” to the condition i.e. a wish to get better and a wish to be sick. This account perhaps presents in a simplistic way situations that may be very complex. At times, the child gives the parent a “*raison d’etre*” by being constantly sick or in pain.

A 12-year-old child, Rosie, was referred by her pediatrician because of the suspected psychogenic cause of many of her symptoms. Rosie was barely starting the changes of puberty and she was “homeschooled” by her mother. She was fairly isolated and afraid of going outside, particularly with the additional factor of the COVID pandemic. However, since before that started, she had expressed anxiety about going to school and facing “mean girls.” Rosie is a Hispanic child in an ethnically diverse community. She is very bright, despite this she complained that school was hard for her and needed much help from the mother. The parents were divorced, the father paid child support but the mother “had to stay home” to look after Rosie because she got “sick a lot.” Rosie suffered from chronic and frequent abdominal pains, her appetite would diminish and she was underweight but not emaciated. Rosie also had frequent tensional headaches, her hands and her feet hurt and she had episodes of dizziness at times. No physical causes had been found despite repeated studies, for all these symptoms. The child seemed very anxious, but not as anxious as her mother. The patient wanted to spend more time with her father, as the parents were divorced, but her illnesses prevented this. Rosie’s mother thought that “only the mother” knew how to give all the medicines and alleviate the numerous symptoms of her daughter.

The child expressed a desire to see her father and spend time with him but the mother would insist that “while she was sick” she could not spend time with him even though she wanted to. When the clinician intervened, he talked with the father who thought that the mother was resentful about the divorce and wanted to punish him by keeping Rosie all to herself. This appeared to be true as it came up in several family sessions. If the child expressed she faintest desire to talk to her father, the mother would become alarmed and remind Rosie that she could have diarrhea any time: what if she “did not have time to make it to the bathroom?.” The mother would present all the possible things that could go wrong. The clinician spoke of the father who told Rosie he could deal with these issues. The mother became very irate when the clinician spoke to the mother and child together about the fact that the father also wanted to spend time with the child. Rosie clearly wanted to see her father but her mother would become panicked that “something terrible might happen.” The mother constantly spoke to Rosie about how sick she was, about her pains and other symptoms; it clearly seemed that the child would comply with her mother’s fear of “having to share” Rosie with the father. The image of the father was presented as that of an irresponsible man and quite unable to care for his daughter, even when there was no evidence of that. The child had to be faithful to her mother or the mother would become very upset and start to cry that: she could not be “all alone” without Rosie. The mother became furious with the psychiatrist when he would suggest that the father and Rosie could have a visit and that father would be prepared to deal with the situation. In one session the mother finally exploded emotionally about this and said that the psychiatrist did not understand the seriousness of the problems in the child and the incapacity of the father to take care of any health problems, even though he was a successful professional. The mother would cling to the child “for dear life” and was most threatened with any sign of separation. The psychiatrist was seen as an adversary who was interfering in this “special relationship” between the child and her mother.

The term psychogenic pain does not seem adequate when it comes to the entities described here, as it assumes that the problem is “only” psychological. The term unexplained pain seems more realistic in terms that as far as it can be medically determined, in many cases there is no clear tissue damage. The reality is that in many cases of chronic pain in children, there are multiple factors determining the pain, including emotional, psychological issues as well as some

medical conditions. In these cases, the level of pain reported is not explainable by the nature or severity of that medical condition. It should be underlined that the experience of pain is always integrated in the brain itself and therefore is strongly susceptible to thoughts, emotions, and attention as well.

The influence of emotional and psychological factors is not fully understood but there are various candidates to explain the child's perception of pain or intense pain in the absence of a "physical explanation." One of them is the "hypersensitization theory" (Bourke et al., 2015).

The hypersensitization theory invokes the notion that in some cases in which a child or adolescent has experienced pain from a certain origin, like joints, muscles, bone damage, etc. there is a sort of "rewiring" of the central nervous system which occurs due to the repeated experience of pain. In that state, various sensations are interpreted as pain and magnify the perception of it (Rief & Broadbent, 2007). This can manifest cognitively as an "all or nothing" concept of health, in which the slightest symptom is interpreted as ominous, and perhaps painful. Another component of functional pain symptoms could be the increased attention to pain and the "lack of distractors" that some patients may experience. Unfortunately, the "illness behavior" or assuming the sick role in a child or adolescent can lead to stopping attendance to school, not going out on activities and being confined to a room or a hospital. This focuses the mind even more on the pain issue and allows for fewer distractions.

As in other areas of "somatization," functional pain disorders can be strongly influenced by family interactions and factors. For example, children whose parents suffer from chronic pain tend to be more anxious and more focused on negative events (Sieh et al., 2013).

The affective components of pain may impact the spinoreticular tracts *en route* to the anterior cingulate cortex, while the unpleasant aspect of pain can traverse the spinothalamic tract toward the sensory cortex. However, there is no pathway to define emotional pain. Therefore, historically when the subjective report of a patient's pain is not explainable by the pathology, the pain was

deemed "functional" or more relevantly "psychogenic." Though decades of research has continuously demonstrated that pain is indeed a complex biopsychosocial phenomenon. To this point, most patients do not live in isolation but in a social context which contributes to the experience of pain and adaptation to it. It is generally unclear – and irrelevant to the patient – whether psychological factors preceded the onset of pain or evolved in response to longstanding symptoms. What is relevant to the patient is that both the physical and psychological contributors of pain need to be assessed and subsequently addressed.

When one addresses the psychological contributors of pain the clinician must understand these psychological elements to include beliefs, thoughts, feelings, and behaviors. In order to understand unexplained pain it is useful to look into experimental findings. For example, when "treated" with a functionless machine, 5 of 58 chronic pain patients dropped out because it worsened their pain. Similarly, a fake magnetic therapy significantly increased pain in 11% of trials. In another experiment, more than two-thirds of a sample of college students reported mild headaches when told that an electric current was passing through their heads, though there was actually no current. One of the strongest demonstrations of psychogenic clinical pain was an experiment where the failure of dense sensory-motor blockades to relieve persistent extremity pain. Interestingly, expectations of pain do seem to produce pain despite the absence of a perceptual noxious stimulus, though such perceptual stimuli would be reflected in functional MRI changes in the expected regions of the brain (Hechler et al. 2010). One recent study showed that patients with cervical spondylosis and comorbid depression who undergo cervical epidural steroid injections (CESIs) are less likely to achieve successful outcomes in both pain and function, compared with non-depressed patients at 3 months post-treatment. Such contributing psychological factors may be conditioning or elements such as beliefs. Regardless, it is clear from studies as well as the experience of any chronic pain physician that psychological and emotional factors do contribute to the patient's pain experi-

ence. This phenomenon is psychogenic pain and its contributing elements as described above must be investigated by clinicians, especially in a child and adolescent population, to fully understand the patient's presenting symptoms and etiology, to eventually aid in their diagnosis and management.

A 14 year old girl, the oldest of two children, Mary, was referred by her pediatrician due to complains of "pain everywhere" in her body which had lasted for about two years. She had been evaluated in a neurological clinic where no organic pathology was found. She was referred to a pain clinic for children where some counseling and cognitive behavioral therapy had been attempted, as well as relaxation techniques and mindfulness strategies. However, she continued being impaired by the pain, which was fairly severe on her lower and upper limbs, her pelvis, back and the neck, and she also had frequent headaches. The child was seen several times with her family. During our first interview Mary described the origin of the pain problem. She had had an ingrown toenail which became infected, then an extraction of the nail was performed in an outpatient procedure, this was about two years ago. Shortly, not only the toe but the whole foot started to hurt and then the other foot. She described that the pain started to "go up her body," from the feet, then the legs, the thighs, the pelvis, etc. over the course of days and weeks until her whole body hurt, more severely on the back and the neck. She had been treated also with gabapentin and an antidepressant medication with little benefit. The child said that it felt like "somebody was sticking needles on her body and that it progressed as if she were drowning in pain." She showed little emotion and was resigned to live like this for the time being and could not go to school.

As the evaluation progressed, it surfaced that she was very worried about her parents, who had intense conflict and "might divorce" and had spoken about it openly to the children. Her mother was very emotional and spoke of her antecedents of having grown very traumatized and "having never felt safe at her home." The mother's husband was very distant emotionally and was very child-like, wanting to solve family problems with trips to Disney World, his favorite place in the world. This only put the family in more debt. The mother always had slept with her daughter in the same bed, since she was very small "in order to make sure nothing happened to her" (in a separate interview the mother revealed that she and her siblings had been sexually abused by their father) and agonized that something might happen to Mary. The child was a very intelligent and insightful girl and was the "main confidant" of her mother. The

mother would discuss with Mary her sadness, frustration and past sufferings. When we talked with Mary about this in a family session, she revealed that she always worried about her mother and thought her duty was to "always protect her and take care of her." The therapists told her that this would be very hard for a 14-year-old girl. Spontaneously the mother reflected on the position in which she was putting Mary and later on, she revealed to us that she had decided not to continue with this pattern and would allow her daughter to sleep in her own bed and not tell Mary her problems in such depth. The mother would seek psychotherapy to help her own emotional problems. The mother realized that the girl felt very burdened with the role of mother's confidant. In another session, we asked the patient if this would be acceptable to her. We used the term of "being fired" from her job as the main protector of her mother. She said "oh yes," almost as though she were being released from captivity. A few weeks later she started going to school and in two or three weeks the pain was "almost totally gone." We jokingly told the patient she was "vacated" from being the caretaker of her mother as her mother was a very competent and an adult. The child said she felt much better emotionally. She seemed almost liberated. The sessions continued without the children and focused more on the marital problems, of which there were many. Mary has been without pains since.

In the above vignette, the metaphor was introduced that perhaps Mary felt "too burdened" by all the adult problems she was facing in addition to her own life, growing up and being a teenager. She agreed and started to cry, showing great emotion, as well as her parents. This "release" seemed to give her the chance to be without pain.

Diagnosis and Management of Primary Chronic Pain in Children and Adolescents

Primary chronic pain in children is a complex condition which requires a multimodal diagnostic and treatment approach. Frequently, these pain conditions are further complicated by comorbid mental health conditions such as depression, anxiety, and history of emotional trauma/stress. Primary chronic pain conditions, as the name suggests, are conditions in which no other underlying health issues are identified. Some of

the primary pain conditions include chronic headache, chronic abdominal pain, amplified pain syndrome which further includes widespread/whole body pain and more localized pain in the extremities such as chronic regional pain syndrome. Primary pain condition is not a disease in itself; rather it is a manifestation or a symptom of underlying health condition or ongoing tissue damage. Other less common chronic pain conditions in children include facial pain and temporomandibular joint pain. Temporomandibular joint pain can be related to underlying conditions such as malocclusion, teeth grinding/clenching, and anxiety.

Common underlying mechanism of “central sensitization” have been suggested for amplified pain syndrome such as widespread whole-body pain and more localized “chronic regional pain syndrome” (CRPS). In other words, after emotional trauma or stress, the central nervous system is sensitized to any stimulus, painful or non-painful, and the child perceives it as pain. Involvement of the autonomic nervous system is suggested in CRPS and some interventional techniques involve blocking of sympathetic nerves for temporary relief of pain. Interestingly, Speck et al. (2017) found an increased prevalence of posttraumatic stress disorder (PTSD) in CRPS. We would like to propose this novel idea that CRPS is the “posttraumatic stress disorder at cellular/tissue level.” Allodynia and increased sensitivity in CRPS can be compared to hypervigilance in PTSD. Avoidance of physical activity in CRPS can be compared to avoidance of triggers in PTSD. More studies are needed to understand possible common underlying pathology of PTSD, CRPS, and amplified pain syndrome in general.

Chronic pain and mental health conditions are similar in the sense that they are both subjective. There is no laboratory test to confirm the diagnosis. In other words, these are clinical diagnoses. A multidisciplinary treatment team, using a biopsychosocial approach would be similar to a biopsychosocial approach used in treatment of mental health conditions. Therefore, pain physicians with background training in psychiatry are

better equipped in dealing with chronic pain conditions.

Perhaps the first ingredient that a multidisciplinary team must apply when dealing with a child and adolescent with any sort of pain, be it chronic or “functional” is empathy (Claar et al. 2008). This should be exercised first toward the minor, but then also with the parents, who after all have the welfare and happiness of their son or daughter as their main priority. Often these patients and their families can be taxing, frustrating and a negative outlook for the physician is to assume that the problem is “all in the mind” and therefore ignore it (Hausteiner-Wiehle et al., 2013).

In most modern pain treatment centers, there is a policy of “no narcotic use” for patients with chronic pain, and the application of analgesic measures in the form of medications, alternative interventions (exercise, physical rehabilitation, yoga, meditation, mindfulness, hypnosis) as well as psychological interventions, i.e., psychotherapy directed toward the child and/or the family are all employed. Of course, this would be different in cases of severe pain due to tumors, neurological damage, burns, and other severe conditions that require the immediate alleviation of severe pain.

It should be clear that each situation is unique in each child/family and there can be no universal prescriptions or absolute rules to address a unique situation. The interventions should be dictated by the specific needs and factors involved, which is only determined by a careful set of examinations by pediatric professionals and mental health staff versed in “mind–body” problems and in various forms of psychotherapies.

In the case of functional pain, much can be done with psychosocial interventions to alleviate the pain. Perhaps the first condition in that case is that the child is ready, able or can “renounce” to the language of pain. Physical pain can be a way of expressing emotional pain. This can be due to anxiety, tensions, an unresolved loss, traumatic experiences, as well as a way to avoid unpleasant or difficult experiences. The psychological evaluation might endeavor to understand not only the intrapsychic aspects of the intense pain, but also

the interpersonal factors that may be involved, particularly in connection with family members, peers or other factors in school.

Most pediatricians dealing even with functional or too intense pain that cannot be explained by tissue damage recommend to try a multidisciplinary approach that often includes medications like anticonvulsants (e.g., pregabalin, gabapentin), and SSRI (selective serotonin reuptake inhibitor) antidepressants and amitriptyline to ameliorate the pain (Cooper et al., 2017).

No single discipline has the expertise to treat chronic pain unilaterally. A multidisciplinary approach or more correctly “integrative approach” is the key to success (Allen et al. 2012; Kozłowska & Khan, 2011. Shaygan & Karami, 2020).

Validating pain, educating families about the nature of the condition should be the first step in the treatment planning. Avoiding physical activity “to prevent further damage” is a very common issue which should be addressed. Shifting focus from pain and “pain score” to function and quality of life might be an important step forward. Treating coexisting emotional or behavioral difficulties and sleep disorders is important to improve quality of life and function.

A detailed sleep history and addressing sleep issues is extremely important in chronic pain conditions. Sleep hygiene education should be included in all treatment plans. Improvement in sleep during the treatment process can also be an indicator of better pain control and improved quality of life.

A detailed history to explore mental health is needed in children with chronic pain. Most families will not volunteer this information, unless asked. In our experience, most families are thankful that someone took the time to inquire about their mental health. Families need to be adequately informed about the comprehensive approach of the treatment team from the start (Palermo & Eccleston, 2009).

An integrative approach is different from multidisciplinary approach as the former involves ongoing communication between team members about a patient’s progress. The treatment team may include pain physicians, psychiatrist, nurses, psychologists, physical therapist, social workers,

and many other disciplines. Ideally a patient should be evaluated by a pain physician, psychiatrist/psychologist, and physical therapist during the initial visit to formulate a treatment plan. And as per need of individualized treatment plan, other modalities should be utilized.

Physicians can provide education to the patient and her family about the condition. Medications and injecting medications regionally are not the first line of intervention. Simple analgesics such as acetaminophen and ibuprofen can be used as adjunct in selected patients. Other medications such as gabapentin and low-dose amitriptyline can be used for temporary relief of pain. Invasive treatment such as nerve blocks should only be used as last resort for refractory cases and as adjunct to other treatment modalities described above.

Mental health professionals can provide services such as cognitive behavioral therapy (CBT), psychodynamic or mentalization-based psychotherapy, and relaxation techniques such as biofeedback, progressive muscle relaxation, meditation, and hypnosis to name a few. Family therapy may be an essential adjuvant to the individual approach.

A physical therapist provides education, motivation to be physically active and reassurance that movement will not cause more damage. Desensitization techniques can be useful in amplified pain syndromes.

Mirror box therapy has shown to be useful in CRPS. In mirror therapy, one is “fooling” the brain to think that the affected limb is healthy and this helps relieve the pain. Mirror therapy has been used for phantom pain phenomena (the perception of pain in a limb that has been amputated, a foot, leg, hand, arm). The mirror-box therapy exposes the patient to move the “healthy limb” and see this in a mirror that makes the opposite limb “appear” as though it is also moving. This “rewires” the brain to decouple the proprioceptive input from pain stimuli, which is thought to be at the basis of the phantom limb phenomenon and chronic regional pain syndromes (Karmarkar & Lieberman, 2006; Sayegh et al., 2013). Seeing positive results with mirror therapy, we think

that virtual reality may hold some promise in treating condition such as amplified pain.

As with other problems related to somatization and functional conditions, it is not rare that that some families might reject any intervention by a mental health professional, be it a social worker, psychologist, or a psychiatrist. This should be considered, in general, as a marker of a negative outlook on the case, i.e., that it is more likely to become chronic or be perpetuated. Another indicator of this sort is repeated complaints about various physicians with the administrators of hospitals, and changing physicians of the same specialty (Lindley et al., 2005).

References

- Allen, L. B., Tsao, J. C., Seidman, L. C., Ehrenreich-May, J., & Zeltzer, L. K. (2012). A unified, transdiagnostic treatment for adolescents with chronic pain and comorbid anxiety and depression. *Cognitive and Behavioral Practice, 19*(1), 56–67.
- Basch, M. C., Chow, E. T., Logan, D. E., Schechter, N. L., & Simons, L. E. (2015). Perspectives on the clinical significance of functional pain syndromes in children. *Journal of Pain Research, 8*, 675–686.
- Beggs, S., Currie, G., Salter, M. W., Fitzgerald, M., & Walker, S. M. (2012). Priming of adult pain responses by neonatal pain experience: Maintenance by central neuroimmune activity. *Brain, 135*, 404–417.
- Bourke, J. H., Langford, R. M., & White, P. D. (2015). The common link between functional somatic syndromes may be central sensitisation. *Journal of Psychosomatic Research, 78*(3), 228–236.
- Brookes, M., Sharpe, L., & Kozłowska, K. (2018). Attentional and interpretational biases toward pain-related stimuli in children and adolescents: A systematic review of the evidence. *The Journal of Pain, 19*, 1091. <https://doi.org/10.1016/j.jpain.2018.04.010>
- Campbell, J. N., & Meyer, R. A. (2006). Mechanisms of neuropathic pain. *Neuron, 52*(1), 77–92.
- Claar, R. L., Baber, K. F., Simons, L. E., Logan, D. E., & Walker, L. S. (2008). Pain coping profiles in adolescents with chronic pain. *Pain, 140*(2), 368–375.
- Coffa, D., & Mehling, W. (2014). Management of chronic pain. In *Current occupational & environmental medicine* (5th ed.). Mc Grow Hill.
- Coffa, D., & Mehling, W. (2021). The management of chronic pain. In J. LaDou & R. J. Harrison (Eds.), *Current diagnosis and treatment: Occupational and environmental medicine*. McGraw Hill.
- Cooper, T. E., Wiffen, P. J., Heathcote, L. C., Clinch, J., Howard, R., Krane, E., Lord, S. M., Sethna, N., Schechter, N., & Wood, C. (2017). Antiepileptic drugs for chronic non-cancer pain in children and adolescents. *Cochrane Database of Systematic Reviews, 8*, Cd012536.
- Davis, D. A., Luecken, L. J., & Zautra, A. J. (2005). Are reports of childhood abuse related to the experience of chronic pain in adulthood? A meta-analytic review of the literature. *The Clinical Journal of Pain, 21*(5), 398–405.
- Eccleston, C., Crombez, G., Scotford, A., Clinch, J., & Connell, H. (2004). Adolescent chronic pain: Patterns and predictors of emotional distress in adolescents with chronic pain and their parents. *Pain, 108*(3), 221–229.
- Eccleston, C., Wastell, S., Crombez, G., & Jordan, A. (2008). Adolescent social development and chronic pain. *European Journal of Pain, 12*(6), 765–774.
- Fitzgerald, M. (2005). The development of nociceptive circuits. *Nature Reviews Neuroscience, 6*, 507–520.
- Fitzgerald, M., & Beggs, S. (2001). The neurobiology of pain: Developmental aspects. *The Neuroscientist, 7*(3), 246–252.
- Galluzzi, K. E. (2005). Management of neuropathic pain. *The Journal of the American Osteopathic Association, 105*(Suppl 4), S12–S19.
- Harbeck, C., & Peterson, L. (1992). Elephants dancing in my head: A developmental approach to children's concepts of specific pains. *Child Development, 63*(1), 138–149.
- Hausteiner-Wiehle, C., Henningsen, P., Häuser, W., Herrmann, M., Ronel, J., Sattel, H., & Schäfer, R. (Hrsg.). (2013). *Umgang mit patienten mit nicht-spezifischen, funktionellen und somatoformen Körperbeschwerden* (S3-Leitlinien mit Quellentexten, Praxismaterialien und Patientenleitlinie). Schattauer-Verlag.
- Hechler, T., Dobe, M., Damschen, U., Blankenburg, M., Schroeder, S., Kosfelder, J., Hohmeister, J., Kroll, A., Wollgarten-Hadamek, I., Zohsel, K., Demirakça, S., Flor, H., & Hermann, C. (2010). Cerebral processing of pain in school-aged children with neonatal nociceptive input: An exploratory fMRI study. *Pain, 150*(2), 257–267.
- Hohmeister, J., Kroll, A., Wollgarten-Hadamek, I., Zohsel, K., Demirakça, S., Flor, H., & Hermann, C. (2010). Cerebral processing of pain in school-aged children with neonatal nociceptive input: an exploratory fMRI study. *Pain, 150*(2), 257–267.
- IASP Subcommittee on Taxonomy. (1979). The need of a taxonomy. *Pain, 6*, 249–252.
- Jacobson, C. J., Farrell, J. E., Kashikar-Zuck, S., Seid, M., Verkamp, E., & DeWitt, E. M. (2013). Disclosure and self-report of emotional, social, and physical health in children and adolescents with chronic pain—A qualitative study of PROMIS pediatric measures. *Journal of Pediatric Psychology, 38*(1), 82–93.
- Karmarkar, A., & Lieberman, I. (2006). Mirror box therapy for complex regional pain syndrome. *Anaesthesia, 61*(4), 412–413.
- King, S., Chambers, C. T., Huguet, A., et al. (2011). The epidemiology of chronic pain in children and adoles-

- cents revisited: A systematic review. *Pain*, 152(12), 2729–2738.
- Kolacz, J., & Porges, S. W. (2018). Chronic diffuse pain and functional gastrointestinal disorders after traumatic stress: Pathophysiology through a polyvagal perspective. *Frontiers in Medicine*, 5, 145.
- Kozłowska, K. (2009). Attachment relationships shape pain-signaling behavior. *Journal of Pain*, 10(10), 1020–1028.
- Kozłowska, K., & Khan, R. (2011). A developmental, body-oriented intervention for children and adolescents with medically unexplained chronic pain. *Clinical Child Psychology and Psychiatry*, 16(4), 575–598.
- Lindley, K. J., Glaser, D., & Milla, P. J. (2005). Consumerism in healthcare can be detrimental to child health: lessons from children with functional abdominal pain. *Archives of Disease in Childhood*, 90(4), 335–337.
- Lundeberg, S., & Lundeberg, T. (2013). Pain in infants and children—Physiological background and clinical aspects. *Acupuncture and Related Therapies*, 1(4), 46–49.
- McGrath, P. A., & Gillespie, J. (2001). Pain assessment in children and adolescents. In D. C. Turk & R. Melzack (Eds.), *Handbook of pain assessment* (pp. 97–118). The Guilford Press.
- O'Rourke, D. (2004). The measurement of pain in infants, children, and adolescents: from policy to practice. *Physical Therapy*, 84(6), 560–570.
- Palermo, T. M., & Eccleston, C. (2009). Parents of children and adolescents with chronic pain. *Pain*, 146(1–2), 15–21.
- Prangnell, A., Voon, P., Shulha, H., Nosova, E., Shoveller, J., Milloy, M. J., Kerr, M. J., & Hayashi, K. (2019). The relationship between childhood emotional abuse and chronic pain among people who inject drugs in Vancouver, Canada. *Child Abuse & Neglect*, 93, 119–127.
- Raja, S. N., Carr, D. B., Cohen, M., Finnerup, N. B., Herta, F., Gibson, S., et al. (2020). The revised International Association for the Study of Pain definition of pain: Concepts, challenges, and compromises. *Pain*, 161(9), 1976–1982.
- Ranger, M., Chau, C. M., Garg, A., et al. (2013). Neonatal pain-related stress predicts cortical thickness at age 7 years in children born very preterm. *PLoS One*, 8(10), e76702.
- Rathmell, J. P., & Fields, H. L. (2018). Pain: Pathophysiology and management. In J. L. Jameson, A. S. Fauci, D. L. Kasper, S. L. Hauser, D. L. Longo, & J. Loscalzo (Eds.), *Harrison's principles of internal medicine*. McGraw-Hill Education.
- Rief, W., & Broadbent, E. (2007). Explaining medically unexplained symptoms—models and mechanisms. *Clinical Psychology Review*, 27(7), 821–841.
- Savedra, M. C., Holzemer, W. L., Tesler, M. D., & Wilkie, D. J. (1993). Assessment of postoperation pain in children and adolescents using the adolescent pediatric pain tool. *Nursing Research*, 42(1), 5–9.
- Sayegh, S. A., Filén, T., Johansson, M., Sandström, S., Stiewe, G., & Butler, S. (2013). Mirror therapy for complex regional pain syndrome (CRPS)—A literature review and an illustrative case report. *Scandinavian Journal of Pain*, 4(4), 200–207.
- Shaygan, M., & Karami, Z. (2020). Chronic pain in adolescents: The predictive role of emotional intelligence, self-esteem and parenting style. *International Journal of Community Based Nursing and Midwifery*, 8(3), 253–263.
- Shih, A. R., & von Baeyer, C. L. (1994). Preschool children's seriation of pain faces and happy faces in the Affective Facial Scale. *Psychological Reports*, 74(4), 659–665.
- Sieh, D. S., Visser-Meily, J. M., & Meijer, A. M. (2013). Differential outcomes of adolescents with chronically ill and healthy parents. *Journal of Child and Family Studies*, 22(2), 209–218.
- Turk, D. C., & Melzack, R. (Eds.). (2011) *Handbook of pain assessment* (pp. 97–118). The Guilford Press.
- Van de Velde, M., Jani, J., De Buck, F., & Deprest, J. (2006). Fetal pain perception and pain management. *Seminars in Fetal and Neonatal Medicine*, 11(4), 232–236.
- Whitten, C. E., Donovan, M., & Cristobal, K. (2005). Treating chronic pain: New knowledge, more choices. *The Permanente Journal*, 9(4), 9–18.
- Williams, A. C. C., & Craig, K. D. (2016). Updating the definition of pain. *Pain*, 157(11), 2420–2423.
- Speck, V., Schlereth, T., Birklein, & Malhöfner, C. (2017). Increased prevalence of posttraumatic stress disorder in CRPS. *European Journal of Pain*, 21(3), 466–473.

Muhammad Ishaq Farhan MD. Assistant Professor, Department of Psychiatry, University of Missouri Kansas City. Chief Department of Pain Management. Consultant sleep physician. American Board certified in psychiatry, sleep medicine and pain medicine. He uses an interdisciplinary approach for the treatment of chronic pain, sleep, and mental health problems. Chief of Division of Interdisciplinary Pain Management Program at University Health, Kansas City, Missouri. Moderator and pain/sleep expert for Missouri Tele Health Network and Chronic Pain Management (ECHO program).

Hirsch K. Srivastava MD Resident Physician, Department of Psychiatry. University of Missouri Kansas City

Muhammad A. Kamran FCPS, BDS Associate Professor, Department of Pedodontics and orthodontics, King Khalid University. Abha, Saudi Arabia. FCPS orthodontics, Pakistan. Visiting Professor, Liaquat College of Medicine and Dentistry, Karachi, Pakistan.



Chronic Medical Conditions Strongly Influenced by Emotional States: Eczema, Asthma, Headaches and Gut Inflammation

Gage Rodriguez

Dermatological Conditions

In medical science, it is often stated that the skin is the mirror of the mind (or the soul) (Jacobi, 2017). There is an embryological relationship between the central nervous system and the skin, and the skin is profusely innervated. It is easy to understand that tensions, anxiety, and other mental states can have a major influence on the determination and course of conditions that affect the skin.

It has been estimated that about a third of all patients attending a dermatological service for consultation will have a diagnosis of an emotional or behavioral disturbance (Hath et al., 2009). There are a number of dermatological conditions which have an important component of emotional or psychological factors determining the course or exacerbations of the conditions. One of the most frequent ones is eczema, but there is a long list of such conditions. The skin is clearly related to the central nervous system in terms of neurotransmitters and psycho-neuro-immunological connections. Here, we focus on eczema, but others like vitiligo and acne vulgaris are known to be strongly influenced by stressors and emotional factors.

G. Rodriguez (✉)
Ochsner Health System, New Orleans, LA, USA
e-mail: gage.rodriquez@ochsner.org

Atopic Dermatitis. Eczema

Atopic dermatitis (also called atopic dermatosis and neurodermatitis) is one of the multifactorial dermatological conditions together with psoriasis vulgaris, acne vulgaris, and many others. Atopic dermatitis is a fairly common condition that affects a significant proportion of infants, school children, and adolescents. The prevalence is around 10–15% of children (Augustin et al., 2015; Jacobi, 2017; Ring, 2016). For about a century, the connection between emotional stressors or problems and itching/eczema has been known, therefore it was given the name neurodermatitis, which is most commonly used in Germany (Ring & Koehne, 2016). Eczema is more common in the US (from the Greek ekzema, meaning to bring about by heat, or “boiling over” of break out).

Its central characteristic is the presence of areas of the skin in which there is persistent pruritus, leading to a strong desire to scratch. This in turn gives way to a variety of morphological alterations in the skin, some of which may cause even more pruritus. Typically the onset in the majority of cases is in infancy. It is known that atopic conditions tend to have a familial pattern, but are also multidetermined, i.e., several factors contribute to the appearance and maintenance of the condition (Hath et al., 2009). Also, the course of the dermatitis is strongly affected by emotional factors.

In eczema the scratching becomes more intense with sweating and there are exacerbations with certain foods (food intolerance), and intolerance of animal hair or wool. Also the child may manifest white dermographism (the pressure on the skin leads to the pressured area to temporarily appear lighter in color than the surrounding skin). Many children experience asthma as well as allergic rhinitis.

Atopic dermatitis can lead to a vicious cycle called “itch-scratch” cycle, which consists of the itching leading to skin lesions caused by the scratching, which in turn can determine further itch. The frequent scratching of the skin may lead to associated consequences such as lichenosis.

In the majority of cases there is a family history of allergies and the course is chronic. The course of the condition fluctuates in the affected child or adolescent, with episodes of flare-up and others of diminished symptoms. The term “atopic march” has been used to describe the frequent association of atopic dermatitis with asthma later on in the life of the child, as well as other allergic conditions, such as allergic conjunctivitis.

Atopic dermatitis is a multidetermined condition, in which genetic factors not only play an important role, but also there may be multiple triggering factors, to which the child is allergic, such as some foods, animal hair, pollen, dust mites, some clothing, climatic changes, chemical substances, and there are also psychological factors (Gieler et al., 2000).

It is well established that anxiety and stress can trigger an exacerbation of the condition through the release of stress mediators (Hath & Gieler, 2006). This may include suppression of beta-adrenergic activity in the sympathetic system. Also, the sympathetic vegetative system exerts an important influence on the skin, with an effect on Langerhans cells and mast cells, which may be activated by stress. Langerhans cells are macrophages that reside in the epidermis and dermis.

In terms of its pathophysiology, atopic dermatitis is related to excessive production of Immunoglobulin E (IgE), as well as a defect in the T suppressor cells, and an alteration in the Th1/Th2 balance in favor of the Th2.

The T suppressor cells have as their main function the cessation of an immune response once the goal of “fighting” foreign antigens or agents has been achieved and “close down” the immune response. The Th1/Th2 balance refers to the balance in the immunities mediated by T helper cells type 1 and T helper cells type 2 (Kidd, 2003). The T helper cells type 1 are thought to be responsible for “cellular immunity.” Cellular immunity signifies the mechanisms to fight intracellular viruses, cancerous cells, and producing a delayed-type skin sensitivity to agents. On the other hand, the T helper cells type 2 are associated with “humoral immunity” and stimulate the production of antibodies against extracellular agents. Therefore, a disbalance in favor of helper cells type 2 is associated with atopic manifestations (as well as with immune suppression typical of pregnancy, and tolerance of grafts).

In eczema, there is also an increased production of interleukins (IL), type 3 and 4, which enhance the activity of mast cells. An increase in IL 4 (interleukin 4) leads to a higher level of B cells and immunoglobulin E, while interleukin 5 leads to a greater level of eosinophils. Additionally, there is an increase in substance P, and NGF (Peters, 2016). Substance P is secreted by dendritic terminals and several leukocytes. Substance P promotes the inflammatory response. NGF means nerve growth factor, also associated with enhancing the inflammatory response.

Additionally, atopic dermatitis is often associated with impaired production of sweat and also reduced production of sebum (necessary for skin lubrication). There may be also a relative blockade of the beta-adrenergic system. The beta-adrenergic system is related to the activation of the sympathetic nervous system, in response to epinephrine and norepinephrine.

Clinically, atopic dermatitis tends to affect the scalp, facial skin, as well as flexure areas of the extremities (arms and legs). It has been associated with attention deficit disorder in older children (Metz et al., 2013). If is severe, it can affect the quality of sleep of the child, as the scratching during the night is associated with episodes of waking that often go unnoticed. This may lead to

hypersomnia in the daytime, as well as irritability and restlessness or hyperactivity during the day.

It is known that pruritus (itching) can be perceived differently by children with different personalities and coping styles and that stress is a powerful inducer of further itching and can cause flare-ups of the condition.

It has been estimated that in around a third of patients with eczema, stress is an important triggering factor (Hath & Gieler, 2006.). The most frequent triggers can be anxiety-producing and traumatic experiences, as well as losses, important separations from parents, the transition to kindergarten, elementary school, high school, college, etc.

The management of atopic dermatitis is primarily the rapid reduction of the itch, and then treatment of the skin, maintaining its hydration and reducing the itch mechanisms, often with medications. However, reduction and management of stress, anxiety, and tensions are important components.

In systematic reviews of treatment outcomes, psychological interventions as adjuvants have led to better results than medication or skin management interventions alone. These include an intense concentration on something else, distraction from the itch, as well as relaxation strategies. In older children, small group discussions allowing for individualized concerns have been shown to be effective, and these have been implemented in Germany and France.

Asthma

Asthma consists of airflow obstruction, in reaction to some stimulus, which impedes adequate respiration, particularly the exhalation of air. Generally, there is hyper-reactivity of the airways, as well as local oedema in them, with eosinophilic and lymphocytic inflammation. The episodes produce anxiety in the child or adolescent affected, and a fear of death. Indeed, severe asthma can be lethal. Each episode has to be treated and if severe, it can make the child and his or her caregivers fear another episode.

There are numerous triggers of asthma, including allergies to specific agents like dust,

fomites, animal hair, pollen, and many other allergens. It can also be triggered by infections, exercise, cold air, and emotions (Wood et al., 2007), particularly negative emotions (Ritz et al., 2010).

The prevalence of asthma in children and adolescents has great variability and is very different in diverse countries, showing a prevalence between 3 and 20% of the general population in different areas (Yorke et al., 2007). Among childhood chronic medical conditions, the most frequent condition leading to hospitalization of children and adolescents is asthma. Asthma is also a disease of poverty in countries like the USA. It is associated with mold, with fomites on old carpets, cockroaches in the house, and with general disrepair of the home, which sadly is the status of many children, including “minority children” in old low-income apartments. The same occurs in many large cities all over the world and is most prevalent among the poor (Collins et al., 2008) and minorities (Weinstein et al., 2019). The psychosocial factors in asthma are receiving increasing attention, as many children and adolescents are “trapped” in cycles of disadvantage and poverty, which usually are also associated with less access to care, less environmental interventions, and just dealing with each episode one at a time, without taking into account the important environmental and psychosocial factors involved (Weinstein et al., 2019).

Even though it may be relatively common, when it is severe it has a significant mortality risk and impairs considerably the quality of life of the affected child when it consists of frequent or severe attacks, limiting the capacity of the child to engage in activities like exercise or sports. Previous asthma attacks can lead to traumatic memories of hospitalizations and procedures that may make the child dread subsequent episodes.

For a long time, it has been thought that there are important psychological and emotional factors implicated in bronchial asthma in children. In the old psychoanalytic writings, it was often associated with separation anxiety and general anguish as a causal factor. There are children and adolescents in whom intense stress or anxiety can lead to an episode of asthma, through a number

of reactions associated with the response to stress. High levels of stress and tension in family interactions also appear to be associated with worse outcomes in asthma (Klinnert et al., 2008). This has been associated with increased maternal depression, and certainly with chaotic family functioning (Weinsten et al., 2017).

Aside the individual's emotional issues, i.e., anxiety, fear, and sadness or intense anger, there is evidence that a negative emotional climate in the family also contributes to increased episodes of asthma (Wood et al., 2007). This was born by a study with almost 300 children in whom this issue was studied by Wood et al. (2007). The episodes of asthma also have a negative impact on parents and sibling relationships. If a child gets severe episodes, and these are brought about by tears, frustrations, anger, etc., parents may become extremely careful to not upset the affected child in the least, perhaps leading to an alteration in the parent–child relationship. Parents might have to think carefully before frustrating a young child who might develop an asthma episode from crying. A “difficult child” with more emotional dysregulation would have more frequent episodes of anger. A recent study with around 60 children with asthma and a comparison group found increased levels of authoritarian parenting and hostility in mothers of children with asthma (Avcil et al., 2019).

In adolescence, the affected youngster may “deny” that he or she has asthma and attempt to just “be normal” by participating in exercises, refusing to use preventive strategies, carry an inhaler to school, etc. making adherence to early interventions and preventive measures difficult to implement (Rietveld & Creer, 2003). It is also important to consider the effect on the child on the family, if the child lives in poverty, has frequent hospitalizations and poor self-control, requires the parent to stay in the hospital, jeopardizing the overall family functioning and employment of that parent. Also, with worse family functioning, there is less adherence to asthma control interventions or prevention.

Presently, it is not clear that anxiety “causes” asthma, but there is an association between anxiety and asthma and it is clear that intense emo-

tions can trigger episodes. The effect probably is bilateral. One would think that not being able to breathe would cause fear in children, e.g., fear of death. Also, the fear and tension associated with the condition may contribute to the onset of episodes. Also, multiple studies point to the association between anxiety states, as well as depression, and episodes of asthma (Van Lieshout & MacQueen, 2008).

Relaxation Therapy, Biofeedback, and Psychosocial Interventions

Even if there is no “causative” relationship between stress, anxiety, family tensions, and the onset of an episode of asthma, there is evidence that psychological interventions can improve the frequency of episodes, their severity, and the child's adherence to treatment. Several cognitive and behavioral strategies have shown an improvement in the quality of life and course of asthma in minors. Psychodynamic psychotherapies are more difficult to research as they are highly individualized, rather than manualized, but they should be considered when there are multiple manifestations of anxiety and a history of traumatic experiences, as well as family tensions. Traumatic experiences can be present in the caregiver or in the child as important determining factors (Weinstein et al., 2019).

Family interventions aimed at reducing family pressures, discord, dysfunctional family relationships and conflicts, as well as strategies to improve the anxiety and tension in the individual child have shown positive results.

Mindfulness strategies offer the ability to get away from “catastrophical thoughts” and scary scenarios that occur in the mind of anxious children and to be in the present moment. Breathing calmly and feeling alive, attempting to relax the muscles and the general level of tension in the body are helpful interventions. Mindfulness is related to meditation, for example, by attempting to prevent the mind of the child or adolescent from engaging in predicting scary outcomes, the fear of hospitalization or death, and picturing complications which may or may not occur.

Something similar could be said of guided imagery and self-hypnosis strategies (British Thorax Society/SIGN, 2004) aimed at helping the person “calm their body” and going to a “safe place in the mind” in which they can gain control of breathing, inhibit the fear response, and experience well-being.

Biofeedback is a technique aimed at teaching the child or adolescent “how it feels” to be relaxed through a number of concrete implements. These may involve a reduction of galvanic skin response, increased temperature in the peripheral areas of the body such as the fingers (associated with a relaxation response) as well as beta wave training (through an electrode placed on the head), reduction of the cardiac rate. All these maneuvers are associated with a “desired response” to the device in question (thermometer, a computer screen, a specific sound like music, etc.) which are part of the biofeedback equipment. Once the child is trained in the relaxation response, this can be accomplished without the need for further devices.

These children, even quite young ones, can be assisted to develop less intense reactions and implement strategies not to become overwhelmed by feelings and intense reactions. Parents can also be assisted to develop strategies to “say no” to their children in a less abrupt fashion, with more empathy and helping the child to cope better with frustrations, containing their emotions, and helping them understand the parent’s point of view about saying “no” to something the child wants.

Any comprehensive approach to alleviate the morbidity of asthma and its associated emotional difficulties has to include management of environmental conditions, improvement of the living situation and addressing inequalities in access to care, and life conditions, for the child and the family.

Headaches, Tension, and Migraine

Headaches in children and adolescents are a frequent complain that requires evaluation and treatment by the pediatrician and sometimes the child neurologist. The phenomenon of headaches is

complex and not very well understood, particularly when the headaches occur frequently and are very intense. They can cause significant difficulty in everyday function and in school attendance, as well as requiring care by adults in the life of the child.

There is uncertainty as to what is precisely the role of medical factors and “environmental” or emotional factors in the causation and manifestation of headaches. In the realm of headaches, many authors consider the influence of emotional and psychological factors as very important.

Headaches are often not diagnosed very early in the child’s life (Ballotin et al., 2004). However, headaches can contribute to sleep difficulties as well as excessive crying in the infant. Also, migraines can occur in infants, and they could be suspected in children whose parents suffer from migraines and whose crying may be quite intense and unsoothable.

There is an organization called the “International Headache Society” which has produced diagnostic criteria to help clinicians guide their diagnosis and further investigations in patients whose central complain is headache.

In addition to the categories of “migraine” and “tension-type headaches,” the international Headache Society also includes “trigeminal autonomic cephalalgia” and “other primary headache disorders.” Those are the “primary headache” disorders.

There are multiple “secondary headache” conditions, for instance, related to head trauma, vascular diseases, including a category of headache “secondary to a psychiatric disorder.”

Epidemiology

The investigations on the prevalence of headaches gives wide variations in the rates of “headache” in children, which of course has to do with what is included in the term headache, it could include only one headache in one’s life, or frequent headaches, or headaches of such intensity to require medical advice.

The estimates range from a prevalence of 4–20% in the preschool child and around 38–50% in school-age children. If only migraine head-

aches are considered, the frequency increases with age from childhood to adolescence. It is estimated that the rate of migraine may be from 1–3% in preschool children and from 4–11% in school age. In very general terms, it is estimated that the prevalence of headaches in the pediatric population is around 10% (Vannatta et al., 2008).

Phenomenology

From the symptomatic point of view, it may be relatively straightforward to distinguish between two major types of headaches: migraine and “tension type headaches.” In the first, migraine, there is a clear onset of the headache, often preceded by an aura (phosgenes, changes in the visual field, other sensory symptoms) followed by the onset of throbbing headache, often in one side of the head. The pain is intense and may last for hours or sometimes for days, ending at a definite time. The pain may be accompanied by symptoms like photophobia, nausea, or vomiting, as well as others. Then there is a period of no further symptoms until the next episode of migraine. Despite these “clear differences” there are children in whom it is hard to distinguish the headache type, as there may be an overlap between disorders.

Most clinicians dealing with children who experience headaches could agree that there is a correlation between headaches and emotional and behavioral problems. Establishing such association does not mean causality, as it is possible that the hassles of “living with headaches” and the consequences of having frequent or severe headaches could cause secondarily difficulties in the emotional life of the child.

A recent meta-analysis (Ballotin et al., 2013) using a somewhat gross screening device (the Achenbach Behavioral Checklist) found an association between psychopathology and headaches, both of them tension-type and migraine. This study compared the rates of psychopathology with normal children. There was a predominance in the “headache children” of internalizing difficulties (such as anxiety and depression).

Tension-Type Headaches

There is an inherent difficulty in diagnosing headaches as “tension headaches.” The problem resides in attributing causal or an important determining role to emotional tension. After all, there are many children who experience emotional tension and may not manifest that in the form of headaches.

It is generally recognized that tension-type headaches are very frequent. In the general population, it has been estimated between 30% and 78% of lifetime prevalence. The frequency in children and adolescents has been reported in a very wide range (Parisi et al., 2011). The average age of onset seems to be in the school-age child, or around age 7.

At the same time, it is also true that in some children, certain tensions or stressors may find an expression in the form of intermittent headaches and that there may be an important interpersonal element in the timing, nature, and continuation of the headaches. It may be that the headaches can account for opportunities to avoid attending school, missing difficult examinations, sport, or academic competitions. The head pain often tends to elicit concern and special ministrations from parents or peers. In the clinical scenario, this is often encountered. However, from a rigorous scientific point of view, it may be difficult to attribute a clear-cut causal role to tension.

The mechanism of tension-type headache is unknown. It is thought that peripheral pain mechanisms are involved, but in the chronic tension-type headache, central pain mechanisms are thought more important.

The pain is of bilateral location, it is pressing or a feeling of tightening of the head, and is non-pulsating. It is of mild to moderate intensity and not aggravated by physical activity. The pain is not associated with nausea or vomiting. Despite not being typical, it can be associated with photophobia or phonophobia. The central physical finding is increased pericranial tenderness.

The typical tension-type headache lasts four to 6 h, although there have been reports of days or even years on end. On the other hand, tension-

type headaches may be more frequent, they may occur every day and may be less intense. The headache tends to affect the entire head and is not restricted to one side. Also, it is generally not throbbing. It may occur every day and is associated with worries and tensions. It may occur before facing a difficult situation, such as going to school if the school is feared.

Most clinical studies find that there is a correlation between psychosocial stressors in the life of the child and tension-type headaches. Also, there is a higher correlation (than in the general population) of emotional disturbances, such as anxiety and mood disorders, such as depression.

Other correlates are oromandibular dysfunction and high muscular tension in general. Of course, these symptoms can be also related with high emotional tension or anxiety.

There are cases in which migraine and tension headaches occur in the same child and the diagnosis may be more complicated.

A frequent companion to family tensions is anger in the child or between the parents and children, or between siblings.

Alex, a 9-year-old boy, was referred by his pediatrician due to frequent headaches that occurred several times a week and lasted several hours at a time. They occurred also on weekends and did not appear to be migraines. The boy had episodes of rage when he thought that an "unfairness" had been committed by his mother or stepfather. During the diagnostic interviews, it surfaced that Alex was feeling very different from his two older brothers who were "light skinned" while he was dark. They did not include him in their games as they were several years older. Also, the biological father consistently talked badly to Alex during visits, of his scorn for his mother and his duty "never to obey" the stepfather as he was "a nobody." When the boy was able to improve his relationship with his siblings as the feeling of exclusion was explored, and also the prohibition to have affectionate feelings for his stepfather, the boy's resentments disappeared, together with the headaches. The work then consisted of allowing Alex to develop a strategy to confront or disavow the malignant instructions of his father to make life difficult for the family with whom Alex spent the majority of the time.

Migraine Headaches

Migraine headaches are often characterized by an "attack" of headache. The headaches generally last several hours to days (from 2 to 72 h, in the case of children). The headache mostly has a unilateral location in the head (but may be bilateral in children) is pulsating in quality and the pain is moderate to severe in intensity. The pain is usually aggravated by physical activity. There are phenomena accompanying the headache such as nausea, vomiting, photophobia, or phonophobia.

The headache generally is frontotemporal, and in children and adolescents, bilateral headache more often occurs than in adults. There may be cutaneous allodynia (feeling pain on being touched or with light pressure on the skin) or cranial autonomic symptoms (lacrimation, nasal congestion, conjunctival injection, facial flushing among others). In girls, there may be a correlation between migraine and the menstrual period in a category called "pure menstrual migraine."

Regarding auras, there are those that are considered "typical" auras and there are atypical auras such as "brainstem aura." The auras may include symptoms in the visual sensory field, for example, scintillations (seeing lights) or sensory complaints such as "a feeling of pins and needles". The aura may manifest in other sensory systems, as well as speech and language symptoms, motor symptoms, brainstem phenomena, and retinal phenomena.

The auras last over 5 min, and the symptoms occur in succession. The aura can last up to 60 min. Among the speech and language symptoms, there is aphasia and also dysarthria. Aphasia is regarded as a unilateral symptom, while dysarthria may or may not be unilateral. Clinicians often recommend for the child to describe systematically their auras, and in the adolescent to undertake an aura diary. There are many instances of "aura without headache" and of course with headache.

Examples of brainstem auras are symptoms that are fully reversible after the episode and

include dysarthria, vertigo, tinnitus, hypoacusis, diplopia, ataxia, and a decreased level of consciousness.

There is a form of migraine called hemiplegic migraine, which is associated with transient motor symptoms. In reality, it most often is not a “paralysis” that is reversible but motor weakness. The motor weakness in some patients may persist for several weeks after the migraine.

It is important to underscore that some of the symptoms of aura may be accompanied by a feeling of anxiety and hyperventilation.

The term retinal migraine refers to a subset of migraine with aura, the aura must include fully reversible symptoms such as monocular and visual phenomena (positive or negative, such as scintillations, scotomata, and blindness). These phenomena should be confirmed by a clinical visual examination or the patient’s drawing of the field defect. The visual phenomena last over 5 min, may last up to 60 min, and are accompanied or followed by headache.

Regarding chronic migraine, the term refers to a migraine that lasts for more 15 or more days, while fulfilling the diagnostic criteria for migraine with or without aura.

Some complications of migraine are status migrainosus, persistent aura without infarction, migrainosus infarction, and migraine aura-triggered seizures. Status migrainosus is diagnosed when the person fulfills the criteria for headache which is unremitting for 72 h and whose symptoms are debilitating.

There appears to be a correlation between several health difficulties and greater prevalence of migraine headache, for instance, with sleep disturbance. The main correlates appear to be diminished amount of total sleep, as well as bruxism (Miller et al., 2003).

For decades, various authors have reported an association between symptoms of high anxiety, perfectionism, the need for control, and conflict in interpersonal relationships (including repressed hostility) as frequent correlates of migraine headaches (Cahill & Cannon, 2005). Certainly, the direction of the effects is not clear: whether the headaches are “caused” by the feelings or the

feelings could be caused by the painful episodes, or whether there is a bidirectional relationship. Some authors (Fearon & Hotopf, 2001) based on a longitudinal study (involving 17,414 children) suggest that migraine and chronic headaches should be considered as markers of underlying psychosocial adversity. In another study, the Minnesota twin study (a study involving adolescent twins and their families) the researchers (Marmorstein et al., 2009) looked at the association between parental psychopathology and offspring with migraine. They found an association between parental drug use, depression and antisocial behavior in the parents. This is important because it throws light on the “reasons for the tension” and problems that the child may face, not only at the individual but the interpersonal level.

The association between symptoms of high anxiety and headaches should not be surprising, as there may be common neurotransmitters associated with both, namely dopamine and serotonin.

There are several accounts of behavioral strategies to treat migraine in adults, such as relaxation therapy and biofeedback. There are also a number of behavioral strategies to deal with the pain itself. A promising approach would be to use the relaxation strategies at the first signs that a migraine is coming, during the aura, if possible.

Regarding treatment, there are pharmacological and non-pharmacological approaches. There is a high positive placebo response, which makes it hard to ascertain whether pharmacological treatments are truly helpful (Parisi et al., 2011). Most clinicians recommend a bio-psycho-social approach to the understanding of the condition and the treatment. The combination of preventive pharmacologic treatments and cognitive behavioral therapy has shown effectiveness in adolescents with chronic migraine.

A headache diary is often recommended to evaluate the characteristics of the headaches and the results of the interventions. The most studied therapies have been biofeedback, relaxation strategies, and cognitive and behavioral psychotherapies.

The biofeedback that is preferred is electromyographic biofeedback. In this way, the older child or adolescent can detect signs of muscular tension and when he or she is relaxed (Arndorfer & Allen, 2001).

Inflammatory Bowel Disease

The term inflammatory bowel disease is an umbrella concept that covers Crohn's disease, ulcerative colitis, and unclassified inflammatory bowel disease.

Crohn's disease and ulcerative colitis are relatively rare in children and more frequent in adolescents. Currently, their incidence is increasing in the Western world (Langhorst et al., 2019; Perminow et al., 2009; Sawczenko et al., 2001) and its onset is earlier than previously thought. The conditions have a fairly severe impact on the quality of life of the child /adolescent and the family.

The prevalence is estimated to be around 20 per 100, 000 children and adolescents. The conditions are similar: ulcerative colitis is restricted to the colon and it often affects the rectum, if there is also an alteration in the distal Ileum then Chron's disease is diagnosed.

There is growing consensus that the prevalence of these conditions is higher as there is improvement in the living conditions of people of all ages (Feeney et al., 2002). Inflammatory bowel disease is often diagnosed for the first time in adolescence. This is a vulnerable age in which there may be particularly shame and embarrassment about the symptoms, as well as a stigma of "being different" and somehow abnormal.

Clinical Manifestations and Pathophysiology

The most common manifestations in children involve a colic type of abdominal pain that recurs day after day. There are "flare-ups" and periods of relatively less symptoms, particularly with treatment. Other manifestations are diarrhea which at times can be so intense that the child

cannot reach the toilet on time and has fecal accidents. There may be weight loss as a result of poor nutrition, as well as growth stunting when the condition occurs in childhood. There may be anemia and pale skin, as well as general weakness due to inadequate nutrition. The child with little energy to spare may be less involved in physical activities and may have difficulty carrying out school work. This is compounded by the need to miss school during the periods of exacerbation. This may lead to fears and anxieties in a conscientious child and add to the tension of having to "makeup work" or fall behind.

Inflammatory bowel disease is not caused by psychological factors, but it can be exacerbated or "triggered" by living in stressful circumstances and by negative experiences. Anxiety and depressive symptoms are the most common and there may be posttraumatic manifestations associated with procedures and "infusions" to treat the condition. This encompasses endoscopies, hospitalizations, imaging studies, and laboratory studies are a part of the diagnostic strategies.

The child often will have a feeling of little control over the body and of being "beholden" to the unpredictable course of the condition.

Regarding the pathophysiology of the process of inflammation, there are multiple factors, some of them genetic as well as depending on the intestinal flora and diet.

One impact of Crohn's disease in childhood is growth failure, which is seen in 40–50% of children with Crohn's (Newby et al., 2005).

Regarding the nature of the conditions, it is clear that there are genetic conditions, for instance, Chron's disease has been associated with mutations in genes NOD2/CARD15, but this does not occur in many cases. There are also alterations in the intestinal flora and the mucosa's response to these agents, leading to inflammation, ulceration, and bleeding.

There is evidence that chronic stress can contribute powerfully to the exacerbation of Chron's disease and ulcerative colitis (Konturek, 2019). Nowadays, researchers speak of the "brain-intestinal-microbiotic axis" to illustrate the interplay between these factors. The intestinal bacteria exert an influence on the amount of short-chain

fatty acids, cytokines which promote inflammation and the release of neurotransmitters such as serotonin and gamma-aminobutyric acid (GABA). An alteration in the intestinal flora (dysbiosis) has been associated with problems such as irritable bowel syndrome and inflammatory conditions. This seems to be determined by a diminished population of bacteria such as *Lactobacillus* and *Bifidobacterium*, *Clostridium* of species IV and XIVa, *Lachnospiraceae*, and particularly *Faecalibacterium prausnitzii*. These “good” bacteria tend to produce short-chain fatty acids which have a protective effect on the integrity of the mucosa of the intestinal wall (Rajilić-Stojanović et al., 2015). On the contrary, there are bacteria that may be associated with promoting inflammation on the intestinal wall such as *Escherichia coli*, *Streptococcus*, *Ruminococcus gnavus*, and *Proteobacteria* (Zuo & Ng, 2018).

As in the other conditions described above, there are important psychological factors that have an impact on the course and perception of the illness, and the effects may well be bidirectional. It can be affirmed that there is an association between internalization tendencies (emotional symptoms), i.e., anxiety states, depression, and a worse perception of the illness (coping) with a greater report of symptoms of dysfunction and pain (van Tilburg et al., 2017). These issues may also play a role in determining relapse activity and in the degree of disability associated. There are more studies on these issues in the adult population (Halpin & Ford, 2012), but some in children.

van Tilburg et al. (2017) emphasize that the perception of the symptoms such as diarrhea, abdominal pain, and bloating is strongly influenced by anxiety, the concept that the child has of his or her disease, as well as by depressive symptoms. It may be that not only the perception of the symptoms is impacted, but also even the inflammatory activity. One of the reasons for the anxieties in a child or adolescent can be the unpredictability of the course, and the need for repeated treatments, perhaps infusions, and some hospitalizations as well as diagnostic studies episodically.

Some of the medications can have side effects which further impact the quality of life of the child. It appears that the level of psychological distress is a greater predictor of the quality of life than the actual severity of the condition (Claar et al., 2017). This suggests that improving the perception of the illness, the coping abilities of the child and the levels of general distress could have a positive impact on the perception and course of the condition.

Intervention

There is consensus that the management of inflammatory bowel disease should be multimodal and involve a particular diet (for instance, including probiotics). Sometimes, a “low FODMAP diet” is recommended (FODMAP stands for fermentable oligosaccharides, disaccharides, monosaccharides, and polyols). Strategies have included the actual intake or probiotics and prebiotics to regulate the microbial population, “stool transplant” from another individual, as well as in some cases use of antibiotics and anti-inflammatory medications. Lifestyle adjustments such as reducing overall level of stress and increasing relaxation activities, as well as better coping and psychological strategies to deal with the condition and its consequences can also be helpful. Hypnosis and imagery or mental visualization can be helpful to ameliorate the abdominal pain associated with the condition.

There is a form of hypnosis called “gut-oriented hypnosis” or gut-directed hypnosis (Keefer & Keshavarzian, 2007; Pemberton et al., 2020) in which the relaxation during the trance is an association between the hands over the abdomen producing a relaxing and calming effect through the release of a “calming energy,” which has shown empirically a reduction in the level of pain.

The patient should be assisted to identify which situations, activities or perceptions cause distress, or anxiety and attempt to deal with them better, or avoid them, i.e., avoid very difficult situations. When this is associated with problematic family interactions, clearly an intervention

involving family relationships should be attempted to reduce this chronic tension which is a determining factor in the course of the illness, diarrhea, pain, etc.

These are the recommendations of the German guidelines for the diagnosis and treatment of ulcerative colitis (Dignass et al., 2011; Kucharzik et al., 2018; Preiß et al., 2014). The recommendations also include psychotherapy in order to help the patient deal with emotions, repressed conflicts, dealing with stress and with the consequences of having this chronic condition.

References

- Arndorfer, R. E., & Allen, K. D. (2001). Extending the efficacy of a thermal biofeedback treatment package to the management of tension type headaches in children. *Cephalalgia*, 41, 183–192.
- Augustin, M., Radtke, M. A., Glaeske, G., Reich, K., Christopher, E., Schaefer, I., & Jacob, I. A. (2015). Epidemiology and comorbidity in children with psoriasis and atopic eczema. *Dermatology*, 231(1), 35–40.
- Avcil, S., Uysal, P., Demir, F., Erge, D., Kurt Omurlu, I., & Yenigun, A. (2019). Mothers' emotional states and attitudes regarding their children with asthma. *Journal of Asthma*, 56(6), 618–626.
- Ballotin, U., Nicoli, F., Pitillo, G., Ginevra, O. F., Borgatti, R., & Lanzi, G. (2004). Migraine and tension headache in children under 6 years of age. *European Journal of Pain*, 8(4), 307–314.
- Ballotin, U., Fusar Poli, P., Trmine, C., Molteni, S., & Galli, F. (2013). Psychopathological symptoms in child and adolescent migraine and tension-type headache: A meta-analysis. *Cephalalgia*, 33(2), 112–122.
- British Thorax Society/SIGN. (2004). British guideline on the management of asthma. A national clinical guideline. *Thorax*, 58(suppl 1), i1–i4.
- Cahill, C. M., & Cannon, M. (2005). The longitudinal relationship between comorbid migraine and psychiatric disorder. *Cephalalgia*, 25, 1099–1100.
- Claar, R. L., Van Tilburg, M. A., Abdullah, B., Langer, S., Sherif, D., Whitehead, W. E., Drossman, D. A., & Levy, R. L. (2017). Psychological distress and quality of life in pediatric Crohn's disease: Impact of pain and disease state. *Journal of Pediatric Gastroenterology and Nutrition*, 65(4), 420.
- Collins, J. E., Gill, T. K., Chittleborough, C. R., Martin, A. J., Taylor, A. W., & Winefield, H. (2008). Mental, emotional, and social problems among school children with asthma. *Journal of Asthma*, 45(6), 489–493.
- Dignass, A., Preis, J. C., Aust, D. E., Autschbach, F., Ballauff, A., Barretton, G., & Stallmach, A. (2011). Aktualisierte Leitlinie zur Diagnostik und therapie der Colitis ulcerosa. *Zeitschrift für Gastroenterologie*, 49(9), 1276–1431.
- Fearon, P., & Hotopf, M. (2001). Relation between headache in childhood and physical and psychiatric symptoms in adulthood: National birth cohort study. *British Medical Journal*, 322, 1145.
- Feeney, M. A., Murphy, F., Clegg, A. J., Trebble, T. M., Sharer, N. M., & Snook, J. A. (2002). A case-control study of childhood environmental risk factors for the development of inflammatory bowel disease. *European Journal of Gastroenterology & Hepatology*, 14(5), 529–534.
- Gieler, U., Kupfer, J., Niemeier, V., Brosig, B., & Stangier, U. (2000). Atopic eczema prevention programs. A new therapeutic concept for secondary prevention. *Dermatologie Psychosomatik*, 1, 138–147.
- Halpin, S. J., & Ford, A. C. (2012). Prevalence of symptoms meeting criteria for irritable bowel syndrome in inflammatory bowel disease: Systematic review and meta-analysis. *American Journal of Gastroenterology*, 107, 1474–1482.
- Hath, W., & Gieler, P. D. M. U. (2006). Multifaktorielle Dermatosen. In W. Harth & M. U. Gieler (Eds.), *Psychosomatische Dermatologie* (pp. 83–133). Springer.
- Hath, W., Gieler, U., Kusnir, D., & Tausk, F. A. (2009). *Clinical management in psychodermatology*. Springer.
- Jacobi, A. (2017). Die Haut als Spiegel der Seele. *Ästhetische Dermatologie & Kosmetologie*, 9(4), 27–33.
- Keefer, L., & Keshavarzian, A. (2007). Feasibility and acceptability of gut-directed hypnosis on inflammatory bowel disease: A brief communication. *International Journal of Clinical and Experimental Hypnosis*, 55(4), 457–466.
- Kidd, P. (2003). Th1/Th2 balance: The hypothesis, its limitations and implications for health and disease. *Alternative Medicine Review*, 8(3), 223–246.
- Klinnert, M. D., Kaugars, A. S., Strand, M., & Silveira, L. (2008). Family psychological factors in relation to children's asthma status and behavioral adjustment at age 4. *Family Process*, 47, 41–61.
- Konturek, P. C. (2019). Psychobiologische Mechanismen und Risikofaktoren bei funktionellen und chronischen Darmerkrankungen. In U. T. Egle, C. Heim, B. Van Strauss, & R. Känel (Eds.), *Psychosomatik- neurobiologisch fundiert und evidenzbasiert* (pp. 332–337). Stuttgart.
- Kucharzik, T., Dignass, A. U., Atreya, R., Bokemeyer, B., Esters, P., Herrlinger, K., et al. (2018). Aktualisierte S3-Leitlinie Colitis ulcerosa der Deutschen Gesellschaft für Gastroenterologie, Verdauungs- und Stoffwechselkrankheiten (DGVS). *Zeitschrift für Gastroenterologie*, 56(09), 1087–1169.
- Langhorst, J., Koch, A. K., & Häuser, W. (2019). Entzündliche Darmkrankheiten. In U. T. Egle, C. Heim, B. Van Strauss, & R. Känel (Eds.), *Psychosomatik- neurobiologisch fundiert und evidenzbasiert* (pp. 338–354). Stuttgart.

- Marmorstein, N. R., Iacono, W. G., & Markey, C. N. (2009). Parental psychopathology and migraine headaches among adolescent girls. *Cephalalgia*, *29*(9), 38–47.
- Metz, M., Wahn, U., Gieler, U., Stock, P., Schmitt, J., & Blume-Peytavi, U. (2013). Chronic pruritus associated with dermatologic disease in infancy and childhood: Update from an interdisciplinary group of dermatologists and pediatricians. *Pediatric Allergy and Immunology*, *24*(6), 527–539.
- Miller, V. A., Palermo, T. M., Powers, S. W., Scher, M. S., & Hershey, A. D. (2003). Migraine headaches and sleep disturbances in children. *Headache: The Journal of Head and Face Pain*, *43*(4), 362–368.
- Newby, E. A., Sawczenko, A., Thomas, A. G., & Wilson, D. (2005). Interventions for growth failure in childhood Crohn's disease. *Cochrane Database of Systematic Reviews*, *3*.
- Parisi, P., Papetti, L., Spalice, A., Nicita, F., Ursitti, F., & Villa, M. P. (2011). Tension-type headache in paediatric age. *Acta Paediatrica*, *100*(4), 491–495.
- Pemberton, L., Kita, L., & Andrews, K. (2020). Practitioners' experiences of using gut directed hypnosis for irritable bowel syndrome: Perceived impact upon client wellbeing: A qualitative study. *Complementary Therapies in Medicine*, *55*, 1–6.
- Perminow, G., Brackmann, S., Lyckander, L. G., Franke, A., Borthne, A., Rydning, A., Geir, A., Schreiber, S., Vatn, M. H., & The IBSEN-II Group. (2009). A characterization in childhood inflammatory bowel disease, a new population-based inception cohort from South-Eastern Norway, 2005–07, showing increased incidence in Crohn's disease. *Scandinavian Journal of Gastroenterology*, *44*(4), 446–456.
- Peters, E. M. J. (2016). Gestresste Haut? – Aktueller Stand molekularer psychosomatischer Zusammenhänge und ihr Beitrag zu Ursachen und Folgen dermatologischer Erkrankungen. *Journal der Deutsche Dermatologische Gesellschaft*, *14*(3), 233–252.
- Preiß, J. C., Bokemeyer, B., Buhr, H. J., Dignau, A., Häuser, W., Hartmann, F., et al. (2014). Aktualisierte S3-Leitlinie. Diagnostik und Therapie des Morbus Crohn. *Zeitschrift für Gastroenterologie*, *52*(12), 1431–1484.
- Rajilić-Stojanović, M., Jonkers, D. M., Salonen, A., Hanevik, K., Raes, J., Jalanka, J., DeVos, M. W., Manchanh, C., Golic, N., Enck, P., Phillipou, E., Iraq, F. A., Clarke, G., Spiller, R. C., & Penders, J. (2015). Intestinal microbiota and diet in IBS: causes, consequences, or epiphenomena? *The American Journal of Gastroenterology*, *110*(2), 278–287.
- Rietveld, S., & Creer, T. L. (2003). Psychiatric factors in asthma. *American Journal of Respiratory Medicine*, *2*(1), 1–10.
- Ring, J. (2016). Preface. In J. Ring & C. Kuehne (Eds.), *Atopic dermatitis. Eczema* (pp. v–viii). Springer.
- Ring, J., & Koehne, C. (2016). Psychological influence in atopic dermatitis. In J. Ring & C. Kuehne (Eds.), *Atopic dermatitis. Eczema* (pp. 99–106). Springer.
- Ritz, T., Kullowatz, A., Goldman, M. D., Smith, H. J., Kannies, F., Dahme, B., & Magnussen, H. (2010). Airway response to emotional stimuli in asthma: The role of the cholinergic pathway. *Journal of Applied Physiology*, *108*(6), 1542–1549.
- Sawczenko, A., Sandhu, B. K., Logan, R. F. A., Jenkins, H., Taylor, C. J., Mian, S., & Lynn, R. (2001). Prospective survey of childhood inflammatory bowel disease in the British Isles. *The Lancet*, *357*(9262), 1093–1094.
- Van Lieshout, R. J., & MacQueen, G. (2008). Psychological factors in asthma. *Allergy, Asthma & Clinical Immunology*, *4*(1), 12.
- van Tilburg, M. A., Claar, R. L., Romano, J. M., Langer, S. L., Drossman, D. A., Whitehead, W. E., Abdullah, B., & Levy, R. L. (2017). Psychological factors may play an important role in pediatric Crohn's disease symptoms and disability. *The Journal of Pediatrics*, *184*, 94–100.
- Vannatta, K., Getzoff, E. A., Powers, S. W., Noll, R. B., Gerhardt, C. A., & Hershey, A. D. (2008). Multiple perspectives on the psychological functioning of children with and without migraine. *Headache: The Journal of Head and Face Pain*, *48*(7), 994–1004.
- Weinstein, S. M., Pugach, O., Rosales, G., Mosnaim, G. S., Walton, S. M., & Martin, M. A. (2019). Family chaos and asthma control. *Pediatrics*, *144*(2).
- Wood, B. L., Lim, J. H., Miller, B. D., Cheah, P. A., Simmens, S., Stern, T., Waxmonsky, J., & Ballos, M. (2007). Family emotional climate, depression, emotional triggering of asthma, and disease severity in pediatric asthma: Examination of pathways of effect. *Journal of Pediatric Psychology*, *32*(5), 542–551.
- Yorke, J., Fleming, S. L., & Shuldham, C. (2007). A systematic review of psychological interventions for children with asthma. *Pediatric Pulmonology*, *42*, 114–124.
- Zuo, T., & Ng, S. C. (2018). The gut microbiota in the pathogenesis and therapeutics of inflammatory bowel disease. *Frontiers in Microbiology*, *9*, 2247–2260.

Gage Rodriguez MD. Child and adolescent neurologist. MD from Louisiana State University School of Medicine in New Orleans in 2016. Completed a 5 year combined residency/fellowship in pediatric neurology at Baylor College of Medicine in 2021. Pediatric Headache Fellowship at Baylor College of Medicine. Pediatric neurologist and headache specialist at Ochsner Health, New Orleans, Louisiana.



Mind–Body Issues in the Consultation-Liaison Service in Pediatric Hospitals

24

Shankar Nandakumar, J. Martin Maldonado-Duran, Juan Manuel Saucedo-Garcia, Sohail Nibras, Ashok Yerramsetti, and Vinh-Son Nguyen

Consultation-liaison child psychiatry is an intermediary between pediatrics and child psychiatry (Duverger et al., 2011). It is a point of encounter between these disciplines. It is neither one nor the other alone, but an attempt at a comprehensive understanding of the child in a medical facility, in the context of a family, a health care team, and social and cultural factors.

As a subspecialty within child psychiatry, consultation-liaison services are often feared by mental health clinicians due to several factors described here. It is a vital service in any pediatric medical hospital, as children/adolescents and their families suffer considerably during hospitalization and afterward. The impact of hospitalization, medical treatment, challenging diagnosis, and treatments required may take such a huge toll

on the child and family that intervention by mental health clinicians are necessary.

Some of the dread by mental health clinicians is caused by the features of many of these services. An answer to “what is happening with this child, why does she or he behave this way?” and “what to do?” are often peremptory questions asked of the mental health clinician. These may not be easy to answer quickly, often they are not, and require a process of engagement and complexity which is time-consuming and necessitates time and multiple interventions. Information must be obtained from the child directly, observing or discussing with the youngster. Information about the medical problem at hand needs to be factored in also, such as what medications the child is taking and what could explain the changes in the behavior or emotions of the child? (Frank, 2002). What is the impact of the underlying medical illness or illnesses affecting the child? What is the history of this child prior to the hospitalization? What is their developmental history? What is the functioning of the family, including parents and siblings? What is the interaction between the child/family with the medical, nursing, and other health personnel? Are there conflicts between these participants, including between the medical professionals themselves? Are they communicating the same message or recommendations? In the era of the internet, families may look up several diagnoses, medications, and treatments and

S. Nandakumar (✉) · J. M. Maldonado-Duran
Baylor College of Medicine, Houston, TX, USA
e-mail: Shankar.nandakumar@bcm.edu

J. M. Saucedo-Garcia
National Autonomous University of Mexico,
Mexico City, Mexico

S. Nibras · A. Yerramsetti
Department of Psychiatry Baylor College of
Medicine, Saint Louis University,
St. Louis, MO, USA

V.-S. Nguyen
Menninger Department of Psychiatry and Behavioral
Sciences, Baylor College of Medicine Menninger,
Houston, TX, USA

seek help from support groups that may offer different solutions. What are parents to do with this information? With this array of potential factors and the complex interaction between them, it is no surprise that a “quick answer” may be impossible, even though the child is exhibiting changes in emotion, voicing suicidal thoughts, wishes to die, refusing treatments, etc.

The parents of the child may be very frustrated, scared, angry, shocked, and may also require assistance. There may be a conflict between the child and the medical personnel, and the mental health clinician may be asked to help the staff deal with a difficult child or family.

Perhaps more than other subspecialties of child psychiatry, consultation-liaison requires considerable knowledge of pharmacotherapy and psychopharmacology. This is also true for several potential metabolic syndromes and conditions, as well as side effects of multiple medications which may play a role in the alteration of the child’s emotional or mental state.

The issues mentioned above require the psychiatrist to function as a sort of detective who will integrate all the information from the various sources. Obtaining that information may require several visits and interviews with the child or family. Even when all of this is accomplished, someone may be dissatisfied or frustrated with the fact that this all has taken so much time, that the improvement is only partial, and that there is not a quick fix to the problems at hand.

The experience can be challenging and fascinating, particularly if the situation improves with the child or the family. At other times, the consultation process may be frustrating and demand considerable time and attempts to help multiple parties to discuss the situation at hand, which they may or may not be prepared to do. All the above may contribute to the relatively low number of professionals devoted solely to these endeavors. This is often the case not only in the USA, but also in other countries.

The consultation-liaison psychiatrist and other mental health professionals associated with that service need to maintain multiple perspectives about a child and family. Above all, they should focus on the “psychological” world of the child,

the family, and the pediatric team (Duverger et al., 2011) while at the same time taking into account organic factors, medical data, and suggesting intervention strategies in the short and the longer term. The psychiatrist is above all a consultant, while the ultimate decisions regarding treatment interventions rest on the treating pediatrician and their team.

A population of children for whom the psychiatrist is consulted is those who have previously known emotional difficulty, psychiatric condition, or disorder, and who also are experiencing a medical condition, e.g., diabetes, arthritis, gastrointestinal problems, etc.

In the US and Australia, among other countries, most psychiatric hospital settings are adverse to admit a patient with a major medical condition. These children are increasingly being treated in a pediatric hospital, while the psychiatrist is called to attempt to manage the psychiatric difficulty affecting the child (Holmes et al., 2000).

Consultation-liaison psychiatry arose around 90 years ago from the frequent coexistence or comorbidity of emotional or behavioral disturbances in patients who are suffering from chronic or severe medical conditions (McLeod, 2002; Kapfhammer, 2011; Wolf et al., 2013). Mental health interventions are often required for youngsters who require repeated hospitalizations or treatments which severely alter the quality of life of the patient and family.

It is well known that emotional disturbances can exacerbate or worsen some medical conditions, making them more difficult to treat. Clinicians should encourage the child and family to maintain adherence to the treatment, which in the long run will affect the quality of life of the child and family. Around 30% of patients seen in hospitals exhibit considerable distress or have a psychological disturbance (Büchi et al., 2010; Lücke & Müller, 2018).

Consultation-liaison child psychiatry seems like an odd term that implies two services, one of consultation and another of liaison. With whom? Liaison with the medical team and with the family of the child. It was implemented for the first time in the USA and then adopted in the rest of

the world as a useful service for patients in a medical setting.

This service should be *par excellence* a “mind body” realm in which the body and the mind of the child (and the family, and the other caregivers) play an important role.

With the most recent trends, the literature in the US and in other countries like Germany (Häuser & Stein, 2006) demonstrates that the consultation liaison psychiatric service is becoming more and more restricted and is always in peril due to several factors. In many centers, the service is poorly staffed by a part time psychiatrist or mental health professional, and the consultant is only called “in dire circumstances,” almost on an emergency basis when a child is becoming aggressive, suicidal, refuses to participate in the medical treatment, or there is a major alteration in the child’s mental state. The consultation often centers only on the child in question, and the service requested is often an urgent pharmacological intervention to remedy the problem at hand. The other tasks, liaison with other professionals and considering psychosocial factors in the child’s life, are often not carried out. This is so for multiple reasons. Often there is “little time” given the constraints on the consultant. If the child improves, no further contact with the psychiatrist is expected by the pediatric team. The liaison aspect of the work is tending to disappear. In hospitals where charges for any medical service are closely monitored, the time the psychiatrist would invest in consulting with other medical professionals is considered “not reimbursable” and therefore discouraged. The only service that is paid is the direct consultation with the child/family. This denies the importance of a comprehensive intervention to understand a complex network of problems.

With those service constraints and very high expectations of the psychiatrist, it is no surprise that this work may not be particularly popular among psychiatrists. Given the limited time allotted to assess a child/situation and the enormous expectations that after that interview, the psychiatrist will provide a remedy to the situation once and for all frequently everyone will be frustrated when such a quick fix is not possible.

Here we examine the intricacies and different approaches to the consultation-liaison mental health work and offer some suggestions for further developments.

Different Types of Intervention in Consultation-Liaison

The first level of intervention has briefly been mentioned above. A recent review of the most frequent requests for consultation in various centers in the US indicates certain trends. Increasingly, there is a demand for consultations when a child has an altered mental state (delirium, bizarre, and agitated behavior, aggression) in children with autism, with intellectual disability, or in cases where autoimmune encephalitis is suspected. Also, suicidal ideation, non-participation in treatment, and refusal of services are frequent scenarios that result in consultation. In these situations, the expectation is that the psychiatrist might prescribe a psychotropic medication, and if further services are required the psychologist, counselor, or social worker might become involved.

Often, the psychiatrist is consulted when there is a crisis situation. A child may be voicing suicidal ideation or a wish to die or refuses any medical procedures, even if they are life-saving. There may be marked conflict between the family and the health care staff, or between the child and his or her parents (Fegert & Goldbeck, 2004). The clinician is expected to quickly diagnose the situation and suggest an immediate, needed intervention. This model puts the psychiatrist in a position of a “messianic professional” (Graindorge, 2005) who will come, see the situation for what it is, and offer a solution to the problem.

The above scenario often creates intense anguish and pressure to the psychiatrist who may come into to a difficult situation which has many facets and layers, yet one prescription is expected to solve the problems at hand. This expectation may lead to great disappointment by the pediatric team, that the consultant is unable to “see everything” and have practical solutions to the

challenge at hand. After all, much of the medical team tends to be oriented to concrete action and attempting to solve those problems with practical interventions.

A mid-career child psychiatrist, who is a member of the consultation team, described a very difficult experience he had during a consultation request in a tertiary level pediatric hospital. The pediatrician who had called the psychiatric service expected to get an opinion as to the management of a child who had been depressed for several weeks. The psychiatrist had recommended the child to see a psychotherapist and had recommended an SSRI (selective serotonin reuptake inhibitor) antidepressant medication. After three weeks the child had not improved much. The pediatrician in charge of the child, who was in hospital due to a chronic medical condition, was extremely frustrated. He told the child psychiatrist that, in his clinical practice, when an antibiotic does not work for an infection, he would quickly change to another antibiotic. The pediatrician could not understand why the psychiatrist did not immediately change the antidepressant and why any improvement would “take so long.” He berated the psychiatrist as being too careful and cautious and needing to be “more aggressive” like he was with his own use of antibiotics for children. The child psychiatrist felt very frustrated and devalued as the pediatrician quickly hung up the telephone after this statement.

In all facets of consultation work, including a request from a consultation-liaison service, it is important to know certain elements: (1) who is making the call or request for services. (2) Who is interested in the consultation, who is the “real client,” is it the patient/family? Is it the medical team? Is it a supervisor above the medical team? (3) Who suggested the consultation? (4) What is the problem or question one is being asked to consult on? The more elusive issues are the meta-messages that may be implicit in the consultation request but never stated directly or verbally. For instance, a consultation centered on a child might contain, in disguise, a conflict between the medical team and a family, or a conflict between physicians from different specialties. The consultant must pay attention to these questions and “meta-questions” so that he or she can focus the work on the more important issues and address those that are implicit and have not been discussed openly (Cottencin et al., 2006).

The “liaison” portion of the consultation-liaison psychiatric field is often considered less important, and in some hospitals it is not considered a part of the “routine services.” It is however a very important activity. It consists mostly of working with the different clinicians involved in the care of a child or family and building long-term collaborative relationships with different members of specialties. The psychiatrist, as a professional versed in human relationships, communications, and interactions, and as an “outsider” to the various teams, is able to assist clinicians in the delivery of their services and continuing to carry on their work. For example, a colleague from a hematological specialty may develop a feeling of guilt or utter sadness after one of his or her patients dies. This often implies the death of a child after a period of treatment in which the physician might have developed a close relationship with the child and/or the family, sees them fight the condition, tries different alternatives, witnesses the child having no further survival chances and ultimately dying. This may cause the physician and other medical team members, like nurses, to have a multitude of thoughts and feelings, which may be normative and expected, but nevertheless can cause further challenges in the professionals. Unacknowledged or unexpressed sadness and frustration are very common, as the doctor must be stoic or strong at all times, and in control of him or herself. The psychiatrist can assist the pediatrician in question and other members of the clinical team, if they desire, to speak about his or her feelings and in this way facilitate a “mourning process” to explore unspeakable feelings like blaming oneself for the death of the child, a feeling of anger or frustration with oneself or other team members. There may be also a tendency to “blame others” (colleagues, the family of the child) for what eventually occurred. This expression of feelings and thoughts, in a safe environment, can help the clinician to continue carrying out his or her work in a more helpful fashion, having expressed feelings that otherwise may remain unconscious or “pent up” and cause anger, irritability or emotional distance from further patients, which may remind the clinician of the dead child.

There are also instances in which contradictory recommendations are given to the family in terms of a “best” course of treatment, from different specialists or from different professionals of the same specialty. This may make the patient and family confused, frustrated, having more uncertainty and loss of confidence in treaters. When this is detected, the mental health clinician can help the clinicians in question to understand the position in which the family finds itself and agree on a more “unified message” and realize that there are many uncertainties in medicine and not everything can be with addressed with “one correct solution” or have one simple course of action. Unresolved tensions and unspoken feelings are likely to grow if not explored and may lead to barriers in collaboration that may be expressed in the future. There are multiple other scenarios which could be described where the ability to work with a trusted colleague is very difficult (Lücke & Müller, 2018). One common situation is “who is in charge” and whether the input from different specialties (nephrology, pulmonology, cardiology) is taken into account as “it should.”

The Impact of the Age and Developmental Stage of the Child

Even though it might seem obvious, this issue is often not addressed adequately when discussing “working with children and adolescents” in consultation liaison. It is readily understandable that the impact of a medical condition can manifest very differently if it occurs in an infant or an adolescent.

An issue that all hospitalized children will face is the separation from the parents, siblings, other relatives, and peers. The pediatric hospital is a highly artificial milieu with many rules and strategies to promote the health of the child as well as the work of the medical and health care personnel. The mere separation as well as the illness will determine a change in the behavior of any child, be it an infant (separation from caregivers) on one end of the spectrum or a teenager

who may be very impacted by the separation from friends. The “regression” that should be expected in any child who is hospitalized must be taken into account when examining a child’s behavior. Anxiety and fear, withdrawal, sadness and behavioral regression would be common responses in any normal child and family. Hospitals differ in many ways, such as size, services, rules, who can visit, and who can stay with the child. The practices can also be very different in various countries and areas. The clinician also may pay attention to the quality of the interaction between a child/family and nursing staff, particularly when there are complaints from the staff or the family. At times, there are misunderstandings or prejudices that can be clarified or addressed more openly.

In some countries with universal health care, the parents can focus mostly on the health of their child and practical issues regarding family routine, caring for siblings, travelling to the hospital, as well as the progress of their child. In countries like many in Latin America and the US, parents may have to deal with the same issues plus the question of the financial cost of the care, and how they might be indebted for a long time in the future. They may have to “appeal” to insurance companies to approve a given treatment, procedure, or device even when it is prescribed by the physician. Certain devices or services “may not be covered” by health insurance, adding more financial pressures to the family, as well as having to “appeal” to insurance company representatives hoping to convince them to finance this or that necessary or prescribed treatment option.

Hospitalization or medical procedures are perceived differently depending on the age and developmental status of the affected child (Turkel & Pao, 2010) and family. A small child does not understand that certain procedures can be painful but are required by the medical condition, and may perceive the pain the staff causes as an attack.

In situations like delirium and others with changes in the mental status, the approach to the diagnosis of delirium can be quite different if one is dealing with an infant or toddler, in comparison with an adolescent. The latter can be

interviewed and a “mental status examination” can be conducted in the more usual manner. In the infant, the changes in behavior, attention span and agitation can be inferred from the change in the usual behavior of the infant. Intense crying, or marked irritability accompanied by changes in the vital signs, and the report by parents that their child is behaving very differently will help in making the correct diagnosis.

A preschool child has a very different cognitive ability than an older child; at this age the child will exhibit magical thinking and have a concept of death as “reversible.” The child may attribute his or her medical condition to their own behavior (their fault) or feel like they are being punished by the hospitalization and medical procedures. The understanding of the reasons for painful procedures is very different than that of the older child who may realize the procedures are needed and they are not being carried out because he or she is “bad,” and the child is not being punished.

This child’s understanding (or not understanding) of their illness and the required treatments is a crucial issue, as well as whether the child/family have grasped the explanations of pediatricians and specialists. Even though the doctor may in a cognitive sense offer a perfectly understandable explanation, if the child or the parent are in shock, exhausted, overwhelmed with anxiety, they may not be able to really process the information conveyed. They may say it “was never explained to them” and complain. Several attempts at explanations may be necessary in those circumstances. The mental health professional, who is an outsider in the medical scenario, may inquire from the patient and the family what is their understanding of the condition, the recommendations of the staff, and their perception of their treaters. The psychiatrist can be a bridge to solve some of those communicational problems.

This communication may be essential to prepare a child for a surgery or a medical procedure. With the young child this may require a “theatrical representation” with miniature toys or puppets, through play, as to what is to be expected. In older children, a detailed, concrete explanation,

together with relaxation strategies may be very helpful to prepare a child for such procedures.

When the illness affects the hospitalized school-age child, whose stay in hospital may be short or prolonged, emergent or programmed all of these factors impact the child in different ways. One impact is an almost unavoidable regression in emotional expressiveness and behavior that “being taken care of” will produce in the child. Some children will be very worried about missing school, being left behind academically or not being with their peers. All of this may impact their response to the illness itself and the hospitalization(s).

When one deals with an adolescent, the situation is perhaps more complex. Most adolescents feel strongly about individual freedoms, choices, being more and more independent, making one’s own decisions, being with peers, being like them, etc. A chronic illness and a stay in the hospital militate against these tendencies, promoting regression, confinement, and separation from peers. Depending on the nature of the illness, the youngster may feel very different from peers or friends. The question of sexuality may be an unanswered one, whether the young person will be able to develop normal abilities in this area. In the normal adolescent, often there are already concerns about social acceptability, body image, and who one is. A chronic illness and prolonged hospitalization accentuate this and may generate problems in themselves in the psychic area (Marcelli et al., 2018).

In the following, we describe different “types” of consultation, to focus on the issues in each of these. At times, the consultations involve elements of all of them in the same process.

Child-Centered Consultation

The most common initial encounter between the mental health service (psychiatrist, psychologist, psychotherapist) and the pediatric in-patient staff is the request for a consultation centered on one child or family that has manifested worrisome symptoms. These are often suicidal ideas, non-compliance with treatment, conflict with the

health care team, or aggressive behavior in the child. Usually, this could be considered as a quasi-emergency request in which it is hoped the clinician can offer something to resolve the problem (Diefenbacher & Arolt, 2004). Unfortunately, often that consultation is sought “at the end of the rope” of the child or the family: when “something has to be done now,” when the situation is critical and there is a need to address it immediately. There is a reasonable portion to this consultation. After all, the child psychiatrist is in a good position to determine whether the child is delirious, is experiencing psychotic symptoms, or whether there are important psychosocial components interacting with the child’s medical illness, the medication he or she is taking, etc. An experienced clinician can offer valuable input to use psychopharmacological and psychosocial strategies to help the child or adolescent and the family. In most situations, this is successful. In others, there are persistent difficulties with children who practice self-harm, who are chronically suicidal, or when there is important intrafamilial conflict. At times, the diagnostic picture is not so clear. The essence of the consultation is not to come into the team as a sort of clairvoyant who will diagnose everything, but one who will work in collaboration with the pediatric team to find answers to the question and offer suggestions or solutions in collaboration with the team. The psychiatrist can also offer valuable strategies on how to de-escalate an aggressive child, how to validate the feelings of the child or family, and to communicate with them to solve interpersonal conflict.

Sometimes there is great relief once this professional appears on the scene, but often also disappointment at the ineffectiveness of a quick intervention, particularly a psychopharmacological one.

In general, it would be desirable that the clinician be contacted well before the problem develops to a critical point in which there is a need for urgent intervention. When there are signs of distress, unhappiness, problems adjusting to a new diagnosis, and general manifestations of distress in the child or family, then there would be a chance for a more thoughtful intervention that

may or may not involve pharmacological intervention. In some hospitals, the consultation-liaison service has a policy in which “no consultation is inappropriate” (Guerrero & Matsu, 2008) as the request implies that someone in the team is concerned about a child/family. It is useful to contact the person making the request to hear firsthand, if possible, what is being asked or what is the concern. Unfortunately, when the consultation service is overwhelmed with multiple requests and only one psychiatrist is available, there is a tendency to “triage” those requests and dismiss some consultations as “inappropriate.” For instance, if a child is very sad after being diagnosed with leukemia, the consultation team may deem that it is normal that a child would be crying after that revelation. When the psychiatrist is called, in some centers the physician might say that since this is “normal” there is no need for a psychiatric consultation or intervention. It is preferable to attend all requests and develop a collaborative relationship with the pediatric staff and advise them of the findings. It is best to do this in person, to convey the nuances of the case and to assess the response from those requesting the consult. This not only involves the cognitive and “digital communication” but also the feelings and nuances, tones of the health care team to take that issue into account when making recommendations.

In this model, the child is the initial reason for the consult, the one that is manifesting the most symptoms, crying, aggression, agitation, etc. and it is tempting to assume that helping the child alone is all that is required. Depending on the clinical orientation of the psychiatrist, this view may persist, or the clinician could take a broader perspective, including the developmental history of the child, their interactions with family members and treaters in the clinical team (physicians, nurses, occupational and physical therapists) and explore possible contributors to the problem at hand. Depending on the orientation of the clinician, the recommendation from the consultant may involve interventions only with the child or with the child and their family or include the clinical team. Incidentally, the written report from the psychiatrist ought to be readable, perhaps

concise but conveying the essential points of appraisal and recommendations, if possible free of jargon and technical terms.

At times, the problematic behavior is not only in the child or adolescent but also in the family members. A father or mother may come to visit their child drunk and fight with the child, spouse, or the staff. A parent who is sleep-deprived and frustrated may be hostile to the most well-meaning medical staff. There may be mistrust and questioning of the recommendations of the clinicians. Also, the understandable anger that any parent may feel when a terrible diagnosis is given about one's child, may be easily displaced toward the "messenger," i.e., the medical team. The parent may complain intensely about the smallest delay or error and request to issue formal complaints to the hospital authorities. A therapeutic intervention with parents may be to ask them how they feel about the current situation and allow, in a climate of emotional security, to vent the mixture of feelings, including negative ones about the clinical staff. Then, these can be addressed in a rational manner.

There may be questions of introducing alternative medicine strategies, religious or magical interventions, etc. depending on the religious or cultural practices of the family. They may request for some amulet to be used by the child, or to have a priest or pastor pray for the child, or to bring other practitioners of traditional medicine to contribute to the care. All of this is best understood, and if possible and not harmful, accommodated.

The mental health professional may help the medical team understand the issues involved in all these reactions and try to offer interventions that might be helpful to the family or child and foster a better collaboration with the medical team. One could say that the child psychiatrist in these situations is a sort of "translator" (or bridge), helping the communication from the physicians to the family and child, and vice versa.

A psychiatrist was called to consult on a 14-year-old girl and her family who were perceived as very difficult and uncooperative with the medical team in a specialized eating disorders unit. The child complained that the staff were "mean to her" and were too radical in their approach, telling the girl that if she did not eat a certain number of calories

per meal, they would install a nasogastric tube and feed her through that. The parents were frustrated that their daughter complained to them, and they voiced the concerns with this approach, which was thought purely behavioral, and draconian in their view. When these concerns were voiced by the parents, they felt that two nurses "had shut them down" and were too authoritarian and complained about them to the ombudsperson of the hospital. The parents were then seen as "difficult" and uncooperative. The parents threatened to take the child out of hospital against medical advice, even when their daughter was still struggling with anorexia and vomiting (bulimia). The psychiatrist sat with the child and family and listened to their complaints, which then he relayed to the nursing and medical staff. The psychiatrist emphasized how difficult it had been for the parents to be seen as "not taking their daughter's side" and thought they needed to "defend her." The psychiatrist discussed the situation with the leader of the medical team. The latter came to talk with the family and explained the concerns of the staff, the reason for certain interventions and why they had discovered over time that negotiating with the child on food amounts, etc. was often part of the problem. The parents listened and understood the point of view. The child begrudgingly agreed to the conditions, when the parents said they could not take her home in her currently compromised medical condition. The child improved gradually when a boundary was set, but with an understanding of the rationale for rules that at first appeared as too rigid and punitive. The parents had struggled very much for months to set any rules or boundaries to their daughter in many fronts, not only in terms of her dieting, vomiting, and exercising. The psychiatrist offered to continue to be involved with the family, trying to help listen to the concerns as they arose and to work with the child on her problems with self-image and anxieties about food, and with the parents to take a clearer stance *vis à vis* their daughter.

In psychodynamic terms, the child who is experiencing pain, a hospitalization, constrains in his or her movements, or a medical condition will develop various "defense mechanisms" to deal with those circumstances. These may consist of "denial of the illness" (which may be maladaptive or a way of coping with an overwhelming reality), as well as anger at him or herself, at the parents, at the medical staff. There may be a perception that the staff is punishing the child and paranoid feelings may develop. This is best identified early on and dealt with from the start.

Regarding the most frequent reasons for consultation by pediatric teams in hospitals, there are

differences in various countries depending on the “therapeutic culture” of the country or region. In some hospital settings, the psychiatrist is only called in “dire circumstances,” for acute problems that need to be addressed immediately. In others, where there is a greater presence of consultation-liaison staff and an ongoing relationship with different specialties, the consultations may be more focused on chronic difficulties, like poor adherence to treatment, diminished cooperation by the child or family, dealing with relapses, poor quality of life, depression and anxiety in the child or family members, or helping the child to live with a chronic illness.

In the first situations, the acute interventions, the most frequent reasons for consultation are: alterations in the mental state of the child, from infancy to adolescence, often with symptoms of delirium, which requires a quick evaluation and intervention. This does not have to be only pharmacological but also psychosocial. Other reasons are, increasingly, children with autistic disorder or autoimmune encephalitis, who exhibit aggressive behavior, agitation and who cannot be contained in a psychiatric setting. Other requests are to evaluate the child’s statements about wanting to die or wish to commit suicide. Finally, the unexplained medical conditions in which strong emotional components of the clinical picture are suspected, i.e., somatoform disorders.

In other services, the consultations tend to be related to the child’s adherence to treatment, family problems, including marital discord and sibling distress (the family of the child), as well as living with uncertainty, unpredictability, with handicapping conditions, and changes in demeanor or attitude when there is a modification in the child’s treatment, a relapse, or a new developmental phase.

Consultee-Centered Consultation

In this situation, more in liaison psychiatry, the general pediatrician, pediatric specialist, or nurse may request to discuss a situation with the mental health clinician or psychiatrist. This request requires a relationship of trust and a feeling of

security on the part of the clinician who is consulting, expecting that the mental health professional will maintain necessary confidentiality and will help the medical professional to understand a situation, to explore a particular reaction, or other obstacles to the deliverance of his or her services.

Frequent scenarios are a particularly negative reaction to a child or family. The mental health clinician may help the consultee to explore the possible reasons for the reaction: for example, feeling devalued, contradicted, challenged, or accused of being incompetent, etc.

Another scenario may be feelings of sadness and guilt about the deterioration of a child, the development of a medical complication, or the death of a child. The pediatrician or medical clinician may experience feelings of guilt, regret, or anger at him or herself for “not having done more” or not having tried alternative treatment. The mental health professional focuses on the thoughts, feelings, and behavior of the pediatric clinician and tries to help understand the factors involved in the reaction being described. This model also requires a trusting relationship with the clinician involved. The consultation centers on the work of the clinician and possible psychological or emotional factors that may impact his/her decisions, work, and relationship with patient(s), and is not properly psychotherapy but a “therapeutic consultation.”

A young oncologist requested to talk with the child psychiatrist involved in his unit about his feelings regarding his work. He was an experienced physician who usually was optimistic and enthusiastic about his work. Now he found himself “almost burned out.” He had become particularly attached to Jaime, a 12-year-old who had a brain tumor, who had “great parents,” very cooperative, optimistic and supportive. The oncologist had tried different approaches from radiation to chemotherapy with his patient. Jaime was a very sweet, resilient, and stoic boy, who endured the radiation and the chemotherapy with great patience and was always thankful and hoped to get better. When the tumor spread over other parts of the brain, the child eventually died in the course of weeks. The parents were devastated. The doctor tried to be supportive and very strong. He attended the funeral and tried to remain “professional” in all his interactions with the family. However, since that death three months

ago, he had noticed himself to be more irritable, less enthusiastic about the work, and more emotionally distant when he approached other children and families. His wife had noticed he was more tired and easily irritated. The psychiatrist listened and asked questions of the oncologist about how he had felt about Jaime's death. The psychiatrist started to cry, attempting everything not to cry openly. The psychiatrist validated the doctor's feelings and told him this clearly suggested that he cared very deeply about Jaime. The oncologist revealed feelings of guilt, trying to explore whether he should have tried a more bold or heroic approach. He thought perhaps he was too conservative or not aggressive enough. This was unlikely, as he had followed established protocols and had consulted with several colleagues before. When the oncologist allowed himself to express his sadness and his guilt, the psychiatrist conveyed that it was normal to feel this way and that some of his feelings were normal and others based on guilt and self-blame. His feelings were contained and validated. The pediatrician revealed that when he was younger his brother had died from a malignancy, and Jaime reminded him much of the dead brother. Then the conversation ended. Weeks later the oncologist approached the psychiatrist indicating that the "talk" had helped him deal with his sadness and guilt and he had noticed that after exploring his feelings and dreams about the child, he had "forgiven himself" and allowed himself to mourn the boy. He also had been reflecting on how he had experienced earlier on the death of his own brother. He felt more like his usual self.

Systemic Consultation

Working with sick children is difficult for multiple reasons. The clinician may become attached to a certain patient and experience much grief when a complication develops, or the patient deteriorates. There may be conflicting opinions from different specialists on how to address a particular clinical situation, whether to proceed with a surgery or use a pharmacological approach. There may be various opinions on trying this or that medication, favored by different team members. There may be tensions or previous conflicts between clinicians of different specialties, which are manifested in clinical meetings in which a child's problems are being discussed. The conflict may be covert or overt, as well as reactions such as devaluation of a particular colleague,

scapegoating, and blaming one another, among other possible scenarios.

The mental health clinician can help to give an "outsider's point of view" very much as one would while interacting with a different interpersonal system, such as a family. The mental health clinician must be seen as maintaining neutrality and assisting the team members to communicate their thoughts and feelings in a respectful and cooperative spirit, focusing on solving problems to maintain a long-term collaborative relationship. The mental health professional may reflect on the fact that there may be different points of view, preferences, and styles of reaction that may be helpful to the patient without one being the "absolute best" in everyone's mind. The mental health staff can help with issues of communication, cohesion of the team, and being a bridge between different specialists, between the patient/family and the clinical team, and help the functioning of the caregiving team in the benefit of the patient.

Other important issues include demoralization of the clinician or medical staff, as well as the common problem of feeling burned out or exceedingly overworked. These issues can be addressed in the liaison process with the staff (Wellen & Wise, 2010). Low morale, lack of energy, depression, and even suicidal ideation are commonplace in many medical settings. This has to do with the multiple demands of the workplace, little emphasis on self-care, excessive expectations of oneself, and lack of emotional support in the workplace, among many other possibilities. Even if the psychiatrist does not directly treat the colleague, one can assist him or her to recognize what is happening, normalize their reactions, identify certain patterns of response or reaction, and seek further psychotherapy and self-care outside of the hospital if necessary.

Trends in Different Services

Collaboration in multidisciplinary teams focused on a special field of pediatrics or a procedure; this involves a certain "specialization" of the mental health professional or psychiatrist in collabora-

tion with a subspecialty of pediatrics, e.g., cardiology or dermatology and focusing on both, client/family-centered consultations and consultations with the treatment teams (Lucas et al., 2020). The specialization also can refer to rather unique procedures or conditions such as transplants, intersex clinic for infants born with ambiguous genitalia, etc. There will be a long-term and ongoing collaboration in which there is a mutual influence between the medical focus and the psychological and emotional wellbeing of the child and the family. This allows for greater expertise by the mental health staff on some of the most common phenomena encountered in specific areas, like the intersex clinic, or a diabetes clinic. It allows for long-term programs and the creation of groups of patients, and groups of parents where professionals can involve the child and the parents in psychotherapeutic interventions. The shared experience of the children with each other, or of parents with each other allows for a feeling of mutual support and not being “the only one” in the group of acquaintances who are struggling with a particular condition or set of problems.

Such collaborations often involve the treatment of the child or family as outpatients, not only interventions in the hospital (Lücke & Müller, 2018).

Psychosomatic Unit or Mind–Body Center

This entails a special collaboration between pediatric services and the mental health team, involving multiple disciplines, child psychiatrist, psychologist, social worker, counselor, family therapist, occupational and physical therapist, as well as offering complementary services such as acupuncture, massage therapy, biofeedback, yoga, and relaxation activities (Wolf et al., 2013). The specialization in addressing problems with “conversion” or somatization may be useful as the team develops expertise in addressing common problems. This often involved reluctance by families to consider “the psychological” in their child who has headaches or paresthesia, etc. Also,

it allows for a gradual approach in which the family does not feel judged and is told “the child is not really sick” or “everything is in the mind.” This “individually tailored” approach by an experienced team may be a great resource, preventing relapses and further hospitalizations.

Many patients with psychosomatic difficulties, with medically unexplained symptoms, as well as their families, may have considerable difficulty contemplating the intervention of mental health professional. Indeed, the parents of a child or an adolescent might feel offended by the mere referral or introduction of a psychiatrist or psychologist as if this denied the reality of their perception or symptoms. The pediatrician may need to invest considerable effort in psychoeducational terms and in creating a working or therapeutic alliance with the child and his or her family members. Once this has been established in many cases, it may be desirable that when the child has been discharged from the pediatric hospital, psychological or interpersonal interventions can continue as an outpatient (Guerrero & Matsu, 2008). This model (Kirchen-Peters et al., 2012) creates some demands on the medical and mental health staff involved in the service and requires close collaboration between the consultation team members. It can create a sense of continuity of the intervention work and benefit the patient/family as well as the clinician who would not only be engaged in very short interventions but more prolonged work, seeing the therapeutic work to the end.

Even though the name of a service is “consultation liaison psychiatry” a more useful name might be mental health liaison or just mental health. This implies that the services are not only psychiatric but psychological and social as well. Therefore, a mental health team can be constituted by the collaboration between psychologists versed in psychosomatic issues (or health psychologists) as well as social work therapists who can work psychotherapeutically with individuals and families, and all of them, including the psychiatrist, can participate in individual and family therapies, hypnosis, biofeedback, relaxation techniques, and others, depending on their training and interests. Some referrals naturally would

be most suited to the psychiatrist, who has a medical background (Lenoir et al., 2009). These might include cases of organic brain syndromes, delirium, and others that require a pharmacological intervention. Also, those in which there is a suspicion of side effects of medicines which could alter the mental status, emotions, and behavior of the child in question. Other services, like dealing with chronic pain, preparation for procedures, or dealing with the learning of a difficult diagnosis, can be carried out by the psychologist or psychotherapist; the role of the psychiatrist cannot be limited to just being a psychopharmaceutical treater, nor of the psychologist to “non-medical” cases, as he or she can always consult with a medical colleague if there is a problem or a difficult case.

Long-Term Collaboration with Medical Teams and Educational Role

After repeated interactions between the psychiatric consultant and various medical teams, there is the possibility of further collaboration on issues of improving the emotional milieu of the unit, the emotional welfare of the medical team, improved communication and problem solving when difficulties arise, among other benefits. Also, the medical team may feel “contained” or supported when they develop the trust that the mental health professional/consultant will be available to them in the future. The mental health professional may also have an educational role in teaching the medical staff how to recognize signs of potential difficulties and how to address them early on. He or she can also assist them in determining when a referral may be useful for psychiatric consultation at the bedside or with the team. The medical team, although very busy, can be helped to intervene when common challenges arise (Rießland-Seifert et al., 2006). For example, an adolescent who has been given a diagnosis of a severe or chronic disease may develop a number of feelings, from shock and disbelief, denial of the situation, to feeling over-

whelmed and devastated. The medical and nursing staff should be equipped to assist the child and family to deal with this news and recognize the normality of feeling angry, sad, scared, etc. They could promote the expression, verbally or otherwise, or these feelings and assist in “working through” these feelings during the period of hospitalization. In this way, the mental health consultant assists the medical staff to provide a more comprehensive approach that incorporates the psychosocial wellbeing of the child and family. Instead of compartmentalizing every intervention, the staff could develop a more comprehensive approach.

Similarly, the nursing and medical team may recognize and help the various family members, parents, and siblings to deal with the common reactions of parents and siblings for example. Parents may have multiple questions about their role in the problem at hand, how they can deal with the feelings of impotence, grief, anger at the diagnosis, the medical team or even their own child. Also, it is not uncommon that siblings have multiple feelings about the child who is ill, and at the same time requiring so much attention and care that they may feel set aside or ignored. Reactions like mistrusting the opinion of the medical personnel, being angry at them, feeling that more communication or explanations are necessary are very common in families dealing with multiple problems. Common and expectable reactions perhaps could be best managed by the staff who already has an ongoing relationship with the family and who collaborate with them daily. Being sad, angry, scared are not signs of severe psychopathology. They do not necessarily require a psychiatric intervention as the staff develops more competencies to recognize these reactions and to discuss them with the family or the siblings. When a more complicated psychosocial situation develops, more expertise may be required, of course.

A long-term relationship with the psychiatric or mental health consultants assist the team to feel capable of processing a number of common reactions and to deal with them appropriately in the course of their duties.

References

- Büchi, S., Berney, A., & Kurt, H. (2010). La psychiatrie de consultation et de liaison en Suisse, aujourd'hui et demain. *Bulletin des médecins suisses* [Schweizerische Ärztezeitung] *Bollettino dei medici svizzeri*, *91*(4), 121–122.
- Cotencin, O., Versaveel, C., & Goudemand, M. (2006). Por une vision systemique de la psychiatrie de liaison. *L'Encephale.*, *32*, 305–314.
- Diefenbacher, A., & Arolt, V. (2004). Konsiliarpsychiatrische Versorgung-Entwicklung und Perspektiven. In V. Arolt & A. Diefenbacher (Eds.), *Psychiatrie in der klinischen Medizin* (pp. 54–85). Darmstadt.
- Duverger, P., Chocard, A. S., Malka, J., & Ninus, A. (2011). *Psychopathologie en service de pediatrie*. Issy-les-Molineux, France: Elsevier Masson.
- Fegert, J. M., & Goldbeck, L. (2004). Kinder- und jugendpsychiatrischer Konsiliar- und Liaisondienst. In V. Arolt & A. Diefenbacher (Eds.), *Psychiatrie in der klinischen Medizin* (pp. 223–238). Steinkopff.
- Frank, R. (2002). Aufgaben eines Konsiliar- und Liaisondienstes. *Monatsschrift Kinderheilkunde*, *150*(2), 186–191.
- Graindorge, C. (2005). Maladie somatique et l'enfant, psychiatrie de liaison: pour quoi faire ? *Neuropsychiatrie de l'enfance et de l'adolescence*, *52*, 275–276.
- Guerrero, A., & Matsu, C. (2008). Children and adolescents. In A. Leigh & J. Streltzer (Eds.), *Handbook of consultation-liaison psychiatry* (pp. 316–340). Springer.
- Häuser, W., & Stein, B. (2006). Psychiatrische und psychosomatische Konsiliar- und Liaisonleistungen im deutschen Fallpauschalensystem. *Psychosomatik Und Konsiliarpsychiatrie*, *1*(1), 47–51.
- Holmes, A. C. N., Judd, F. K., Lloyd, J. H., Dakis, J., Crampin, E. F., & Katsenos, S. (2000). The development of clinical indicators for a consultation-liaison service. *Australian and New Zealand Journal of Psychiatry*, *34*(3), 496–503.
- Kapfhammer, H.P. (2011). Konsiliar und liaison Psychiatrie. In H. J. Müller, G. Laux, & H. P. Kapfhammer (Hrsg.) *Psychiatrie, Psychosomatik, Psychotherapie* (pp. 1297–1318). Springer Verlag.
- Kirchen-Peters, S., Fehrenbach, R. A., & Diefenbacher, A. (2012). Wie arbeiten ambulante Konsiliar- und Liaisondienste und was bewirken sie? *Psychiatrische Praxis*, *39*, 394–399.
- Lenoir, P., Maloy, J., Desombre, H., Abert, B., Taleb, M. O., & Sauvage, D. (2009). La psychiatrie de liaison en pediatrie: ressources et contraintes d'une collaboration interdisciplinaire. *Neuropsychiatrie de l'enfance et de l'adolescence.*, *57*, 75–84.
- Lucas, T., Koester-Lück, M., & Kunert, D. (2020). Psychosoziale Versorgung von Kindern und Jugendlichen in Kliniken für Kinder- und Jugendmedizin und Kinderchirurgie. *Monatsschrift Kinderheilkunde.*, *168*, 1040–1042.
- Lücke, C., & Müller, H. H. O. (2018). Versorgungsmodelle der Konsiliar-Liaison-Psychiatrie im Vergleich. *Psychopraxis. Neuropraxis*, *21*, 14–18.
- Macleod, S. (2002). Consultation-liaison psychiatry hits a midlife crisis. *Australasian Psychiatry*, *10*(3), 229–231.
- Marcelli, D., Braconnier, A., & Tadonnet, L. (2018). *Adolescence et psychopathologie*. Elsevier Masson.
- Rießland-Seifert, A., Höcher, Z., & Erbert, S. (2006). Pflegepersonal in psychiatrisch-psychosomatischen Konsiliar-Liaison-Diensten. *Psychosomatik Und Konsiliarpsychiatrie*, *1*(1), 40–46.
- Turkel, S., & Pao, M. (2010). Children's reactions and consequences of illness and hospitalization and transition of care from pediatric to adult settings. In J. J. Amos & R. G. Robinson (Eds.), *Psychosomatic medicine. An introduction to consultation-liaison psychiatry* (pp. 249–258). Cambridge University Press.
- Wellen, M., & Wise, T. (2010). Demoralization in the medical setting. In J. J. Amos & R. G. Robinson (Eds.), *Psychosomatic medicine* (pp. 235–241). Cambridge University Press.
- Wolf, M., Arolt, V., Burian, R., & Diefenbacher, M. B. A. (2013). Konsiliar-liaison Psychiatrie und Psychosomatik. *Nervenarzt*, *84*, 639–650.

Shankar Nandakumar MD, MPH Psychiatry Resident at Baylor College of Medicine. He studied Neurobiology at the University of Texas at Austin. Medical School University of Texas Health San Antonio. Master in Public Health at the University of Texas School of Public Health. He is part of the Continuing Education Track at Baylor College of Medicine, which is focused on furthering educational pursuits in academic careers.

J. Martin Maldonado-Duran, MD, is an infant, child, and adolescent psychiatrist and family therapist. He is an associate professor of psychiatry at the Menninger Department of Psychiatry, Baylor College of Medicine, and works at the complex care service in the Texas Children's Hospital. He is also an adjunct professor of infant psychopathology at Kansas State University and a clinical professor at the Kansas University School of Medicine. He was formerly a researcher at the Child and Family Center of the Menninger Clinic for several years. He edited the book *Infant and Toddler Mental Health*, published by American Psychiatric Press, and coedited *Clinical Handbook of Transcultural Infant Mental Health*, he also has coedited or edited five additional books in Spanish on topics of child and infant mental health. Dr. Maldonado has written numerous papers and book chapters on topics of child development and psychopathology in several countries.

Juan Manuel Saucedo-Garcia MD Child and Adolescent Psychiatrist (Universidad Nacional Autónoma de México and University of Toronto), family therapist (Universidad Iberoamericana). Fellow of the National Academy of Medicine and the Mexican Academy of

Pediatrics. Former president of the Mexican Association for Child psychiatry and of the National Council for Psychiatry. Former editor of the *Revista Médica* of the IMSS and of the *Boletín Médico del Hospital Infantil de México*. Coeditor of the book "Family, Its Dynamics and Treatment" (*Familia. Su dinámica y tratamiento*) and "Attention Deficit Disorder Through the Lifespan". Currently professor of Psychiatry at the Faculty of Medicine of the Universidad Nacional Autónoma de México. Author of 69 journal articles and 55 book chapters on topics of child and adolescent mental health and family therapy.

Sohail Nibras, MD Child and adolescent psychiatrist. Consultation Liaison Psychiatry service at Texas Children's Hospital. Assistant Professor of Child and Adolescent Psychiatry at Menninger Department of Psychiatry Baylor College of Medicine. He completed psychiatry residency at Saint Louis University (SLU) School of Medicine and fellowship at Southern Illinois University (SIU) School of Medicine. He focused on medical education and has completed the Medical Education Track (MET) at SIU. He has been awarded multiple times by students as an outstanding educator.

Ashok Yerramsetti, MD is a Child and Adolescent Psychiatrist in the Houston area. He completed his undergraduate studies in Neuroscience at Johns Hopkins University. He then attended Baylor College of Medicine, where he completed his medical doctorate, certificate in medical ethics, General Psychiatry residency, and Child & Adolescent Psychiatry fellowship. As part of his residency, he graduated from the clinician educator track. He has presented nationally on neurodevelopmental disorders, including Autism and the impact of medical stress on the family.

Vinh-Son Nguyen MD Resident Physician at the Baylor College of Medicine Menninger Department of Psychiatry and Behavioral Sciences and member of the Clinician Educator Track. He is an American Psychiatric Association/Substance Abuse and Mental Health Services Administration Minority Fellow. Chair of the Texas Society of Psychiatric Physicians Resident and Fellow Member Section. He is a former University of Texas System Archer Fellow. He serves as an Advisor for The Understanding Initiative: Vietnamese American Mental Health Resource Center and Brainy Bunch Helping Hands Grant Project. His interests include global mental health, minority mental health advocacy, and reducing effects of adverse childhood experiences.



Mind–Body Issues in Children and Adolescents with Developmental Disabilities

25

Steven M. Lazar

Introduction

Child development is the basic science of pediatrics.

This apt quote from former United States Surgeon General, Julius B. Richmond, strikes a chord for a wider audience than the medical professionals he initially addressed (Richmond, 1967). When the typical process of development goes awry, significant concern arises from families, patients, and physicians alike. When a developmental course is altered through a brain-based mechanism, a diagnosis of a neurodevelopmental disability can be made.

The terms *typical* and *atypical* neurodevelopment are used in place of *normal* and *abnormal* when describing developmental differences. This is done with an understanding that *disability* itself is as much a social construct as it is a medicalized label. This decision is based on the negative connotations related to descriptions of abnormality. Furthermore, within descriptions of those with disabilities, person-first language (i.e., person with disability) is used while acknowledging that there are advocates for identity-first language (i.e., disabled individual), given the

inextricable link between disability and identity. In practice, choice of language should be based on individual preferences of patients and their families, or align with the preference of a specific disability community (i.e., deaf person or blind person).

A theory of neurodevelopment is useful to understand not only severity of disability but also individual strengths and adaptability within.

Historical Perspectives on Typical Child Development

Jean Piaget proposed a cognitive development stage theory in which one's interactions with the environment are governed by cognitive processes that mature throughout childhood (Piaget, 1935, 1952, 1955; Piaget & Cook, 1952; Wadsworth, 2005). These cognitive processes that develop as a function of adaptation to one's environment were termed schemas. Schemata arise through assimilation of new information into existing schemas and accommodation by creating new schemas to process new types of information. This cognitive model of development emphasizes the importance of one's mind's response to information as ascertained by the body. The progression from a pure sensory input to motor output of the sensorimotor stage (typically in infancy) to more complex reasoning and abstraction (typically starting in adolescence) has deep implica-

S. M. Lazar (✉)

Division of Pediatric Neurology and Developmental Neuroscience, Texas Children's Hospital, Houston, TX, USA
e-mail: Steven.lazar@bcm.edu

tions for mind–body issues of those with neurodevelopmental disabilities.

In order to best assess the mind of a child with a neurodevelopmental disability, the highest level of cognition and reasoning must be determined, as the complexity and assumption of diagnoses and meaning of the presenting body of the child should not be overreached. For example, if a teenage child has the cognitive ability of a toddler, then behavioral interventions and assessments should be those appropriate for a toddler's understanding.

Although the formerly prominent radical behaviorist model has fallen out of favor, behavioral principles of classical and operant conditioning retain long-lasting impact on clinical practice particularly regarding Applied Behavioral Analysis therapy (Proctor & Weeks, 2012).

Further, within the realm of neurodevelopmental disabilities, some children can only communicate their internal drives, wants, and needs through behaviors in an atypical way. For example, a child who is non-verbal with severe motor and cognitive disabilities may scream and hit to express wanting comfort by a caregiver, though the caregiver may perceive this as the child being “mean” or “angry.” In this instance, behavioral principles of determining antecedent influences, behavioral action, and consequences become necessary to help understand and appropriately attribute descriptors to a child's internal state. In fact, the body becomes a pure expression of the mind in the most severe cognitive disabilities.

Going beyond the inner mind of the child and family, societal and cultural influences have been implicated on learning and development. Notably, the works of Lev Vygotsky and his sociocultural theory supply a framework for child development in which the support of others is required to close the gap between one's skills and those yet to be learned, termed the zone of proximal development (Vygotsky & Cole, 1978). Parallel to Vygotsky, Urie Bronfenbrenner (1979) proposed an ecological theory of development in which the cultural context of a child's situation drives developmental change.

Brief Historical Perspective on Atypical Neurodevelopment

Fear, disgust, pity, revulsion, at times reverence, and above all: otherness. These contrasting terms encapsulate much of humanity's historical reaction to disability. Individuals with disability have traditionally been viewed as a smiting of the divine for the moral failings of the individual or their parents. In contrast, some cultures viewed those with disabilities as people who needed care and protection, or even as sacred beings. These contrasting views do share a commonality of *otherness* in which one with disabilities remains in a different class from those deemed “normal.” For the purposes of this chapter, focus will be given to the shaping of societal relationship to disability within the United States of America.

While institutionalization characterized the treatment of United States citizens with disabilities, a mixture of political isolationism and rhetoric of American superiority blended with extrapolation of Mendelian laws of inheritance and social Darwinism: this combination led to more harrowing practices. As part of efforts to create an ideal “American” identity, forced sterilization programs deprived the reproductive ability of over 65,000 citizens with disabilities who were deemed “unfit” or “degenerate” by the 1960s (Nielsen, 2012; Serrato Calero et al., 2020).

The mid-twentieth century was characterized by the largest shift in societal attitudes towards disability. The landmark case *Brown v. Board of Education* (*Brown v. Board of Education*, 347 U.S. 483, 1954) set a precedent prohibiting state sanctioned segregation, based on a person's unalterable characteristics which included disability along with race and gender. This ruling laid the groundwork for later disability organizations such as Berkeley's Disabled Students' Program to fight against the notion that those with disabilities need to be separated, particularly through institutionalization, from the general population (Nielsen, 2012).

The growth of community-based services regained traction in the 1970s through multiple legislative efforts including Architectural Barriers

Act of 1968 and Rehabilitation Act of 1973. Although the language of these acts was very clear to benefit those with physical disabilities, it did not inherently protect those with cognitive and intellectual disabilities (Conrad, 2020). Couched within the momentum of the civil rights movement, disability rights advocates succeeded in lobbying for the Education for All Handicapped Children Act of 1975, later expanded into the Individuals with Disabilities Education Act (IDEA) in 1990.

These laws played an integral role in disability rights and compounded with prior case law advanced the notion that individuals with disabilities have a right to access-free public education in the least restrictive environment. Along with the IDEA, the Americans with Disabilities Act (ADA) of 1990 (amended in 2008) marked a new era of disability rights. The act was designed to eliminate discrimination based on any physical or mental impairment.

Societal perspectives towards the disabled evolved, from those in which some people are seen as subhuman, to people understood as citizens with all applicable rights in the early stages of the twenty-first century. Still, these persons have lower social, economic, and political capital than their peers without disabilities.

Framework of Neurodevelopmental Disabilities

Arnold Capute and colleagues proposed an organizational system of neurodevelopmental disabilities known as the spectrum and continuum of developmental disabilities (Capute & Palmer, 1980). Therein, motor, cognitive, and neurobehavioral development exist as a spectrum of skills and difficulties. This spectrum includes all levels of ability: from the profoundly impaired to the profoundly gifted. There is an understanding that each stream does not exist or develop in isolation, a continuum of interrelated (dis)abilities across categories emerge. The source of all behavior at its core is attributed to the vast, complex neural network of the brain (Accardo et al., 1997). Both environmental and genetic factors portend multi-

ple influences on the developing brain, which in turn influences the mind.

These interactions mean that complex behavioral phenotypes can be ascribed to divergent etiologies. Similarly, a single etiology can lead to a broad range of neurodevelopmental and psychiatric manifestations. For example, a single known recurrent pathogenic chromosomal deletion can independently manifest with psychiatric conditions, neurodevelopmental disturbances, or a combination of both. This interpretation of complex interplay of environmental and genetic influences leading to brain dysfunction, which in turn lead to diverse observable phenotypes has been named “developmental brain dysfunction” (Moreno-De-Luca et al., 2013).

The World Health Organization has provided a framework of assessing health and disability in children through a biopsychosocial model known as the International Classification of Function, Disability, and Health: Children and Youth Version (ICF-CY) (World Health Organization (WHO), 2007). This model takes a holistic approach to assessment of those with disabilities and helps place disability within the context of mental states, social constructs, and adaptation (Fig. 25.1) (Schariti et al., 2018).

The Clinical Evaluation of Children with Neurodevelopmental Disability

When a family presents for evaluation of a child with a neurodevelopmental disability, four questions consistently arise.

What is going on with my child (*diagnostic understanding*)?

Why has this happened to my child (*etiology*)?

What does this mean for my child (*prognosis*)?

What can I do to help my child (*intervention*)?

The diagnostic journey is an integral part of identity formation for families and those with disabilities. From a diagnostic standpoint, this is where a “label” comes into play. Some families have strong opinions of whether they want a

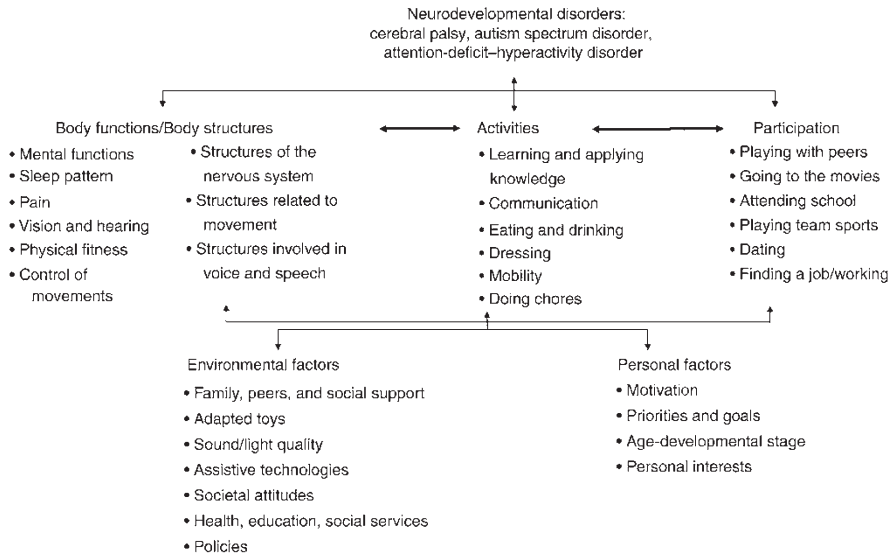


Fig. 25.1 The ICF biopsychosocial model applied to neurodevelopmental disorders. (Reprinted by permission from WILEY: *Developmental Medicine & Child Neurology*, International Classification of Functioning,

Disability and Health Core Sets for cerebral palsy, autism spectrum disorder, and attention-deficit-hyperactivity disorder, Verónica Schiariti, et al. ©2018)

“label” placed upon their child and its societal implications. From a clinical perspective, diagnostic classifications have value regarding clinical care, research, as well as societal resource allocation (Myers, 2019). To families and patients, the attribution of a diagnosis may create a dichotomous personal history of “before” and “after.” This can inherently change the way in which families view their child’s place within the world.

Diagnosis and Etiology

Three levels of descriptive diagnoses exist within neurodevelopmental disabilities, each with its own implications to the clinician, patient, and family. This can be conceptualized as a triangle with the broad base representing specific impairments leading to a narrower second level of categorical diagnoses, which then is followed by an even narrower third level of etiologic diagnosis (Myers, 2019), that is, when an etiology can be found.

The first level of diagnosis, the specific impairments, may encompass a broad range of signs and symptoms that are of particular concern to the patient and family. Examples include academic underachievement, poor social skills, repetitive behaviors, restricted interests, muscle tone issues, and abnormal movements. Delineating functional impairment and target symptoms is at the core of treatment planning and counseling. Specific impairments are the level at which pharmacologic as well as behavioral and educational interventions have the highest level of importance. Given that this is the functional target of the interventions, the clinician can better counsel families on why certain recommendations are given. Clinical recommendations are not meant to change who the child is at heart, but to help them adapt and succeed within the family and society to which they are bound.

The second level of diagnosis encompasses recognizable patterns and clusters of behaviors that typically represent clinical syndromes or disorders. Examples include autism spectrum

disorder, attention-deficit/hyperactivity disorder, intellectual disability, and cerebral palsy. This is the level at which neurodevelopmental disabilities are typically categorized. While this level does have significant variability, the diagnostic categories are fairly reliable and can help with communication to families and to understand why their child may be exhibiting certain patterns of behaviors. The language used for these descriptive diagnoses can allow for a sense of identity and community for patients and their families through support organizations and emphasis that they are not alone.

The third and most narrow level of diagnosis is etiologic. This is the fastest growing area of neurodevelopmental research, yet for many it will remain unknown. Relevant etiologies of neurodevelopmental disabilities include genetic, traumatic, hypoxic-ischemic, a combination of the above as well as the unknown. Etiologic diagnoses can help families and patients to better understand the “why” question to their difficulties (Tremblay et al., 2018). The importance of understanding an etiology for neurodevelopmental differences cannot be understated. From a medical standpoint, this level of diagnosis has an impact on determining if other evaluations are needed for the health of the child. An etiologic diagnosis can also assist in prognostication and guidance on outcomes with a little more certainty. This diagnostic formulation used clinically ties well into understanding and applying a framework of developmental brain dysfunction.

From a patient and family perspective, identification of an etiology can lead to both relief as well as frustration. Foremost on parents’ minds is the concern that their child has developed atypically due to something they did wrong or something they did not do. This internal struggle and sense of guilt can be just as relevant for both congenital (including genetic) and acquired (traumatic or infectious brain injury) etiologies. In the case of genetics, parents may have an inherent sense of guilt related to “giving” their child a disability, even in the case of non-inherited *de novo* genetic changes. Interparental and familial conflict may arise when one parent feels or is blamed for the disability.

Prognosis and Intervention

Within medicine, and particularly in neurodevelopmental disabilities, tolerance of ambiguity, uncertainty, and the unknown is a vital skill for clinicians (Luther & Crandall, 2011). For as much as science has advanced in the study of developmental outcomes, there remains much to be asked on the applicability of these outcomes. Practically, many clinicians provide prognostic information in the form of ratios and statistics, but parents may want answers to specific questions of what their child’s future will look like (Will my child walk? Will they talk? Will they go to college?).

This generalization is reversed in the setting of critical illness, where parents’ attention is on survival, while clinicians may focus on neurologic outcome and risk of disability (Lemmon et al., 2019a). Furthermore, much of the data cited by clinicians on outcomes are limited by innuendo and non-specific descriptors (Lemmon et al., 2019b). Large population data evaluations often discuss outcomes from a dichotomous all-or-none approach (impaired or not impaired) and use vague references to “poor” outcomes. This is inherently biased as what a “poor” outcome is for one family may be acceptable or even miraculous for another. While the clinician can approach these questions through comparisons to population datasets, families tend to remain focused on their individual child. Statistics are a guide but are of little help with the individual child’s unique set of circumstances.

Caregivers typically want to know what can be done to help their child. For most neurodevelopmental disabilities, there are no treatments or cures that will either reverse their course or normalize development. This can lead to frustration for clinicians and caregivers given the traditional medical experience and framework of *disease* with a defined treatment. The clinician must look past the categorical diagnosis and instead present interventions to the family in relation to specific impairments and challenges that the child experiences. This is essential for creating a holistic management plan where outcomes and the response to interventions can be assessed.

Intrinsic to the discussion of intervention is the assumption that those with neurodevelopmental disabilities have a “problem” that needs to be “fixed.” Critics of the traditional medical approach to diagnosis and treatment proposed that developmental disabilities and psychiatric diagnoses in childhood are over-medicalized and pathologized, and oppose the idea of requiring “treatment” (Haydon-Laurelut, 2015). Fundamental to this argument is the growth of disability identity formation and the Neurodiversity movement where neurodevelopmental differences should be accepted as they are and society should adapt to the individual (Ortega, 2009).

A discussion of intervention should be based within an appraisal of current challenges and concerns of the child and presented as a framework of supports to allow the child to reach their maximum potential within the familial and societal constraints that currently exist, while emphasizing that those recommendations are not meant to change who the child is (Cadwgan & Goodwin, 2018).

Mind–Body–Society Issues for the Child

Identity, Autonomy, and Independence

A modern social framework defines *disability* as a product of failure of society to provide appropriate adaptive supports, as opposed to an inherent problem of the individual (Conrad, 2020; McClimens, 2003). While this model can help drive societal change to support those with disabilities, a parallel movement has emphasized the importance of disability to one’s identity and warns against the denial of that disability (Andrews et al., 2019). Identity development is a fundamental social process, and literature has supported disability identity as a unique phenomenon that shapes the way a person sees themselves, their bodies, and their relationship to the world (Forber-Pratt et al., 2017). This internal and inherently personal identity development is

best exemplified by the contrasting opinions and views upon person-first or identity-first language in the discussion of disability (Dunn & Andrews, 2015). Even within this discussion, *identity* becomes synonymous with *disability*. Further, disability self-concept has been shown as a mediator for improved life satisfaction for both congenital and acquired disability (Bogart, 2014).

The key to uncovering the internal states of those with more severe disability and limited traditional communicative ability has been the concept of *proxy*. This proxy is typically implemented through descriptions of and assumptions of the meaning behind observable behaviors. Parents are often the experts of their individual child. The role of the parent and other caretakers becomes paramount to ascribing complex emotional and cognitive thought processes to the individual with severe disability.

When ascribing a proxy, there is an inherent loss of independence for the individual. The individual becomes a vessel for the thoughts, feelings, and assumptions of both the caregiver and the clinician. Across the spectrum and continuum of developmental disabilities, there are varied impacts on autonomy and independence as well as direct interventions with specific examples detailed later in this section.

Autonomy and independence are consistent factors influencing quality of life in those with disabilities (Sandjojo et al., 2019). Support of autonomy from the family unit and society can improve self-determination and overall functional independence in those with intellectual disabilities (Frielink et al., 2018).

Internal and External Influences on Mind–Body Issues

Through various factors, both innate and situational, individuals with neurodevelopmental disabilities are much more likely to be diagnosed with a co-occurring mental health diagnosis including depression, anxiety disorders, bipolar disorder, psychotic disorders, and others (Lai et al., 2019; Munir, 2016; Pinals et al., 2021). One of the leading factors of this variability is

likely due to the shared neurologic origins of psychiatric and neurodevelopmental diagnoses through a process of developmental brain dysfunction. Single genetic etiologies can lead to a broad continuum of neurobehavioral and neuropsychiatric phenotypes (*pleiotropy*) and spectrum of severity of phenotypic expression (*variable expressivity*) (Finucane et al., 2015; Myers et al., 2020). For example, a shared familial pathogenic genetic variant can express itself as severe autism spectrum disorder and intellectual disability in the child, major depressive disorder with psychotic features in a sibling, schizophrenia in an aunt, and a longstanding thread of non-specific behavioral and learning concerns in other relatives.

This undercurrent of increased risk of psychiatric diagnoses interplays with personal, familial, and societal factors for individuals with neurodevelopmental disabilities. Clinicians should be cognizant of these mental health implications and early signs of psychiatric illness. For example, a child with the cognitive abilities of an 18-month-old would not be expected to present depressive symptoms in the same way a typically developing 16-year-old would.

A blend of behaviorist methods and neurobiologic theories has been implemented to better understand stereotypic behavior, particularly self-injurious behavior, in those with limited communicative ability (Minshawi et al., 2015). From a practical, readily implementable standpoint, behaviorist principles attempt to understand the purpose of these stereotyped behaviors in a process known as *functional analysis* which is at the core of *applied behavior analysis* (Beavers et al., 2013). This is a formal process in which the context of a behavior is assessed. Data are collected on the environment and stimuli prior to a specified behavior (*antecedents*), the *behavior* is defined in a measurable way, and the aftermath of the behavior (*consequence*) is described. Through multiple iterations of this process, patterns and trends are analyzed to determine the *function* or meaning of a behavior. Within this model, repetitive behaviors, particularly self-injurious behaviors, are deemed a conduit of communication and

expression of the inner self to achieve a desired consequence. For children with limited traditional communicative ability, this assessment of observable behaviors may be one of the only processes to understand the needs, wants, and expression of the child's inner self across the spectrum and continuum of motor, cognitive, and neurobehavioral disability.

Motor Disability

Among the most visible disabilities are those affecting movement. The quintessential motor neurodevelopmental disability is cerebral palsy. Cerebral palsy describes a group of disorders of the development of movement and posture, causing activity limitation, which are attributed to non-progressive disturbances that occurred in the developing fetal or infant brain. The motor disorders of cerebral palsy are often accompanied by disturbances of sensation, cognition, communication, perception, and/or a behavioral disorder, and/or by a seizure disorder (Bax et al., 2005). People with cerebral palsy are typically classified by a description of their motor impairment whether spastic, dyskinetic, or ataxic as well as localization of their difficulties.

Through the term cerebral palsy, a large, diverse group of individuals and their families have found shared experience and created a powerful advocacy movement. Given the nature of physical and motor disability, the impact of one's body not being "built" like others and physically incompatible with societal infrastructure can have a profound influence on one's mind (Stark, 2010).

Moving from the pure descriptive terminology of labeling disability, more applicable, functional rating systems have been developed to better understand motor disability. Reporting systems such as the Gross Motor Function Classification System (GMFCS) (Palisano et al., 1997), Manual Ability Classification System (MACS) (Eliasson et al., 2006), and Communication Function Classification System (CFCS) (Hidecker et al., 2011) have been developed to better identify and categorize ability and adaptive needs as opposed

to focusing of deficits (Paulson & Vargus-Adams, 2017).

Individuals with motor disability are also more likely to require adaptive equipment and attendant support for mobility and communication. While this need for equipment and adaptation can lead to feelings of stigmatization and otherness, incorporation of this equipment and needs to one's identity can be a protective factor. Notably, societal supports of adaptive sport and recreation allow for the identity negotiation and can help build social networks, experience freedom and success, and feel a sense of normalcy within a society that is not necessarily built for them (Lundberg et al., 2017).

As adaptive equipment is incorporated to one's identity, it becomes congruent with their view of their body. As such, adaptive mobility devices such as wheelchairs, walkers, or crutches should be considered as one with the person with disability and ascribed the personal space and respect that should be given to their physical body. For example, if someone requires a wheelchair for mobility, that chair should not be moved or handled without the individual's request or consent. This same courtesy should be extended to adaptive communication devices as well as they occupy a complex sociolinguistic territory within a predominantly spoken language world (Smith, 2018). While these devices may be on the same platform as entertainment devices (i.e., electronic tablet), manipulation of the device should not be used as a reward or punishment as it is the embodiment of their own voice.

Within neurodevelopmental motor disability, there is no guarantee that there is associated cognitive disability, though the more severe the disability, the more likely there is to be cognitive impairment (Dalvand et al., 2012). This incongruity, particularly regarding assumptions that those with severe motor disability must have associated cognitive disability, can lead to increased stigmatization and further sense of otherness. Motor disability in the setting of typical intelligence leads to diminished social activities or delayed and less frequent dating compared to their typical peers. This associates with psycho-

logical maladjustment, low self-esteem, and low self-efficacy particularly regarding difficulty developing sexual relationships (Wiegerink et al., 2006).

Individuals with developmental disabilities have sexual needs and desires much like their typically developing peers (Murphy et al., 2006) and is a leading factor of adult quality of life (Maestro-Gonzalez et al., 2018). The right to express these needs has been historically denied due to misconceptions or negative attitudes towards those with disabilities (Richards & Watson, 2006; Tamas et al., 2019). This bias has led to extreme familial and societal responses to sexuality for those with disabilities including forced sterilization, bodily modification, and hormonal castration (Epstein & Rosenbaum, 2019; Serrato Calero et al., 2020).

While motor disability has the physical limitations in expression of sexuality, this can be compounded by concern for risk of abuse particularly with comorbid cognitive disability (Tamas et al., 2019; Wissink et al., 2015). Across the continuum of neurodevelopmental disability, some level of cognitive impairment is expected with motor disability and had its own unique implications for identity formation and understanding of the mind and body.

Cognitive Disability

While motor disabilities are some of the most outwardly visible types of disability, cognitive disabilities have been described as one of the "invisible disabilities." On the more severe end of the cognitive spectrum, cognitive and intellectual disabilities can be readily apparent, but the needs of those on the moderate to mild end of the spectrum may go unnoticed (Nouwens et al., 2016). The prototypical cognitive disability includes *Intellectual Disability/Intellectual (Developmental) Disorder (ID/IDD)*, formerly known as *Mental Retardation*, and historically *Idiocy* (Patel et al., 2018). Intellectual disability has been defined by the American Academic of Intellectual and Developmental Disabilities (AAIDD) as significant impairment in intellec-

tual functioning and in adaptive behavior (Schalock et al., 2021). Intellectual functioning or *intelligence* refers to general mental capacity including skills in learning, reasoning, problem solving, and others. Adaptive behavior is a collection of skills that are learned and performed by people to succeed in their everyday lives and encompass conceptual, social, and practical skills.

Across the spectrum of intellectual disability, the severity of disability can help to predict the overall functional outcome and level of support needed throughout the lifespan. In general, the more severe the disability, the earlier it can be diagnosed as well as the earlier that developmental gains begin to plateau. Intellectual Disability is typically categorized into levels of mild, moderate, severe, and profound severity based on a combination of intelligence quotient (IQ) ranges, adaptive functioning, and overall intensity of supports needed (Patel et al., 2018; Schalock et al., 2021).

Those with mild intellectual disability (IQ ~50–70) show difficulty in comprehension of complex language concepts and academic skills including reading and writing to a 2nd–3rd grade level. They typically can perform most self-care and home activities as well as basic independent job skills and utilize public transportation. At this level, many can achieve relative independent living and employment with episodic and short-term supports.

Persons in the moderate intellectual disability range (IQ ~35–49) have language and academic skills in the basic abilities, with potential sight-word reading and understand basic number concepts and counting. There is a range of ability in self-care with some independences but typically requiring supervision and consistent support with the higher functioning able to have some independence in living.

In the severe intellectual disability range (IQ ~20–34), there is limited language and skills are typically preacademic. In this range, there is more likely to be associated motor impairments and will require daily support and supervision but may acquire basic self-care skills with intensive supports and training. For those with pro-

found intellectual disability (IQ <20), communication abilities are very limited and will require high intensity full time support throughout their life.

With increasing severity of intellectual impairment, there is an increasing reliance on others for care and supports. In the most severe range, with limited ability for self-expression and communication, individuals with intellectual disability require full support in all aspects of life. They become reliant on their family or caretakers to assist in daily basic needs and self-care functioning as well as interpret behaviors as a window to their inner mental states. Also, they are more likely to have comorbid physical or sensory disability and be obviously impaired to the outside observer. In a way, this can be advantageous in that their personal and societal needs are more apparent and less difficult to advocate for.

In contrast, on the mild end of the intellectual disability spectrum, their disability may be less readily apparent and are at increased risk of sexual, physical, and financial abuse (McDonnell et al., 2019; Nouwens et al., 2016; Smit et al., 2019; Wissink et al., 2017). This risk for maltreatment and presumed underreporting is directly related to both a lack of educational support on appropriate interaction and physical contact at their level of understanding (Wissink et al., 2015) as well as a personal lack of bodily autonomy. Individuals with intellectual disability are also at a higher risk for social manipulation and abuse due to an innate need for inclusion and acceptance into peer groups without the cognitive reasoning ability to understand they are being manipulated (Greenspan, 2008, 2021).

This risk extends to legal implications in that those with intellectual disabilities are at higher risk for false confession coercion and are indeed at a higher risk for incarceration (Najdowski & Bottoms, 2012; K. Richards & Ellem, 2018). This increased risk of involvement with the criminal justice system has been associated with their susceptibility to manipulation, lack of social support services, differential treatment, and higher incidence of comorbid psychiatric disorders (Hayes, 2018; Olley & Cox, 2020). This overrepresentation of intellectual disability in the incar-

cerated population has been described as a modern extension of institutionalization (Ben-Moshe, 2013). Particularly for those on the mild end of the spectrum, formal diagnosis of an intellectual disability can provide legal supports and protections for criminal justice system exposure (Harris, 2010; Williams et al., 2015).

Neurobehavioral Disability

The third stream of neurodevelopmental disability includes neurobehavioral disorders such as autism spectrum disorder (ASD). As with cerebral palsy, there is no indication in the current diagnostic criteria that there must be an associated cognitive or intellectual disability. Children with ASD are at a higher risk of intellectual disability, (Thurm et al., 2019). The behaviors and difficulties seen in ASD are thought to occur due to an inherent atypicality in the way in which a child responds to and understands their environment.

A developmental assessment can show a peculiar pattern in which there are notable strengths in visual-perceptual reasoning compared to language and social skills, while also displaying a pattern of seemingly advanced skills prior to mastering earlier skills (developmental deviance) (Myers, 2019). The difference in internal motivation and skills may be the driving force behind the atypical behaviors seen in ASD such as sensory difficulties, repetitive behaviors, and atypical visual observation (e.g. looking at objects out of the corner of eyes). ASD can be viewed as an atypical way of viewing, understanding, and responding to the world around them.

Some advocates have promoted the idea that this atypical behavior is not something to be pathologized but is simply an extension of the typical spectrum of human behavior. This concept has driven the Neurodiversity movement in which neurodevelopmental disorders, particularly ASD, are conceptualized as just another way of being human (Ariel Cascio, 2012; Baron-Cohen, 2017; Kapp et al., 2013; Ortega, 2009). This is not to say that this movement does not

recognize that some with ASD in fact do have a disability but is more reminiscent of the modern social definition of disability in which society fails to provide appropriate support, which leads to the impairments defining disability (den Houting, 2019).

ASD advocates have led the promotion of the use of identity-first language in neurodevelopmental disabilities, preferring to be called an autistic person as opposed to someone with autism (Botha et al., 2021; Vivanti, 2019). This identity has extended for some to the extent that recommendation of therapy such as applied behavior analysis (ABA) is a means by which to strip them of their identity and behaviors that are simply a benign neurologic difference (Kirkham, 2017). This controversy of intervention and identity is made even more striking with broad definitions and diagnostic criteria that include both extremely high-functioning individuals as well as low-functioning individuals without the ability to communicate meaningfully. This broad encompassing definition has lumped many individuals and families together that have completely different personal and cultural values and understanding of the diagnosis. The role of the clinician in this instance is to ensure individualized care and give recommendations to families within the understanding of their personal beliefs and goals.

Mind–Body–Society Issues for the Family

The family of a child with a disability experiences multiple challenges. The parental role for a child with neurodevelopmental disabilities mirrors many of the challenges experienced by the individual, particularly regarding autonomy and identity. Notable factors of familial stress in raising a child with a disability include the initial diagnosis, identities and roles, care giving, level of disability, availability and access to necessary services, education, financial stresses, and decisions about guardianship (Singh & Verma, 2017).

The Parental Experience

The reaction of parents to a new diagnosis of a disability has often been characterized through a sense of loss and grief. Parallels have been drawn between reactions to diagnoses of a disability and the death of child in the sense that parents' image of the future with a "perfect" or "normal" child is disrupted (Ellis, 1989; Fernández-Alcántara et al., 2016; Wayment & Brookshire, 2017). The longitudinal experience of families has been framed within a context of "chronic sorrow" by which this sense of loss occurs throughout their life (Coughlin & Sethares, 2017; Olshansky, 1962). This perspective has been challenged, given the inherent bias that those with disabilities should be looked at as a burden and medicalized, without acknowledging the importance of socio-cultural variability in the understanding of disability (Lalvani & Polvere, 2013).

Outside of this pattern of reaction and response to disability within the family, parental stress is increased due to medical complexity, financial burdens, and severity of disability (Craig et al., 2016). Aside from the personal impact on this stress on parents, increased parental stress has been associated with worsened functional outcomes in children with neurodevelopmental disabilities (Almogbel et al., 2017). While children with neurodevelopmental disabilities are at a higher risk emotional and behavioral disturbances, there is also a higher incidence of neuro-cognitive and psychiatric diagnoses for the family members. This is likely due to a mix of environmental and inherent, hereditary factors increasing risk across family members (Finucane et al., 2015, 2021; Moreno-De-Luca et al., 2013; Sanders et al., 2019).

Family members also experience deviation from typical family roles. While parents envision their child's future as one of slowly diminishing reliance and dependence on parental support, this view is shifted when a child has a neurodevelopmental disability. Around the time of diagnosis, parental perspective moves from *when* to *will* my child be able to do something (such as walking, driving, or live independently) (Heiman, 2002).

This new variable of the unknown can lead to significant stress for the family. Children with disabilities and their parents often have different perspectives on independence and autonomy: parents tend to focus on what their child cannot do while the child will focus on what they can do (Peeters et al., 2014). The roots of this discrepancy take hold from early life in which physical and emotional support required of the child with a disability is particularly robust.

Parents can view their child as one needing extensive support and protection from a world that is not necessarily built to accept them. This can lead to extended infantilization of the child in which allowance and support of independence are hindered. This stresses parent–child dynamics as support of independence and autonomy from parents is a leading factor in quality of life for those with disabilities (Frielink et al., 2018; Sandjojo et al., 2019).

This struggle for balance between support and adaptive needs and independence extends from the model of parent to child support to the role of child to parental support. In a traditional model, as parents age and themselves require support from their children, the challenge becomes less of who will take care of *me* when I cannot, but who will take care of *my child* when I cannot? This struggle is particularly notable within the period of transition from childhood to adulthood (Ankeny et al., 2009; Racine et al., 2014; Rapanaro et al., 2008). While children with disabilities can be viewed as stagnated at an immature level of development, parents themselves can become stagnant and feel unable to progress to their next stage in life. The conventional ability of parents to reach a second period of independence in their life after raising children to adulthood is diminished with a child with significant healthcare needs and severe disability. Their intensively supportive role as a parent extends practically indefinitely as the child reaches chronologic and legal adulthood (Pascall & Hendey, 2016).

As a child reaches adulthood, they become independent from a societal and legal perspective in which they are required to make their own

financial, medical, and personal decisions. This process is upended with children who have significant, particularly cognitive, disabilities.

To best support those who could be taken advantage of or are unable to advocate for themselves, a process of *guardianship* can be pursued, which may differ by states and countries. This process is a legal extension of the parental decision-making rights on behalf of their child once they reach a legal age of majority. Without this process, individuals with severe disabilities do not have a legal proxy for financial and medical decisions (Sell, 2019).

While the highest extent of this process functionally transitions the bodily, financial, and legal rights and independence of one to another, there are intermediary processes for limited, partial guardianship that allow for shared decision making for those with milder cognitive disability (Lin et al., 2020; Werner & Chabany, 2016). This process can lead to significant parental stress (Baxter et al., 1995; Pascall & Hendey, 2016; Singh & Verma, 2017). Discussion of guardianship and transition can lead to internal turmoil as it can reinforce the permanency of a disability and the current parental role no matter how prepared a caregiver may be.

As a result of the deinstitutionalization movement, the role of the parents in the care of those with neurodevelopmental disabilities has also evolved. As society moved from an institutionalizing model, the housing, care, and management of those with disabilities returned to the family. This shift has also shaped a new model of successful parenting for children with disabilities. Within rising societal emphasis on self-sufficiency and independence, the concept of motherhood and parenthood has been reframed to require extensive amounts of support and resources to care for these children, even if it extends outside the means and abilities of the family (Tabatabai, 2019). When the needs surpass the ability of a family, societal pressures can make a parent's decision to place their child in a residential-care facility feel like a failure as a parent (Green, 2004).

The Sibling Experience

Siblings also face unique experiences. Recent sibling advocates have brought attention to the role of typically developing siblings and their own challenges. Some siblings have coalesced under an identity of “glass children” by which they share their experience as children whose needs were overshadowed by their siblings with special needs (Maples, 2010). Aside from the interpersonal sibling–parent–child with disability relationship implications of this model, siblings are noted to have higher incidence of behavioral, emotional, and health issues compared to the general population (Marquis et al., 2019).

Avieli et al. (2019) defined five archetypes of sibling relationships through the lifespan. These are the parent-surrogate sibling, the estranged sibling, the bystander sibling, the mediator sibling, and the friend sibling. The parent-surrogate sibling is one who takes on an early parental and caregiver role for the sibling. This is more common with children who have intensive medical and health needs as the medicalized nature of their care may require more support than parents can give themselves. This can lead to early needs for caretaking and parentification at the expense of their own childhood. In fact, this role extends through the implication that they will maintain this parental role throughout their own lifespan.

The estranged sibling is one who is felt to be outside of the core parental child with disability dy(tri)ad. They become a passive observer and the presence within the family.

The bystander sibling is one in which they have their own unique place within the family: their role is the implication that as parents age, they will move into a caretaker role for their sibling.

The mediator sibling is one in which he or she is the intermediary between parents and the child with a disability. This sibling tends to be one set of siblings, in which one is the closest either in age or emotionally and are deemed to be the link between the child with disability and the remainder of the family.

The final archetype is the friend sibling. Within this model, both the children with and without a disability form lifelong bonds with each other and are harmonic and equal regarding their roles within the family.

These proposed archetypes are not absolute, as there is no single sibling identity and there is considerable heterogeneity of the sibling role. They can provide a framework of insight to the clinician.

Mind–Body–Society Issues for the Healthcare System

As children and adolescents with neurodevelopmental disabilities have longer life expectancies than in the past, they have their own unique challenges to access and utilization of medical care. Given the spectrum of neurodevelopmental disability and increase risk of multiple physical, mental, and developmental healthcare needs, they are at high risk for disparities in the quality and access to healthcare services (Cheak-Zamora & Thullen, 2016). This is particularly true in countries where there is no universal access to services, and welfare supports, like in the case of the US.

As access to care is diminished, individuals with neurodevelopmental disabilities, particularly those with co-occurring psychiatric disorders, have higher rates of negative health outcomes with increasing long-term care admissions, hospital readmissions, and repeated emergency department visits (Ailey et al., 2017; Lin et al., 2021). Individuals with developmental disabilities are particularly vulnerable to systemic disruptions such as those seen in the COVID-19 Pandemic due to their greater healthcare needs, dependency on community-based services, and mental health concerns (Aishworiya & Kang, 2020).

While individuals and families have their own distinct frustrations with the limits of social supports, clinicians within the healthcare system are poised to experience their own aggravations and struggles with their ability to assist their patients. Unlike the traditional disease model of medicine, clinicians who work with neurodevelopmental

disabilities must adapt to a supportive as opposed to a curative model. Navigating the limited social systems, and indeed the healthcare system itself can lead to clinical distress and burnout. Individuals with disabilities, particularly those without their own voice, require ample support and advocates, not only from their family and community, but of their health care providers. While the individual clinician is unlikely to make large societal change, they can first help their patients with disabilities by being personal advocates at the bedside.

Disability rights advocates have published and promoted best practices to support the autonomy, independence, and *humanness* of individuals with disabilities. This practice starts at the bedside. To provide competent treatment and care for individuals with disabilities, the following recommendations have been collated from writings of disability advocates (Gibson, 2009) and governmental organizations (United States Office of the Surgeon General & Office on Disability, 2005):

- Ask the individual if they prefer person- or identity-first language is the best way to individualize care. When unsure or they are unable to express their preference, use first-person language.
- Communicate directly to the individual with a disability as opposed to through a caretaker or interpreter. Even though they may need a proxy or advocate present, they retain the same rights of privacy, confidentiality, and participation in decision making for their medical care that those without disabilities have.
- Do not assume that an individual with a motor or physical disability also has a concurrent cognitive disability or hearing disability. Speak in a normal tone and volume with language appropriate for their cognitive skills if known.
- Introduce and identify yourself to the patient with a disability. They are the patient, even if they require another to speak for them.
- Listen attentively and be patient for those with speech and/or cognitive impairments. Allow them to finish their statements rather than

cutting in or speaking for the person by what is assumed. Additionally, do not pretend to understand when you do not. Ask for repetition or clarification if needed.

- Treat adaptive equipment as part of the individual's body and treat it with the same respect as you would their person.
- Above all, treat those with disabilities just as you would any other, as a person.

References

- Accardo, P. J., Shapiro, B. K., & Capute, A. J. (Eds.). (1997). *Behavior belongs in the Brian: Neurobehavioral syndromes*. York Press.
- Ailey, S. H., Brown, P. J., & Ridge, C. M. (2017). Improving hospital care of patients with intellectual and developmental disabilities. *Disability and Health Journal*, 10(2), 169–172.
- Aishworiya, R., & Kang, Y. Q. (2020). Including children with developmental disabilities in the equation during this COVID-19 pandemic. *Journal of Autism and Developmental Disorders*, 51(6), 2155–2158.
- Almogbel, Y. S., Goyal, R., & Sangsiry, S. S. (2017). Association between parenting stress and functional impairment among children diagnosed with neurodevelopmental disorders. *Community Mental Health Journal*, 53(4), 405–414.
- Americans with Disabilities Act (ADA), Pub. L. No. 328 (1990).
- Andrews, E. E., Anjali, F. P. J., Mona, L. R., Lund, E. M., Pilarski, C. R., & Balter, R. (2019). SaytheWord: A disability culture commentary on the erasure of disability. *Rehabilitation Psychology*, 64(2), 111–118.
- Ankeny, E. M., Wilkins, J., & Spain, J. (2009). Mothers' experiences of transition planning for their children with disabilities. *Teaching Exceptional Children*, 41(6), 28–36.
- Ariel Cascio, M. (2012). Neurodiversity: Autism pride among mothers of children with autism Spectrum disorders. *Intellectual and Developmental Disabilities*, 50(3), 273–283.
- Avieli, H., Band-Winterstein, T., & Araten Bergman, T. (2019). Sibling relationships over the life course: Growing up with a disability. *Qualitative Health Research*, 29(12), 1739–1750.
- Baron-Cohen, S. (2017). Editorial perspective: Neurodiversity—a revolutionary concept for autism and psychiatry. *Journal of Child Psychology and Psychiatry*, 58(6), 744–747.
- Bax, M., Goldstein, M., Rosenbaun, P., Leviton, A., Paneth, N., Dan, B., Jacobsson, B., & Damiano, D. (2005). Proposed definition and classification of cerebral palsy. *Developmental Medicine and Child Neurology*, 47(8), 571–576.
- Baxter, C., Cummins, R. A., & Polak, S. (1995). A longitudinal study of parental stress and support: From diagnosis of disability to leaving school. *International Journal of Disability, Development and Education*, 42(2), 125–136.
- Beavers, G. A., Iwata, B. A., & Lerman, D. C. (2013). Thirty years of research on the functional analysis of problem behavior. *Journal of Applied Behavior Analysis*, 46, 1–21.
- Ben-Moshe, L. (2013). The institution yet to come': Analyzing incarceration through a disability lens. *The Disability Studies Reader*, 4, 132–145.
- Bogart, K. R. (2014). The role of disability self-concept in adaptation to congenital or acquired disability. *Rehabilitation Psychology*, 59(1), 107–115.
- Botha, M., Hanlon, J., & Williams, G. L. (2021). Does language matter? Identity-first versus person-first language use in autism research: A response to Vivanti. *Journal of Autism and Developmental Disorders*, 20(1), 1–9.
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.
- Brown v. Board of Education, 347 U.S. 483, Library of Congress, Washington, DC 20540 USA (1954).
- Cadwgan, J., & Goodwin, J. (2018). Helping parents with the diagnosis of disability. *Paediatrics and Child Health*, 28(8), 357–363.
- Capute, A. J., & Palmer, F. B. (1980). A pediatric overview of the spectrum of developmental disabilities. *Journal of Developmental and Behavioral Pediatrics*, 1(2), 66–69.
- Cheak-Zamora, N. C., & Thullen, M. (2016). Disparities in quality and access to care for children with developmental disabilities and multiple health conditions. *Maternal and Child Health Journal*, 21(1), 36–44.
- Conrad, J. A. (2020). On intellectual and developmental disabilities in the United States: A historical perspective. *Journal of Intellectual Disabilities*, 24(1), 85–101.
- Coughlin, M. B., & Sethares, K. A. (2017). Chronic sorrow in parents of children with a chronic illness or disability: An integrative literature review. *Journal of Pediatric Nursing: Nursing Care of Children and Families*, 37, 108–116.
- Craig, F., Operto, F. F., de Giacomo, A., Margari, L., Frolli, A., Conson, M., Ivagnes, S., Monaco, M., & Margari, F. (2016). Parenting stress among parents of children with neurodevelopmental disorders. *Psychiatry Research*, 242, 121–129.
- Dalvand, H., Dehghan, L., Hadian, M. R., Feizy, A., & Hosseini, S. A. (2012). Relationship between gross motor and intellectual function in children with cerebral palsy: A cross-sectional study. *Archives of Physical Medicine and Rehabilitation*, 93(3), 480–484.
- den Houting, J. (2019). Neurodiversity: An insider's perspective. *Autism*, 23(2), 271–273.

- Dunn, D. S., & Andrews, E. E. (2015). Person-first and identity-first language: Developing psychologists' cultural competence using disability language. *The American Psychologist*, *70*(3), 255–264.
- Eliasson, A. C., Krumlinde-Sundholm, L., Rösblad, B., Beckung, E., Arner, M., Öhrvall, A. M., & Rosenbaum, P. (2006). The manual ability classification system (MACS) for children with cerebral palsy: Scale development and evidence of validity and reliability. *Developmental Medicine and Child Neurology*, *48*(7), 549–554.
- Ellis, J. B. (1989). Grieving for the loss of the perfect child: Parents of children with handicaps. *Child and Adolescent Social Work Journal*, *6*(4), 259–270.
- Epstein, J., & Rosenbaum, S. A. (2019). Revisiting Ashley X: An essay on disabled bodily integrity, sexuality, dignity, and family caregiving. *Touro Law Review*, *35*(1), 197–234.
- Fernández-Alcántara, M., García-Caro, M. P., Pérez-Marfil, M. N., Hueso-Montoro, C., Laynez-Rubio, C., & Cruz-Quintana, F. (2016). Feelings of loss and grief in parents of children diagnosed with autism spectrum disorder (ASD). *Research in Developmental Disabilities*, *55*, 312–321.
- Finucane, B., Challman, T. D., Martin, C. L., & Ledbetter, D. H. (2015). Shift happens: Family background influences clinical variability in genetic neurodevelopmental disorders. *Genetics in Medicine*, *18*(4), 302–304.
- Finucane, B., Ledbetter, D. H., & Vorstman, J. A. (2021). Diagnostic genetic testing for neurodevelopmental psychiatric disorders: Closing the gap between recommendation and clinical implementation. *Current Opinion in Genetics & Development*, *68*, 1–8.
- Forber-Pratt, A. J., Lye, D. A., Mueller, C., & Samples, L. B. (2017). Disability identity development: A systematic review of the literature. *Rehabilitation Psychology*, *62*(2), 198–207.
- Frieling, N., Schuengel, C., & Embregts, P. J. C. M. (2018). Autonomy support, need satisfaction, and motivation for support among adults with intellectual disability: Testing a self-determination theory model. *American Journal on Intellectual and Developmental Disabilities*, *123*(1), 33–49.
- Gibson, J. (2009). Navigating societal norms: The psychological implication of living in the United States with a disability. In C. A. Marshall, E. Kendall, & M. E. Banks (Eds.), *Disabilities: Insights from across fields and around the world* (Vol. 2, pp. 139–150). ABC-CLIO.
- Green, S. E. (2004). The impact of stigma on maternal attitudes toward placement of children with disabilities in residential care facilities. *Social Science & Medicine*, *59*(4), 799–812.
- Greenspan, S. (2008). Foolish action in adults with intellectual disabilities: The forgotten problem of risk-unawareness. In R. Hodapp (Ed.), *International review of research in mental retardation* (Vol. 36, pp. 147–194). Academic Press.
- Greenspan, S. (2021). Common sense in persons with intellectual disabilities: The challenge of deciding to say no to social manipulation. In I. Khemka & L. Hickson (Eds.), *Decision making by individuals with intellectual and developmental disabilities* (Positive Psychology and Disability Series) (pp. 285–300). Springer.
- Harris, J. C. (2010). Chapter 10: Legal aspects of intellectual disability. In E. P. Benedek et al. (Eds.), *Principles and practice of child and adolescent forensic mental health* (pp. 131–145). American Psychiatric Association Publishing.
- Haydon-Laurel, M. A. (2015). Disability: Beyond individualization, psychologisation and medicalization. *Meta*, *27*, 1–15.
- Hayes, S. (2018). Criminal behavior and intellectual and developmental disabilities. In W. R. Lindsay & J. L. Taylor (Eds.), *The Wiley handbook on offenders with intellectual and developmental Disabilities* (pp. 21–37). Wiley.
- Heiman, T. (2002). Parents of children with disabilities: Resilience, coping, and future expectations. *Journal of Developmental and Physical Disabilities*, *14*(2), 159–171.
- Hidecker, M. J. C., Paneth, N., Rosenbaum, P. L., Kent, R. D., Lillie, J., Eulenberg, J. B., Chester, K., Johnson, B., Michalsen, L., Evatt, M., & Taylor, K. (2011). Developing and validating the communication function classification system for individuals with cerebral palsy. *Developmental Medicine & Child Neurology*, *53*(8), 704–710.
- Kapp, S. K., Gillespie-Lynch, K., Sherman, L. E., & Hutman, T. (2013). Deficit, difference, or both? Autism and neurodiversity. *Developmental Psychology*, *49*(1), 59–71.
- Kirkham, P. (2017). 'The line between intervention and abuse' – Autism and applied behaviour analysis. *History of Human Sciences*, *30*(2), 107–126.
- Lai, M. C., Kasseh, C., Besney, R., Bonato, S., Hull, L., Mandy, W., Szatmari, P., & Ameis, S. H. (2019). Prevalence of co-occurring mental health diagnoses in the autism population: A systematic review and meta-analysis. *The Lancet Psychiatry*, *6*(10), 819–829.
- Lalvani, P., & Polvere, L. (2013). Historical perspectives on studying families of children with disabilities: A case for critical research. *Disability Studies Quarterly*, *33*(3) Online Publication.
- Lemmon, M. E., Huffstetler, H., Barks, M. C., Kirby, C., Katz, M., Ubel, P. A., Docherty, S. L., & Brandon, D. (2019a). Neurologic outcome after prematurity: Perspectives of parents and clinicians. *Pediatrics*, *144*(1), 1–8.
- Lemmon, M. E., Ubel, P. A., & Janvier, A. (2019b). Estimating neurologic prognosis in children: High stakes, poor data. *JAMA Neurology*, *76*(8), 879–880.
- Lin, J. L., Clark, C. L., Halpern-Felsher, B., Bennett, P. N., Assis-Hassid, S., Amir, O., Nunez, Y. C., Cleary, N. M., Gehrmann, S., Grosz, B. J., & Sanders, L. M. (2020). Parent perspectives in shared decision-making for children with medical complexity. *Academic Pediatrics*, *20*(8), 1101–1108.

- Lin, E., Balogh, R., Chung, H., Dobranowski, K., Durbin, A., Volpe, T., & Lunskey, Y. (2021). Looking across health and healthcare outcomes for people with intellectual and developmental disabilities and psychiatric disorders: Population-based longitudinal study. *The British Journal of Psychiatry*, *218*(1), 51–57.
- Lundberg, N. R., Taniguchi, S., McCormick, B. P., & Tibbs, C. (2017). Identity negotiating: Redefining stigmatized identities through adaptive sports and recreation participation among individuals with a disability. *Journal of Leisure Research*, *43*(2), 205–225.
- Luther, V. P., & Crandall, S. J. (2011). Commentary: Ambiguity and uncertainty: Neglected elements of medical education curricula? *Academic Medicine*, *86*(7), 799–800.
- Maestro-Gonzalez, A., Cruz Bilbao-Leon, M., Zuazua-Rico, D., Fernandez-Carreira, J. M., Baldonedo-Cernuda, R. F., & Pilar Mosteiro-Diaz, M. (2018). Quality of life as assessed by adults with cerebral palsy. *PLoS One*, *13*(2), e0191960.
- Maples, A. (2010). Recognizing glass children. *TEDxSanAntonio*. <https://www.youtube.com/watch?v=MSwqo-g2Tbk>
- Marquis, S., Hayes, M. V., & McGrail, K. (2019). Factors that may affect the health of siblings of children who have an intellectual/developmental disability. *Journal of Policy and Practice in Intellectual Disabilities*, *16*(4), 273–286.
- McClimens, A. (2003). The Organization of Difference: People with intellectual Disabilities and the social model of disability. *Mental Retardation*, *41*(1), 35–46.
- McDonnell, C. G., Boan, A. D., Bradley, C. C., Seay, K. D., Charles, J. M., & Carpenter, L. A. (2019). Child maltreatment in autism spectrum disorder and intellectual disability: Results from a population-based sample. *Journal of Child Psychology and Psychiatry*, *60*(5), 576–584.
- Minshawi, N. F., Hurwitz, S., Morriss, D., & McDougle, C. J. (2015). Multidisciplinary assessment and treatment of self-injurious behavior in autism Spectrum disorder and intellectual disability: Integration of psychological and biological theory and approach. *Journal of Autism and Developmental Disorders*, *45*(6), 1541–1568.
- Moreno-De-Luca, A., Myers, S. M., Challman, T. D., Moreno-De-Luca, D., Evans, D. W., & Ledbetter, D. H. (2013). Developmental brain dysfunction: Revival and expansion of old concepts based on new genetic evidence. *The Lancet Neurology*, *12*(4), 406–414.
- Munir, K. M. (2016). The co-occurrence of mental disorders in children and adolescents with intellectual disability/intellectual developmental disorder. *Current Opinion in Psychiatry*, *29*(2), 95–102.
- Murphy, N. A., Elias, E. R., & Disabilities, for the C. on C. W. (2006). Sexuality of children and adolescents with developmental Disabilities. *Pediatrics*, *118*(1), 398–403.
- Myers, S. M. (2019). Diagnosing developmental disabilities. In M. L. Batshaw, N. J. Roizen, & L. Pellegrino (Eds.), *Children with disabilities* (pp. 199–224). Brooks Publishing.
- Myers, S. M., Challman, T. D., Bernier, R., Bourgeron, T., Chung, W. K., Constantino, J. N., Eichler, E. E., Jacquemont, S., Miller, D. T., Mitchell, K. J., Zoghbi, H. Y., Martin, C. L., & Ledbetter, D. H. (2020). Insufficient evidence for “autism-specific” genes. *American Journal of Human Genetics*, *106*(5), 587–595.
- Najdowski, C. J., & Bottoms, B. L. (2012). Understanding jurors’ judgments in cases involving juvenile defendants: Effects of confession evidence and intellectual disability. *Psychology, Public Policy, and Law*, *18*(2), 297–337.
- Nielsen, K. E. (2012). *A disability history of the United States*. Beacon Press.
- Nouwens, P. J. G., Lucas, R., Embregts, P. J. C. M., & van Nieuwenhuizen, C. (2016). In plain sight but still invisible: A structured case analysis of people with mild intellectual disability or borderline intellectual functioning. *Journal of Intellectual & Developmental Disability*, *42*(1), 36–44.
- Olley, J. G., & Cox, A. W. (2020). Intellectual and developmental disabilities and the criminal justice system. In L. M. Glidden (Ed.), *APA handbook of intellectual and developmental disabilities* (Clinical and educational implications: Prevention, intervention, and treatment) (Vol. 2, pp. 299–331).
- Olshansky, S. (1962). Chronic sorrow: A response to having a mentally defective child. *Families in Society: The Journal of Contemporary Social Services*, *43*(4), 190–197.
- Ortega, F. (2009). The cerebral subject and the challenge of neurodiversity. *BioSocieties*, *4*(4), 425–445.
- Palisano, R., Rosenbaum, P., Walter, S., Russell, D., Wood, E., & Galuppi, B. (1997). Development and reliability of a system to classify gross motor function in children with cerebral palsy. *Developmental Medicine and Child Neurology*, *39*(4), 214–223.
- Pascall, G., & Hendey, N. (2016). Disability and transition to adulthood: The politics of parenting. *Critical Social Policy*, *24*, 165–186.
- Patel, D. R., Apple, R., Kanungo, S., & Akkal, A. (2018). Intellectual disability: Definitions, evaluation and principles of treatment. *Pediatric Medicine*, *1*(10), 1–11.
- Paulson, A., & Vargus-Adams, J. (2017). Overview of four functional classification systems commonly used in cerebral palsy. *Children*, *4*(4), 30.
- Peeters, M. A. C., Hilberink, S. R., & van Staa, A. (2014). The road to independence: Lived experiences of youth with chronic conditions and their parents compared. *Journal of Pediatric Rehabilitation Medicine*, *7*(1), 33–42.
- Piaget, J. (1935). *La naissance de l’intelligence chez l’enfant*. Delachaux et Niestlé.

- Piaget, J. (1952). *Play, dreams and imitation in childhood*. W W Norton & Co.
- Piaget, J. (1955). *The child's construction of reality*. Routledge & Kegan Paul.
- Piaget, J., & Cook, M. T. (1952). *The origins of intelligence in children*. International Universities Press.
- Pinals, D. A., Hovermale, L., Mauch, D., & Anacker, L. (2021). Persons with intellectual and developmental Disabilities in the mental health system: Part 1. Clinical considerations. *Psychiatric Services*, *appi.ps.2019005*.
- Proctor, R. W., & Weeks, D. J. (2012). *The goal of BF skinner and behavior analysis*. Springer.
- Racine, E., Bell, E., Yan, A., Andrew, G., Bell, L. E., Clarke, M., Dubljevic, V., Goldowitz, D., Janvier, A., McLachlan, K., Muhajarine, N., Nicholas, D., Oskoui, M., Rasmussen, C., Anne Rasmussen, L., Roberts, W., Shevell, M., Wade, L., & Yager, J. Y. (2014). Ethics challenges of transition from paediatric to adult health care services for young adults with neurodevelopmental disabilities. *Paediatrics & Child Health*, *19*(2), 65–68.
- Rapanaro, C., Bartu, A., & Lee, A. H. (2008). Perceived benefits and negative impact of challenges encountered in caring for young adults with intellectual Disabilities in the transition to adulthood. *Journal of Applied Research in Intellectual Disabilities*, *21*(1), 34–47.
- Richards, K., & Ellem, K. (2018). Young people with cognitive disabilities and overrepresentation in the criminal justice system: Service provider perspectives on policing. *Police Practice and Research*, *20*(2), 156–171.
- Richards, D., & Watson, S. L. (2006). Sexuality and developmental disability: Obstacles to healthy sexuality throughout the lifespan. *Developmental Disabilities Bulletin*, *34*(2), 137–155.
- Richmond, J. B. (1967). Child development: A basic science for pediatrics. *Pediatrics*, *39*(5), 649–658.
- Sanders, S. J., Sahin, M., Hostyk, J., Thurm, A., Jacquemont, S., Avillach, P., Douard, E., Martin, C. L., Modi, M. E., Moreno-De-Luca, A., Raznahan, A., Anticevic, A., Dolmetsch, R., Feng, G., Geschwind, D. H., Glahn, D. C., Goldstein, D. B., Ledbetter, D. H., Mulle, J. G., et al. (2019). A framework for the investigation of rare genetic disorders in neuropsychiatry. *Nature Medicine*, *25*(10), 1477–1487.
- Sandjojo, J., Gebhardt, W. A., Zedlitz, A. M. E. E., Hoekman, J., den Haan, J. A., & Evers, A. W. M. (2019). Promoting independence of people with intellectual disabilities: A focus group study perspectives from people with intellectual disabilities, legal representatives, and support staff. *Journal of Policy and Practice in Intellectual Disabilities*, *16*(1), 37–52.
- Schalock, R. L., Luckasson, R., & Tassé, M. J. (2021). An overview of intellectual disability: Definition, diagnosis, classification, and systems of supports (12th ed.). *American Journal on Intellectual and Developmental Disabilities*, *126*(6), 439–442.
- Schiariti, V., Mahdi, S., & Bölte, S. (2018). International classification of functioning, disability and health core sets for cerebral palsy, autism spectrum disorder, and attention-deficit–hyperactivity disorder. *Developmental Medicine and Child Neurology*, *60*(9), 933–941.
- Sell, S. J. (2019). A potential civil death: Guardianship of persons with disabilities in Utah. *Utah Law Review*, *3*(Article 5), 215–235.
- Serrato Calero, M. d. l. M., Delgado-Vázquez, Á. M., & Díaz Jiménez, R. M. (2020). Systematized review and meta-synthesis of the sterilization of women with Disabilities in the field of social science: From macroeugenics to microeugenics. *Sexuality Research and Social Policy*, *18*(3), 653–671.
- Singh, A., & Verma, R. (2017). Unplanned journey of parenting a child with special needs. *Indian Journal of Research*, *6*(3), 581–583.
- Smit, M. J., Scheffers, M., Emck, C., van Busschbach, J. T., & Beek, P. J. (2019). Clinical characteristics of individuals with intellectual disability who have experienced sexual abuse. An overview of the literature. *Research in Developmental Disabilities*, *95*(103513), 1–11.
- Smith, M. M. (2018). Constructing and navigating cultural borderlands using augmentative and alternative communication. *Topics in Language Disorders*, *38*(2), 96–107.
- Stark, S. (2010). Creating disability in the home: The role of environmental barriers in the United States. *Disability & Society*, *16*(1), 37–49.
- Tabatabai, A. (2019). Mother of a person: Neoliberalism and narratives of parenting children with disabilities. *Disability & Society*, *35*(1), 111–131.
- Tamas, D., Brkic Jovanovic, N., Rajic, M., Bugarski Ignjatovic, V., & Peric Prkosovacki, B. (2019). Professionals, parents and the general public: Attitudes towards the sexuality of persons with intellectual disability. *Sexuality and Disability*, *37*(2), 245–258.
- Thurm, A., Farmer, C., Salzman, E., Lord, C., & Bishop, S. (2019). State of the field: Differentiating intellectual disability from autism spectrum disorder. *Frontiers in Psychiatry*, *10*(526), 1–10.
- Tremblay, I., Grondin, S., Laberge, A. M., Cousineau, D., Carmant, L., Rowan, A., & Janvier, A. (2018). Diagnostic and therapeutic misconception: Parental expectations and perspectives regarding genetic testing for developmental disorders. *Journal of Autism and Developmental Disorders*, *49*(1), 363–375.
- United States Office of the Surgeon General, & Office on Disability. (2005). *The surgeon General's call to action to improve the health and wellness of persons with disabilities*. In *health* (San Francisco). Office of the Surgeon General (US).
- Vivanti, G. (2019). Ask the editor: What is the Most appropriate way to talk about individuals with a diagnosis of autism? *Journal of Autism and Developmental Disorders*, *50*(2), 691–693.

- Vygotsky, L. S., & Cole, M. (1978). *Mind in society: Development of higher psychological processes*. Harvard University Press.
- Wadsworth, B. J. (2005). *Piaget's theory of cognitive and affective development: Foundations of constructivism*. Longman Publishing.
- Wayment, H. A., & Brookshire, K. A. (2017). Mothers' reactions to their Child's ASD diagnosis: Predictors that discriminate grief from distress. *Journal of Autism and Developmental Disorders*, 48(4), 1147–1158.
- Werner, S., & Chabany, R. (2016). Guardianship law versus supported decision-making policies: Perceptions of persons with intellectual or psychiatric disabilities and parents. *The American Journal of Orthopsychiatry*, 86(5), 486–499.
- Wiegerink, D. J. H. G., Roebroek, M. E., Donkervoort, M., Stam, H. J., & Cohen-Kettenis, P. T. (2006). Social and sexual relationships of adolescents and young adults with cerebral palsy: A review. *Clinical Rehabilitation*, 20(12), 1023–1031.
- Williams, V., Swift, P., & Mason, V. (2015). The blurred edges of intellectual disability. *Disability & Society*, 30(5), 704–716.
- Wissink, I. B., van Vugt, E., Moonen, X., Stams, G. J. J. M., & Hendriks, J. (2015). Sexual abuse involving children with an intellectual disability (ID): A narrative review. *Research in Developmental Disabilities*, 36, 20–35.
- Wissink, I. B., van Vugt, E. S., Smits, I. A. M., Moonen, X. M. H., & Stams, G. J. J. M. (2017). Reports of sexual abuse of children in state care: A comparison between children with and without intellectual disability. *Journal of Intellectual & Developmental Disability*, 43(2), 152–163.
- World Health Organization (WHO). (2007). International classification of functioning, disability, and health: Children & Youth Version: ICF-CY. *World Health Organization*.

Steven M. Lazar, MD is a Clinical Fellow and former Chief Resident of Neurodevelopmental Disabilities and Child Neurology at Texas Children's Hospital and Baylor College of Medicine. Dr. Lazar completed his undergraduate medical training at the Sidney Kimmel Medical College at Thomas Jefferson University and is currently completing a Master of Education in Curriculum and Instruction for Health Professions Education at the University of Houston. Dr. Lazar's clinical interests include the evaluation and treatment of children with neurodevelopmental disabilities across the spectrum and continuum of disability. His research and professional interests focus on medical education and training of physicians as well as allied health professionals in the care of children and adults with neurodevelopmental disabilities.



Mind–Body Issues in Children with Complex Medical Conditions and Complex Care Needs: Effects and Manifestations in the Child

Jennifer Benjamin, Heather Moore,
and Sutapa Khatua

What Is Complex Pediatric Care?

We refer to a disease, syndrome, or a combination of pathologies that are severe, often life threatening and which will require medical care for years and which generally will not be “cured” or, more rarely, only after multiple medical interventions or a series of surgeries (Cohen et al., 2018).

The affected child may experience an immense variety of symptoms, going from pain, difficulties breathing, abdominal difficulties, problems with movement, instability in vital signs, vision, auditory, and other perceptual problems, and possible complications from all these. As noted, generally there is no expectation that these conditions will be completely cured, and the outlook is one of improvements in functioning of the child, amelioration of symptoms, and “living with” the need for medical care. This may consist of having

a central line for the administration of medications, total parenteral nutrition, chronic pain, repeated surgical procedures, etc. It is perhaps hard for the public to imagine the variety of conditions that may affect the same child and those who care for them, for the most parents (Fisher, 2001) and other family members, nursing personnel in the home and often a multidisciplinary and multi-specialty medical team.

With the advances of medical knowledge, technology, and new methods of treating diseases, there are an increasing number of children and adolescents who are able to continue their life with the assistance of devices and treatments that previously did not exist. For example, leukemia (Pineros et al., 2011) or kidney failure used to be ominous diagnoses even a generation ago, and now many children are able to survive, with the help of new treatments, and if there is kidney failure, with hemodialysis several times a week. The same occurs with children who have difficulties such as “short gut syndrome” who may be supported in their nutritional needs with parental nutrition through a central line for years. There are increasingly successful organ transplants which may afford a child a second chance of surviving difficulties like a severe cardiac malformation, liver failure, etc. Many forms of cancer used to be practically a “death sentence,” and presently, many of these conditions can be successfully treated. These survival rates and access to care tend to be more available in developed

J. Benjamin (✉) · H. Moore, MD
Complex Care Clinic, Houston, TX, USA
e-mail: jennifer.benjamin@bcm.edu

S. Khatua
Complex Care Clinic, Houston, TX, USA

Assistant professor, Baylor College of Medicine.
Pediatrician at the Complex Care Clinic, Texas
Childrens Hospital. Previously faculty at the
McGovern School of Medicine, University of Texas,
Houston, United States

countries and not in poor countries, or in the poorer children of a developed country (Blakely et al., 2003; Singh, 2010).

These recent treatments are welcome as new opportunities for the survival of the child, but at the same time, these new chances involve risks for the emotional life of the child (Malhotra & Singh, 2002), his or her adjustment to a family life that has to be modified to accommodate those needs, and the same is true for the educational needs and interpersonal relations of the child with peers.

Furthermore, these emotional needs may change with the growth of the child, from a preschooler to an adolescent. The response of the child to his or her medical condition may be very different. A child who was well adjusted may eventually become resentful and angry, or on the other end of the spectrum “learn to live” with the adjustments that his or her medical conditions represent in their everyday life.

The need to engage in treatments for months or years often leads to multiple and repeated medical visits to specialized clinics, and may be difficult to endure. There may be re-hospitalizations as well as administration of multiple medications, participation in rehabilitation strategies such as occupational or physical therapy, in the home or in a clinic setting. Some children will require repeated procedures such as laboratory testing and repeated imaging with radiology. In these situations, many tertiary level hospitals have adopted the concept of a complex care primary pediatrician, whose team provides the “medical home” for the child and also includes care coordinators and navigators to help families satisfy the multiple needs for care and supportive equipment, such as respirators, wheelchairs, feeding pumps, etc. (Chen et al., 2012).

Besides this, there are a number of conditions that could be called “rare diseases” about which there is much less knowledge and at times there may be only few cases of that condition reported in the medical literature. This applies to a number of genetic conditions and other dysmorphic syndromes. Some of these are only characterized by a specific DNA sequence and reported in a world database, identifying other children with similar

problems. Some children have a condition that only one in a million children could develop, and some have novel mutations about which very little is known.

In this chapter, we propose to review the main mind–body issues for the child first and foremost, then for the family and for other caregivers. Our hope is to alert clinicians to the emotional and physical needs of all concerned.

A part of complex care should be the consideration of the emotional needs and problems that the child with an array of medical conditions may face, as well as the reactions of mother, father, siblings, and other caregivers as they deal day to day with the multiple needs of the child. Normal children in the general population have about a 20% prevalence of emotional and behavioral difficulties, which may be mild to severe. In the arena of children with delayed development and chronic illness with frequent and repeated hospitalizations and procedures, the prevalence is much higher. This can be due to “living in constant stress” or “always scared” of what might happen. Some children for instance require constant surveillance of their oxygen levels, others might on any given day have a seizure, or an elevation of urea level in the blood, that need to be monitored constantly. Also, the limitations imposed by a number of illnesses dictate on the child conditions which would be difficult to accept for any person. The constant exposure to procedures and maneuvers may lead to increased levels of anxiety, depression (Curtis & Luby, 2008; Pineros et al., 2011; Pao & Bosk, 2011), anger, and resentment, as well as withdrawal or “acting out aggressively” when caregivers are attempting to carry out some procedures on the child. There will be three sets of problems in the main: internalization difficulties (anxiety, depression, constant fear), externalization problems (aggression, defiance, resentment, disruptive behavior in general) (Borge et al., 2004; Gartstein et al., 2000) and developmental problems, learning difficulties, global handicap, or specific problems in other areas of development (language, fine and gross motor functioning, emotional development). Depression and anxiety are also more frequent in the parents of children with

these conditions (Cohn et al., 2020; van Oers et al., 2014).

The siblings of a child with multiple or difficult medical problems will experience a variety of reactions, which go from required helpfulness, love and compassion, to ambivalence toward their brother or sister, or frank hostility and jealousy. They may feel resentful that the parents devote so much time and energy caring for a brother or sister, who may be very “annoying,” disruptive, or difficult in many other ways. There is also a higher risk of depressive and anxiety symptoms in siblings (Fisman et al., 2000; Sharpe & Rossiter, 2002).

The parents of these children may develop a number of reactions. On the positive side, there may be resilience and strengthening of the marriage in order to collaborate and help the family cope. On the other side of the spectrum there may be marital discord, mutual blaming, depression, anxiety states, and “burnout” in caring for a child who goes on being sick for many years (Anderson & Davis, 2011; Cloutier et al., 2002).

All of the above situations make obvious the need for mental health professionals. The interventions of a child psychiatrist and psychotherapist or other mental health professional, working together with the pediatric staff should assist these children and families, as the need is intense, as the requirement for relief is quite urgent in some cases.

In our center, we have developed an “integrated model” of care which includes a child and adolescent psychiatrist and family therapist available during the working day of the clinic. Other psychotherapists can be “on call” in order to deal with situations that can be managed later. This model is promising in that it avoids a “referral outside” of the clinic. It allows for a true integration of care in which the pediatric staff is aware of the emotional issues or family problems that are salient. It also allows clinicians to work collaboratively to ameliorate their own stressors and also address the emotional needs of parents

and siblings, as well as those of the child. This could be conceived of as a family psychiatrist (Chadda & Deb, 2013), as the child psychiatrist is also equipped to assist adults.

Who Are the Children/Adolescents with Complex Care Needs?

Due to multiple advances in medicine and medical care, children with medical complexity have increasing chances of survival. In the USA, it is estimated that there are 11.2 million children and youth with special health care needs (CYSHCN) according to a 2011 national survey (*Archived Data Documents - NSCH and NS-CSHCN Prior to 2016*). Another way to quantify this is an estimated 19.4% of children having special health care needs (Mattson et al., 2019). The prevalence is increasing as better opportunities for medical care and survival advance, increasing the prevalence by 4.3% from the data of the 2019 census (Young, 2022). This is closely related to an improvement in the neonatal care, from which more “graduates” emerge, and due to the greater utilization of lifesaving technology (van der Veen, 2003). A subset of children with special health care needs are those with congenital, genetic, multisystem conditions requiring multi-specialty input and technology dependence for their daily needs. (Kuo et al., 2011). Technology dependence refers to the need to use certain equipment literally to stay alive, such as oxygen, dialysis, parenteral nutrition, feeding pumps, etc.

These more affected children can have problems ranging from mild to severe neurological impairment. They are the resource-intensive subset of childrens, and they are often referred to as children with medical complexity CMC (Mattson et al., 2019). Despite being a small subset, CMC account for an increasing proportion of inpatient admissions, hospitalization, and health care utilization (Feudtner et al., 2001; Simon et al., 2010). In countries with less sophistication in medical equipment, the high costs of this care and the

unavailability of equipment for everyone result in less survival rates and less opportunities for long-term care with intensive and complex medical interventions.

The Mind and the Body of the Child with Complex Medical Needs

It is a difficult task to describe and do justice to the emotions and reactions of any child. In cases in which there are additionally communicational difficulties, the youngster may be unable to speak or communicate with sounds or signs. If there is marked intellectual handicap, it is easy to misread or overlook their reactions to various events. Often, parents are very aware of their own child's responses to various stimuli and events, for example, a fear of going to a hospital or a clinic, due to previous negative or painful experiences. Also, there may be reactions like frustration when caregivers cannot grasp what the child wants or needs. Small environmental changes or minute alterations in their routine can have a big impact on a child who has many limitations in movement, intellect, or perception, and whose world is very restricted. We describe here a number of situations in which the input of a child and adolescent psychiatrist or other child mental health professional can be useful to ascertain what is happening with a child who exhibits a mood change, intense anxiety, signs of depression, aggressive behavior, or difficulties with sleep among many others.

We could refer to the "psychopathology of children with chronic medical conditions". However, in these situations, even when the child may experience anguish, sadness, anger, and relational problems, it seems more useful to talk about the "lived experience" of the child. This seems preferable than to merely apply simplistic labels such as "disruptive behavior disorder" or "anxiety disorder" even though obviously these issues may be manifesting in the child and the family members. The reactions can occur in multiple presentations, but the most frequent manifestations are discussed here. We do not intend to give detailed "what to do" descriptions in such

cases but more describe a way of approaching the child and family, to understand what might be happening and collaborate with them in finding solutions.

Changes in the Demeanor or Mood of the Child

A child or adolescent with complex medical needs who is typically content may start exhibiting disruptive behavior. This may consist of temper outbursts or acting aggressively toward those who practice routine caring procedures (feeding the child, changing diapers, or taking him or her to the toilet, taking vital signs). He or she may kick, pinch, bite, scratch, or show other forms of aggression toward the routine caregivers. The question arises as to what is the source for this change in behavior. Aggression may well be a manifestation of a protest, wanting to change something, a communication that is difficult, but which is a sign after all the child is alive and fighting.

Alternatively, a child who previously seemed happy, smiling, and relating to those around him or her may look sad, crying easily, appear dejected, and without interest in regular activities. There may be also increased restlessness, anxiety, and fear of things that previously the child found easy to do.

The first priority, in collaboration with the complex care pediatrician, is to rule out the possibility that a medical issue has developed. This could be some infection, urinary or elsewhere, pain (in teeth, headache, in limbs), some metabolic alteration or side effects from a new medication or one whose dose was recently changed. Also there may be interactions between medications, prescribed by the different specialists. This is clinical work that takes time and there is a need to do a careful review of the symptoms, their context, and the pharmacological regime of the child. In centers with complex medical care teams, the pediatrician has longer visits to discuss the current the status of the child and evaluate any possible changes in his or her medical status.

An 11 year old girl with intellectual handicap, Pearl, who also had cerebral palsy and sequelae of a meningocele repair that had developed in the frontal part of the brain at birth, had required special care for years. This consisted of occupational, physical therapy and Pearl was attending school in a specialized program. She could not talk, but seemed to understand sentences and simple requests. She had been heretofore rather content and would smile on seeing her parents and was mostly happy. The psychiatrist was asked to consult with the child, as she recently had started to develop unusual behaviors, hitting her head, crying for no obvious reason, hitting her legs or scratching them, and seeming very angry when her diaper had to be changed. She also seemed angry when she was being fed through the nasogastric tube. Normally she had been cooperative, but now she seemed generally angry and annoyed. The psychiatrist observed her and her parents together in the clinic. She had not been sleeping well recently. As we pondered what could have triggered these changes, the mother revealed that she and her husband had been fighting recently. She was suspecting her husband of infidelities with colleagues at work, and expected that he would not “linger at work” after his shift. She wanted him to come home immediately as his shift ended in order to assist in taking care of Pearl. The father, for his part was also angry that his wife was “so controlling” and he thought she had a much easier life. He said “all she had to do was provide care for Pearl” before and after school. The arguments were at times very heated. As the parents discussed some of these issues in front of Pearl in the psychiatrist’s office, she started to cry and to become agitated, hitting her head and trying to slap her parents and to scratch them, mother and father. The clinician thought that the patient could be reacting to this “new reality” of her parents yelling and arguing, father leaving the house for periods of hours (after a verbal fight) and the mother feeling very resentful and wishing she could also work outside the home. As these marital issues were addressed, the parents were able to see more of the partner’s point of view and they, over the course of several sessions, started to negotiate how they would spend time. Pearl’s father reassured his wife of his love and that he was not straying outside the marriage. She started to work some hours in the day whilst Pearl was at school. The arguments diminished and Pearl started going “back to normal” without agitation and aggression.

In some respects, working with Pearl was like working clinically with an infant. She is non verbal and cannot articulate her emotions and her anger but displayed them through the language of her body, with little inhibition. She compre-

hended more the “language of emotions” during the arguments, more than the specific accusations between her parents. The clinician could see in situ, her reactions and anger being stirred when the parents would start to argue. This helped in the understanding of the child from her point of view. In a similar way, a change in caregiver (like a nurse who is loved by the child leaving), a move, the birth of a sibling, and a separation from someone can alter the child’s balance and without being able to express reactions with words, the child speaks through the body of his or her anguish, sorrow, or anger.

The reactions to these events are often underappreciated by caregivers and professionals (McClellan & Guerin, 2019) as the child may not openly cry or call for a deceased grandparent, but may become more withdrawn or disinterested in activities that he or she previously enjoyed. The clinician, like a family therapist, can appreciate these “systemic interactions” and reactions that for the members of a family may not be visible as they are “within the family” but are more easily identifiable to the external observer.

Also, as with very young children, for a child who experiences limitations in mobility, communication, and the chance to engage in multiple outside activities, being more often confined to a few spaces, small changes may appear very significant. These may alter a delicate balance that the child might have acquired. In the eyes of the adult, these alterations may appear insignificant, but they may be major for a child who is so strongly oriented to the physical and interpersonal world. The clinician often will have to hypothesize what might be experienced by the child by reading small cues, in the body, in the tone of voice or vocalizations of the child and in his or her reactions when some questions are asked or a certain topic is mentioned. The clinical maneuver is for the clinician (and later on the parents) to attempt to see the world from the point of view of the child. How would it feel, one can try to imagine, to be the child and witness all the goings on around him or her?

As in the regular population of children, some parents are very observant and readily theorize what might be happening to their child, e.g.,: “he

is more withdrawn since grandfather died” and understand quite well the experience of the child. Other parents just refer to a behavioral change and it falls on the clinician to try to draw inferences and then test a certain hypothesis of what might be bothering the child.

Boredom and Need for Agency

At times, the problem is not so much a change but the lack of change per se (Gagne, 2010).

Adults often correctly think that young children or children with handicaps need a routine and high predictability, having a fixed schedule etc. While this is largely true, it is also understandable that when the routine is too fixed, unchanging and unstimulating, the child’s existence may become monotonous or actually boring. Just like other people, children with complex medical conditions may become annoyed with a particular person, their ways of doing things, even a parent who spends all day long with the child and is “always the same.” At times, the environment of the child is so repetitive and unstimulating that the behavioral alteration is due to a wish to affect something in the world, to have an impact and to “break the routine” because such routine may be too predictable, too similar from one day to the next, etc.

The purpose of making such “etiological inferences” is to be able to discuss, if possible, with the child his or her reactions to the or circumstances, or to imagine how it would feel to have everyday be more or less the same, to make modifications that could be easily made and which might remedy the monotony for the child. At times, parents become so used to the passivity in the child that they may not realize that from the point of view of the minor, the situation may be quite unstimulating and exasperating. In one of the children we saw, this as a predominant mechanism.

Julio is now 14 years old. He has a fairly severe autistic disorder. He has also a seizure disorder and considerable oral aversion, so he only eats some selected foods, not enough to sustain feeding by mouth, and he also has a nasogastric tube. He is

said to have gastroesophageal reflux. The psychiatrist is called because Julio for several months has been hitting himself on the wall, hitting his legs on the rails of his bed, and tends to hit anyone who comes to change his diaper (he is incontinent). He often screams and has a blanket over his whole head, as if wanting to block the light. His maternal grandmother is his main caregiver. She spends most of her time focused very intensely on him, with all the scheduled medications, the feedings to be given at precise times, and observing the child at the bedside far away so as not to be hit. The boy also rocks on his bed and moves his head from side to side. The grandmother advises it is impossible to bring him to the clinic, due to his fear of being outside, so the clinician goes to see him at his the home of his grandparents. The grandfather is working outside the home and is generally less involved, leaving all the care to the grandmother. The grandmother is highly protective of Julio and does not let anyone else look after him. She said with great pride that she in the past, looked after her very sick mother for about ten years at her bedside, and now “it is Julio’s turn to be looked after by her”. Julio’s mother lives with her partner in another house, and he gets jealous if his partner spends time with Julio, so the biological mother is of little help. The other relatives say that grandmother “hogs Julio” and does not let anyone care for him. The clinician theorizes that the boy is very bored, he does not go anywhere outside, even to the yard, to a park or to school. When the clinician suggests to at least take him outside from time to time, his grandmother says this would be impossible. The clinician insists on encouraging Julio to go outside and attempts it, holding his hand to go outside. As the child goes outside, he sits under the sunshine and starts to hear the noises around him, like the birds, looking up. He smiles. It took many visits to convince the grandmother to take him on walks, with the other relatives and to go to the park, in car rides, etc. it is obvious that grandmother is very used to the boy just being on the bed all day long, although there is no medical reason for this. The other family members relinquished giving their opinions as the grandmother “knows everything that is going on with Julio” and he cannot possibly go outside because, among other reasons because he might be a few minutes late for his next medicine dose. With some persuasion from the other relatives, the grandmother acquiesces and Julio starts to go outside, to the park and on walks. The self-hitting and hitting others is almost extinguished. The grandmother seems to feel that if her grandson is better, she would not have anything to do. Unconsciously she resisted maneuvers to help the boy be with other people and do more activities without her. Julio clearly enjoys changing scenery and doing other things.

In this scenario, we find three main issues: (1) the child's boredom with a very restricted and confining routine in a dark room all day and night. (2) The family members unconscious collusion with this regime, which allows them to do other things while grandmother volunteers to "do everything for Julio." (3) The main obstacle is grandmother's desire to devote all her waking hours to Julio, as she does not want any other occupation or distraction. This was the hardest issue to address. Her *raison d'être* was to be a caregiver, and with the best of intention found herself restricting him, and not having to find other concerns in her own life.

Non-adherence to Required Treatments or Procedures

A child who requires many daily procedures to remain alive may have been subjected for years to those maneuvers, which may be lifesaving or sustaining, but they may become very aversive and annoying to the child. For example, a device – a sort of corset – put around the chest which vibrates intensely to make respiratory secretions come up to the upper airway. Repeated chest percussions are performed by parents for the same purpose in children with mucoviscidosis. Repeated tests for blood sugar or repeated injections of insulin several times a day, suctioning of a tracheostomy, physical therapy for a child with contractures (often practiced by parents or professionals, which may be painful) as well as speech or language therapy, school routines, etc. In many situations, it is unfortunate that it is the child's parents who have to perform all these procedures because professionals would not be covered by insurance payments, etc. The young child may not understand why his parents treat him or her in this way, and what is the purpose of all those maneuvers, which feel invasive, uncomfortable, or painful. Also, even an older child even when understanding this is for their own good, may become tired or embarrassed to have to undergo these time-consuming and cumbersome procedures, which make the child feel "not normal" or "not like everyone else," particularly after puberty. The child may wish to be like his or

her peers and try to ignore or skip the procedures at least some of the time, i.e. act as if he/she did not need them. This worries parents intensely and may lead to confrontations, begging, resentment for all concerned, and physicians may insist on the need for the procedures. It is necessary in these situations to listen to the child, if he or she can communicate, and help the youngster voice their frustration, anger, resentment, and a mixture of feelings about themselves, their body, their parents, the medical condition, the physicians, or treaters, etc. if there is intense anger and resentment in the child, he or she may use this non-participation or opposition to the maneuvers as a way to counter-attack the parents or other caregivers. This may be the "only weapon" the child has to express his or her anger. This form of non-cooperation has been called the power of the powerless. The boy or girl may express anger in many ways, also "being mean" to siblings and to other family members as proxies, to discharge unspoken frustration, anger, and emotional pain.

Any person may become tired of repeated experiences, particularly if they are aversive. Even when a child "knows" certain procedures or maneuvers are necessary, some children protest, oppose, or do not wish to continue participating in such measures or procedures. This may reflect a variety of reasons and motives, from being angry at the different lifestyles the child has to lead, to frustration with a "fate" that the child did not ask for, fantasies about dying and "resting." In a moment of frustration, the child may say "I don't want this life" or "to live like this." These statements are alarming for parents but understandable when their son or daughter voices them, expressing utter frustration and the "unfairness of life". Since many of these procedures are essential, such as feeding a child who requires to be fed by a central line, or a device to support the ventricular pumping of blood, non cooperation may not be a viable option.

A child may become stable for a period of time and not require further hospitalizations or complications may not occur. As this happens, he or she may develop the impression of being much better, only to relapse later on. There may be many feelings of disappointment, frustration,

anger, and “private theories” about whose fault this is or why it occurred.

Carlos is 13 years old now. He was born with tetralogy of Fallot and other cardiovascular malformations. He has had several heart operations and has always required periodic hospitalizations some of several weeks at a time to stabilize his condition. He also requires careful monitoring of his diet, as he has a kidney disease that could lead to failure. After a near fatal episode of pulmonary complications he required a tracheostomy, which he hated and he blamed his mother for allowing the doctors to install it. Once better, Carlos is brought because he refuses to do physical therapy, any exercise, he verbally insults the nurses who come to do treatments as well as his mother and his twin sister. He orders her around like a humble servant, and the sister is very worried about her brother, that he might die if he does not participate in his treatments, which would occur if this went on for days at a time. The sister obeys the brother who asks “bring me a drink”, take these plates away,” etc. and she does all this dutifully but with internal resentment.

Carlos was seen at his home by a mental health professional. At first, he yelled at the clinician, and ordered that he “left his room.” He was playing videogames and did not want to be disturbed. He would order his sister to “bring another pancake” or just snap his fingers saying “water”, at which the sister would bring what he wanted. The mother oscillated between being patient and losing her temper and scolding the boy for being so difficult. After two or three sessions, Carlos started to voice his anger and frustration with his life. He said he “did not want this life” and appeared sad and angry. He wanted to be like his sister, who was healthy, and thought it was not fair that she could play basketball and had friends at school. He also was angry at himself for being sick, and detested his body, he had become somewhat overweight and was bloated and oedematous at times. Over a period of time of validating his feelings, we offered alternatives to discharge his very understandable anger, hitting a punching bag, tearing paper from magazines, making “angry drawings”, writing bad words, etc. He started to see the few good things in his life. His mother was very patient with him and his sister loved him. He started to accept the realities of his life, which were not his or anyone else’s fault and started to cooperate again without aggression, even though still angry. Just externalizing and being allowed to “be mad” had helped him feel less resentful and frustrated toward himself and his family.

The notion of offering alternatives to the “physical discharge” of anger seems to be effec-

tive particularly when children struggle to verbalize their feelings and their frustrations. It is a first step to release those feelings, which perhaps later can be named, i.e. expressed verbally and processed. Pharmacotherapy in severe cases can be useful, as with alpha adrenergic medications if they can be used given the child’s medical status, an alternative can be a small doses of neuroleptic medication to diminish the severity of the rage at first and hoping to discontinue the medicines once the anger is externalized symbolically or verbally. Then the child can see the “other side of the coin” that the caregivers are also caught in an impossible situation. Everyone would wish the child were healthy, but this is not so, and it is an act of love to engage in ministering all those maneuvers and care which the child detests, and despite this the caregivers offer it. The child may start engaging in the few things in his life which may offer solace or pleasure.

Connecting with Others Through Transgressions

A child with important or multiple physical difficulties, unable to understand or to speak what he or she might feel or think, may be very challenged to have an impact in the world around him or her. Also, at times, caregivers like nurses or other carers, might prefer to work with a child who is very passive, docile, and does not give any problems, or does not move around very much. Of course, families may have several more children, who also need care. The parents may allow the child with physical impairments or who is non-verbal, to watch endless hours of television, screens, a video tablet, etc. The child may become indeed very distraught or agitated of these devices run out of energy or battery, and in some families, there are two or three “tablets” in order to always have one on hand, lest the child become angry. The child may not know how to interact playfully with others, as most of the interactions are with electronic devices or with caregivers that come to change the child’s clothes, diapers, clean him or her, administer medications, etc. The patient is not going to verbalize the need to interact in other

ways. Sometimes he or she discovers that if one throws the tablet, break the smart telephone, hit one's siblings, scratch, or hit, the caregivers are sure to pay attention and intervene, even if to admonish or to say "no." In families in which parents are overwhelmed, with multitasking in addition to caring for a "sick child" the patient learns to sometimes resort to undesirable behaviors by being disruptive and aggressive, to seek parental attention. This amounts to negative reinforcement, in which the child elicits the desired interactions after doing something forbidden. Aside aggressive behaviors, there may be episodes of yelling and self harm such as hitting one's head, biting one's hands, getting in front of the television, throwing food, and waking everyone up in the middle of the night. In a sense, the parent may have to "give attention" to the child but only when these negative things happen.

In these situations, the intervention may consist of engaging the child spontaneously, in playful interactions, conversation, with touch or other preferred activities. This may alleviate the need for human contact and engagement, which are natural in all human beings. Other adults in the house as well as a sibling devoting time to engage in playful interaction, helps the child's behavior. This may be all that is required two or three times a day for the child to feel noticed, observed, and as agent who has an impact in the world around him or her.

The mother of a child with a rare genetic disorder, John, 14 years old, brought him for consultation with the mental health clinician. John had quadriplegia, his movements were very rigid, but he could move all his limbs, and he could not speak nor seemed to understand words. The mother was struggling because whenever one would approach John he would "grab one's hands" intensely, not let them go, and bury his nails on the other person's skin as hard as he could, without releasing them. He smiled when the person showed pain, as if he were triumphant. The family was of very precarious economical status, and the mother had other children to look after, ten and eight years old. Nobody would come close to John, because of the scratching and pinching, which was very strong and painful. During a session in the office, John performed this on the clinician's hands. John seemed to have found this "one way" to interact with others, when anyone came close, making dif-

ficult all the maneuvers involved in his care. We discussed with his mother the child's daily routine which was staying at home all day long, watching television, yelling and fighting when any one came close. There was a vicious cycle: when one would approach him he would become physically aggressive, as in the scratching and pinching. This would make anybody try to avoid him as much as possible, only to approach when absolutely necessary and be received with the nails and pinching. We suggested to try a small dose of a neuroleptic medication to reduce his aggressiveness, and most of all to engage with him by singing, showing him toys, talking to him and interacting more than heretofore. The child started to calm down and when the neuroleptic was discontinued, he was engaging in more positive interactions with his caregivers, who in turn played with him with a ball, kicking it, throwing it, etc. and the child seemed much less unhappy and angry.

The family members, including the father, discovered that they would spend almost the same amount of time fighting with John and containing him, which he seemed to enjoy, as playing with him in the "front end" and diminishing, thus, the angry tirades.

Attachment to Illnesses, Procedures and Devices

Children, who have intense or complicated medical conditions, are at times very hard to care for. A parent (or parents) who is vulnerable in the first place, who has had difficulties growing up, who has intellectual or organizational limitations may be unable to care for the child in those circumstances. There may frequent missed appointments, missing required medications, not filling out prescriptions, or fail to prevent certain complications. In those circumstances, medical personnel may be obligated to request the intervention of child-protective services, who may decide that a parent is unable to provide the child with the needed care. In the USA, this often means that the child may be trusted to a relative, or if one is not available to the foster care system. There are foster parents who "specialize" in looking after children with complex medical needs or handicaps. At times, we encounter a foster home in which there are four or five children with major

medical conditions, all of whom have specialized interventions, nursing staff who come to the house to look after each child, etc. If the child is difficult or has too many complications, the foster parent may request to have the child transferred to another home. These different episodes of foster care, each with a different family, can happen several times. A child may not have “objects” (in the psychodynamic sense, i.e., people in whom to invest emotionally) in his or her life. There may be frequent losses of caregivers and transfer to new ones. The child may be left with only the “equipment” he or she has carried from home to home, as a sort of “attachment representations.” Here we are talking of physical devices, which follow the child wherever he goes. The patient may not have any further contact with the biological parents and be “in the foster care system” for all the rest of his or her childhood. This at times means to go from one foster home to another periodically.

A four year old girl, Rosie, was seen by us because her foster mother thought she was too disruptive, too hyperactive (constantly making noises and moving on her carriage) and too needy. Rosie cried a lot when there were changes in the home, or when she was approached.

Such approaches could be for a medical procedure or just to interact, but the girl seemed scared of all people. Perhaps she associated the proximity of others with a medical procedure, a shot, a maneuver, etc. Rosie was brought to the psychiatrist's office and looked perplexed. She did not make eye contact and seemed rather scared or emotionally paralyzed. She did not talk, but made noises to communicate displeasure. She had a tracheostomy due to problems in the airways as she had been born quite premature. She required gastric feedings, and a number of other therapies. Her foster mother had five additional children and thought that Rosie was too demanding and needy, too hyperactive and difficult to care for as she was uncooperative. The clinician observed Rosie and she seemed to be quite afraid. She was sitting on a carriage that had gone with her from foster home to foster home. When the clinician approached, she started banging her head on the back of the carriage, which she did often when distressed. When we attempted to release her from the carriage to play on the floor she was frantic, almost panicked, and insisted to be on the carriage. She also clung to a stuffed animal that had gone with her to the various homes. The foster mother said that Rosie always wanted to be on that chair even to go to

sleep and that it made her “feel secure.” Indeed that seemed to be the case. Rosie had been in three previous foster homes after being taken away from the care of her mother at age one. She seemed to be overwhelmed and unfocused, aimlessly moving on the chair and banging her body on it. As we overcame her resistance and showed her various toys, she started to relax. She became interested in hand puppets that were shown to her and “talked to her”. Rosie started to smile and to touch them. Her foster mother was surprised. The foster mother wanted the child to be quiet and did not want to carry her in her arms. Rosie did not have much physical contact with anybody, not of a cuddling nature, nor hugs or caresses. Her main contact with others was to have procedures performed on her, like feeding through a gastric tube or aspirations of the tracheostomy area. It appeared that the foster mother just looked after her as a “patient” rather than like a little daughter. In subsequent session, with Rosie and her foster mother, we noticed that Rosie wanted to interact with the puppets and started to imitate their actions and to play with them. We advised her foster mother to play with Rosie in a similar way at home. Rosie seemed to have lost all her attachment figures over and over and only was attached to the tracheostomy (which she did not want anyone to touch) and to the carriage and her stuffed animal, these made her feel secure. The foster mother said that, frankly, playing with Rosie was “too much work” and too much to ask of her. She openly said that she was not used to children expecting interactions like that, because all her other children were very quiet and did not talk or demand that much, they were all severely handicapped and had their respective nurses. Gradually, we “spoke for the child” in terms of the possible experiences Rosie might have had and how she might have felt losing her mother and other caregivers in succession. The foster mother was moved and, over time, started to interact more with Rosie, who relished the attention and touch of the adult. Slowly Rosie was able to be calmer, to play with toys and to be less adverse to pleasurable interactions with other adults. This took several weeks of listening to the numerous complaints of the foster mother, who had asked for a medication to “calm her down”.

The above vignette is perhaps a more intense version of a phenomenon that we encounter frequently in children who have been dependent on devices and equipment for a long period of time. At times, the children seem to become very attached to them and may not want to lose them. The thought of not having an oxygen machine, a tracheostomy, or a gastric tube may be scary to the child, who may have to develop new coping

behaviors. Even abandoning a wheelchair when the child has improved, may seem like a very scary proposition as it is almost like a part of the body of the child. A five-year-old girl who has a trachostomy has told us repeatedly that she did not want it taken out, as she had “been born with it.” Other children dread the notion of not having the gastric tube, and to have to eat by mouth, even when they are quite capable of doing so. Giving up “objects” (i.e. transitional objects) that have been a part of their life, which have made the child feel secure, may be very difficult and may require considerable psychological intervention to adjust to the notion of not having them and take the necessary steps to not use them anymore. The only way to part with them is to substitute them with something else, e.g. the presence of actual people, human interactions and the feeling of freedom to move around or play in a pleasurable way.

Sexuality and the Adolescent with Complex Pediatric Problems

Just like any other child, there is a time when he or she reaches puberty and this brings about a “bath of hormones” that will produce changes in the body and the mind and emotional states of the child. Puberty may bring changes in the emotionality of the youngster and a number of needed adjustments to the “new body.” In the case of the girl, she and her caregivers may have to deal with the issues around the menstrual period and the premenstrual stage. In both genders, there is the increase in sexual desire and an interest in sexual experiences. The question of masturbation and sexual exchanges with other adolescents comes to the fore. At times, there are additional issues with sexual orientation and gender identity.

One of the frequent scenarios is how to deal with the child’s desire to masturbate. Most adults realize that this is an expected wish on the part of the young person, but there may be problems with how and where this is accomplished, as well as the frequency of the action.

We dealt with a 17-year child who had quadriplegia and spent much of his time lying down,

and was non-verbal but responded minimally to the environment. It became a challenge to find female nurses who would be willing to take care of him because of his tendency to masturbate, to the point of ejaculation, several times a day. It seemed clear that a young person in his situation had little opportunity to experience any sort of amusement or pleasure, given the severity of the handicaps involved. He had to be in bed almost all the time and only could move his hands a little. The child may discover that he or she finds comfort or pleasure in this activity and the question becomes one of the place, time and how to deal with it. In the case mentioned above, a male nurse was found and he understood that this was a natural desire of the patient and “allowed this to happen.” The nurse mentioned that given the nature of the child’s everyday life, it was quite understandable that he sought a minimum of pleasure in his rather monotonous life.

Each child and family have to be approached individually, and a thorough assessment of the possible difficulties in the child and family needs to be made, exploring their needs and their amenability to interventions. These situations also have to be seen within a specific social and cultural context.

There are some systemic problems in accessing care for the children themselves, and also for their caregivers.

Admission Criteria in Mental Health Clinics

The child who has emotional and behavioral difficulties and also intellectual deficit or a handicapping condition may fall in a “no man’s land.” The developmental disabilities field often is prepared to help children who experience intellectual deficits and physical handicaps, but not emotional difficulties such as anxiety and depression, or aggressive behavior. Then these children are referred to mental health services.

The psychiatric, psychological, or counseling services openly and as a part of their policies, at times exclude children with intellectual handicaps and also with severe disabilities. Therefore,

the needs of the child may be unmet in large part due to this systemic failure. The mental health field would refer the patient to the “developmental disability” system to deal with those difficulties. If this occurs with the child, it is even more frequently the case that the family’s emotional needs are not addressed either (Jackson et al., 2020).

Psychotherapy

Individual and parent–child interventions should be applied in a flexible manner, taking advantage of the skills that the child has, be it verbal, motor, artistic abilities, musical inclination, etc. as a way to promote self-expression, to process feelings and to resolve difficult issues such as the feelings of isolation, of “being different” from others or perpetually sick. One of the possibilities is art therapy, promoting drawings, paintings, plasticine play, or any other form of artistic activity – if this is possible – for children to express their feelings and desires or fantasies (Wyder, 2019).

For adolescents who have the capacity to communicate be it through written word, read, and converse, in the new world of social connectivity through the world wide web, a feeling of connectedness with other youngsters who have similar experiences can be very useful. This can be a source of mutual social support, and feeling like a part of a community where one feels understood (Kim & Qian, 2021). This can be accomplished through group therapy sessions for children who have chronic medical conditions.

References

- Anderson, T., & Davis, C. (2011). Evidence-based practice with families of chronically ill children: A critical literature review. *Journal of Evidence-Based Social Work*, 8(4), 416–425.
- Archived Data Documents—NSCH and NS-CSHCN Prior to 2016. (n.d.). Retrieved January 17, 2022, from <https://www.childhealthdata.org/learn-about-the-nsch/archive-prior-year-data-documents-and-resources>
- Blakely, T., Atkinson, J., Kiro, C., Blaiklock, A., & D’Souza, A. (2003). Child mortality, socioeconomic position, and one-parent families: Independent associations and variation by age and cause of death. *International Journal of Epidemiology*, 32(3), 410–418.
- Borge, A. I., Wehring, K. W., Lie, K. K., & Nordhagen, R. (2004). Chronic illness and aggressive behaviour: A population-based study of 4-year-olds. *European Journal of Developmental Psychology*, 1(1), 19–29.
- Chadda, R. K., & Deb, K. S. (2013). Indian family systems, collectivistic society and psychotherapy. *Indian Journal of Psychiatry*, 55(Suppl 2), S299–S309.
- Chen, A. Y., Schragger, S. M., & Mangione-Smith, R. (2012). Quality measures for primary care of complex pediatric patients. *Pediatrics*, 129(3), 433–445.
- Cloutier, P. F., Manion, I. G., Walker, J. G., & Johnson, S. M. (2002). Emotionally focused interventions for couples with chronically ill children: A 2-year follow-up. *Journal of Marital and Family Therapy*, 28(4), 391–398.
- Cohen, E., Berry, J. G., Sanders, L., Schor, E. L., & Wise, P. H. (2018). Status complexus? The emergence of pediatric complex care. *Pediatrics*, 141(Supplement_3), S202–S211.
- Cohn, L. N., Pechlivanoglou, P., Lee, Y., Mahant, S., Orkin, J., Marson, A., & Cohen, E. (2020). Health outcomes of parents of children with chronic illness: A systematic review and meta-analysis. *The Journal of Pediatrics*, 218, 166–177.
- Curtis, C. E., & Luby, J. L. (2008). Depression and social functioning in preschool children with chronic medical conditions. *The Journal of Pediatrics*, 153(3), 408–413.
- Feudtner, C., Hays, R. M., Haynes, G., Geyer, J. R., Neff, J. M., & Koepsell, T. D. (2001). Deaths attributed to pediatric complex chronic conditions: National trends and implications for supportive care services. *Pediatrics*, 107(6), e99–e99.
- Fisher, H. R. (2001). The needs of parents with chronically sick children: A literature review. *Journal of Advanced Nursing*, 36(4), 600–607.
- Fisman, S., Wolf, L., Ellison, D., & Freeman, T. (2000). A longitudinal study of siblings of children with chronic disabilities. *The Canadian Journal of Psychiatry*, 45(4), 369–375.
- Gagne, T. (2010). *Ways to help chronically ill children*. Mitchell Lane Publishers, Inc.
- Gartstein, M. A., Noll, R. B., & Vannatta, K. (2000). Childhood aggression and chronic illness: Possible protective mechanisms. *Journal of Applied Developmental Psychology*, 21(3), 315–333.
- Jackson, L., Keville, S., & Ludlow, A. K. (2020). Mothers’ experiences of accessing mental health care for their child with an autism spectrum disorder. *Journal of Child and Family Studies*, 29(2), 534–545.
- Kim, K. M., & Qian, X. (2021). ‘I feel valued’: The experience of social networking site engagement among people with intellectual and developmental disabilities in South Korea. *International Journal of Developmental Disabilities*, 67(6), 410–419.
- Kuo, D. Z., Cohen, E., Agrawal, R., Berry, J. G., & Casey, P. H. (2011). A National Profile of caregiver challenges of more-complex children with special Health care

- needs. *Archives of Pediatrics & Adolescent Medicine*, 165(11), 1020–1026.
- Malhotra, S., & Singh, G. (2002). Psychological consequences of chronic physical illnesses in children and adolescents. *The Indian Journal of Pediatrics*, 69(2), 145–148.
- Mattson, G., Kuo, D. Z., Committee on Psychosocial Aspects of Child and Family Health, Council on Children with Disabilities, Yogman, M., Baum, R., Gambon, T. B., Lavin, A., Esparza, R. M., Nasir, A. A., Wissow, L. S., Apkon, S., Brei, T. J., Davidson, L. F., Davis, B. E., Ellerbeck, K. A., Hyman, S. L., Leppert, M. O., Noritz, G. H., et al. (2019). Psychosocial factors in children and youth with special health care needs and their families. *Pediatrics*, 143(1), 1–14.
- McClellan, K., & Guerin, S. (2019). A qualitative analysis of psychologists' views of bereavement among children with intellectual disability in Ireland. *British Journal of Learning Disabilities*, 47(4), 247–254.
- Pao, M., & Bosk, A. (2011). Anxiety in medically ill children/adolescents. *Depression and Anxiety*, 28(1), 40–49.
- Pineros, M., Gamboa, O., & Suarez, A. (2011). Child mortality from cancer in Colombia, 1985–2008. *Revista Panamericana de Salud Pública*, 30(1), 15–21.
- Sharpe, D., & Rossiter, L. (2002). Siblings of children with a chronic illness: A meta-analysis. *Journal of Pediatric Psychology*, 27(8), 699–710.
- Simon, T. D., Berry, J., Feudtner, C., Stone, B. L., Sheng, X., Bratton, S. L., Dean, J. M., & Srivastava, R. (2010). Children with complex chronic conditions in inpatient hospital settings in the United States. *Pediatrics*, 126(4), 647–655.
- Singh, G. K. (2010). *Child mortality in the United States, 1935–2007: Large racial and socioeconomic disparities have persisted over time*. US Department of Health and Human Services, Health Resources and Services Administration.
- van der Veen, W. J. (2003). The small epidemiologic transition: Further decrease in infant mortality due to medical intervention during pregnancy and childbirth, yet no decrease in childhood disabilities. *Nederlands Tijdschrift voor Geneeskunde*, 147(9), 378–381.
- van Oers, H. A., Haverman, L., Limperg, P. F., van Dijk-Lokkart, E. M., Maurice-Stam, H., & Grootenhuis, M. A. (2014). Anxiety and depression in mothers and fathers of a chronically ill child. *Maternal and Child Health Journal*, 18(8), 1993–2002.
- Wyder, S. (2019). The house as symbolic representation of the self: drawings and paintings from an art therapy fieldwork study of a closed inpatient adolescents' focus group. *Neuropsychiatrie de l'enfance et de l'adolescence*, 67(5–6), 286–295.
- Young, N. A. (2022). Childhood disability in the United States: 2019. *ACSBR*. 12(6), 1–14.

Jennifer Benjamin MD, MS Assistant Professor in Pediatric Complex care and is an Inaugural Faculty within the Department of Education Innovation and Technology. Co-director for Faculty College in Texas Children's and Director for Technology for the Center for Research Innovation and Scholarship (CRIS). She trained in Medical School in India and in Pediatrics in London, UK and completed Residency training at the Case Western Reserve University, being awarded the Resident Teaching Award. She completed Academic General Pediatric Fellowship at Nationwide Children's Hospital, Columbus Ohio. She completed a Masters in Medical Science Degree from Ohio State University. She serves as the Co-chair of E-learning and Medical Student Education Special interest groups (SIGs) within the Academic Pediatric Association (APA) and serves on the Show & TEL Committee at the Academy of Medical Educators of Europe and in the Education Committee of the Global Tracheostomy Collaborative. Her interests include the use of technology in learning and education, improving the care of children with medical complexity through patient-centered care and use of simulation in teaching procedural skills. She was awarded the Norton Rose Fulbright Faculty Excellence Award in Teaching and Evaluation.

Heather Moore MD. MD from the medical school at the University of Colorado School of Medicine (CU SOM). Residency at Children's Hospital Colorado/CU School of Medicine. Fellowship in Academic General Pediatrics at the University of Texas McGovern Medical School. Pediatrician at Baylor College of Medicine and Texas Children's Hospital since 2016 as the Complex Care Clinic Chief. Director for Texas Children's Hospital Ambulatory Complex Care Program. She has received numerous awards with respect to medical education and patient care. In 2021, she was awarded the BCM Star Award in recognition of her outstanding patient care program delivery.

Sutapa Khatua MD. Assistant Professor of Pediatrics. Complex care clinic in the Department of Academic General Pediatrics at Texas Children's Hospital, faculty at Baylor College of Medicine. Previously faculty at the University of Texas McGovern School of Medicine, Quality Improvement projects. She received Dean's Excellence in Teaching Award and Excellence in Preceptorship Award from Texas Pediatric Society.



Mind–Body Issues in the Treatment of Children with Complex Care Needs: Issues for the Family and the Health Care System. Intervention Strategies

Jennifer Benjamin, Heather Moore,
and Sutapa Khatua

Care giving for children with medical complexity requires great attention and time. Family members, parents, siblings, and extended family members as well as other caregivers face exceptionally high demands. In countries or communities where there is a relatively weak social welfare network, or in which parents do not have sick leave or any other compensations, there will be a high prevalence of unemployment and underemployment (Kuo et al., 2011) with long-term care becoming burdensome and stressful (Caicedo, 2014; McCann et al., 2012). Alternatively, the sheer economic need to work by parents may create an undue stress and pressures on parents to provide care for a child with complex medical problems and to continue employment at all cost.

The concept “burden of care” has been used in the scientific literature to refer to the multiple efforts, demands on time and energy, stress and sheer physical care that the child (or children) will require and the way in which the family can cope with all these demands. Similarly, the concept of “family resilience” has been introduced (Hawley & DeHaan, 1996; Walsh, 1996) to supplement the concept of individual resilience. A fair amount is known about the resilient features

of individuals, but less so about the resilience of families. This notion implies that some families will be able to face adequately the tensions, demands, and stressors associated with having a difficult situation, acutely or chronically. This also applies to having a family member, a child with a severe or long-lasting illness and complex medical needs. Some families will “succumb” to the pressures while others will face them better. Sometimes, the family derives inspiration and courage from the child him or herself. The mother of an 18-year-old boy who was born extremely premature, who does not speak and hardly can move, requiring almost total care at home is an example. She was asked how she managed to have the energy to care for her son for all these years. After thinking for a while, she said with tears in her eyes: “I see my son fighting, struggling to stay alive. He is the one who deals with all the procedures, and he smiles sometimes. If he has such determination to go on, who am I to not follow his example?”

Indeed, the family system may break down, give way to pressure, so to speak, and marital separation or divorce may occur, creating additional challenges for all involved. Also, the family may live in “chronic dysfunction” with intense interpersonal conflict, resentment, depression, and post traumatic symptoms in the members as well as constant uncertainty.

J. Benjamin (✉) · H. Moore · S. Khatua
Baylor College of Medicine, Houston, USA
e-mail: jennifer.benjamin@bcm.edu

Different countries and cultures face the phenomena of chronically sick children and stress in families differently. There are cultures, often in traditional societies in the Middle East, Asia, Central, South America, and Africa, in which the extended family is very involved and they may be expected to step in, to help in the financial, time, and caring demands *vis a vis* their nephew or niece, grandchild or whatever the link may be. This may alleviate very much the burdens for the “nuclear” family. Additionally, in some countries, notably many European ones, there is a strong social welfare system which provides for medical care indefinitely and supports what the child may need as well as protecting the parents’ employment. There are other countries in which families “are on their own” and they will face greater stressors in all areas, financial, childcare, employment, dealing with the medical system, etc. In countries like the United States, there is some degree of assistance for the individual child if he or she is determined “disabled” and the child may have the opportunity to obtain medical care. However, there are few social protections for the parents regarding employment in the long term, and finances, given the fact that at least one parent has to provide care for their child and may be unable to work outside the home. The question in these situations is: Whose duty is it to care for the more vulnerable citizens and sick children? Is it the individual’s family responsibility or also of society as a whole?

The multiple demands of caring for a child with medical complexity is all-encompassing. Caring for these children imposes significant alteration to the family dynamic on a daily basis. The child may require someone’s support for every activity of daily living. Also, someone has to take the child to the multiple visits for various therapies required, clinic appointments for specialists, and unplanned hospitalizations.

The unpredictability of episodic periods of deterioration, or relapses, in the child’s medical status and the need to deal with occasional emergencies and complications following procedures, all of this puts to the test the family’s ability to adapt to such contingencies, which require modi-

fications on a large scale (Grandjean et al., 2021; Raina et al., 2005; Zimmermann et al., 2016).

The multiple roles undertaken by the various family members create time pressures on all. Parents face reduced time for other activities such as work, leisure or relaxation, and personal care, as well as with their other children (Mandic et al., 2017). Besides the most common problem, i.e., motor impairment, there is also a great number of children with sensory, communicative, and intellectual impairments in addition to being completely reliant on their caregivers for their basic needs. These limitations impose longstanding (years) of caregiving demands that far exceed the needs of healthy children of the same age. In some respects, the child may require care similar to that of an infant for many years, although the body of the child may keep growing and achieve adult size, but the functioning is similar to that of an infant, without much change in communication and intellect.

In countries like the United States, and many other industrialized ones, parents are often required to perform tasks that are similar to those formerly provided only by health care professionals: medication administration, managing a critical airway with tracheostomy, suctioning the airway, providing oxygen therapy, feeding through gastrostomy tubes, catheterization of some children for urination several times a day, administering injections, and parenteral nutrition, while keeping sterile the central line (Caicedo, 2014) and many others.

Caring for a child on a ventilator is perceived as more stressful than dealing with other disabilities (Falkson et al., 2017; Wang & Barnard, 2004). Parents have to receive special training to deal with all the variables involved in administering oxygen, maintaining a ventilator, regulating the settings, etc. All of these duties are complex and create tension in parents, having to make decisions that could be dangerous (Feudtner et al., 2021). In many families, this still rests mostly on mothers, as fathers tend to go out to work. Caregivers must prevent complications and crises associated with medical complexities in their children, in addition to restructuring their lives and ensuring the well-being of the rest of

the family (Thyen et al., 1999). Many families describe caring for these children like an emotional roller coaster (Alzawad et al., 2020). These ups and downs may negatively impact emotional well-being, which at times may be worsened by the progressive nature of the illness itself and the child's ability to cope with it.

In the United States, it is estimated that the families of children with chronic health conditions spend an average of 5.1 h of family-provided health care per week with a total of 1.5 billion hours of care every year nationally. However, around 12% of children and youth with complex care needs needed more than 21 h per week of family-based health care.

Caregivers may experience a sense of helplessness (Alzawad et al., 2020) and depression related to their child's prolonged hospital stays in intensive care units or with the deterioration of the child's health (Grandjean et al., 2021; Hagstrom, 2017; Zimmermann et al., 2016). Due to the fact that many of the children have required and may episodically need intensive care unit (ICU) treatment, ICU intensive care unit care when admitted to hospitals, families face stressors from various aspects of care in these environments such as procedures the child has to undergo. Another issue is the physical appearance of their loved one being very sick and pieces of equipment attached to their son or daughter (Colville et al., 2009). In most intensive care units, there will be multiple personnel involved in the care, so families face fragmentation of individualized care, for example, a new physician who takes over and knows little about their child, or a new nurse. There may be occasions of breakdown of communication from teams with families. Parents may feel they need to be extremely involved in care of their hospitalized child as they often are the ones that have continuous information about what has been tried, and how their child responded (Geoghegan et al., 2016). The chances of tension or even conflict between parents and critical care team members are higher in children's families whose child stays in intensive care unit for a prolonged time. These families are by then quite knowledgeable about the medical issues in their child and may prefer to be actively

involved in caring for their son or daughter at their bedside. They also intend to participate in decision-making and asking questions from care teams. Any transition, for example, the child being moved to a new ward prior to discharge, transferred to a higher level of care unit is also associated with anxiety, as the child will be looked after by a "new team" (Colville et al., 2009). In the US, families caring for children with chronic severe medical conditions have reported significant conflict between their work and caring for their child: some may not have any leave to stay away from work, and some may not be aware of having that opportunity (Chung et al., 2007). Some parents can choose not to work, but then they would not be paid and the economic pressures do not go away.

In order to manage caring for their child's needs, mothers in particular forgo employment opportunities in order to care for their children (Anderson & Eifert, 1989) and have much lower employment rates (Baldwin, 2015; Hirst, 1985) compared to mothers of healthy children (Thyen et al., 1999). Single mothers are impacted more than those that are married. Mothers are required to care for their children almost continuously, sometimes even if their child is asleep. These implications are more severe in children with chronic medical needs and in those with technology dependence and with lower socio-economic status (Walker et al., 1989). More mothers than fathers are required to quit their jobs to care for a child with technology dependency (Thyen et al., 1999). This significantly affects the family's income and financial stability. If unemployed, most mothers identify lack of childcare resources as the reason for unemployment. In a study, 82% of women attributed their inability to work outside the home to limitations arising from disabilities in their child. Those who work outside the home, or are employed report disruption in their work due to commitments with caring for their child. Often they take up different jobs or work only some hours to accommodate their child's needs. At times, they may be unable to keep a specific job and seek another due to fear of losing medical insurance coverage for their child.

All of this makes it clear that mothers of children with medical complexity are a particularly vulnerable group. It is not the just medical condition of their child per se that is difficult, but also the implications of that on their child's day to day functioning that significantly affects mothers, causing significant psychological distress. (Breslau et al., 1982).

A child's prolonged stay in hospital and psychological stress from caring for a child with medical complexity often leads to parents' experiencing symptoms of depression and anxiety and further deterioration of physical health. (Beardslee et al., 1983). Although increasingly fathers participate in the role of caregivers of a child with medical complexity, mothers still carry most of the burden of attending outpatient appointments for their child (King et al., 1996). Mothers caring for children with technology dependence have significantly lower rates of employment, higher out-of-pocket expenses, and lower mental health scores. (Thyen et al., 1999).

Families in the US and other countries, whose children are technology dependent, have significantly higher out-of-pocket medical expenses (Walker et al., 1989). In the United States, it is estimated that \$35.7 billion dollars were spent in 2015 on professional home health aide for children with cerebral palsy. These children require home health services in average of 14.4 h a week (Mullaney, 2017). The families caring for these children lose more than \$17 billion in income each year, with individual families spending an estimated \$3 200 USD in earnings each year. CYSHCN (Children and youth with special health care needs) have three times more health care expenditures compared to healthy children. Even when one has insurance, there are "co-pays" (the portion not covered by health insurance that the parent must pay) with out-of-pocket expenses and incomplete coverages, this might impact a significant proportion of their total income (Newacheck & Kim, 2005). In the United States, Medicaid is a federal/state health insurance system for children living in poverty or those who have been determined to have a disability. Utilizing State Medicaid agencies allows professionals involved in complex medical care to be put in a different payment model for care utilization, with more emphasis on

specialty care, inpatient admission, and using mental health services (Berry et al., 2014; Health Services and Health Care Needs Fulfilled by Structured Clinical Programs for Children with Medical Complexity – ScienceDirect).

Another aspect of concern, is that given all these stressors, neurologically delayed children are at higher risk of experiencing maltreatment and to be exposed to domestic violence. It has been estimated that children with neurological damage and complex medical care experience a prevalence of 37% of those adverse experiences, compared to 18% in healthy children. The more adverse events the child experiences, they have a multiplied negative effect. They may lead to the child exhibiting psychopathology, poorer school performance, and violent behaviors (The National Survey of Children with Special Health Care Needs Chartbook 2009–2010).

Emotional Needs, Struggles, and Stressors in Caregivers

Not all, but a significant proportion of parents caring for these children report feeling frustrated, angry, helpless, or hopeless. They may have no energy for social activities and have trouble getting support from others or feel social isolation (Caicedo, 2014; Wang & Barnard, 2004). It is common that parents have higher social support at first, when the child is diagnosed, and perhaps during acute episodes; these supports tend to dwindle overtime (Quittner et al., 1990). The uncertainty related to the children's outcomes and their overall health status is emotionally very demanding for families. Due to the constant tension and stress, parents may have difficulties remembering facts, medications names, and doses in milligrams or milliliters, and they may struggle to think quickly, not fully understanding the implications of their decisions, and having trouble explaining to medical providers how they feel, worrying about their child all the time. (Caicedo, 2014).

In some studies, parents with younger children who have cancer have been found to have lower levels of vitality, poorer mental health, general health and lower levels of Health-Related

Quality of Life (Morhun et al., 2020). A number of parents report feeling “stuck” at their home to care for their child with neurological impairment, but also feeling guilty that they cannot adequately care for their other children (Carnevale et al., 2006). In a study of around 90,000 parents, 9.5% received a new mental health diagnosis after their child’s PICU (Pediatric intensive care unit) hospitalization, with mothers being more significantly affected than fathers (Logan et al., 2020).

These stressors often reflect also on physical health of caregivers. The parents and siblings of children with these conditions in a study were 50–70% more likely to utilize healthcare with diverse illnesses and diagnoses; and using medicine prescription for them, than families caring for healthy children (Feudtner et al., 2021). Again, mothers tended to experience higher levels of illnesses than fathers.

Most parents caring for children with medical complexity experience loss of sleep and a need for added vigilance during the night. In several studies, a majority of parents have reported feeling tired during the day, when they wake up in the morning and report being too tired to complete the tasks they intended to do (Caicedo, 2014). As the children get older and heavier to transfer, if he or she is paralyzed, parents may need to invest in changing the structure of their homes to accommodate lifts to help move their child (Carnevale et al., 2006). Long-term demands of caring for these children substantially reduce the health-promoting activities of mothers, such as exercise and recreation (Kuster et al., 2004).

Regarding financial implications, in the US, more than half of the parents of CMC stop working to care for their child, with families facing poverty overtime (Kuo et al., 2011).

Posttraumatic Stress Symptoms in Parents

A smaller proportion of parents or other caregivers of children with complex medical problems suffer from posttraumatic stress disorder (Balluffi et al., 2004; Norberg et al., 2005; Stuber & Shemesh, 2006). Many will not know this, but

experience chronic-free floating anxiety, constant worry, a need to control every aspect of care, or feel dejected, sad, depressed, exhausted, or pessimistic. Some of these parents will actually endure a sense of a doomed future, fear of a terrible complication, flashbacks from previous “near-misses” in which their child was not breathing, had a seizure, was intubated, transported by helicopter to another hospital, etc. In many cases, even years later, there are troubling memories of the initial stay in an intensive care unit for example. Other phenomena like avoidance of thinking or feeling about previous difficult episodes, frequent nightmares, a feeling of being listless inside or emotional numbness are other signs of the same. It is important to recognize these as such. The interventions for post-traumatic symptoms are different. Often just identifying the problem and naming it help parents to not feel so guilty about their feelings or difficulties. Those become “understandable.” Then, just being able to recount in detail the negative experiences which were so traumatic at the time, and feeling listened to and understood or contained, may have a therapeutic effect. In situations where the symptoms of posttraumatic disorder are severe, specific treatments may be implemented such as Eye Movement Desensitization and Reprocessing strategies, psychotherapy, biofeedback, or medication to diminish the hyperarousal and constant anxiety. This may consist of alpha-adrenergic medications or antidepressants. Elsewhere in this book, the importance of a multi-modal approach has been highlighted.

On the positive side, families often feel a strong sense of emotional relationship to their child with ventilator dependence, feeling energized, and emotionally enriched caring for their child with medical needs. (Carnevale et al., 2006; Cohen et al., 2013). In other words, some families are able to experience the depth of their pain and value the other “good things” in their life, including their affected child, who is alive and with the family. For siblings, helping care of their brother or sister can be excessive, but often it can help them to develop compassion, helpfulness, and a sense of the important things in life.

Family Resilience

Family resilience (Walsh, 1996) is a relatively new concept which takes a systemic (rather than an individual) view of the complex system which is a family. Often this refers to the nuclear family, but it can include the extended family in cultures in which this is the general view of what a family is. The concept implies that a system has features which allow the family to face changes, stressors, new demands and the child's medical condition mostly in a successful way. Family functioning traditionally has been evaluated in terms of their organization, emotional climate, interpersonal warmth, psychological involvement, flexibility, and ability to solve problems. Any normal family changes with the development of their children, and parenting strategies are adapted to the individual style of the child, temperament, and emotional needs.

Family resilience has different specific features, depending on the social context, but in a Westernized society, it includes a "shared narrative and beliefs" of the family, i.e., a common understanding of what the family is and how it came to be, and how it generally will respond to new situations. Also, this implies what is important to its members and what things should "be done" or "should not" be done. The concept of a shared belief system promotes coherence among the family members, and collaboration between the various participants. These features tend to foster a sense of competence that they can deal with difficult problems, and a positive outlook. From that definition, one can infer what strategies might be employed, when attempting to help a family to deal with a child and promote those features.

Regarding shared meaning, families can arrive at different theories or explanations of why their child developed certain health problems. These may include religious beliefs (e.g., this is the will of God, who is testing the family) or that it is their fate, or it is written that this had to happen (in many Muslim families, this involves the concept of *maktub*, something that is written in the book of their fate). Some families regard the illness as nobody's fault. On the other end of the

spectrum, one could find mothers or fathers who feel this is a punishment from God, or that the condition "is their fault" due to some transgression, to not getting medical care soon enough, not having insisted on certain tests early enough, etc. Some families feel they may be doomed to be unhappy that one tragedy will follow another, and they may lose hope. Some parents may not seek external help or relief in the care of their child, because they may feel they deserve to be punished or to suffer. Some do not do it because they may mistrust strangers and feel their child might be mistreated.

In general, families with better ability to solve problems, in which there is more communication, emotional involvement with each other, flexibility, and a positive outlook, will be more resilient in the face of an adverse event. Obviously, all families will be temporarily disrupted and in need of a response to an unexpected major problem, but the more resilient families are more likely to recover from those events.

Patient and Family-Centered Care for Children with Medical Complexity

Patient- and family-centered care is the foundation of modern complex medical care, and this should allow the establishment of a thoughtful health care plan. This care should be customized to the individual needs of the patient and family, allowing for shared decision-making, with patients having ready access to medical teams and scientific information (Kuo et al., 2011). Institutions should incorporate essential features of these clinics as highlighted by the National Consensus Framework for Systems of care for children and youth with complex healthcare needs, which underlined the need for family and professional partnerships. An important component is to provide a "medical home." Children should have access to medical screening for early and continuing referrals. Optimally, it should be easy to use support systems with a seamless transition to adult services as the child reaches adulthood (Kuo et al., 2015).

Several studies highlight the need for primary care physicians to work closely with specialists in a care model at tertiary hospitals, partnering with families, and primary care physicians. The latter should become familiarized with the medical condition of a child with medical complexity. The pediatrician should be closely involved with the child during hospitalization and offering close follow-up after hospitalization. When this has occurred, a study showed this it contributed to a 50% reduction in hospital days and a savings of \$10.7 million in hospitalization costs in families. (A Tertiary Care–Primary Care Partnership Model for Medically Complex and Fragile Children and Youth With Special Health Care Needs.)

Medical teams surrounding the patient can often anticipate the needs of the patient and work collaboratively with specialists (Institute of Medicine (US) Committee on Quality of Health Care in America, 2001). These well-coordinated systems of care have shown to improve patient satisfaction, with improved health and well-being, greater efficiency, greater access to physicians and better transition services (Kuhlthau et al., 2011). Comprehensive care with primary care physicians with adequate knowledge of the child's illness has been shown to lead to improved health and lower costs in caring for these children (Mosquera et al., 2014). Previous studies suggest the need for access to experienced physicians, with sub-specialists working in the same hospital, and primary care clinicians being able to prioritize children who might be otherwise taken to an emergency room or require hospitalizations. After these evaluations, there is a need of prompt follow-up of patients if there was an emergency department visit (Homer et al., 2008; Jackson et al., 2019).

Hospital-based care of children with complex health problems means that the hospital itself has outpatient services for complex care, as well as access to multiple subspecialties in pediatrics, which any child might require. This collaboration provides the opportunity to implement an integrated care model allowing for network of primary care practices and specialists to collaborate on quality improvement initiatives such as pre-

vention of unnecessary emergency department visits and further hospitalizations in PICU (Cohen et al., 2018). Emergency room visits, if they could be prevented, alleviate the burden for families, and the stressors associated with ambulance transportation, being long hours in a waiting room, uncertainty, and fear of what might happen.

Complex care teams in collaboration with care coordination teams that address the different needs of these children have shown improved health outcomes and lower costs. (Cohen et al., 2018; Mosquera et al., 2014). In addition to hospital-based services, patients would benefit from community-based resources such as home health, access to pharmacies that deliver medication, and durable medical equipment (e.g. wheelchair, special bed, respirators, etc.) as well as access to mental health services (Cohen et al., 2013; Kuo et al., 2015). Institutions need to be mindful of improving access for families that have problems with transportation, those who live geographically far from hospitals, with transportation assistance or if necessary and possible, improved access to telehealth (Arora et al., 2011). The advantages of access to a structured program in a tertiary center with proximity to medical specialists who have expertise in complex care, show better long-term health outcomes in this population (Cohen et al., 2011).

Collaboration During Hospitalizations

It would be desirable if families whose child requires hospitalization could receive assistance with developing positive coping strategies (Zimmermann et al., 2016). Families with low economic resources, or with lower educational status will need additional counseling from physicians and teams when their child is hospitalized. This could involve strategies to engage parents who are unavailable to care for their child, due to limited resources, to be by their child's bedside during hospitalizations, if this is possible (Colville et al., 2009; Studdert et al., 2003). Another important issue to reduce paren-

tal stress is effective communication of staff that cares for their child (Meyer et al., 1998). Effective communication with families, for example, using family-centered rounds, help build trust and allows for family empowerment (Boss et al., 2020). Physicians need training in family-centered communication, taking into consideration how much information families desire and also the usefulness of participation in the care (Nelson et al., 2005) of their child.

Assisting Families

Family support is crucial in helping caregivers with the care of their medically vulnerable child. Physicians need to foster the overall health and functioning of families, not only of “their child patient”. Declining physical and mental health in parents is, at the same time, also an indicator of the quality care for their child may be deteriorating (Caicedo, 2014). The medical home teams are in a very unique position to care for these children and their families, by building rapport overtime, which allows families to voice concerns and seek help when indicated.

Families could benefit from having regular screening for depressive symptoms and having access to community-based resources for mental health and psychosocial problems. They may also require other assistance, like respite care, care coordination teams, and private nursing help (Kuo et al., 2011).

Ensuring that the family has access to child therapies, plus strategies for coping have been found to be significant predictors of mother’s engagement in health promotion activities, this should also be applicable to fathers (Kuster et al., 2004). Providing easy access to community-based services and ensuring maternal mental health are associated with better health outcomes in children with chronic conditions (Thompson Jr. & Gustafson, 1996). In our model of care, a mental health professional is attached to the complex care unit, giving ready access to services that otherwise require a separate referral. Ideally, this person should be dedicated to the complex

care team and be available to get acquainted with families who are struggling in “real time” and offer interventions promptly.

Resources

In the United States, there is a possibility of gaining access to supplemental security income program for families, in order to help with financial aid to low-income groups with flexible time arrangements for family members. The latter can function as “employees” of the family to help pay for their time spent caring for their relative. This helps alleviate stress in families (Heymann et al., 1996). Families will require information of the resources available to them. Some may not be aware of the “family medical leave act” (FMLA, a federal program) which allows them to keep their employment even when they are absent from work to care for their child. (Chung et al., 2007). This is more important for families who have limited education and do not speak English, or are immigrants and do not realize the features of the health care system. Parents who have a better understanding of the social support services available, can better make the make the case for obtaining support resources (Morhun et al., 2020). These support systems can be personal and/or institutional with help for caregivers with daily activities of caring for their child or providing strategies for coping with distress (Harper et al., 2016; Racine et al., 2018). Due to prolonged hospitalizations, some of these interventions need to be hospital-based parent groups (Racine et al., 2018). Parents who attend these support groups find it beneficial to share their experiences with caregivers who go through similar struggles.

In other situations, there is a frequent change in nursing personnel. In the US, nursing agencies will make personnel decisions without involving the parents in the process. A child might “lose his or her nurse” from one day to the next, and another nurse, who does not know the child may have to start from zero to deal with child. The parents may have to practically “train” the nurse on the preferences and unique features of their

child to assist her in the management of functions like tube feedings (gastric or jejunal tubes), management of ventilation, aspiration of secretions, etc.

Parents can also engage in communities “on line” to share recent experiences, to obtain suggestions from parents who have traversed similar situations, and to find resources for children. This is a two-edge sword as sometimes parents give advice or suggestions in an anecdotal manner, which may lead to unwise decisions or trials of measures that may not be useful or could be damaging. However, overall there is the opportunity to reduce the feeling of isolation and not having any support from others (Caton et al., 2019).

Children’s groups, adolescent groups, and parent groups are difficult to implement regularly, due to the difficulties of transportation and the numerous stressors the family faces. However, having several meetings a year may be a useful opportunity for children who can do so, see others who face similar difficulties, and speak of their feelings and problems. The same occurs with parents. The meetings should be presented more in a psychoeducational model, promoting health, and helping parents share their concerns. More severe problems can always be addressed in specific group psychotherapy sessions for adolescents or in session with parents.

The Medical and Nursing Staff. Challenges and Opportunities

A whole chapter could be written about this subject. We focus on the main issues faced specifically in complex care situations. First of all, the myriad of conditions that are dealt with require from the pediatrician and nursing staff a need to continuously update their knowledge on conditions they may not have dealt with in the past. Having colleagues with more experience is helpful in this regard, as the pediatrician does not feel alone and can consult with specialists or more experienced clinicians. This highlights the need to have case reviews and consultation sessions. This helps also with the issue of developing an *esprit de corps* and sharing of difficult cases,

particularly when there was an error or an adverse effect.

Pediatric clinicians should have enough time to appraise a new development and to consult with others at the time of the appointment, sometimes a decision has to be made which could imply a difference between life and death. The pediatrician does not need additional burdens of an administrative nature. Clearly the focus and the majority of the efforts of the clinician should be on the patient and the family. Unfortunately in the US, pressures from insurance companies and other agencies make documentation of “paramount” importance as well. The clinician may prescribe a certain medication, only to be denied by the insurance company. This may require an “appeal” or a conversation between the physician or nurse in charge of the patient and another clinician employed by the insurance company to convince this person to approve the medication. This may or may not occur. If not, the clinician will be having to resort to an alternative medication. This can also occur with procedures, which have to be judged as justified and necessary by the insurance company.

It must be said that most of the time the clinicians, parents and the child form a partnership that is successful in terms of working together, the parents trust the clinicians involved, and several sub-specialists work together to achieve a common goal. This is an enormous satisfaction for all concerned, as the healthcare system functions as it should. However, here, we focus on some possible scenarios that may be less successful.

Some common scenarios that are commonly seen in clinicians who work with patients with complex care problems are:

Frustration and Fatigue

Dealing with a child with multiple medical needs can be compared to trying to put together a puzzle with multiple movable pieces. One is the status of the child which may change from one hour to the next. Then the appraisal of nurses or par-

ents at home, and their abilities as well as their expectations. Caregivers may request a hospitalization when it is not needed, or the opposite, refuse a hospitalization when it is needed. Then, there are other opinions by caregivers who may “believe or not believe” in certain treatments based on their “own research”, things they have heard from other parents, or advertisements, etc. They may request treatments that are not required or decline others that are. Also, there may be one patient that would require not only the allotted time for a consultation (perhaps 45 min on average) but due to complications and required studies, or a decompensation may require much more time from the clinician. Reaching sub-specialists to obtain their opinion may be another challenge. If a patient, for example, develops a respiratory problem, the collaboration with a pulmonologist may be necessary and this specific individual may or may not be available. Other patients may be waiting to be seen. This will require collaboration between clinicians to “do justice” to each case. In a center of this level of sub-specialization like complex care, families may have traveled long distances, or the child may have been brought by an ambulance and a team, even for a routine appointment. All of these arrangements have to be taken into account. The situation may become overwhelming temporarily. If this happens often, it may lead to a feeling of frustration and resentment in clinicians, who are trained not to express such feelings, but to provide care no matter what. Having colleagues and other outlets for emotional expression or processing of feelings may be important. A mental health professional staff may be very useful to fulfill this mission of “liaison psychiatry.”

Sadness and Grief

Working with children with such complicated health problems and whose illnesses are not “curable” will not only take an emotional toll on the child, family and the physicians and nurses. This is also true for the pediatrician coordinating the care, the complex care specialist. The death of a patient, even when it was expected and even more

when unexpected, may lead to feelings of sadness and grief that are only natural after a long-standing partnership and struggle to help the child survive, a partnership with the child and family. The clinician may experience a normal period of grief and conflicting emotions. There may be also feelings of guilt, as after all, most physicians are trained to save lives, and they may experience a death as a failure. The common reactions of “if only” I had done a certain action, perhaps the outcome could be different. This may include doubts as to whether the clinician should have ordered an EKG, a certain laboratory test, a hospitalization, etc., even when everything was done well. The repeated experience of losing patients may, in unfavorable circumstances, lead to a feeling of emotional disengagement at least temporarily. The clinician should be able to discuss intense feelings, doubts, and anger in a confidential way with a colleague from mental health services who is experienced to deal with those feelings, which are normal. These revelations may help the clinician to continue working with other patients maintaining a better morale. Participating in memorial services, remembering the child when he or she was alive and marking some important anniversaries may help with the closure of the grief and acceptance of the loss.

Tensions or Conflict Between Clinicians

In the middle of stressful circumstances, caring for very ill children may unavoidably lead to different opinions as to “what to do.” A specialist may recommend a certain course of action, while another may not agree or suggest a very different course. It is not common that there is open conflict, but repeated adverse experiences may lead to feelings of anger and frustration. Having the time for clinical conferences to discuss with all the pediatricians and others involved in the care of the child may be useful to arrive at a common ground and to establish long-term collaborations and partnerships of mutual trust. Differences of opinion do not have to lead to conflict. It is important for the staff not to blame each other for

a negative outcome and to talk about different alternatives openly and then arrive together to a course of action may prevent this.

Balint Groups

In many clinical settings all over the world, there are modalities of Balint groups (Van Roy et al., 2015) which may help clinicians to discuss in a confidential setting, their tensions, and feelings about their work. The term Balint refers to Michael Baling, a Hungarian psychiatrist who first suggested to have regular physicians meet regularly to discuss their work and their tensions. These are not group therapy sessions, but focus on the work of physicians and the emotions and tensions associated with that work. The information shared is confidential and may not be discussed outside the group. The commonalities observed by participants may help them realize the normalcy of their reactions and feelings, offer emotional support between participants, and assist them to continue their difficult work (Van Roy et al., 2015). These strategies tend to help clinicians conduct their clinical work having expressed their emotions and realized the impact of work events on their life. These have proven effective in maintaining a more positive morale in the staff and reducing turnover, as well as improving work satisfaction.

References

- A Tertiary Care–Primary Care Partnership Model for Medically Complex and Fragile Children and Youth With Special Health Care Needs | Adolescent Medicine | JAMA Pediatrics | JAMA Network. (n.d.). Retrieved January 27, 2022, from <https://jamanetwork.com/journals/jamapediatrics/article-abstract/571241>
- Alzawad, Z., Lewis, F. M., Kantrowitz-Gordon, I., & Howells, A. J. (2020). A qualitative study of parents' experiences in the pediatric intensive care unit: Riding a roller coaster. *Journal of Pediatric Nursing, 51*, 8–14.
- Anderson, J. M., & Eifert, H. (1989). Managing chronic illness in the family: Women as caretakers. *Journal of Advanced Nursing, 14*(9), 735–743.
- Archived Data Documents—NSCH and NS-CSHCN Prior to 2016. (n.d.). Retrieved January 17, 2022, from <https://www.childhealthdata.org/learn-about-the-nsch/archive-prior-year-data-documents-and-resources>
- Arora, S., Kalishman, S., Dion, D., Som, D., Thornton, K., Bankhurst, A., Boyle, J., Harkins, M., Moseley, K., Murata, G., Komaramy, M., Katzman, J., Colleran, K., Deming, P., & Yutzy, S. (2011). Partnering urban academic medical centers and rural primary care clinicians to provide complex chronic disease care. *Health Affairs, 30*(6), 1176–1184.
- Baldwin, S. (2015). *The costs of caring: Families with disabled children*. Routledge.
- Balluffi, A., Kassam-Adams, N., Kazak, A., Tucker, M., Dominguez, T., & Helfaer, M. (2004). Traumatic stress in parents of children admitted to the pediatric intensive care unit. *Pediatric Critical Care Medicine, 5*(6), 547–553.
- Beardslee, W. R., Bemporad, J., Keller, M. B., & Klerman, G. L. (1983). Children of parents with major affective disorder: A review. *The American Journal of Psychiatry, 140*(7), 825–832.
- Berry, J. G., Hall, M., Neff, J., Goodman, D., Cohen, E., Agrawal, R., Kuo, D., & Feudtner, C. (2014). Children with medical complexity and Medicaid: Spending and cost sheavings. *Health Affairs, 33*(12), 2199–2206.
- Boss, R. D., Hirschfeld, R. S., Barone, S., Johnson, E., & Arnold, R. M. (2020). Pediatric chronic critical illness: Training teams to address the communication challenges of patients with repeated and prolonged hospitalizations. *Journal of Pain and Symptom Management, 60*(5), 959–967.
- Breslau, N., Staruch, K. S., & Mortimer, E. A., Jr. (1982). Psychological distress in mothers of disabled children. *American Journal of Diseases of Children, 136*(8), 682–686.
- Caicedo, C. (2014). Families with special needs children: Family health, functioning, and care burden. *Journal of the American Psychiatric Nurses Association, 20*(6), 398–407.
- Carnevale, F. A., Alexander, E., Davis, M., Rennick, J., & Troini, R. (2006). Daily living with distress and enrichment: The moral experience of families with ventilator-assisted children at home. *Pediatrics, 117*(1), e48–e60.
- Caton, S., Koivunen, E. R., & Allison, C. (2019). Internet use for family carers of people with intellectual disabilities: A literature review and thematic synthesis. *Journal of Intellectual Disabilities, 23*(3), 446–468.
- Chung, P. J., Garfield, C. F., Elliott, M. N., Carey, C., Eriksson, C., & Schuster, M. A. (2007). Need for and use of family leave among parents of children with special health care needs. *Pediatrics, 119*(5), e1047–e1055.
- Cohen, E., Kuo, D. Z., Agrawal, R., Berry, J. G., Bhagat, S. K. M., Simon, T. D., & Srivastava, R. (2011). Children with medical complexity: An emerging population for clinical and research initiatives. *Pediatrics, 127*(3), 529–538.
- Cohen, E., Yantzi, N., Guan, J., Lam, K., & Guttmann, A. (2013). Residential movement patterns of families of young children with chronic conditions in Ontario, Canada: A population-based cohort study. *International Journal for Equity in Health, 12*(1), 1–10.

- Cohen, E., Berry, J. G., Sanders, L., Schor, E. L., & Wise, P. H. (2018). Status complexicus? The emergence of pediatric complex care. *Pediatrics*, *141*(Sup. 3), S202–S211.
- Colville, G., Darkins, J., Hesketh, J., Bennett, V., Alcock, J., & Noyes, J. (2009). The impact on parents of a child's admission to intensive care: Integration of qualitative findings from a cross-sectional study. *Intensive and Critical Care Nursing*, *25*(2), 72–79.
- Falkson, S., Knecht, C., Hellmers, C., & Metzger, S. (2017). The perspective of families with a ventilator-dependent child at home. A literature review. *Journal of Pediatric Nursing*, *36*, 213–224.
- Feudtner, C., Nye, R. T., Boyden, J. Y., Schwartz, K. E., Korn, E. R., Dewitt, A. G., Waldman, A. T., Schwartz, L. A., Shen, Y. A., Manocchia, M., Xiao, R., Lord, B. T., & Hill, D. L. (2021). Association between children with life-threatening conditions and their parents' and siblings' mental and physical health. *Journal of the American Medical Association Network Open*, *4*(12), e2137250–e2137266.
- Geoghegan, S., Oulton, K., Bull, C., Brierley, J., Peters, M., & Wray, J. (2016). The experience of long-stay parents in the ICU: A qualitative study of parent and staff perspectives. *Pediatric Critical Care Medicine*, *17*(11), e496–e501.
- Grandjean, C., Ullmann, P., Marston, M., Maitre, M.-C., Perez, M.-H., & Ramelet, A.-S. (2021). Sources of stress, family functioning, and needs of families with a chronic critically ill child: A qualitative study. *Frontiers in Pediatrics*, *9*, 1–15.
- Hagstrom, S. (2017). Family stress in pediatric critical care. *Journal of Pediatric Nursing*, *32*, 32–40.
- Harper, F. W. K., Peterson, A. M., Albrecht, T. L., Taub, J. W., Phipps, S., & Penner, L. A. (2016). Satisfaction with support versus size of network: Differential effects of social support on psychological distress in parents of pediatric cancer patients. *Psycho-Oncology*, *25*(5), 551–558.
- Hawley, D. R., & DeHaan, L. (1996). Toward a definition of family resilience: Integrating life-span and family perspectives. *Family Process*, *35*, 283–298.
- Health Services and Health Care Needs Fulfilled by Structured Clinical Programs for Children with Medical Complexity—Science Direct. (n.d.). Retrieved January 27, 2022. <https://pubmed.ncbi.nlm.nih.gov/26526361/>
- Heymann, S. J., Earle, A., & Egleston, B. (1996). Parental availability for the care of sick children. *Pediatrics*, *98*(2), 226–230.
- Hirst, M. (1985). Young adults with disabilities: Health, employment and financial costs for family carers. *Child: Care, Health and Development*, *11*(5), 291–307.
- Homer, C. J., Klatka, K., Romm, D., Kuhlthau, K., Bloom, S., Newacheck, P., Van Cleave, J., & Perrin, J. M. (2008). A review of the evidence for the medical home for children with special health care needs. *Pediatrics*, *122*(4), e922–e937.
- Institute of Medicine (US) Committee on Quality of Health Care in America. (2001). *Crossing the quality chasm: A new health system for the 21st century*. National Academies Press (US).
- Jackson, L., Keville, S., & Ludlow, A. K. (2019). Mother's experiences of accessing mental health care for their child with an autism spectrum disorder. *Journal of Child and Family Studies*, *29*(2), 534–545.
- King, G. A., King, S. M., & Rosenbaum, P. L. (1996). How mothers and fathers view professional caregiving for children with disabilities. *Developmental Medicine & Child Neurology*, *38*(5), 397–407.
- Kuhlthau, K. A., Bloom, S., Van Cleave, J., Knapp, A. A., Romm, D., Klatka, K., Homer, C. J., Newacheck, P. W., & Perrin, J. M. (2011). Evidence for family-centered care for children with special health care needs: A systematic review. *Academic Pediatrics*, *11*(2), 136–143.
- Kuo, D. Z., Cohen, E., Agrawal, R., Berry, J. G., & Casey, P. H. (2011). A national profile of caregiver challenges of more-complex children with special health care needs. *Archives of Pediatrics & Adolescent Medicine*, *165*(11), 1020–1026.
- Kuo, D. Z., Hall, M., Agrawal, R., Cohen, E., Feudtner, C., Goodman, D. M., Neff, J. M., & Berry, J. G. (2015). Comparison of health care spending and utilization among children with medicaid insurance. *Pediatrics*, *136*(6), 1521–1529.
- Kuster, P. A., Badr, L. K., Chang, B. L., Wuerker, A. K., & Benjamin, A. E. (2004). Factors influencing health promoting activities of mothers caring for ventilator-assisted children. *Journal of Pediatric Nursing*, *19*(4), 276–287.
- Logan, G. E., Sahrman, J. M., Gu, H., & Hartman, M. E. (2020). Parental mental health care after their child's pediatric intensive care hospitalization. *Pediatric Critical Care Medicine*, *21*(11), 941–948.
- Mandic, C. G., Johaningsmeir, S., Corden, T. E., Earle, A., Acevedo-Garcia, D., & Gordon, J. B. (2017). Impact of caring for children with medical complexity on parents' employment and time. *Community, Work & Family*, *20*(4), 444–458.
- McCann, D., Bull, R., & Winzenberg, T. (2012). The daily patterns of time use for parents of children with complex needs: A systematic review. *Journal of Child Health Care*, *16*(1), 26–52.
- Meyer, E. C., Snelling, L. K., & Myren-Manbeck, L. K. (1998). Pediatric intensive care: The parents' experience. *American Association of Critical Care Nursing. Clinical*, *9*(1), 64–74.
- Morhun, J. M., Racine, N. M., Guilcher, G. M. T., Tomfohr-Madsen, L. M., & Schulte, F. S. M. (2020). Health-related quality of life and Well-being in parents of infants and toddlers with cancer. *Current Oncology*, *27*(2), e206–e215.
- Mosquera, R. A., Avritscher, E. B. C., Samuels, C. L., Harris, T. S., Pedroza, C., Evans, P., Navarro, F., Wootton, S. H., Pacheco, S., Clifton, G., Moody, S., Franzini, L., Zupancic, J., & Tyson, J. E. (2014).

- Effect of an enhanced medical home on serious illness and cost of care among high-risk children with chronic illness: A randomized clinical trial. *Journal of the American Medical Association*, 312(14), 2640–2648.
- Mullaney, T. (2017, January 2). Families provide \$36 billion in pediatric home health annually. *Home Health Care News*. <https://homehealthcarenews.com/2017/01/families-provide-36-billion-in-pediatric-home-health-annually>
- Nelson, J. E., Kinjo, K., Meier, D. E., Ahmad, K., & Morrison, R. S. (2005). When critical illness becomes chronic: Informational needs of patients and families. *Journal of Critical Care*, 20(1), 79–89.
- Newacheck, P. W., & Kim, S. E. (2005). A national profile of health care utilization and expenditures for children with special health care needs. *Archives of Pediatrics & Adolescent Medicine*, 159(1), 10–17.
- Norberg, A. L., Lindblad, F., & Boman, K. K. (2005). Parental traumatic stress during and after paediatric cancer treatment. *Acta Oncologica*, 44(4), 382–388.
- Quittner, A. L., Glueckauf, R. L., & Jackson, D. N. (1990). Chronic parenting stress: Moderating versus mediating effects of social support. *Journal of Personality and Social Psychology*, 59(6), 1266–1278.
- Racine, N. M., Smith, A., Pelletier, W., Scott-Lane, L., Guilcher, G. M. T., & Schulte, F. (2018). Evaluation of a support group for parents of children hospitalized for cancer and hematopoietic stem cell transplantation. *Social Work with Groups*, 41(4), 276–290.
- Raina, P., O'Donnell, M., Rosenbaum, P., Brehaut, J., Walter, S. D., Russell, D., Swinton, M., Zhu, B., & Wood, E. (2005). The health and well-being of caregivers of children with cerebral palsy. *Pediatrics*, 115(6), e626–e636.
- Stuber, M. L., & Shemesh, E. (2006). Post-traumatic stress response to life-threatening illnesses in children and their parents. *Child and Adolescent Psychiatric Clinics of North America*, 15(3), 597–609.
- Studdert, D. M., Burns, J. P., Mello, M. M., Puopolo, A. L., Truog, R. D., & Brennan, T. A. (2003). Nature of conflict in the care of pediatric intensive care patients with prolonged stay. *Pediatrics*, 112(3 Pt 1), 553–558.
- The National Survey of Children with Special Health Care Needs Chartbook 2009–2010. (n.d.). Retrieved January 17, 2022, from <https://mchb.hrsa.gov/sites/default/files/mchb/data-research/nscsh-chartbook-06-2013.pdf>
- Thompson, R. J., Jr., & Gustafson, K. E. (1996). *Adaptation to chronic childhood illness* (pp. 157–176). American Psychological Association.
- Thyen, U., Kuhlthau, K., & Perrin, J. M. (1999). Employment, child care, and mental health of mothers caring for children assisted by technology. *Pediatrics*, 103(6), 1235–1242.
- Van Roy, K., Vanheule, S., & Inslegers, R. (2015). Research on Balint groups: A literature review. *Patient Education and Counseling*, 98(6), 685–694.
- Walker, L. S., Ortiz-Valdes, J. A., & Newbrough, J. R. (1989). The role of maternal employment and depression in the psychological adjustment of chronically ill, mentally retarded, and well children. *Journal of Pediatric Psychology*, 14(3), 357–370.
- Walsh, F. (1996). The concept of family resilience: Crisis and challenge. *Family Process*, 25, 261–281.
- Wang, K. W. K., & Barnard, A. (2004). Technology-dependent children and their families: A review. *Journal of Advanced Nursing*, 45(1), 36–46.
- Zimmermann, K., Bergstraesser, E., Engberg, S., Ramelet, A.-S., Marfurt-Russenberger, K., Von der Weid, N., Grandjean, C., Fahrni-Nater, P., & Cignacco, E. (2016). When parents face the death of their child: A nationwide cross-sectional survey of parental perspectives on their child's end-of-life care. *BMC Palliative Care*, 15(1), 1–14.
- Jennifer Benjamin MD.** Assistant Professor in Pediatric Complex care and is an Inaugural Faculty within the Department of Education Innovation and Technology. Co-director for Faculty College in Texas Children's and Director for Technology for the Center for Research Innovation and Scholarship (CRIS). Co-chair of E-learning and Medical Student Education Special interest groups (SIGs) within the Academic Pediatric Association (APA) and serves on the Show & TEL Committee at the Academy of Medical Educators of Europe and Educational Committee of the Global Tracheostomy Collaborative. Her interests include the use of technology in learning and education, improving the care of children with medical complexity through patient-centered care and use of simulation in teaching procedural skills. She was recently awarded the Norton Rose Fulbright Faculty Excellence Award for Teaching and Evaluation.
- Heather Moore MD:** MD from the medical school at the University of Colorado School of Medicine (CU SOM). Residency at Children's Hospital Colorado/CU School of Medicine. Fellowship in Academic General Pediatrics at the University of Texas McGovern Medical School. Pediatrician at Baylor College of Medicine and Texas Children's Hospital since 2016 as the Complex Care Clinic Chief. Director for Texas Children's Hospital Ambulatory Complex Care Program. She has received numerous awards with respect to medical education and patient care. In 2021, she was awarded the BCM Star Award in recognition of her outstanding patient care program delivery.
- Sutapa Khatua MD** Assistant Professor of Pediatrics. Complex care clinic in the Department of Academic General Pediatrics at Texas Children's Hospital, faculty at Baylor College of Medicine. Previously faculty at the University of Texas McGovern School of Medicine, Quality Improvement projects. She received Dean's Excellence in Teaching Award and Excellence in Preceptorship Award from Texas Pediatric Society.



Mind–Body Issues for Children in Palliative and End-of-Life Care

28

Amanda Padilla, Rachel A. Kentor,
and Jared Rubenstein

Palliative care is an evolving discipline that focuses on quality-of-life improvement for people with life-threatening illnesses. This includes patients in all stages of life, from the newly born and in the perinatal period to the elderly, and can be incorporated throughout the spectrum of illness, from initial diagnosis to death and through bereavement. Palliative care can happen in any setting a patient may be, whether that is at the home or in a clinical setting like an outpatient clinic or hospital room.

Children who are in need of palliative care, whether due to chronic or critical illness or in the context of end-of-life care often have varied needs that span the physical, emotional, and spiritual spectrum. When addressing complex symptom management, there can be significant overlap between somatic symptoms and physical expressions of mental and emotional pain and suffering. Additionally, the complexities of pediatric palliative care patients and their medical needs often coincide with elevated communication needs, including the need to address complex family structures, sensitive and distressing topics, and provide communication that is patient centered and holistic.

Palliative care aims to lessen the symptomatic burden of ailments, whether they are caused by physical or mental distress and often as a consequence of both. In this chapter, we will review the communication challenges and opportunities that

can present themselves in palliative care encounters. Additionally, we will explore how mind–body interactions can alter and influence physical symptoms along with relevant approaches to managing these issues in patient care.

Suffering and the Mind–Body Experience

In the pursuit to improve quality of life for patients, whatever stage they may be in their illness, there is often an emphasis on minimizing or eradicating suffering. Suffering is a subjective experience that typically is used to describe pain but can encompass many different types of distressing experiences. It has been defined as an “unpleasant or even anguishing experience which severely affects a person at a psychophysical and an existential level” and affects the whole person including body and mind (Bueno-Gomez, 2017). Suffering can be present whenever there is a threat to personhood or the relationships that provide meaning in life (Kane & Primomo, 2001). This can extend beyond the person afflicted with illness to the family unit, particularly when the patient is a child or adolescent.

As clinicians approach suffering in the pediatric patient, it is critical to communicate with the family unit, which typically includes parents or guardians of the child. Age-appropriate communication with children concerning their symptoms and proposed treatments is as key as relationship building with caregivers, as all the family shares and influences the experience of

A. Padilla (✉) · R. A. Kentor · J. Rubenstein
Department of Pediatrics, Baylor College of
Medicine, Houston, TX, USA
e-mail: axpadil2@texaschildrens.org

illness. Additionally, clinicians may sometimes navigate difficulties in parent–child communication that can arise due to suffering on the part of both the patient and the caregiver.

Physical ailments that are common to the critically or terminally ill can generate or enhance the experience of suffering. Additionally, spiritual, emotional, and existential distress can cause suffering independent of physical conditions. These interrelated sources of distress affect one another, often compound suffering, and can lead to an experience often labeled as “total pain.”

Total Pain

Total pain, a concept initially defined by hospice pioneer Cicely Saunders, includes the belief that physical, emotional, psychological, social, and spiritual elements can both influence and be influenced by pain. Saunders was a physician, nurse, and social worker, who worked as a clinician from the late 1950s through the beginning of the twenty-first century and established St. Christopher’s Hospice in London, England in 1967.

As a clinician working in St. Christopher’s Hospice, Saunders aimed to study pain in patients with advanced cancer and through diligent interviewing and transcribing came to describe the multifaceted pain experience of over 1000 patients.

Saunders had an interest in not only the physical aspect of pain but the mental distress that often affected those at the end of their lives. She described through her works and the narratives of her patients how analgesics are sometimes insufficient to treat physical pain that intersects with emotional and psychological pain and how the pain experience can be ameliorated with effective communication and careful listening (Clark, 1999).

The concept of total pain has evolved with continued clinical utility since its initial descriptions in the 1960s, and Saunders contributed greatly to current palliative care standards that include proactively treating pain and tending to the multidimensional elements of suffering that

can occur in those with life-threatening illnesses.

Saunders stressed the importance of being present with patients in their suffering and treating them as a whole person and hearing their stories. She emphasized avoiding the tendency to view the patient as a constellation of symptoms to be treated. She proposed that most people have a story to tell and that the experience of patients telling their stories and having their pain validated was therapeutic in and of itself. This practice of being truly present with people in their suffering and acknowledging total pain is a necessary skill for those who care for children and their families.

As clinicians aim to effectively treat pain and suffering in the pediatric patient, it is important to address all the elements that influence total pain and contribute to suffering.

From a physical point of view, there are many symptoms commonly seen in the palliative care patient that can exacerbate pain, and these consist among others of nausea, dyspnea, constipation, and fatigue.

Mental and emotional stress can also be a significant factor in pain perception and add to a total pain experience. Often, clinicians find that in order to adequately address pain in their patients, they must simultaneously use pharmacologic modalities of pain control while uncovering and treating the underlying mental and emotional stressors that are exacerbating the pain. These can be diverse and include subjective anxieties as well as social stressors like fear of abandonment, fear of dying, fear of increased physical pain, anger due to difficulties associated with the illness, and overwhelming guilt. If the child is religious, this can include a feeling of disconnection from God or the patient’s spiritual community.

Because total pain is multidimensional, it often requires the skills of an interdisciplinary team to address the various aspects of pain. The work of palliative care clinicians focuses on treating the whole person, and there is often an emphasis on an interdisciplinary approach to patient care.

This is different from multidisciplinary teams where clinicians practice independently within their team structure. The palliative care team can include professionals like physicians, a child psychiatrist, advanced clinical nurse practitioners, other nurses, psychologists, pharmacists, social workers, chaplains, grief therapists, and child-life specialists.

When these clinicians work together, they can contribute significantly to the alleviation of suffering and the overall experience of illness. This often leads to a better patient and family experiences of communication and care during hospitalizations. This has been demonstrated in those cared for by interdisciplinary teams. Additionally, there is some evidence of improvement of physical and psychosocial symptoms for patients cared for by interdisciplinary teams (Leclerc et al., 2014).

The hallmark of interdisciplinary teams is their collaborative nature, and there is much value in the different perspectives and expertise that this diversity can offer patients.

If a child or adolescent is struggling with pain, which is perhaps enhanced by a feeling of anger at God and feelings of abandonment, then a chaplain or spiritual advisor might be the best clinician to help explore this source of distress. If an adolescent's pain presentation is worse when expressing worry about a painful death, it would be prudent for the patient's physician and larger medical team to spend time listening to the patient's fears and validating these emotions. The child or adolescent generally would benefit from information about what a peaceful death can be like, and reassurances that any pain will be managed, also that there will be a symptom management plan to assist him or her at the end of life.

A child who is angry after being told of a new cancer diagnosis, but does not have the words to describe his multiple emotions and fears, may benefit from assistance from creative arts therapy. Art therapists and other child-life specialists can assist children in processing their anticipatory grief or fear during stressful hospitalizations and life-changing experiences. Often when the spiritual, emotional, or psychological factors that are

exacerbating the pain are effectively addressed, analgesia and symptom management becomes more easily attainable.

Most stressors that increase pain and contribute to total pain can be discovered and potentially improved by careful listening and spending time conversing with patients and their families and using relevant clinical resources. Because this discovery and subsequent interventions can require significant time and relationship building, it is helpful to incorporate palliative care early in the disease process.

Communication Regarding Distressing Symptoms

Effective communication is a cornerstone of palliative care, and its power in managing symptoms should not be underestimated. Pain and suffering in children and adolescents with advanced and/or critical illnesses can be broadly categorized into three sources: pain stemming directly from the disease process, pain caused by the disease treatment, and pain unrelated to either (Rodgers & Todd, 2000).

Understandably, clinicians often focus on the specific, "explainable" pain that they can more easily address with treatments. Such assessment may be one explanation for the robust research demonstrating that patients rate their pain as more severe than the clinicians treating them. In order to effectively assess and honor the full scope of a patient's pain, a different set of communication "tools" may be necessary.

Looking at the literature and evidence-based intervention strategies for somatic symptom disorders can inform such an approach. Although an organic etiology may be easily identified in patients with advanced or critical illnesses, clinicians often encounter situations in which the extent of a patient's pain and suffering appears beyond that which is explainable solely by an underlying pathology. Indeed, suffering encompasses not just bodily complaints but also their psychological and behavioral sequelae (Henningesen, 2018). Conceptualization of the

interplay of physical and psychological symptoms has evolved over the years, moving from a “top-down” theory of psychogenic factors triggering peripheral physiological responses to a “bottom-up” approach, in which peripheral input is thought to be overamplified by the emotional and psychosocial context. Currently, bodily distress is being largely considered a “disorder of perception” in which the brain is continuously processing and re-evaluating nociceptive sensory input within the context of the changing environment around it (Henningsen, 2018). If perception does, in fact, impact pain and somatic symptoms, then addressing a patient’s perceptions, expectations, and pain-related beliefs is a necessary component of effectively treating the symptoms themselves. Specific communication strategies may be particularly useful in this regard, whether in the context of a somatic symptom disorder or organic disease-related pain in a palliative care setting. It is important that clinicians discuss contextual factors (e.g., psychosocial stressors, clinically significant psychopathology, pain-related beliefs, etc.) as “amplifiers” of pain and other symptoms, rather than the cause of them (Henningsen, 2018). Effective assessment of symptoms also involves assessing not just the physical symptoms themselves, but also the affective and relational experiences connected to those symptoms (e.g., what previous interactions a patient may have had with their healthcare provider/family/friend when discussing their symptoms, and what their emotional experience was within it). Similarly to dyspnea, there are not always objective markers that accurately reflect a patient’s pain or symptoms; therefore, attempting to give reassurance (e.g., your oxygenation rate is fine, just look at the monitor) can be both ineffective and invalidating.

Another barrier to optimal symptom management is the reluctance of some patients to express their pain. Such reluctance is largely cognitive in nature, be it due to fears of stigma, desire for “stoicism”, cautiousness, fatalistic beliefs about the pain being unchangeable, denial of the symptoms themselves, and/or concerns about bothering medical providers (Cagle & Bunting, 2017). Given that patient cognitions and perceptions are at the root of underreporting symptoms, thorough

symptom assessment will be largely ineffective unless providers first explore and address these thoughts directly with patients first, facilitating greater willingness to talk about their symptoms at all.

Common Symptoms in Pediatric Palliative Care

Physical Pain

Pain is a common symptom in patients who are in need of palliative care, and it is often an area of focus and source of distress during serious illness and the end-of-life period. Pain is multifaceted, often the sensory byproduct of tissue injury or threat of injury which is mediated by a complex system of central and peripheral nervous system involvement and can vary greatly in presentation.

As clinicians aim to treat pain effectively, it is important to characterize the type of pain experienced by the patient. This can present unique challenges in the pediatric patient due to the developmental and communication abilities of the child, social dynamics between child and caretakers, and social dynamics between child and healthcare providers. When gathering a pain history for a child or adolescent, the clinician should consider both subjective reporting and objective observations, paying particular attention to the descriptions of pain from patients themselves. Although children can have limitations of pain reporting due to their age and communication abilities, reports of pain should always be regarded and explored further with the child. Additionally, family or caregiver input and use of observational pain assessment scores along with frequent clinical re-assessments should be congregated for a comprehensive pain history (Manworren & Stinson, 2016). All these elements combined can then provide a thorough pain history from which to guide medical treatments.

Pediatric patients have variability in their abilities to describe pain due to age and developmental differences, and pain evaluations should be tailored to the patient with this variability in mind

[Table 28.1]. There can also be significant social and cultural factors that affect pain expression and communication, including differences in expectations of pain expression by gender or familial communication style.

Validated pain-scoring systems exist for different developmental stages and clinical scenarios. There are pain scales that can be used for acute pain, postoperative pain, or procedure-related pain. Additionally, there are pain scales that are appropriate for neonates or school-aged children and pain scales that are optimized for those with reduced oral communication skills and impaired cognition [Table 28.2]. It is common for children receiving palliative care to have limitations in their ability to communicate with spoken language due to the severity of their illness or underlying developmental or intellectual disabilities. Those with disabilities may also have variable presentation of physical pain due to underlying delays and may present with differences in crying, grimacing, or attentiveness to their caregiver (Emerson & Bursch, 2020). In these situations, observational assessment by the clinician and family and caregiver input are critical to effective pain management.

Typically, pain is classified as either acute or chronic pain based on the duration of pain and furthermore into types of pain based on quality. The two overarching types of pain are nociceptive and neuropathic, with nociceptive pain being further divided into somatic and visceral pain. Somatic pain is felt in musculoskeletal structures like skin, bones, and muscles and is typically sharp and well localized, while visceral pain is felt in internal organs and is poorly localized and typically described as aching or pressure. Neuropathic pain is attributed to nerve injury and often presents with pins and needles, burning sensation, or allodynia (Weinstein et al., 2012). Classifying pain helps with pain management, as treatments can be tailored to the type of pain being treated, including which pain receptors to target. Opioids are commonly used for moderate to severe pain of various etiologies and tend to be more effective for nociceptive pain, while gabapentinoids are the first-line treatment for neuropathic pain. There extends beyond these

Table 28.1 Developmental timeline of pain communication (Emerson & Bursch, 2020)

Age group	Pain expression and communication
Neonates-infants	<ul style="list-style-type: none"> • Pain expression is often demonstrated by physical signs of distress including crying, grimace, and tone changes; vital sign changes including tachycardia and blood pressure fluctuations.
Ages 1–3	<ul style="list-style-type: none"> • Pain continues to be demonstrated via physical signs of distress or withdrawal, particularly in the preverbal period. • Children are able to start notifying others of pain with spoken language at about two years old. Typically words like “hurt” and “ouch” are used. • Time perception is generally difficult and time descriptors unreliable.
Ages 3–6	<ul style="list-style-type: none"> • Pain expression continues to evolve, and descriptive words are used when discussing pain. • Children are able to start using subjective pain scales like FACES Pain Scale Revised with some difficulty at younger ages. • Pre-school-age children typically have difficulty with localizing pain. • Symptoms of pain may be confused with additional distressing symptoms. • Magical thinking can influence pain expression. Social expectations and the desire to please adults can also influence articulation of pain.
Ages 7–11	<ul style="list-style-type: none"> • Perception of pain remains concrete and cause and effect of pain management can generally be understood when uncomplicated. • Children are able to use numerical pain scales.
Adolescents	<ul style="list-style-type: none"> • Abstract reasoning continues to develop and articulation of pain becomes more complex.

pharmacologic treatments and other effective medications a vast array of non-pharmacologic interventions and various rehabilitative and interventional pain modalities that can treat pain effectively.

With appropriate pain medication administration, treatment of the underlying disease process causing pain, and frequent reassessment and alterations of the pain management plan, people

Table 28.2 Validated pain assessment scale examples

Pain scale	Method of assessment	Population
NEONATAL PAIN AGITATION AND SEDATION SCALE (N-PASS)	Observational scale of pain behaviors, five categories with five-point scale (-2 to +2)	Neonatal, sedated neonates, postoperative
CRIES	Observational scale of pain behaviors, five categories with three-point scale	Neonatal, postoperative
FACES, LEGS, ACTIVITY, CRY, CONSOLABILITY SCALE (FLACC)	Observational scale of pain behaviors, five categories with three-point scale	Ages two months to seven years, postoperative
REVISED FACES, LEGS, ACTIVITY, CRY, CONSOLABILITY SCALE (R-FLACC)	Observational scale of pain behaviors based on FLACC with added patient-centered pain behaviors, tailored for the child with cognitive impairment or oral communication difficulties	Nonverbal children or children with cognitive impairments
FACES PAIN SCALE-REVISED (FPS-R)	Self-reported scale, facial illustrations accompanied by numerical scale 0-10	Patients over age three
0-10 SCALE	Self-reported scale, numerical from 0 to 10	Patients over age seven

can often achieve significant relief from severe pain even in the setting of progressive disease. Sometimes clinicians can find that pain is difficult to control, even with careful attention to these factors. In times like these, it is important to recognize that there is significant overlap between additional domains of well-being that affect the pain experience and to consider whether the patient is being affected by total pain.

Juan is a fifteen-year-old boy with relapsed leukemia. He is admitted to the hospital due to severe bony leg pain requiring use of hydromorphone patient-controlled analgesia (PCA) with continuous infusion and interval doses. He reports 9 out of 10 pain requiring dramatic escalations in his PCA dose. When asked about his pain, it is difficult for him to describe the pain and how the PCA is helping, though he does report that it is helping “a little.” During previous admissions with similar episodes of bony pain the increases in his PCA appeared to help Juan with his pain and he was able to complete his activities of daily living and converse with his health-

care team. Now he appears withdrawn and spends most of the day in bed with the lights off. Pain scores appear to be worse during the night and the medical team notices that he is somewhat reluctant to use his PCA during nighttime hours. Juan’s mother has a very close relationship with Juan, but she admits that they do not have conversations about what is happening with Juan’s health or his escalating pain at home. With her permission, the medical teams spend time talking to Juan alone and he expresses to the team that he thinks that he is dying due the increases in pain and worries that he will die suddenly in his sleep. This prompts a longer conversation with Juan and his mother together with his oncologist and the palliative care team. They speak openly and honestly about what Juan and his mother should expect with his disease process and reassure Juan that his increased pain is not a sign of imminent death and that it is unlikely for him to die suddenly in his sleep. He is also reassured that if he uses the PCA as intended he is not at risk of dying related to use of opioids.

Due to opening the lines of communication between Juan and his mother, they are able to converse openly about Juan's fears and struggles and prioritize and plan activities that are important to Juan. Now that he realizes that his pain is not a sign of impending death, he is more engaged in his pain treatment plan and is agreeable to adjuvants like guided imagery. He begins participating more in daily activities like physical therapy and he is able to achieve better pain control with appropriate use of his PCA.

Juan's pain experience is difficult to treat given its multifactorial nature. Patients like Juan can have pain that is worsened by feelings of existential distress or anxiety in addition to pain that is poorly controlled due to ineffective or under-dosed analgesics. Juan's pain is likely exacerbated by his unspoken fears about dying and his inability to speak to his closest family member about this concern. It is also likely that Juan's beliefs about pain, including that pain may not be able to be alleviated in the setting of his perceived impending death, affect his pain expression. Additionally, due to the fear of death during his sleep, he is not utilizing his PCA effectively and has undertreated pain. If a thorough pain history was not obtained for this patient, he would be at risk for inappropriate pain management. Without gathering the information about his distress and worries, he may have had unnecessary escalations in his opioids above his actual needs. He would also continue to be at risk for poor coping and total pain during the remainder of his illness. Because Juan's medical teams were effective communicators and obtained a thorough history that was not limited to questions about physical pain, they were able to uncover hidden stressors that deserve careful attention.

Dyspnea

Dyspnea is a complex, uncomfortable sensation that includes air hunger, work/effort, and chest tightness. Similar to pain, dyspnea has both a sensory component and an affective component. Sensory signals from the respiratory system are interpreted by the brain and can be affected by other physical, psychological, social, and spiritual input (Tucker et al., 2012). Given this, the concept of "total dyspnea" has been described (Abernethy & Wheeler, 2008).

Among all pediatric patients receiving palliative care, the point prevalence of dyspnea is 46% (Feudtner et al., 2021). Prevalence is higher in some disease groups, with a prevalence of dyspnea in children with cancer as high as 80% (Wolfe et al., 2000). Greater dyspnea is associated with lower health-related quality of life (Greunberger et al., 2017), depression (Reddy et al., 2009), and anxiety (Anllo et al., 2020). It also tends to worsen as death approaches (Mercadante et al., 2000).

Assessment of dyspnea should include a thorough history, as it is inherently subjective (Campbell, 2011), and not necessarily correlated with objective indicators of work of breathing (e.g., oxygen saturation, respiratory rate). Dyspnea can be reported using a subjective number report scale as with pain or with a functional scale, such as the Functional Dyspnea Scale (Celli et al., 2004).

Treatment of dyspnea can be pharmacologic or non-pharmacologic. In terms of non-pharmacologic treatments, general measures include reducing the need for exertion, repositioning, and improving air circulation (Tucker et al., 2012). Additionally, the use of a simple fan has been shown to be beneficial in improving the sensation of dyspnea (Galbraith et al., 2010). There has also been some evidence of benefit of guided imagery in improving dyspnea (Fasolino, 2020).

Regarding pharmacologic therapy for dyspnea, opioids are the first-line treatment with the most supportive evidence (Mahler et al., 2010) and have even been shown to increase exercise tolerance (Light et al., 1989).

Anxiety and Dyspnea

Research demonstrates that higher levels of anxiety are associated with more severe dyspnea (Anllo et al, 2020). Given the cyclical nature of the two, it is difficult if not impossible to know whether anxiety precipitates dyspnea or if the uncomfortable sensation of dyspnea triggers anxiety. The cooccurrence, or interdependence, of anxiety and dyspnea is unsurprising. The sensation of being unable to breathe triggers the sympathetic nervous system (our “fight or flight” response) out of an adaptive, evolutionary drive to protect oneself from threat. When the sympathetic nervous system is activated, respiratory rate increases, which increases the work of breathing and may intensify the sensation of dyspnea. As objective data do not adequately reflect the subjective experience of dyspnea, querying a patient’s level of anxiety may permit a meaningful marker of dyspnea intensity during acute exacerbations (Bailey et al., 2004).

Interestingly, one study evaluating the effectiveness of a brief hypnotic intervention on anxiety and dyspnea in COPD found that the intervention not only improved anxiety, but also respiratory rate, arterial oxygen saturation, and Borg scores (visual analog scale of dyspnea) as well, suggesting that interventions which improve anxiety may also contribute to relief in objective respiratory strain (Anllo et al., 2020).

Sarah is a seventeen-year-old girl with advanced idiopathic pulmonary fibrosis, who is admitted to the hospital with shortness of breath and a suspected exacerbation. She is currently undergoing evaluation for lung transplant. During this admission, she complains of severe dyspnea that is worse with exertion, including when engaging in behaviors like using the toilet and taking a shower. Her oxygen saturations remain 95-96% on 3L/min oxygen via nasal cannula and her blood gases are reassuring. Nevertheless, she feels quite breathless, and she begins to complain of abdominal pain and nausea during the course of her admission.

Sarah’s medical team conducts a thorough symptom history in an attempt to better control her dyspnea. Sarah reports that she gets very anxious at the thought of feeling short of breath and has begun avoiding activities that cause dyspnea. She has developed constipation and has been avoiding going to the bathroom due to fears of breathlessness from the walk to the bathroom and from exertion from straining. She admits that she feels helpless when having to leave her hospital bed and spends a lot of time worrying that the feelings of breathlessness will return. Her medical team starts a multimodal treatment plan for her dyspnea. They start her on a low dose of oral opioids and bring her a bedside fan. They also recognize that constipation and walking to the bathroom is exacerbating her symptoms, prompting them to order a bedside commode and a bowel regimen. She is also taught some deep breathing and relaxation techniques. Soon Sarah reports some improvement in her dyspnea. She expresses that it is helpful to be able to use the bedside fan and breathing techniques when she feels short of breath and that she is no longer avoiding using the toilet. Sarah continues her transplant workup with increased tolerance for the daily activities and procedures required.

The multimodal approach to dyspnea is effective at targeting Sarah’s total dyspnea, which is exacerbated by anxiety and other physical symptoms like constipation. A fan provided for comfort can help patients like Sarah who have significant dyspnea, and mindful breathing exercises have shown to acutely help with the sensation of breathlessness. The sense of control from having tools to help her with dyspnea and her interrelated anxiety is invaluable, and the therapeutic alliance and trust in her healthcare team is enhanced when her symptoms are respected and attended. Opioids are a good choice for Sarah, as they are the first-line pharmaco-

logic treatment for dyspnea and at appropriate doses do not cause respiratory depression or pulmonary compromise.

Delirium

Delirium is an altered state of consciousness, which by definition includes disturbances in attention, acute and fluctuating changes in these disturbances, disturbances in cognition not explained by another pre-existing condition, and evidence that these disturbances are a direct physiological consequence of another medical condition or substance intoxication or withdrawal (Association, 2013). Delirium is common in ICU settings and in the end-of-life period. Among patients with cancer admitted to a hospital or hospice, 44% may experience delirium (Irwin & Ferris, 2008). Delirium can present itself in different ways, with some patients becoming more withdrawn or somnolent and others showing signs of agitation or abnormal physical behaviors. Additionally, sleep disturbances and hallucinations are common in patients with delirium.

Regardless of the presentation of delirium it can cause significant suffering to the patient and family and tends to be underdiagnosed and undertreated. Some studies demonstrate that a majority of patients recollected traumatic memories from their episodes of delirium (Burns et al., 2004). Additionally, if delirium remains untreated there is the risk of masking additional distressing symptoms that require treatment.

It is estimated that about 50% of delirium is reversible (Irwin & Ferris, 2008.) Treatment of delirium typically consists of treating the underlying cause or removing the offending agent, whether that is medication or polypharmacy, sleep deprivation or poor sleep hygiene, physical discomfort, constipation, urinary retention, or dehydration among others. Impaired cognition is also a risk factor for developing delirium, and extra vigilance should be maintained when caring for children with developmental and intellectual disabilities.

Prevention of delirium includes maintaining a supportive environment including caregiver or family presence, daytime and nighttime differentiation, reduction of unpleasant stimuli or overstimulation, and reducing medications and interventions like restraints or unnecessary procedures that can precipitate delirium. Antipsychotics are commonly used as pharmacologic therapy for reversible delirium in patients of all ages with anecdotal reports of success, though current scientific evidence does not support this practice. There is clinical utility of benzodiazepines to treat certain types of delirium; however, they can contribute to delirium as well and should be used with caution.

Depression

Depression is a common comorbid condition in patients who receive palliative care, either in the setting of a chronic or critical illness or the end-of-life period. Reports of 42% of all patients in palliative care programs being affected by depression (Irwin & Ferris, 2008) highlight the attention this condition deserves and improvements that must be made in caring for those with life-threatening illnesses.

Depression can be debilitating and negatively affect quality of life. It can exacerbate other distressing symptoms and can often be difficult to diagnose in the end-of-life period. Symptoms of depression can be similar to symptoms of advancing illness (e.g., fatigue, weight loss, physical slowing), and it can be difficult to differentiate what may be normal grieving or emotional distress compared to clinical depression. Depression also often goes undiagnosed due to ingrained beliefs that clinicians may have about depression being a normal part of the dying or grieving process. Additionally, there are studies that demonstrate that the patients themselves are sometimes unwilling to disclose to others the symptoms of depression they may be harboring (Wilson et al., 2009). Discussions with children and adolescents about their depressive symptoms can have the added difficulty of family or parental involvement, as obtaining a thorough history often

requires some time with the patient apart from their family members.

Treatment of depression for the palliative care patient is similar to treatment for any other individual with major depression. Psychotherapy in conjunction with antidepressants is the recommended treatment plan for children and adolescents diagnosed with depression. As medications can take weeks to months to achieve their full efficacy, this treatment plan has limitations in the end-of-life setting.

Given the complexities of diagnosis and treatment, a thorough mental health history should be obtained for all patients requiring palliative care, and psychiatrists and behavioral health specialists should be engaged in the care of palliative care patients whenever possible. Most importantly, clinicians should recognize that a depressed state is not the standard state for children or adolescents receiving palliative care, and that alterations in mood and behavior deserve further investigation.

Conclusion

Treatment of suffering in a palliative care setting requires attention to all domains of well-being, and there is often significant interconnection between symptoms that affect the body and mind. Clinicians who care for children and adolescents who live with life-limiting illnesses must engage in thorough assessments of their patients and the family unit to attend to all the needs that can lead to suffering. This should include thorough histories regarding pain and other distressing physical symptoms in addition to questions about the patient's pain perceptions and pain-related beliefs and other contextual factors. Whenever possible, interdisciplinary teams should be utilized to attend to patients and families, and clinicians should be mindful of the affirming and therapeutic nature of treating patients holistically.

References

Abernethy, A., & Wheeler, J. (2008). Total dyspnoea. *Current Opinion in Supportive & Palliative Care*, 2(2), 110–113.

- Anlló, H., Herer, B., Delignières, A., Bocahu, Y., Segundo, I., Alingrin, V. M., et al. (2020). Hypnosis for the management of anxiety and dyspnea in COPD: A randomized, sham-controlled crossover trial. *International Journal of Chronic Obstructive Pulmonary Disease*, 15, 2609.
- American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5®)*. American Psychiatric Publishing.
- Bailey, P. H. (2004). The dyspnea-anxiety-dyspnea cycle—COPD patients' stories of breathlessness: "It's scary/when you can't breathe". *Qualitative Health Research*, 14(6), 760–778.
- Bueno-Gómez, N. (2017). Conceptualizing suffering and pain. *Philosophy, Ethics, and Humanities in Medicine*, 12(1), 1–11.
- Berry, D. L., Wilkie, D. J., Thomas, C. R., Jr., & Fortner, P. (2003). Clinicians communicating with patients experiencing cancer pain. *Cancer investigation*, 21(3), 374–381.
- Burns, A., Gallagley, A., & Byrne, J. (2004). Delirium. *Journal of Neurology, Neurosurgery & Psychiatry*, 75(3), 362–367.
- Cagle, J., & Bunting, M. (2017). Patient reluctance to discuss pain: understanding stoicism, stigma, and other contributing factors. *Journal of Social Work in End-of-Life & Palliative Care*, 13(1), 27–43.
- Campbell, M. (2011). Dyspnea. *AACN Advanced Critical Care*, 22(3), 257–264.
- Celli, B., MacNee, W., Agusti, A., Anzueto, A., Berg, B., Buist, A., et al. (2004). Standards for the diagnosis and treatment of patients with COPD: a summary of the ATS/ERS position paper. *European Respiratory Journal*, 23(6), 932–946.
- Clark, D. (1999). 'Total pain', disciplinary power and the body in the work of Cicely Saunders, 1958–1967. *Social Science & Medicine*, 49(6), 727–736.
- Emerson, N., & Bursch, B. (2020). Communicating with Youth about Pain: Developmental Considerations. *Children*, 7(10), 184.
- Fasolino, T. (2020). Using Guided Imagery to Address Dyspnea and Spiritual Peace for End-Stage Heart Failure Patients: An Interdisciplinary Approach. (FR440D). *Journal Of Pain And Symptom Management*, 59(2), 468–469.
- Feudtner, C., Nye, R., Hill, D., Hall, M., Hinds, P., Johnston, E., et al. (2021). Polysymptomatology in Pediatric Patients Receiving Palliative Care Based on Parent-Reported Data. *JAMA Network Open*, 4(8), e2119730.
- Galbraith, S., Fagan, P., Perkins, P., Lynch, A., & Booth, S. (2010). Does the Use of a Handheld Fan Improve Chronic Dyspnea? A Randomized, Controlled, Crossover Trial. *Journal of Pain and Symptom Management*, 39(5), 831–838.
- Gruenberger, J., Vietri, J., Keininger, D., & Mahler, D. (2017). Greater dyspnea is associated with lower health-related quality of life among European patients with COPD. *International Journal of Chronic Obstructive Pulmonary Disease*, 12, 937–944.
- Henningsen, P. (2022). Management of somatic symptom disorder. *Dialsgoes in Clinical Neuroscience*, 20, 23.

- Hillman, B. A., Tabrizi, M. N., Gauda, E. B., Carson, K. A., & Aucott, S. W. (2015). (2015), The Neonatal Pain, Agitation and Sedation Scale and the bedside nurse's assessment of neonates. *Journal of Perinatology*, 35(2), 128–131.
- Irwin, S., & Ferris, F. (2008). The Opportunity for Psychiatry in Palliative Care. *The Canadian Journal of Psychiatry*, 53(11), 713–724.
- Kane, J., & Primomo, M. (2001). Alleviating the suffering of seriously ill children. *American Journal of Hospice and Palliative Medicine*, 18(3), 161–169.
- Krechel, S. W., & Bildner, J. (1995). CRIES: a new neonatal postoperative pain measurement score. Initial testing of validity and reliability. *Pediatric Anesthesia*, 5(1), 53–61.
- Leclerc, B., Blanchard, L., Cantinotti, M., Couturier, Y., Gervais, D., Lessard, S., & Mongeau, S. (2014). The effectiveness of Interdisciplinary Teams in End-Of-Life Palliative Care: A Systematic review of Comparative Studies. *Journal of Palliative Care*, 30(1), 44–54.
- Light, R., Muro, J., Sato, R., Stansbury, D., Fischer, C., & Brown, S. (1989). Effects of Oral Morphine on Breathlessness and Exercise Tolerance in Patients with Chronic Obstructive Pulmonary Disease. *American Review of Respiratory Disease*, 139(1), 126–133.
- Mahler, D., Selecky, P., & Harrod, C. (2010). Management of dyspnea in patients with advanced lung or heart disease. Practical guidance from the American College of Chest Physicians Consensus Statement. *Polish Archives of Internal Medicine*, 120(5), 160–166.
- Malviya, S., Voepel-Lewis, T., Burke, C., Merkel, S., & Tait, A. R. The revised FLACC observational pain tool: improved reliability and validity for pain assessment in children with cognitive impairment. *Paediatr Anaesth*, 16(3), 258–265.
- Manworren, R., & Stinson, J. (2016). Pediatric Pain Measurement, Assessment, and Evaluation. *Seminars in Pediatric Neurology*, 23(3), 189–200.
- Mercadante, S., Casuccio, A., & Fulfaro, F. (2000). The Course of Symptom Frequency and Intensity in Advanced Cancer Patients Followed at Home. *Journal Of Pain And Symptom Management*, 20(2), 104–112.
- Merkel, S. L., Voepel-Lewis, T., Shayevitz, J. R., & Malviya, S. (1997). The FLACC: a behavioral scale for scoring postoperative pain in young children. *Pediatric Nursing*, 3(3), 293–297.
- Reddy, S., Parsons, H., Elsayem, A., Palmer, J., & Bruera, E. (2009). Characteristics and Correlates of Dyspnea in Patients with Advanced Cancer. *Journal of Palliative Medicine*, 12(1), 29–36.
- Rogers, M. S., & Todd, C. J. (2000). The ‘right kind’ of pain: talking about symptoms in outpatient oncology consultations. *Palliative Medicine*, 14(4), 299–307.
- Tucker, R., Nichols, A., & Policzer, J. (2012). *Unipac 4: Managing Nonpain Symptoms*. American Academy of Hospice and Palliative Medicine.
- Wilson, K., Lander, M., & Chochinov, H. M. (2009). In H. M. Chochinov & W. Breitbart (Eds.), *Diagnosis and Management of Depression in Palliative Care. Handbook of Psychiatry in Palliative Medicine*. Oxford University Press.
- Wolfe, J., Grier, H., Klar, N., Levin, S., Ellenbogen, J., Salem-Schatz, S., Emanuel, E., & Weeks, J. (2000). Symptoms and Suffering at the End of Life in Children with Cancer. *New England Journal of Medicine*, 342(5), 326–333.
- Weinstein, S., Portenoy, R., Harrington, S., & Bial, A. (2012). *Unipac 3: Assessing and Treating Pain*. American Academy of Hospice and Palliative Medicine.

Amanda Padilla MD Assistant Professor of Pediatrics at Baylor College of Medicine. Dr. Padilla is a palliative care physician at Texas Children’s Hospital and is a primary care physician for children and adolescents with medical complexity in Texas Children’s Hospital’s Complex Care Clinic.

Rachel A. Kentor PhD. Assistant Professor in the Department of Pediatrics at Baylor College of Medicine. Dr. Kentor is a Pediatric Psychologist at Texas Childrens Hospital. She specializes in oncology, bone marrow transplant, palliative care, and grief and bereavement. She has presented nationally and internationally on her work with critically ill children and their families, both within academic settings and through national news outlets.

Jared Rubenstein MD Assistant Professor in the Department of Pediatrics at Baylor College of Medicine. Dr. Rubenstein is a Pediatric palliative care doctor at Texas Children’s Hospital and the program director for the pediatric hospice and palliative medicine fellowship. He is focused on medical education and public education about palliative care and uses social media to help people communicate better about challenging topics.

Part IV

**Complementary and Alternative Medical
Interventions and Strategies**



Multimodal Psychological Interventions for Children and Families with Mind–Body Problems

J. Martin Maldonado-Duran, Patrick O'Malley, Kulsoom Kazmi, and Teresa Lartigue

Happy families are all alike; every unhappy family is unhappy in its own way. (Leo Tolstoy. Anna Karenina)

We live in an era of specialization, if not super-specialization in many areas of medicine. This allows certain clinicians to acquire more expertise in a narrower field and to be able to research certain aspects of specific disorders and their treatments. This is a necessary and useful development. However, with sub-specialization there is also a loss of skills in other abilities, for instance, to deal with different problems.

This occurs with physicians and with child psychiatrists and psychotherapists. It would seem desirable that while a part of the clinician's time would be devoted to a focused area, he or she might retain abilities to address "general" problems, for instance, in the field of children's emotional difficulties.

In clinical work with real patients and families, it would be very hard for a clinician to restrict himself to only one type of intervention. For instance, it is clear that despite a purely "behavioristic approach" in which a therapist recommends change through some behavioral intervention, like a token economy, the process still has an element of a "transferential relationship" between the parents of a child and the therapist, i.e., a projection of expectations and fantasies about the therapist and his or her role. This exists in the interaction even when it is not the focus of the therapeutic approach. The same could be said of a "purely psychodynamic" psychotherapy, which unavoidably has elements of behavioral modification implicitly imparted by the psychotherapist, who exhibits more interest in certain aspects of the patient and unwittingly reinforces certain behaviors and changes.

Also, as many clinicians have noted for centuries, the individual patient does not develop a disturbance according to a diagnostic and statistical manual. So an adolescent can exhibit an emotional state that includes anxiety, depressive feelings, identity uncertainty, and conflict with parents. A therapeutic approach that "only" centered on anxiety, even though helpful might not be enough to improve the child's level of happiness and quality of life, as well as his or her experience within the family. The therapist unwittingly or purposefully would suggest perhaps, in the

J. M. Maldonado-Duran (✉)
Menninger Department of Psychiatry, Baylor College of Medicine, Houston, TX, USA
e-mail: jesusmam@bcm.edu

P. O'Malley · K. Kazmi
Child and Adolescent Psychiatry Service, Baylor College of Medicine, Houston, TX, USA
e-mail: Patrick.OMalley@bcm.edu;
kkazmi@legacy.communityhealth.org

T. Lartigue
Mexican Psychoanalytical Association,
Mexico City, Mexico

case mentioned above, some additional interventions with the minor or the parents that might be helpful. Only in very highly structured therapies, manualized therapies, for example, the focus is so narrow that there is little flexibility to address additional points (Havik & VandenBos, 1996; Muller, 2009; Vakoch & Strupp, 2000).

In our medical and psychological practice, there is an increasing emphasis on specialized psychotherapies and there are many varieties of them (Morris et al., 2012). There is a great interest in evidence-based interventions, and this is also a positive development. Cognitive and behavioral therapy is now the standard recommendation for many of the most common problems, including depression and anxiety disturbances, eating problems, as well as externalizing difficulties. When one looks at the evidence, most published studies do show an improvement. However, the question remains of what is being treated and how long are the effects sustained, after the course of psychotherapy.

Cognitive and behavioral psychotherapy has demonstrated great usefulness with some specific conditions, for instance, obsessive-compulsive anxiety and other anxiety disorders. The methods used often involve a manual, homework, and practicing skills, such as gradual exposure to feared stimuli and conquering thoughts, fears, or compulsions gradually.

In traditionally psychodynamic psychotherapies (in German-speaking countries, the term “in depth” or deep psychotherapy is used), historically, there was an almost exclusive emphasis on understanding the problem and less emphasis on “symptom removal” or alleviation of symptoms (Braehler et al., 1991). When this is taken to an extreme, psychoanalysis or in-depth psychotherapy could go on for a long time, or even could become a way of life, particularly for some adult patients, as in “*analysis interminable*.”

Psychoanalysis dominated American psychiatry for several decades, certainly after the Second World War, and psychoanalysis became a central way of understanding all psychopathology and was prescribed for every problem (Ritvo & Cohen, 2013). This led to disappointment, as certainly many conditions did not respond well to

psychoanalysis. The therapy is usually very intense, requiring sessions up to four or five times per week, 1 h each, and this made it quite a difficult therapy to access. Additionally, training psychoanalysts was difficult, also costly, and required a rather extensive period, making it impracticable for many psychiatrists.

At first, despite Sigmund Freud’s opinion on the contrary, in the American scene “lay analysts” (non-physicians) were not accepted for training. This has changed now, but still extensive psychoanalytic psychotherapy is not available in the “real world” for most people.

This, however, does not mean that the insights and the experience gained in treating patients “in depth” are not useful and cannot be approached in different ways. Nowadays, part of the standards for training by the ACGME (Accredited Council for Graduate Medical Education, 2020) includes the learning of psychotherapy for child psychiatry trainees. In other countries, “in depth” psychotherapy can be practiced by physicians, and pediatricians, if they have an interest in learning this, as it is done in many psychosomatic centers, for instance, in Germany, Switzerland, and others.

In the US, psychodynamic psychotherapy with children has developed in several ways, two prominent modalities are interpersonal psychotherapy (Bearsley-Smith et al. 2007) and relational psychotherapy (Altman et al., 2002).

It would be undesirable if the only therapeutic tool of child psychiatrists (or general psychiatrists) was psychopharmacological interventions. This chapter attempts to give a brief overview of some strategies to implement psychotherapy in the real world with child patients and families.

We attempt to describe not “another technique” of conducting psychotherapy, but more a way of thinking about applying and combining different therapeutic strategies to address each unique child/adolescent and their specific family, therefore the term multi-modal. In the “real clinical world” most psychotherapists who have to deal with the patient or family they are trying to assist are not so concerned with the “purity” of their method, i.e. a clinician may well use a cognitive intervention in the midst of a psychody-

namically informed psychotherapy. He or she may also give advice to a child on how to deal with a problem at school, or to the parents on how to deal with a sleep problem in their child, and still have the main emphasis on a particular therapeutic school. The therapies in reality are not “pure” except perhaps in the very scripted manualized therapies that are used mostly for research purposes.

Multi-modal refers to the notion of having several therapeutic strategies to apply with each child and family. The therapeutic approach used by the clinician hopefully employs maximum flexibility to adapt the psychotherapeutic approach to the needs of each child/family. Such an approach has been used in multiple centers (Kozłowska & Hanney, 2002; Kozłowska & Khan, 2011) in Australia. This describes a strategy guided by an attachment-based approach, but including play therapy, family interventions, and other techniques. We have described multimodal strategies in clinical work with young children (Maldonado-Durán & Lartigue, 2002). There are multiple accounts of parent–infant and parent–child psychotherapy, in which the therapist is attempting to conduct psychotherapeutic interventions at the same time with the child and his or her parents (Robert-Tissot et al., 1996; Harel et al., 2006; Lieberman et al., 2005; Lebovici, 1994). Several decades ago, researchers in Lausanne focused on the phenomena that take place in “triadic interactions” (McHale et al., 2008) as the young child, the father, and the mother participate in triadic intervention and influence each other (Novick and Novick, 2013).

Also, for several decades, family therapists of different schools described strategies incorporating all the family members in a systemic intervention in which the goal of the therapeutic intervention is to change the way the members interact with each other. Also, one intervenes with how the family-as-a-whole functions, solves problems and adapts to changes and its members are emotionally involved with each other.

The “lens” with which a problem is seen can go from the intrapsychic to the interpersonal, to the systemic view (family view), and from then the family in a social perspective, embedded in a

certain social group and with specific cultural beliefs, parental opinions, etc.

Similarly, the therapeutic strategy can be focused on a “two person psychology” or intersubjective experience between two people (Delgado et al., 2015): the two persons being the child/adolescent and the psychotherapist. The family therapy approach could be described as “multi-person psychology.” The therapist is here also an active member in evaluating and attempting to help modify interactions between the various family members “in real time” and prescribing some changes in the family interactions at home. Obviously, the therapist also has his or her own mind and body, reacting to what is unfolding in front of him or her.

Each approach may have different indications depending on the nature of the problems at hand, the interest, and opinions of the child and family and the training of the psychotherapist.

One could say in general that internalizing problems lend themselves more to “two-person” interventions, particularly with adolescents. Problems of an externalizing nature (disruptiveness, aggression, breaking rules) may be, at least initially, addressed from a family perspective.

If the clinician conducting the psychotherapy is a physician, i.e., a psychiatrist, a pharmacological approach could be incorporated among the other intervention strategies. Some authors have referred to this approach as “family psychiatry” (Heru, 2006). With adults, various family interventions have proven to be helpful in persons with schizophrenia and other major psychiatric conditions (Girón et al., 2015; Pineda & Dadds, 2013). As children are embedded in a family, a family therapy approach may be quite useful. For instance, working with a child who exhibits the effects of harsh parenting by a too strict father, a therapist could discuss individually with a child his or her feelings, fears, memories, etc., which would be helpful. However, the efforts of a psychotherapist trying to help a child can be undone readily by further negative encounters in everyday life with the same father. It would be useful if the therapist could address in meetings with the father or the family, how the father approaches his child, and explore the effects of

this on the son or daughter, and other family members. If the father can explore his exasperation, anger, and discuss its origins and expressions of anger, and these actually change, this may in the long run do more to help the child with his reactions.

Psychodynamic Psychotherapies

We use the plural to acknowledge the various strategies that have been developed to help children deal with emotional problems through play and other interactions. In the modern practice of child psychiatry, this is becoming an almost “forgotten intervention” or something to be practiced only by other disciplines, such as psychologists and social workers. We illustrate here some of the benefits and strategies to utilize play and other interactions in dealing with mind-body problems in children and adolescents.

The Neurobiology of Psychotherapy

Research into the neurophysiology of psychotherapy is mostly in its infancy. There are few studies with children and more studies with adults, in which various measures have been used to explore the relationship between the patient and the psychotherapist and the possible effects of the therapeutic process, in terms of changes in the functioning of the brain or the functioning of certain circuits, associated with cognition and with emotion (Engen & Singer, 2013).

For instance, a small study by Marci et al. (2006) explored whether in moments in which the patient reported an intense emotional connection with the therapist and a therapeutic alliance, there were similar changes in galvanic skin response in both, which did not occur when there were no encounters of this sort. Another study also focused on changes in functioning in various areas of the cerebral cortex during psychotherapy, in which there was a high level of empathy or intersubjective understanding between the patient and the therapist discussing traumatic experiences (Boeker et al, 2013). This study

(Stratford et al., 2009) found an increase in activity in the parietal lobe in the patients involved, a small number of them (15 patients).

Therapeutic alliance means an intuitive understanding between the therapist and the patient (and vice versa) that they are working toward a common goal, the improvement of the patient. The intuitive understanding of the other implies phenomena that are natural to human beings, such as intersubjectivity and “implicit learning,” that is something that the person feels about the other but is not necessarily communicated with words (Lieberman, 2000). With increasing access to the “emotional brain” and the ability to observe the functioning of the limbic system, the amygdala, and other areas of the brain, it is possible to achieve more information about what happens during a psychotherapeutic process (Schore, 2003). One of the therapeutic effects seems to “give meaning” to the experience of the other, a difficult or painful experience, and make it more understandable. Also, it seems helpful to establish connections between the past and the present, and the way the mind is reminded of events from the past from what is happening in the here and now (Calcagni and Elenkov 2006; Elenkov and Chrousos, 2006). Feeling understood, validated, and contained may be therapeutic experiences for people, including children, who have felt misunderstood, ignored, or treated badly in the past. There is the possibility of a “corrective emotional experience” (term used first by Franz Alexander) in discussing something and expressing feelings in front of another person who is interested in understanding and accompanying the other to “process” the experiences, emotions, and reactions (Lane and Nadel, 2020).

There are a number of suggestions as to the mechanisms by which play therapy might induce changes and one of them is a “neurobiological model” which Levy (2011) has described. This consists of the question of cognition, there is an explicit cognition, and then there is implicit cognition. Both can have a lasting impact in improving the effects of past experiences and cognitions.

What Is Psychodynamic Psychotherapy?

The term psychodynamic refers to several basic notions about the nature of the mind and the body of the patient. The new findings in neurobiology are demonstrating some of the psychodynamic ideas that previously were more “theoretical” or “clinical” and which could be dismissed as mere speculations or fantasies, while some of them have actual representations in brain activity and functioning. For instance, in human interaction, there is a “digital” communication, which is logical, direct, and often based on words which are spoken and which transmit a desired message. This is usually processed by the receiver of the communication in the left brain and the contents are processed in this logical or thinking fashion. Additionally, in all digital messages, there are “unspoken communications” which are implicit and unavoidable (Cozolino, 2017). These consist of the way in which things are said and involve the tone, the speed, the choice of emotionally charged words, the volume, and what is conveyed “between the lines” (Remschmidt, 2001; Shirtcliff et al., 2009). The digital message is emitted by a person who additionally has a body and a mouth, as well as gestures, a posture, and a way of saying things. These messages are processed by the listener in the “right brain” and sometimes are much more important than the spoken message, they have a greater impact in eliciting certain responses. This is a “non-logical” or intuitive language that is difficult to “put into words” (Cozolino, 2014).

Psychodynamic means a “movement of forces” within the mind and body of the person emitting a message and the person receiving it. It involves thoughts, feelings, and behavior in interplay (Rous and Clark, 2011). A person may convey with words “I welcome you” but the opposite through the tone of voice or the body language.

In psychodynamic play psychotherapy, the clinician is attentive not only to the conscious and logical communications originating from the child or adolescent, but also “what is not said” with words, what is implied, or what one “feels” in interaction with the child in question. The psy-

chotherapist attempts to listen to “all the messages” that are conveyed by words and actions. This requires an openness to register digital and implicit, non-verbal communications, and for the clinician to allow him or herself “to feel” and register what is happening in this interpersonal or inter-corporeal space.

Repeated observations and experiences with a child may allow the clinician to develop some preliminary conclusions about the child who is playing, be it by himself or with the therapist or with the caregivers: “the child seems angry” may be a working assumption when a child repeatedly plays themes of animals or people fighting. A child who constantly represents going to the doctor, calling an ambulance, and dying might be representing fears of being sick or previous experiences of such, in him or herself or in family members.

Play Therapy

In the discipline of child psychiatry, this is a threatened species. This is unfortunate as the child psychiatrist is in a unique position to offer an “integrated and multimodal” set of interventions to the child and family.

Play is a spontaneous activity in which animals and children engage, as well as adolescents and adults. These activities are pleasurable and are not engaged in for any obviously utilitarian reason (such as gaining access to food, etc.). They may have a function of “practicing skills” as in the case of play fighting or rough play, and also when play is symbolic in nature, the processing of past experiences, and elaboration as to their meaning, implications, and expression of emotions. By its very nature, the symbolic play has enactive and verbal elements (Levy, 2011).

Play is predominant during the developmental phase, but to a degree it is retained by many adults from time to time, between adults or between adults and youngsters. It is practiced “for its own sake” and because it allows exercise as well as practicing skills that may be useful in the future. It is perceived as “fun” or happiness by its participants, and it is initiated spontane-

ously by them. In humans, play is practiced in most societies during childhood and through the rest of life in more limited forms. One could say some sports and viewing others engaged in sports are a form of play. There is a satisfaction and pleasure associated with the activity.

Most parents enjoy playing with their child(ren). Since infancy, the child will make attempts to interact playfully with his or her caregivers, and this increases during the preschool years and will continue later in different versions (Bonovitz & Harlem, 2018). As Winnicott pointed out (Varga, 2011) play is an intermediate space in which reality is suspended temporarily and one can pretend to be a tiger, a dog, and a monster, and the adult will also engage in this pretense which hopefully is also pleasant for him or her. Ideally, it is a mutually pleasurable activity.

These playful interactions in which there is laughter, satisfaction of desires, discharge of energy and of negative feelings such as anger, or the display of fears accomplish the symbolic realization of desires and processing of difficult experiences. The experience of “playing with” the other promotes a sort of bond with the partner in the play which makes future interactions easier. This is a powerful agent to maintain positive relationships between parents and their children. Optimally it should be practiced also in the infant and preschool classrooms, where unfortunately many caregivers see themselves as only “watching the children “rather than playing with them.

We encounter a significant proportion of parents that do not know how to play with infants and young children, or that find it boring. Many attempt to do it in a “marginal way” while they are looking at their cell phone or tablet. Often these adults have not had the experience, during their own childhood, of interacting playfully, but they can learn. After all, a great majority of parents love their children very much and would like to see them happy. Also, they might discover that the play also permits the parents’ expression of their own feelings in a playful way.

We find that in such instances, it is useful for the clinician to play with the child in a symbolic and mutual game, and then invite the parent or caregiver to join at some point (Hammel, 2019).

The clinician may model the possibilities of these interactions and later on allow the spontaneous emergence of themes and games between the parent(s) and the child. When youngsters have some developmental disorders and autistic spectrum difficulties, most of the play will have to be initiated by the parent, while with children without those problems it is the child who is eager to play. There are a great number of possible play interactions even while a parent is shopping for groceries with a young child, during a car ride, at the dinner table, or in spontaneous interactions. Here we mention only a few strategies.

Use of Puppets, Miniature Toys/ Families, and Doll House

Having in the consulting room items like hand puppets, marionettes, miniature people and animals, and a doll house is useful to present to the child the opportunity for symbolic representations, with preschool and school-age children, in particular, this is useful. When the child is very shy, inhibited, or anxious, having puppets “speak” to the child can ease the interaction in a triangular fashion, i.e., talking to the puppet. It may be useful to have a masculine figure, a feminine one and perhaps a wolf, crocodile, or a lion, commonly associated with anger (Mischke-Reeds, 2018). Once the child starts talking, the clinician can assess the child’s language capacities and get an idea of his or her emotional life and the possibility of symbolization, as well as for reciprocal interaction. A parent may “make the puppet talk” and facilitate the child’s response and playfulness. One can encourage the child to say “whatever he or she wants” in the consulting room. The expression of “bad words” and of very angry actions, such as hitting and kicking, should be allowed to occur. From a behavioral point of view, some parents worry that this “encouraging” or condoning aggressive behavior. We see it as an expression of a desire, which is freed in a symbolic representation, which has a therapeutic effect.

At first this is a way of understanding how the young child “really feels,” if he or she wants to be

“the boss,” punish the parents, etc., in symbolic representations. This strategy is very different from a behavioral/didactic one in which the child might be encouraged to “use words instead of hitting.” In the psychodynamic approach the child is free to express very unpleasant feelings, and also sexualized actions in the play if the child desires so. The expressions are to be understood and explored “in depth,” rather than limited or curtailed in the interest of social conventions. Of course, the behavior is contained in the consulting room and the child knows what is happening in the play scenes “is not real.”

The clinician would not say “we keep our hands to ourselves, we don’t hit people” or “we don’t say bad words.” The premise of this is that the clinician wants to know the extent of the child’s feelings and “forbidden thoughts and actions.” After all these are being expressed in a symbolic way, contained, and this is the vehicle to deepen our understanding of what is in the child’s mind and experiences.

Joseph, a five year old boy, is brought for evaluation by his mother. He is the third child of a family in which the father is a cardiologist and the mother a nurse who is now staying home. The family appears as “picture perfect” in society. They are of upper-middle socioeconomic class, blonde and everyone, except for Joseph, is beautiful. Joseph is very smallish, thin and looks sad. He has unstable juvenile diabetes, diagnosed two years prior. Joseph has to be checked as to his sugar level several times a day and had to get insulin injections several also multiple times. An insulin pump had not been contemplated yet. Joseph knows he is very different from all his family members. He is the one with a chronic health condition. When he has to get an injection, he struggles with his mother or father, tries to escape or run elsewhere in the house and “fights them”, this is the main reason why the child was brought, as every shot is a fight. At times he hits his mother when he is angry, or the father and they punish him taking away toys and the like. Joseph feels very different from other children and does not like to talk about his diabetes.

During the first interview the clinician produces a large puppet, a bear who “can talk and move his arms”. The boy suggests that they should “play doctor”. His mother is in the room. Joseph wants to be the doctor. He tries to check the bear’s stomach and the bear protests. The bear

voices that he is tired of always being sick, he is tired of medicines and “always getting shots”. Joseph at first smiles and then laughs intensely. The “doctor” then announces that a shot is necessary and the bear protests and fights. With great energy, Joseph grabs the bear and “stabs” the bear with a pencil pretending it is a shot. The bear gestures in pain and says “no more shots”. The doctor says “you will get a hundred shots” and proceeds to “stab” the bear vigorously. The bear complains and cries and says it hurts too much. The “doctor” then announces with great pleasure the bear must get “a hundred million more shots”. Now the child is almost uncontrollable unleashing a great deal of anger on the bear. He starts wrestling with the bear and hits him with great energy, he wants to scare the bear also. The bear starts fighting back and says “why do I have to get shots?” and Joseph answers “because you are a bad boy”. The child’s mother is now a little alarmed. She has always tried to teach him not to show anger, never to be unpleasant, let alone expressing physical aggression. The clinician tries to impress upon her that this is something he feels and it would be useful to let him express the anger, as he is now the one “conducting the attacks”. She is skeptical but allows this to happen. The mother later on was able to speak of the surprise they experienced having a child like Joseph, as the other children are so healthy, involved in sports, etc. the mother was able to see the frustrations of the child being the object of all these treatments and his perception that his disease is “his fault”.

In the above case, there is a clear expression of anger and frustration both in the child’s everyday life and in the clinical setting. Sometimes children who try very hard to “be so good” may after sometime start daring to express anger and sometimes this is very intense, leading to a “catharsis” that otherwise the child cannot permit him or herself at home or at school. These expressions need to be explored and dealt with, e.g., frustration, feeling too controlled, that the parents “are mean,” etc.

The puppet or miniature person can say can “say what one really thinks” or express forbidden emotions or thoughts. If the clinician models this to the child during symbolic play, the child can follow that lead and give way to repressed feelings or reactions. For instance, a therapist who is pretending to be “the child” in a game depicting

the family can complain that his parents are “too bossy” or that they are too strict and show his or her resentment during the play. The child may then be able to, spontaneously or following that lead, express those “forbidden feelings.” The same can be done with multiple difficult situations.

The play can also give the child a sense of mastery by doing things that in real life he or she fears. For instance, a child, who is afraid of going to the toilet or defecating for fear of falling, of the water splashing, of an animal coming out from the toilet to bite the child, or of hurting, can process these fears in the play situation. The “pretend child” (a miniature person) can sit on a “pretend toilet” and express the thoughts or feelings associated with the activity. The “feces” can just be imagined or represented with small wads of paper or plasticine. The same can be said of many phobias, dogs, horses, going to bed, the dark, fear of being left or abandoned, going to school, and many of the things that scare children.

In children who have undergone traumatic events or have been exposed to traumatic interactions for a long time, such as physical abuse or sexual abuse, these events can be “worked through” by means of play representations.

An 8 year old boy, Arthur, had been in foster care for a couple of years as his mother was addicted to drugs. The foster parents were a married couple who were older. The foster father had engaged in sexualized play with Arthur in situations like going to bed or taking baths together. This was not known to anybody then. Arthur was eventually returned to his biological mother after about a year in that foster home. The biological mother had completed a rehabilitation program for drug dependency. Once with his mother, Arthur would repeatedly show his genitals to other boys and wanted to see theirs. The mother brought Arthur to explore this issue.

Arthur had “a great secret” which the foster father had told him to keep and “never tell anyone” or he would never see the foster father ever. He had given many gifts and toys to Arthur to “convey love” and perhaps grooming him to engage in the sexualized activities when he was of preschool age.

When Arthur finally told his mother what had happened, the play interactions with miniature dolls was useful to understand Arthur’s experiences and feelings. First, he represented situations involving fondling and fellatio, and then repeated aggressive acts. Arthur would “take revenge on the man” by pretending to cut off his penis and punishing the man repeatedly. He seemed to become inundated by anger and would ‘attack’ the pretend foster father intensely during the play sequences. This allowed him to explore the many contradictory feelings he had about this man and “keeping secrets”, as well as eliminating the need to “reenact” his sexualized desires with other children.

For children with developmental disabilities who struggle to use language to express themselves, an excellent vehicle to teach words and feelings is through symbolic play representations. The child can be the father, the mother, the grandfather, etc., and “make the different characters talk.” This also has the benefit of helping the child to develop a “theory of mind” as the youngster has to assume different roles and imagine how other people feel or act in a certain way. These play sequences can be practiced at home with the parents, promoting the development of imaginative activities, language, and the expression of feelings and wishes.

The symbolic representations allow parents to understand the point of view of their child, his or her feelings. Sometimes the play scenes evoke in the parents memories of their own childhood, which had been repressed. This experience helps them empathize with their child and understand how he or she might feel.

In children who feel very distant from their parents, as the latter are very busy and occupied with everyday household duties, or when there is much tension and hostility in the relationship, play interactions “create a space” in which new memories are created of pleasurable interactions. This “being with” while having fun activities together and creating a partnership which is pleasurable for the child and his or her parents can help solve negative feelings. Sometimes this is the first step to improving negative cycles of interactions.

A young child psychiatrist was trying to help a five-year-old boy, Joshua whose young parents brought him for treatment due to frequent temper outbursts, rebellious behavior, irritability and non-cooperation in general. Joshua sometimes would hit his parents. Joshua would say he “did not love them” and tended to do the opposite of what was asked of him. If they asked him to close a door, he would open it more. If they asked him to speak quietly he would yell, as if trying to wake up his little sister, who was nine months old and during the session was in her mother’s arms. The parents said they did not see that the birth of the sister had had any negative effect on Joshua. They thought he had oppositional defiant disorder and perhaps this was constitutional or innate. When the clinician started to play with the child, Joshua proceeded to represent a family with a mother, a father and two children. Soon the psychiatrist started to feel sad in the role of the child, noticing the mother was so involved with the new baby, feeding her, carrying her, cooing to the baby. The clinician “felt” the possible sadness that Joshua might experience, feeling displaced and set aside, now as an outsider. The clinician started to say, representing Joshua :“they hardly pay attention to me now” ...“the most important thing is the baby, always the baby, they don’t think of anything else than the baby”. The clinician said this in a whiny voice, as if complaining. Joshua started to laugh. The doll representing Joshua started to complain that the baby needed everything done for her, feeding her, changing diapers, bathing her, sleeping with the mother (where he used to sleep). The doll-Joshua said “now I am too big” and said he would like to be a baby again. He said perhaps then his parents would show him love. The boy doll started to “cry”. Then the parents felt the emotional pain of their child represented by these scenes, they realized that he was now feeling like a second class person in the family. The father was moved and told Joshua that he always would be very special, as he was their first child. The father hugged Joshua and told him he would play with him, carry him and spend time with him. the mother said he would be “like a baby “when the actual baby took naps. In a few days the expressions of anger from Joshua diminished remarkably. He did not feel “betrayed” any longer, nor was defiant.

These theatrical representations are often more “direct” and anchored in feelings than mere verbal discussions of reactions or feelings. The techniques can be used even with very young children with limited language abilities and those with developmental language difficulties.

Family Therapy

Family psychotherapy is generally understood as a psychotherapeutic approach that involves various or all family members in the endeavor to modify troubling or problematic aspects of the functioning, behavior, or feelings of one, several, or all family members. In the “systemic framework” we have a paradigm change from the focus on individual members to the “family as a whole,” i.e., the family itself and its components become the focus of the intervention and not the individual members. It is another perspective through which clinicians may understand the behavior and feelings of the family members and their troubling symptoms, such as depression, anger problems, anxieties, and many others. Indeed, systemic family therapy has been shown to be effective in dealing with multiple kinds of child problems, such as externalization and internalization problems in children (Carr, 2009, 2014, 2019). The general principles of systemic family therapy approaches are as follows: (1) the behavior of an individual member of the family can be understood as strongly influenced or even dependent on the actions and attitudes of other family members, or on the interpersonal context of the child. (2) The symptoms in the child may be, consciously or unconsciously, facilitated, made possible, or even maintained or encouraged by other family members. (3) Changing the behavior of one member participating in a sequence of events or interactions leading to the symptomatic behavior will make it impossible for the same sequence to occur, and the symptoms or problematic behaviors may be modified or disappear altogether. (4) Approaching the family-as-a-whole may be a more “economic” or effective strategy to deal with situations in which multiple family members manifest emotional or behavioral difficulties, rather than referring each of the members to their own separate individual psychotherapy.

It is well known that in families several of the members may have such difficulties due to genetic, interpersonal, and transgenerational transmission of ways to be in the world. These difficulties make interactions between family

members problematic and emotionally painful at times.

Historically there have been several “schools” of family therapy which can be employed separately in their pure form or elements of several of these can be combined to form an eclectic approach. The most frequently employed are the structural approach proposed by Minuchin years ago, which helped families to maintain lines of hierarchy and rules, particularly useful for those who were chaotic and more disorganized families. The strategic approach proposed by Hailey and others is helpful to deal with a variety of problems in children and adolescents. Its focus is problem solving and proposes strategies by which the family can change maladaptive or dysfunctional interactional sequences. The “paradoxical school” developed by Selvini-Palazzoli and Foscolo in Milan, Italy, is useful in families in which the symptoms of the child are maintained by an unconscious collusion between the family members to divert from other areas of difficulty (like a child “volunteering” to develop an eating disorder to be the focus of the parents’ intense concern, instead of the parents dealing with their own marital difficulties). In the paradoxical approach, the therapist highlights the “benefits” of maintaining the child’s symptoms and may actually prescribe them to the youngster. The hope is that such paradoxical recommendation can mobilize the child and family to do something else.

The transgenerational model developed by Murray Bowen puts the current family in the context of previous generations, the families of origin of each of the parents in the family, and identifies parallels and those patterns that are indeed resemblance of the past and which are repeated or mirrored in the present situation.

Dealing with real families in the clinical setting often requires to incorporate elements from various of these “schools”: from setting boundaries to suggesting problem-solving strategies and proposing to the family a heuristic explanation of why the child is symptomatic.

Often, the problematic patterns of interaction are quite clearly displayed in a sort of *mise en scene* during the evaluation sessions. These pat-

terns, even when they are painful and make family members suffer, are not visible to the members of the family who are “inside” and are unaware of the situation. The question to be solved is how can the interactions and transactional sequences change. This change is only possible if the family is willing to embrace difficult modifications. Many of the initial interventions of the family therapist will “destabilize” the family to a certain degree, as a new transactional pattern is contemplated. The transformation of those patterns, or their maintenance is what gives the signal about whether the family is ready for change. This may or may not be possible, some families may in reality desire to maintain its patterns, even when on the surface they cause suffering or render one member to exhibit emotional or behavioral difficulties.

The family therapy approach will incorporate two major aspects when trying to understand a child’s problems, the structure, and functioning of the family and the evaluation of their relationships.

Regarding the evaluation of the family, there are multiple strategies to do so. Most commonly family therapists evaluate the cohesiveness of the members (how much they feel they belong in the family and feels attached to each other) and the emotional involvement (the feelings of one member affect the feelings of others who are aware of the emotions and behaviors of the other members). The flexibility of the family is another parameter. Within a structure and routines there is enough room for individual variations, exceptions and changes. Problem-solving abilities of the family mean to assess whether once a problem arises, the members try to solve it, or keep attempting the same failed approaches over and over.

Families usually change with the different developmental needs of the children. The therapist will be interested in the various relationships in the family system, the marital interactions, the parent-child interactions (each parent with each child), and the siblings’ relationships with each other.

This allows the therapist to focus his or her interventions on the issues at hand. The principle

of this is that negative relationships (e.g., controlling, distant, anxious, neglectful, abusive) have a negative impact on the development of family members, particularly children. Unfortunately, many families are multi-problem, i.e., they face multiple difficulties, not only with one child but also with various children. There may be maternal or paternal difficulties (depression, anxiety, antecedents of trauma, substance or alcohol abuse), as well as stressors faced by the family. These may include financial problems and difficulties with housing (a too small setting, crowding, unsafe setting). There may be problems also with their environment, such as criminality in the neighborhood and dangerous situations which may deeply impact the behavior of parents toward the children. Finally, in a multicultural society like many Western countries, there may be conflicts regarding cultural values and practices, which may not be understood or valued by the dominant culture.

The therapist tries to understand how these variables impact the family-as-a whole and the different members as contributing to the problems at hand. It may be more expeditious to try to address these multiple problems in family therapy sessions than having five or six individual psychotherapeutic processes going at the same time.

In the case of mind–body problems, several family issues become very prominent (Husain et al., 2007). These include, for example, what is “the sick role” and what is the meaning – for the family – of being sick. This may be relevant for the symptomatic or ill child (with a medical illness or a functional condition) as well as parents who may have experienced multiple stressors for years or trauma. Parents who have suffered much as children often will manifest present difficulties with chronic pain, back pain, fatigue, somatization difficulties, and model to the child the “sick behavior.” Other scenarios are the over-emphasis on physical conditions, as opposed to talking about feelings and in particular negative emotions.

Ramon is a 14 year old boy, who exhibits many difficult behaviors, has a tendency to ignore his

grandmother’s requests and multiple demands. The boy suffers from chronic headaches and is very “hypochondriac” according to his parents. He fears getting sick all the time, fears contagion from diseases (even before the pandemic). Ramon is scared of acquiring an ominous medical condition and is almost panicked when he has the slightest cough, etc.

Ramon’s mother was not in his life for many years due to drug use. Ramon lives with his maternal grandmother, who was left by her husband many years ago, it is “just the two of them” in the house.

Ramon is fairly inhibited, he has hardly any friends and is constantly with his grandmother when he is not in school, he misses school rather often. During the sessions of family therapy when Ramon voices the wish to have friends and to go to their houses and spend time with their families his grandmother immediately says “but who will take care of me? I would be lonely without you!”

Even during the sessions when Ramon does not sit on the couch right next to his grandmother, she says “you are leaving me to sit alone” come here!.

When we ask Ramon if he would like to grow up and go to college, he says that he would like to go to a prestigious college in the East coast. His grandmother interrupts him, saying that she would be very sad, because there would not be anybody to take care of her.

The grandmother is also a hypochondriac, and suffers from diabetes, not very severe, and is extremely anxious due to trauma in her own childhood and later on in life. She transmits her fears to Ramon, who volunteers to stay home all the time to “monitor grandma”.

The therapist focused on the grandmother finding other supportive relationships that were not her grandson, and for Ramon to find ways to be reassured then his grandmother would be fine, even if he were gone for only two hours at a time. This has never happened before and when occasionally the boy goes out with friends, he is constantly texting his grandmother to ask “if she is ok”.

It would appear that for years, Ramon’s grandmother has instilled in the child a fear of the outside, of what might happen, and a worry about “not being healthy” and checking his body all the time, as she does.

The therapy had to focus not only on Ramon’s wishes to grow up and become his own person but also on his grandmother to allow him to be less afraid, to not scare him constantly, and to

find other persons with whom she can be emotionally close.

In some families, a child being sick and having symptoms can become a strategy for the parents to avoid dealing with their marital problems. The therapist can assist the child to realize that the parents have to deal with their relational problems themselves. Some sessions of marital therapy in which the parents do not focus on their sick child but on their relationship could be helpful. One question to be addressed is “how would the interaction be between the spouses if they were not talking about the illness of their child?” They might have to deal with emotional distance, intense conflict, and other marital problems. If this is addressed or even solved, then they could “release” the child from being the cement to continue the marriage alive.

In the course family therapy it may transpire that one parent has intense posttraumatic symptoms that are replayed or reactivated by the behavior of the “symptomatic child” or by certain events in the family. The parent could have depression, intense anxiety, etc., and an individualized intervention to address those issues could be helpful. Intervention by the same psychiatrist can be required, as often there are logistical financial and other obstacles to have a separate clinician dealing with the parent.

During the course of the intervention with the child/family there should be room for using other techniques if these could be useful, like hypnosis with the index child in order to help with anxiety or intense fears. Also, some sessions of eye movement desensitization and reprocessing, or biofeedback could be implemented in order to deal with intense autonomic activation and posttraumatic symptoms, be it in the child or a parent. The same clinician can also provide pharmacotherapeutic interventions with the child if this seems necessary, such as psychostimulant medications, antidepressants, and others to help reduce the intensity of the symptoms.

There can be no “menu” of what is to be done, but the process unfolds in a logical way from the difficulties that come to the surface and gain prominence in the attempts to help the child and the family.

References

- ACGME. (2020). <https://www.acgme.org/globalassets/PFAssets/>
- Altman, L., Briggs, R., Frankel, J., Gensler, D., & Pantone, P. (2002). *Relational child psychotherapy*. Other Press.
- Bearsley-Smith, C., Browne, M. O., Sellick, K., Villanueva, E. V., Chesters, J., Francis, K., & Reddy, P. (2007). Does interpersonal psychotherapy improve clinical care for adolescents with depression attending a rural child and adolescent mental health service? Study protocol for a cluster randomised feasibility trial. *BMC Psychiatry*, 7(1). <https://doi.org/10.1186/1471-244x-7-53>
- Boeker, H., Richter, A., Himmighoffen, H., Ernst, J., Bohleber, L., Hofmann, E., et al. (2013). Essentials of psychoanalytic process and change: How can we investigate the neural effects of psychodynamic psychotherapy in individualized neuro-imaging? *Frontiers in Human Neuroscience*, 7, 1–18.
- Bonovitz, C., & Harlem, A. (Eds.). (2018). *Developmental perspectives in child psychoanalysis and psychotherapy*. Routledge/Taylor & Francis.
- Braehler, E., Geyer, M., & Kavanow, M. M. (1991). *Psychotherapie in der Medizin. Beitrage zur psychosozialen Medizin in ost-un westerupaeischen Laendern*. Springer Fachmedien Wiesbaden.
- Calcagni, E., & Elenkov, I. (2006). Stress system activity, innate and T helper cytokines, and susceptibility to immune-related diseases. *Annals of the New York Academy of Sciences*, 1069, 62–76.
- Carr, A. (2009). The effectiveness of family therapy and systemic interventions for child-focused problems. *Journal of Family Therapy*, 31(1), 3–45.
- Carr, A. (2014). The evidence-base for family therapy and systemic interventions for child-focused problems. *Journal of Family Therapy*, 36(2), 107–157.
- Carr, A. (2019). Family therapy and systemic interventions for child-focused problems: The current evidence base. *Journal of Family Therapy*, 41(2), 153–213.
- Cozolino, L. (2014). *The neuroscience of human relationships: Attachment and the developing social brain* (Norton series on interpersonal neurobiology). WW Norton & Company.
- Cozolino, L. (2017). *The neuroscience of psychotherapy*. W.W. Norton.
- Delgado, S. V., Strawn, J. R., & Pedapati, E. V. (2015). *Contemporary psychodynamic psychotherapy for children and adolescents: Integrating intersubjectivity and neuroscience*. Springer.
- Elenkov, I. J., & Chrousos, G. P. (2006). Stress system—Organization, physiology and immunoregulation. *Neuroimmunomodulation*, 13, 257–267.
- Engen, H. G., & Singer, T. (2013). Empathy circuits. *Current Opinion in Neurobiology*, 23(2), 275–282.
- Girón, M., Nova-Fernández, F., Mañá-Alvarenga, S., Nolasco, A., Molina-Habas, A., Fernández-Yañez, A., Tabares-Seisdedos, R., & Gómez-Beneyto, M. (2015).

- How does family intervention improve the outcome of people with schizophrenia? *Social Psychiatry and Psychiatric Epidemiology*, 50(3), 379–387.
- Hammel, S. (2019). *Handbook of therapeutic storytelling. Stories and Metaphors in psychotherapy, child and family therapy, medical treatment, coaching and supervision*. Routledge/Taylor & Francis Group.
- Harel, J., Kaplan, H., Avimeir-Patt, R., & Ben-Aaron, M. (2006). The child's active role in mother-child, father-child psychotherapy: A psychodynamic approach to the treatment of relational disturbances. *Psychology and Psychotherapy: Theory, Research and Practice*, 79(1), 23–36.
- Havik, O. E., & VandenBos, G. R. (1996). Limitations of manualized psychotherapy for everyday clinical practice. *Clinical Psychology: Science and Practice*, 3(3), 264–267.
- Heru, A. M. (2006). Family psychiatry: From research to practice. *American Journal of Psychiatry*, 163(6), 962–968.
- Husain, K., Browne, T., & Chalder, T. (2007). A review of psychological models and interventions for medically unexplained somatic symptoms in children. *Child and Adolescent Mental Health*, 12(1), 2–7.
- Kozłowska, K., & Hanney, L. (2002). The network perspective: An integration of attachment and family systems theories. *Family Process*, 41(3), 285–312.
- Kozłowska, K., & Khan, R. (2011). A developmental, body-oriented intervention for children and adolescents with medically unexplained chronic pain. *Clinical Child Psychology and Psychiatry*, 16(4), 575–598.
- Lane, R. D., & Nadel, L. (2020). *Neuroscience of enduring change: Implications for psychotherapy*. Oxford University Press.
- Lebovici, S. (1994). La pratique des psychothérapies mères-bébés par Bertrand Cramer et Francisco Palacio-Espasa. *La Psychiatrie de l'Enfant*, 37(2), 415–422.
- Levy, A. J. (2011). Neurobiology and the therapeutic action of psychoanalytic play therapy with children. *Clinical Social Work Journal*, 39, 50–60.
- Lieberman, M. D. (2000). Intuition: A social neuroscience approach. *Psychological Bulletin*, 126, 109–137.
- Lieberman, A. F., Van Horn, P., & Ippen, C. G. (2005). Toward evidence-based treatment: Child-parent psychotherapy with preschoolers exposed to marital violence. *Journal of the American Academy of Child & Adolescent Psychiatry*, 44(12), 1241–1248.
- Maldonado-Durán, J. M., & Lartigue, T. (2002). Multimodal parent-infant psychotherapy. In J. M. Maldonado-Durán (Ed.), *Infant and toddler mental health: Models of clinical intervention with infants and their families* (pp. 129–159).
- Marci, C. D., Glick, D. M., & Ablon, J. S. (2006). The relationship among patient contemplation, early alliance and continuation in psychotherapy. *Psychotherapy Theory, Research, Practice, Training*, 43(2), 238–243.
- McHale, J., Fivaz-Deperusinge, E., Dickstein, S., Robertson, J., & Daley, M. (2008). New evidence for the social embeddedness of infants' early triangular capacities. *Family Process*, 47(4), 445–463.
- Mischke-Reeds, M. (2018). *Somatic psychotherapy toolbox*. PESI Publishing & Media.
- Morris, R. J., Thompson, K. C., & Morris, Y. P. (2012). Child psychotherapy. In *Handbook of psychology* (pp. 454–473). Wiley.
- Muller, K. L. (2009). Manualized psychotherapies in the "Real World". *Pragmatic Case Studies in Psychotherapy*, 5(2), 28–34.
- Novick, K. K., & Novick, J. (2013). A new model of techniques for concurrent psychodynamic work with parents of child and adolescent psychotherapy patients. *Child and Adolescent Psychiatric Clinics of North America*, 22(2), 331–349.
- Pineda, J., & Dadds, M. R. (2013). Family intervention for adolescents with suicidal behavior: A randomized controlled trial and mediation analysis. *Journal of the American Academy of Child & Adolescent Psychiatry*, 52(8), 851–862.
- Remschmidt, H. (2001). *Psychotherapy with children and adolescents*. Cambridge University Press.
- Ritvo, R. Z., & Cohen, J. A. (2013). Past imperfect, future tense: Psychotherapy and child psychiatry. *Journal of the American Academy of Child & Adolescent Psychiatry*, 52(9), 891–893.
- Robert-Tissot, C., Cramer, B., Stern, D. N., Serpa, S. R., Bachmann, J. P., Palacio-Espasa, F., et al. (1996). Outcome evaluation in brief mother-infant psychotherapies: Report on 75 cases. *Infant Mental Health Journal*, 17(2), 97–114.
- Rous, E., & Clark, A. (2011). Thinking without knowing – Child psychoanalytic psychotherapy in the UK and evidence-based practice. *Journal of Evaluation in Clinical Practice*, 19(4), 573–578.
- Schore, A. N. (2003). Revolution connections. In J. Corrigan & H. Wilkinson (Eds.), *Psychotherapy and neuroscience*. Karnac.
- Shirtcliff, E. A., Vitacco, M. J., Graf, A. R., Gostisha, A. J., Merz, J. L., & Zahn-Waxler, C. (2009). Neurobiology of empathy and callousness: Implications for the development of antisocial behavior. *Behavioral Sciences & the Law*, 27(2), 137–171.
- Stratford, T., Lal, S., & Meara, A. (2009). Neurophysiology of therapeutic alliance. *Gestalt Journal of Australia and New Zealand*, 5(2), 19–47.
- Vakoch, D. A., & Strupp, H. H. (2000). The evolution of psychotherapy training: Reflections on manual-based learning and future alternatives. *Journal of Clinical Psychology*, 56(3), 309–318.
- Varga, S. (2011). Winnicott, symbolic play, and other minds. *Philosophical Psychology*, 24(5), 625–637.
- Martin Maldonado-Duran MD.**, is an infant, child, and adolescent psychiatrist and family therapist. He is Associate Professor of Psychiatry at the Menninger Department of Psychiatry, Baylor College of Medicine and works at the complex care service in the Texas Children's Hospital. He edited the book *Infant and Toddler Mental Health*, published by American Psychiatric

Press, and has coedited or edited five additional books in Spanish on topics of child and infant mental health. Coeditor of the book "Clinical Handbook of Transcultural Infant Mental Health" (Springer). He has written numerous papers and book chapters on topics of child development and psychopathology in several countries.

Patrick O'Malley MD, MPH., Child and adolescent psychiatrist. Baylor College of Medicine, Chief fellow for psychotherapy. Board-certified adult psychiatrist, having completed his general psychiatry training at the University of Texas Southwestern, where he undertook the Clinician Educator Track. He holds a Master of Public Health from the University of Texas Houston, School of Public Health. Medical studies at Texas Tech University Health Sciences Center El Paso Paul L. Foster School of Medicine, where he graduated with Distinction in Scholarship and Research. Outstanding Student in Psychiatry Award, as well as induction into the Gold Humanism Honor Society, serving as chapter president. His clinical interests include psychotherapy and working with underserved populations, especially gender- and sexually diverse individuals.

Dr. Kulsoom Kazmi MD, is a child and adolescent psychiatrist working at Legacy community health clinic in Baytown, Texas. Child and adolescent psychiatry fellowship training at Baylor College of Medicine where she was a co-chief fellow. Board-certified psychiatrist, general psychiatry training at the University of Illinois - Carle College of Medicine., where she completed the Research Track. Medical degree from Jinnah Medical and Dental College in Karachi, Pakistan, where she graduated with Excellence in Academics. Her clinical interests include psychotherapy, infant and early childhood psychiatry, cultural psychiatry, and working with children with attention deficit and learning disorders.

Teresa Lartigue PhD., Training psychoanalyst, Mexican Psychoanalytical Association. Child and adolescent psychoanalyst, and infant-parent psychotherapist. Editor of several books: *Psychoanalysis and Gender Relationships*; *Sexuality and Gender*; *Gender and Psychoanalysis*; *The Culture of Parenting*; *Attachment and Early Infant Bonding*; *Social and Filial Violence in Latin America*; and *Power, Gender and Love*, among others.



Yoga and its Use in Children and Adolescents with Mind Body Problems

30

Kirti Saxena, Sherin Kurian, Soujanya Koduri,
Sunil Jani, Lauren Woods, and
Aproteem Choudhury

Introduction

Chronic stress during adolescence is a common experience linked to the incidence of anxiety and depressive disorders (Sheth et al., 2017), among others, through peer pressure, academic and athletic expectations (Leonard et al., 2015). Moreover, chronic stress and resultant psychological manifestations impair functioning in multiple domains (e.g., family, school, peer) relationships and increase the risk for a trajectory of subsequent psychopathology and adverse outcomes lasting into adulthood.

The Centers for Disease Control and Prevention (CDC) study examined mental health symptoms in four different US school districts during 2014–2018 and found that around one in six students had behavioral or emotional symptoms and impairment that could be diagnosed

with a mental health disorder (Danielson et al., 2021).

Additionally, The CDC study found anxiety disorders to be the most reported mental health disorders, followed by oppositional defiant disorder and attention-deficit/hyperactivity disorder (ADHD) (Danielson et al., 2021).

Therefore, addressing mental health needs in youth is critically important since about one in five children have a diagnosable emotional, behavioral, or mental health disturbance and about one in ten young people have a mental health challenge severe enough to impair their functioning at home, school, or in the community (Kessler et al., 2005).

Many estimates show that even though mental illness affects many children and adolescents (6–17 years), at least one-half, and some estimate as many as 80%, do not receive the mental health care they need (Kataoka et al., 2002). Per the U.S. Department of Education, youth with emotional and behavioral disorders have the worst graduation rate of all students with disabilities. Nationally, only 40% of students with emotional, behavioral, and mental health disorders graduate from high school, compared to the national average of 76% (US Department of Education, 2001); and over 50% of students with emotional and behavioral disabilities aged 14 and older drop out of high school. This is the highest dropout rate of any disability group (Data Resource Center for Child & Adolescent Health, 2005/2006).

K. Saxena (✉) · S. Kurian
Baylor College of Medicine, Houston, TX, USA

Texas Children's Hospital, Houston, TX, USA
e-mail: kxsaxen1@texaschildrens.org

S. Koduri
John Peter Smith Hospital, Fort Worth, TX, USA

S. Jani
University of Maryland, College Park, MD, USA

L. Woods
Embark Counseling LLC, Kansas City, KS, USA

A. Choudhury
Texas Children's Hospital, Houston, TX, USA

Therefore, providing children and adolescents with life-long tools that they can quickly and efficiently utilize to develop resilience and potentially prevent or lower the onset and severity of mental health issues is paramount. Indeed, feasible and effective practices developed at younger ages can be beneficial for the management of mental health concerns. In this regard, complementary and alternative medicine (CAM) techniques have to maintain and develop overall health or as an adjunctive treatment for different medical conditions.

The National Institute of Health (NIH) National Center for Complementary and Alternative Medicine (NCCAM) depicts its category of medicine as “focused on the interactions among the brain, mind, body, and behavior, and on the powerful ways in which emotional, mental, social, spiritual, and behavioral factors can directly affect health” (NCCAM Backgrounder, 2007). Yoga-based practices comprise four of the ten most common CAM techniques for children (Kaley-Isley et al., 2010). Yoga is defined as a holistic practice for mental and physical health. It is based on ancient spiritual practices and has developed over the years into various schools and styles of teaching. The practice of yoga incorporates asanas (physical postures), pranayama (breathing techniques), and meditation practices to achieve relaxation and enhance awareness (Woodyard, 2011).

This chapter discusses the known biopsychosocial advantages of CAM in children and adolescents by reviewing the studies of yoga practices in children and adolescents. With and without mental health diagnoses. By shedding light on the numerous benefits of these practices, this chapter highlights the need for ongoing research in using CAM techniques in children and adolescents.

Methods

A PubMed database search of existing peer-reviewed journal articles was conducted using probes with various combinations of the keywords “yoga,” “meditation,” “children,” and

“adolescents.” This chapter incorporates existing literature reviews on the use of yoga and meditation practices in youth. It includes studies published after 2000 and excludes studies involving non-psychiatric health conditions or medical outcome measures. The studies reviewed contained a sample size of at least ten individuals and an intervention period of at least four weeks. This review excludes studies not published in English.

Results

Healthy Populations

The following studies evaluated various yoga and meditation techniques outcomes within healthy children and adolescents (see Table 30.1). School-based programs comprise most of these studies; other studies are conducted in community settings. These benefits experienced by healthy youth, reflecting the protective and preventive nature of practicing CAM techniques, are outlined below:

Children and Adolescents

Two studies (Chaya et al., 2012; Telles et al., 2013) compared yoga with physical activity in evaluating the effectiveness of yoga-based techniques in school-aged children. Both studies separated students into two groups, who practiced yoga for 45 minutes each day and 5 days a week for 3 months. The first study (Chaya et al., 2012) included 7- to 9-year-old children (n = 50, yoga group; n = 50, physical activity group). While the yoga group improved in their attention and visuospatial performance at 3-month follow-up, there were no significant post-intervention differences in cognitive measures of attention, concentration, verbal skills, visuospatial skills, and abstract thinking. The second study (Telles et al., 2013), in children 8- to 13-year-old (n = 98), observed the physical exercise group (n = 49; jogging, relay races, games, and bending motions),

Table 30.1 Yoga studies in a healthy population

Author(s)	Age and number of participants (N)	Study design	Description of study	Outcome
Saxena et al. (2020)	Ninth-grade students (14–15 yr. old); N = 174	Experimental study	Teachers assigned students to yoga group (YG; N = 123) or control group (CG; N = 51). YG participated in 25-min hatha yoga classes twice weekly over 12 weeks. Student self-reports on measures of inattention and hyperactivity and stress were obtained at baseline and at 12 weeks.	Stress and inattention were significantly reduced in the yoga group compared with the control group. These findings suggest that hatha yoga may improve attention and hyperactivity in high school students.
Janjhua et al. (2020)	13–18 years old; N = 110	Pilot study	110 students studying in the senior secondary schools of Mandi district (India). The sample consisted of 52 adolescents practicing yoga and 58 adolescents who have never practiced yoga.	Yoga intervention was shown to be effective in enhancing self-esteem, emotional regulation, and positive feelings among the students practicing yoga. The findings reported that the adolescents who practice yoga have given very higher mean values to all the positive statements of emotional regulation indicating a higher degree of agreement with them.
Telles et al. (2013)	8–13 year olds; N = 98 (49 = yoga group, 49 = physical exercise)	Randomized controlled trial	Students were separated into two groups, one of which practiced yoga for 45 minutes each day, 5 days a week for 3 months	The yoga group saw a significant increase in total self-esteem, general self-esteem, and parental self-esteem. Teachers reported an increase in academic performance, attention, obedience, punctuality, and social interactions in both groups.
Hagins et al. (2013)	Sixth-grade students 10–11 years old (17 male, 13 female); N = 30 (15 = yoga, 15 = control)	Randomized controlled trial	This 15-week study measured blood pressure and heart rate in sixth graders after randomly assigning them to either a yoga intervention or to a control group, which consisted of a physical education class. Students completed mental arithmetic tasks and mirror tracing tasks before and after being presented with behavioral stressors.	No significant differences emerged in stress reactivity between groups, though both groups demonstrated considerable increase in blood pressure.

(continued)

Table 30.1 (continued)

Author(s)	Age and number of participants (N)	Study design	Description of study	Outcome
Conboy et al. (2013)	Ninth and tenth grade (14–16 years old); N = 28	Randomized controlled trial	Student interviews were conducted after taking part in a semester of the yoga program. A formal passive consent with information about the study was sent home to parents/guardians of all students in the study before the interviews.	The participants experienced that breathing techniques and yoga postures improved their performance via muscle relaxation and an increased sense of calmness with improved self-image through increased awareness of their bodies. Other significant benefits included improved sleep and mood regulation, improved social relationships, decreased interest in substance use, and increased concentration and energy.
Khalsa et al. (2013)	Adolescents (mean age = 16 yrs. old); N = 135	Controlled clinical trial	The intervention group (n = 84) took part in a yoga program, and the control group (n = 51) received no treatment. The team evaluated the effects of the yoga intervention by comparing the scores of the intervention group to those of the control group on a number of questionnaires related to music performance anxiety (MPA) and performance-related musculoskeletal disorders (PRMDs).	Yoga participants showed statistically significant reductions in music performance anxiety from baseline to the end of the program compared to the control group, as measured by several subscales of the Performance Anxiety Questionnaire (PAQ) and Music Performance Anxiety Inventory for Adolescents (MPAI-A); however, the results for PRMDs were inconsistent.
Sarokte & Rao (2013)	10–16 years old; N = 90 (group A = 30, group B = 30, group C = 30)	Comparative study	Group A formed the control group, and they were observed silently for 3 months without any intervention. Group B was administered with Choorna of four Medhya Rasayana, Mandukaparni, Yashtimadhu, Guduchi, and Sankhapushpi, at a dose of 2 g twice daily with milk. Subjects belonging to group C were advocated regular yogic practices of asanas, pranayama, and dhyana.	While the group B showed the most improvement in tests related to memory, yoga group C demonstrated improvement in concentration and calming of the mind, which led to measured memory improvement

(continued)

Table 30.1 (continued)

Author(s)	Age and number of participants (N)	Study design	Description of study	Outcome
Chaya et al. (2012)	7–9 year old; N = 100 (50 = yoga group, 50 = physical activity group)	Randomized controlled study	Students were separated into two groups, who practiced yoga for 45 minutes each day, five days a week for three months.	The yoga group saw improvement in their attention and visuospatial performance.
White (2012)	Fourth and fifth grade girls (9–11 years old); N = 155	Randomized controlled trial	Fourth- and fifth-grade girls were recruited from two public schools and randomly assigned to intervention and wait-list control groups. The intervention group met 1 hour a week for 8 weeks and completed 10 minutes of daily homework.	Both the yoga group and the control group exhibited improved self-esteem and self-regulation, though no significant differences between groups appeared
Khalsa et al. (2012)	11th and 12th grade (16–18 years old); N = 121	Preliminary randomized controlled trial	Students were randomly assigned to either regular physical education classes or to 11 weeks of yoga sessions based upon the yoga Ed program over a single semester. Students completed baseline and end-program self-report measures of mood, anxiety, perceived stress, resilience, and other mental health variables.	Most outcome measures exhibited a pattern of worsening in the control group over time, whereas changes in the yoga group over time were either minimal or showed slight improvements. These preliminary results suggest that implementation of yoga is acceptable and feasible in a secondary school setting and has the potential of playing a protective or preventive role in maintaining mental health.
Noggle et al. (2012)	11 and 12th grade (16–18 years old); N = 51	Preliminary randomized controlled trial	Grade 11 or 12 students who registered for physical education (PE) were cluster randomized by class 2:1 yoga: PE-as-usual. A Kripalu-based yoga program of physical postures and meditation was taught 2 to 3 times a week for 10 weeks. Primary outcome measures of psychosocial Well-being were profile of mood states short form and positive and negative affect schedule for children.	The participants reported that the yoga intervention was helpful, indicated an enthusiasm to continue, and a willingness to suggest it to friends. Notably, the yoga group made significant improvements in their mood, tension-anxiety subscale, and in scales assessing acceptance and mindfulness as compared with the physical education control group.

(continued)

Table 30.1 (continued)

Author(s)	Age and number of participants (N)	Study design	Description of study	Outcome
Mendelson et al. (2010)	Baltimore public school fourth and fifth-grade students (9–11 years old); N = 97 (59 female, 38 male)	Randomized control trial, pilot study	Four urban public schools were randomized to an intervention or wait-list control condition. It was hypothesized that the 12-week intervention would reduce involuntary stress responses and improve mental health outcomes and social adjustment. Stress responses, depressive symptoms, and peer relations were assessed at baseline and post-intervention.	Students reported a positive experience with applicable skills for daily living and teachers observed improvements in students' behavior. Additionally, there were decreased involuntary stress reactions and positive trending mood and relationships with teachers and peers in the treatment group.
Ramados & Bose, (2010)	Incarcerated youth (14–18 yrs. old); N = 413	Pilot study	Two pilot studies demonstrated that a comprehensive multimodal intervention of transformative life skills (TLS) consisting of yoga poses, breathing techniques, and meditation can reduce perceived stress and increase self-control and self-awareness in at-risk and incarcerated youth.	Statistical analyses indicate a significant improvement in stress resilience, self-control, and self-awareness among the youth exposed to Niroga's TLS protocols.
Kauts & Sharma, (2009)	14–15 years old (116 girls and 185 boys); N = 301 (164 = yoga group, 137 = control group)	RCT	High- and low-stress students in India across eight public schools were selected on the basis of scores obtained through stress battery. Yoga and control groups were given pre-test in three subjects, i.e., mathematics, science, and social studies. A yoga module consisting of yoga asanas, pranayama, meditation, and a value orientation program was administered in the experimental group for an hour every morning for seven weeks.	The study revealed that yoga participants exhibited significantly higher academic performance in mathematics, science, and social studies, which negatively correlated with high levels of stress.

(continued)

Table 30.1 (continued)

Author(s)	Age and number of participants (N)	Study design	Description of study	Outcome
Berger et al. (2009)	10 year olds; N = 71 (39 = yoga group, 32 = control)	Pilot study	This pilot study compared fourth and fifth-grade students at 2 after-school programs in Bronx, New York. One program offered yoga 1 hour per week for 12 weeks (yoga) and the other program (non-yoga) did not. Pre-intervention and post-intervention emotional Well-being was assessed by Harter's global self-worth and physical appearance subscales, which were the study's primary outcome measures. Pre-intervention and post-intervention, physical well-being was assessed by measures of flexibility and balance.	The study saw significantly fewer negative behaviors (including screaming, yelling, hitting, and throwing objects) in yoga participants compared with the control group as well as improved attention, sleep, self-esteem, and ability to calm oneself in 50–80% of the yoga participants.
Scime & Cook- Cottone, (2008)	Fifth-grade females (10–11 years old); N = 144 (75 = girls' group prevention program, 69 = comparison participants)	Comparison study	Pre- and post-test data from five separate 10-session yoga groups and controls were conducted between March 2003 and June 2005. Questionnaires included the Drive for Thinness, Bulimia, and Body Dissatisfaction scales of the Eating Disorder Inventory-2 (EDI-2), scales to measure current methods and future intentions of eating disordered behavior, a treatment efficacy scale, Perceived Stress Scale (PSS), and the Multidimensional Self-Concept Scale (MSCS)	The results of this comparison study demonstrate mixed support for the girls' group prevention program. Girls' group was efficacious in reducing body dissatisfaction and bulimia of the EDI-2, as well as an increase on the social scale of the MSCS.
Scime et al. (2006)	Fifth-grade girls (10–11 years old); N = 45 (girls' group, a primary prevention program for eating disorders)	Pilot study	The curriculum incorporated interactive discourse, yoga, and relaxation into 10 weekly sessions. Pre- and post-test data from three groups conducted over 13 months were combined for the girls' group sessions. The questionnaires included EDI-2, and two questions assessing media influence.	The study showed significant decreases in body dissatisfaction and drive for thinness, as well as increased awareness of media influence.

(continued)

Table 30.1 (continued)

Author(s)	Age and number of participants (N)	Study design	Description of study	Outcome
Stueck & Gloeckner, (2005)	Fifth-grade students (10–11 years old); N = 48	Training evaluation	A study of 15 yoga sessions, consisting of drawing, breathing technique, massage techniques, imagery, meditation, and music, practiced by students in Germany.	The study saw significantly decreased aggression, physical complaints, and helplessness and increased coping abilities for managing stress in the school setting. A 3-month follow-up revealed maintenance of decreased anxiety and improved emotional regulation, with teachers and parents describing their children as calmer, less impulsive, less aggressive, and more able to concentrate.

enjoyed a statistically significant increase in social self-esteem compared to the yoga group ($n = 49$). Post-pre comparisons within the yoga group ($n = 49$) showed a significant increase in total self-esteem, general self-esteem, and parental self-esteem. Moreover, teachers reported increased academic performance, attention, obedience, punctuality, and social interactions in both groups. In summary, physical exercise and yoga appeared equally effective in improving physical and emotional well-being in school-aged children.

In another study, Hagins et al. (2013) researched the effects of yoga on physiological stress responses in children. This 15-week study measured blood pressure and heart rate in sixth-grade students ($N = 30$) after randomly assigning them to either a yoga intervention ($n = 15$) or to a control group ($n = 15$), which consisted of a physical education class. Students completed mental arithmetic tasks and mirror tracing tasks before and after being presented with behavioral stressors. No significant differences emerged in stress reactivity between groups, though both groups demonstrated considerable increase in blood pressure, perhaps due to students' anticipation of the stressor tasks to be completed.

Several studies have evaluated school-based programs, particularly in fourth and fifth-grade

students (Berger et al., 2009; Mendelson et al., 2010; White, 2012; Stueck & Gloeckner, 2005; Scime et al., 2006; Scime & Cook-Cottone, 2008). One 12-week after-school yoga program in Bronx, New York, reported significantly fewer negative behaviors (including screaming, yelling, hitting, and throwing objects) in yoga participants ($n = 39$ and age = 10), compared with the control group ($n = 32$ and age = 10) as well as improved attention, sleep, self-esteem, and ability to calm oneself in 50 to 80 percent of the yoga participants (Berger et al., 2009). Another 12-week mindfulness and yoga program in Baltimore City public schools utilized focus groups (Mendelson et al., 2010). Students reported a positive experience with applicable skills for daily living, and teachers observed improvements in students' mood. Additionally, the treatment group showed decreased involuntary stress reactions and positive trending moods and relationships with teachers and peers. In an eight-week Mindfulness Awareness for Girls Yoga program, both groups ($n = 70$, yoga group; $n = 85$, wait-list control group) exhibited improved self-esteem and self-regulation, though no significant differences between groups appeared (White, 2012). A study of 15 yoga sessions, consisting of drawing, breathing techniques, massage techniques, imagery, meditation,

and music, practiced by students in Germany ($n = 48$), observed significantly decreased aggression, physical complaints, and helplessness and increased coping abilities for managing stress school setting. A three-month follow-up reduced maintenance of reduced anxiety and improved emotional regulation, with teachers and parents describing their children as calmer, less impulsive, less aggressive, and more able to concentrate (Stueck & Gloeckner, 2005). Another study explored yoga as a primary prevention in fifth-grade girls with eating disorders over 13 months ($N = 45$) and showed significant decreases in body dissatisfaction and drive for thinness, as well as increased awareness of media influence (Scime et al., 2006). They also were able to demonstrate that these effects held over two years in fifth-grade girls; overall the results demonstrated a mixed support for the Girls' Group prevention program ($n = 75$, Girls' Group prevention program; $n = 69$, control group) (Scime & Cook-Cottone, 2008).

A three-month, randomized study compared daily yoga practice in children of 10–16 years who consumed 2 g twice daily of Medhya Rasayana (a medicinal plant utilized in Indian medicine to improve memory and intellect, $n = 30$) with a no-treatment control group ($n = 30$) and a third yoga-practicing group ($n = 30$). This study involved testing for effects on short-term memory with picture and word recall tests and mini-mental status examinations. While the group ingesting Medhya Rasayana showed the most improvement in tests related to memory, the yoga group demonstrated improvement in concentration and calming of the mind, which led to measured memory improvement (Sarokte & Rao, 2013).

To assess the effects of yoga practice on academic performance, 164 high- and low-stress students (14–15 years) in India underwent a 7-week yoga practice. There were 137 students in the control group. This study revealed that yoga participants exhibited significantly higher academic performance in mathematics, science, and social studies, which negatively correlated with high levels of stress (Kauts & Sharma, 2009). In another study, 174 ninth graders underwent a

12-week Hatha yoga program, in which stress and inattention were significantly reduced in the yoga group ($n = 123$) compared with the control group ($n = 51$). In addition to stress management, yoga has shown improvement in emotional regulation (Saxena et al., 2020). For instance, in secondary schools in India, emotional regulation and self-esteem improved in 52 students (13–18 years) with yoga (Janjhua et al., 2020). Thus, there are promising benefits of implementing yoga practice in schools.

Indeed, studies have examined the efficacy of school-based yoga programs compared to regular physical education. For example, Khalsa et al. (2012) found that 11th and 12th graders who underwent an 11-week modified Yoga Ed intervention ($n = 74$; simple yoga postures, breathing exercises, visualization, and games with an emphasis on fun and relaxation) showed improvement in resilience, anger, fatigue, and inertia, while the control group ($n = 47$) worsened in each category. In another study, Noggle et al. (2012) evaluated a ten-week yoga intervention in 11th and 12th graders ($n = 51$), who reported that the program was helpful, indicated an enthusiasm to continue and a willingness to suggest it to friends. Notably, the yoga group made significant improvements in their mood, tension-anxiety subscale, negative affect, and scales assessing acceptance and mindfulness compared with the physical education control group. After participating in a 12-week Hatha yoga program, 28 ninth and tenth graders experienced that breathing techniques and yoga postures improved their performance via muscle relaxation and an increased sense of calmness, improved self-image through increased awareness of their bodies. Other significant benefits included improved sleep and mood regulation, improved social relationships, decreased interest in substance use, and increased concentration and energy (Conboy et al., 2013).

In a six-week summer program for adolescents ($n = 135$), a Kripalu yoga intervention demonstrated significantly lower music performance anxiety in the yoga group ($n = 84$) compared with the no-treatment control group ($n = 51$) though did not note any difference in performance-

related musculoskeletal disorders between groups (Khalsa et al., 2013).

Yoga programs have been implemented for incarcerated youth. Indeed, a daily Transformative Life Skills (TLS) program, consisting of yoga, breathing, and meditation, was administered to adolescents in juvenile hall for 18 months. The adolescents experienced a significant decrease in stress, and increased, self-control. The TLS program was condensed to an 18-week program and administered to a large urban public high school. After participating in this program, participants experienced a decrease in stress and an increase in self-control (Ramadoss & Bose, 2010).

Psychiatric Populations

Studies have investigated the benefits of yoga and meditation practices in children and adolescents with psychiatric diagnoses (Table 30.2). Below is a review of studies in schools, clinics, and community settings depicting the usefulness of CAM techniques' usefulness as adjunctive to traditional treatment.

Mood Disorders

Biegel et al. (2009) examined an 8-week program in 102 adolescents with a mood disorder. The program, which incorporated body scan meditation, sitting meditation, Hatha yoga, and walking meditation, demonstrated reduced anxiety, depression, stress, obsessiveness, improved self-esteem, sleep quality, and interpersonal problems. A systematic review by James-Palmer et al. (2020) confirmed that the practice of yoga reduced symptoms of anxiety and depression in youth (mean age < 18 years) regardless of health status or intervention characteristics.

Shreve et al. (2021) examined the effect of yoga on reducing anxiety in third and fourth graders ($n = 71$). Sixty-one students diagnosed with generalized anxiety disorder completed yoga for ten minutes daily over eight weeks. Eleven students not participating in the yoga intervention served as a control group. After

completing the program, students in the yoga group demonstrated decreased anxiety compared with pre-test results. This study reveals that even a few minutes of yoga daily over 2 months improve anxiety symptoms in children.

Attention Deficit Hyperactivity Disorder and its Common Comorbidities

Eight- to thirteen-year-old boys diagnosed with ADHD participated in a 20-session yoga program, in whom three had comorbid oppositional defiant disorder and three had comorbid learning disabilities. Participants in the yoga group ($N = 11$) reported reduced mood swings, crying fits, angry outbursts, and decreased restlessness, inattention, and impulsivity (Jensen & Kenny, 2004).

Seventy-six students (6–11 years) participated in a six-week Climb-Up program which included a combination of yoga, meditation, and play therapy (Mehta et al., 2011). Both parent and teacher reports attested to improvement in 39.1% of students on behavioral measures, and there were no differences based on age, gender, or type of ADHD. Mehta et al. (2012) conducted a follow-up study of high school students. Parents reported improvements in attention, organization, and impulsivity at the 6-week follow-up and teachers confirmed sustained benefits at the 1-year follow-up with improvements in academic performance and social interactions with peers.

In a family-based study conducted by Harrison et al. (2004), in children with ADHD (4–12 years) study, forty-eight families engaged in six weeks of Sahaja Yoga Meditation, after which parents reported reducing their children's medication as they observed improvements in their child's ADHD symptoms. Children themselves reported improved mood regulation, sleep, attention, and social interactions, while their parents noticed an increase in their confidence and ability to manage schoolwork. In addition, parents reported improvements in their own communication skills and ability to manage their stress, conflict, and anger.

Table 30.2 Yoga studies in a clinical population

Author(s)	Diagnosis, age and number of participants (N)	Study design	Description of study	Outcome
Shreve et al. (2021)	Third and fourth graders with anxiety disorder (8–10 yrs. old); N = 71(60 = intervention group, 11 = comparison group)	Pilot study	Participants completed 10 min of yoga daily during the school week. Participants completed the screen for child anxiety-related emotional disorders anxiety screening tool at the beginning and after the program.	Participants had significantly decreased raw anxiety scores after completing the program. This study demonstrated that yoga practiced 10 min a day over 8 weeks can have a significant impact on decreasing anxiety.
James-Palmer et al. (2020)	Mean age < 18 years; 27 studies	Systematic review	Scientific databases were searched up to November 2018 for experimental studies assessing changes in symptoms of anxiety and/or depression in youths following yoga interventions.	Intervention characteristics varied greatly across studies revealing multiple factors that may impact intervention efficacy; however, 70% of the studies overall showed improvements. For studies assessing anxiety and depression, 58% showed reductions in both symptoms, while 25% showed reductions in anxiety only. Additionally, 70% of studies assessing anxiety alone showed improvements and 40% of studies only assessing depression showed improvements.
Koenig et al. (2012)	5–12-year-olds with autism spectrum disorder (ASD); N = 46 (24 = intervention group, 22 = control)	Pre-test–post-test control group design	Using an experimental pre-test–post-test control group design, examined the effectiveness of the get ready to learn (GRTL) classroom yoga program among children with ASD. The intervention group received yoga program daily for 16 weeks, and the control group engaged in their standard morning routine.	Students in the GRTL program showed significant decreases ($p < 0.05$) in teacher ratings of maladaptive behavior, as measured with the aberrant behavior checklist, compared with the control participants. This study demonstrates that use of daily classroom wide yoga interventions has a significant impact on key classroom behaviors among children with ASD.

(continued)

Table 30.2 (continued)

Author(s)	Diagnosis, age and number of participants (N)	Study design	Description of study	Outcome
Mehta et al. (2012)	6–11-year-olds with ADHD; N = 69	One-year follow-up	A program, known as climb-up, was initially embedded in the school twice weekly. This program incorporated yoga postures, meditation, and behavioral play therapy in one-hour sessions during the school day. Yoga and meditation were performed for the first 25 minutes. Local high school student volunteers were trained to continue to implement the program weekly over the period of one year.	The performance impairment scores for ADHD students assessed by teachers improved by six weeks and were sustained through 12 months in 46 (85%) of the enrolled students. The improvements in their Vanderbilt scores assessed by parents were also seen in 92%. The climb-up program resulted in remarkable improvements in the students' school performances that were sustained throughout the year.
Mehta et al. (2011)	6–11 years old; N = 64	Pilot study	The approach taken was to combine yoga and meditation combined with multimodal behavioral therapy program for children using trained high school volunteers and integrating the program within the public school.	After six weeks of the program, 90.5% of children showed improvement as measured by their performance impairment score, a measurement of academic performance. Parent and teacher evaluations of behavior also found improvement as 25 of the 64 children (39.1%) improved into the normal range as measured by the Vanderbilt questionnaire.
Rosenblatt et al. (2011)	3–16-year-olds with autism; N = 24	Pilot study, within-subject analysis comparing pre- to post-treatment scores	The intervention and data analysis occurred at a medical school teaching hospital. This study involved an eight-week multimodal yoga, dance, and music therapy program based on the relaxation response (RR). Outcomes was measured using the behavioral assessment system for children (BASC-2) and the aberrant behavioral checklist (ABC).	Robust changes were found on the BASC-2, primarily for 5–12-year-old children. The post-treatment scores had a significant change in the atypicality scale of the BASC-2, which measures some of the core features of autism. A movement-based, modified RR program, involving yoga and dance, showed efficacy in treating behavioral and some core features of autism, particularly for latency-aged children.

(continued)

Table 30.2 (continued)

Author(s)	Diagnosis, age and number of participants (N)	Study design	Description of study	Outcome
Ehud et al. (2010)	8–12-year-olds who experienced the second Lebanon war; N = 122	Pre- and post-intervention comparisons	This study was conducted in two elementary schools in Safed, Israel and their teachers. Assessment was conducted using three questionnaires that have been previously validated in international studies and translated to Hebrew.	Teachers reported many statistically significant improvements in the children's concentration, mood and ability to function under pressure, although the children themselves were unaware of any change in their behavior. Participants reported to enjoy and almost expressed an interest in continuing to practice yoga during school hours.
Carei et al. (2010)	11–21-year-olds with eating disorders; N = 54 (27 = standard care, 26 = yoga plus standard care)	Randomized controlled clinical trial	Randomized to an eight-week trial of standard care vs. individualized yoga plus standard care. Outcomes were evaluated at baseline, post-trial, and one-month follow-up included eating disorder examination (EDE), body mass index (BMI), Beck depression inventory, state-trait anxiety inventory, and food preoccupation questionnaire.	Yoga group showed greater decrease in eating disorder symptoms. Specifically, the EDE scores decreased over time in the yoga group, whereas the no yoga group showed some initial decline but then returned to baseline EDE levels at week 12. Food preoccupation was measured before and after each yoga session and decreased significantly after all sessions. Both groups maintained current BMI levels and decreased in anxiety and depression over time.
Biegel et al. (2009)	Adolescents under psychiatric care or had been so in the past (14–18 yrs. old); N = 102 (50 = mindfulness-based stress reduction (MBSR) + treatment as usual (TAU) group; 52 = TAU group)	RCT	MBSR program was offered for adolescents with heterogeneous diagnoses in an outpatient psychiatric facility. Eight weekly classes of MBSR intervention were given as an adjunct to psychiatric treatment. Post-test measures were collected from participants following MBSR program completion at week 8 and at 3 months after the post-test.	Those receiving MBSR self-reported reduced symptoms of anxiety, depression, and somatic distress, and increased self-esteem and sleep quality. Of clinical significance in comparison to the TAU group, the MBSR group showed a higher percentage of diagnostic improvement over the five-month study period and significant increases in global assessment of functioning scores.

(continued)

Table 30.2 (continued)

Author(s)	Diagnosis, age and number of participants (N)	Study design	Description of study	Outcome
Jensen & Kenny, (2004)	8–13-year-old boys with ADHD; N = 19 (yoga group = 11, control = 8)	Clinical trial	Boys diagnosed with ADHD and stabilized on medication were randomly assigned to a 20-session yoga group or a control group. Boys were assessed by parent and teacher behavior rating scales, a continuous performance test, and actigraph motion logs. Control group had cooperative games and activities.	Participants in the yoga group reported significant improvements from pre-test to post-test, but not for the control group on five subscales of the Conners' parents rating scales (CPRS): Oppositional, global index emotional lability, global index Total, global index restless/impulsive and ADHD index. Significant improvements from pre-test to post-test were found for the control group, but not the yoga group on three CPRS subscales: Hyperactivity, anxious/shy, and social problems. Both groups improved significantly on CPRS perfectionism, DSM-IV hyperactive/impulsive, and DSM-IV Total. Data did not provide strong support for the use of yoga for ADHD, because the study was under-powered, but suggest that yoga may be used as a complementary treatment for boys with ADHD stabilized on medication, particularly in the evening when medication effects are absent.
Harrison et al. (2004)	4–12-year-olds with ADHD; N = 44	Pilot study	Parents and children participated in a six-week program of twice weekly clinic sessions and regular meditation at home. Pre- and post-treatment assessments included parent ratings of children's ADHD symptoms, self-esteem and child-parent relationship quality.	Results showed improvements in children's ADHD behavior, self-esteem, and relationship quality. Children described better sleep patterns, less anxiety at home and more able to concentrate, less conflict at school. Parents reported feeling happier, less stressed, and more able to manage their child's behavior.

Autism Spectrum Disorder

Studies have examined yoga-based techniques in children with autism spectrum disorder (ASD). One study looked at the intervention of an 8-week multimodal program (consisting of breathing techniques, yoga poses, dance, and music therapy) in 24 children (3–16 years old), regardless of autism severity, with parent participation in sessions as needed. Latency-aged children ($n = 16$) demonstrated a significant decrease in problematic behaviors (e.g., internalizing symptoms, externalizing symptoms, behavioral symptom index), and improved depression and atypicality scales. There was an increased receptiveness to interventions focused on sounds and movements in latency-aged children (Rosenblatt et al., 2011). Another study utilized The Get Ready to Learn (GRTL) program, which consists of breathing techniques, yoga postures, relaxation strategies, and chanting, specifically for students with disabilities (Koenig et al., 2012). This program was implemented daily for 16 weeks in twenty-five children (5–12 years) with ASD. Per teachers, the students displayed improvement in irritability, lethargy, hyperactivity, non-compliance, and social withdrawal. Parent-rated maladaptive behaviors increased in the control group ($n = 24$), though parents did not report significant changes in the intervention group, indicating a preventative effect of the GRTL program.

Trauma

Studies have assessed the benefits of mind–body techniques in youths exposed to trauma. Indeed, Ehud et al. (2010) implemented a 4-month school-based yoga program with 122 children (8–12 years) who were affected by the Second Lebanon War. Notably, teachers reported improvement in students' attention span, restlessness, and inattention. Indeed, 57% of the children found the yoga practice interesting, 64% reported it to be fun, and 90% of the children wished to continue the practice.

Eating Disorders

A study looked at the effects of yoga on adolescents with eating disorders, including anorexia nervosa, bulimia nervosa, and eating disorders not otherwise specified (Carei et al., 2010). The intervention group, consisting of twenty-six adolescents (11 to 21 years old), included an eight-week yoga program plus standard-of-care treatment. The control group ($n = 27$) received routine physician and dietician services. Both groups showed a reduction in eating disorder behaviors at 9 weeks; however, the control group returned to baseline levels at 1-month follow-up, while the yoga group showed sustained progress. Adolescents in the yoga program reported reduced food preoccupation, which they attributed to positive distractions from thoughts about weight. Body mass index remained stable in both groups, and improvement in anxiety and depression scores was non-significant across groups.

Yoga Therapy

Yoga is the most commonly used mind–body therapy in Western complementary medicine. Yoga Therapy has ridden the waves of popular Western culture and is slowly emerging in health and wellness-oriented communities, holistic health practices, and at medical centers with integrative programs.

As a professional domain, Yoga Therapy is rapidly growing with over 6000 professionally associated members, many of whom carry dual training from conventional medical backgrounds. Despite the existence of the International Association of Yoga Therapists (IAYT), there are no regulatory practices or bodies in place. IAYT accredits yoga therapist training programs and certifies yoga therapists internationally.

IAYT regularly sponsors research and clinical application symposiums and their annual *International Journal of Yoga Therapy* has been a part of PubMed for over a decade. The organization also provides a collaborative and engaged community for practitioners, clinicians, and

researchers, with active participation in areas of pain, oncology, and addiction (Erb & Schmid, 2021).

In the IAYT Scope of Practice for Yoga Therapy, Yoga Therapy is defined as “professional application of the principles and practices of yoga to promote health and well-being within a therapeutic relationship that includes personalized assessment, goal setting, lifestyle management, and yoga practices for individuals or small groups” (Scope of Practice for Yoga Therapy, 2020).

Dr. Mathew Taylor, a leader in the field of Yoga Therapy, describes the essential nature of the approach as that it can be modified based on the participants’ abilities, needs, and state of health. This makes Yoga Therapy ideal and accessible for all age groups, including children and adolescents. Dr. Taylor’s clinical perspective is that Yoga Therapy can support the development of the clients’ awareness on what they think, believe, and perceive and the impact of those on the nervous system, physical body, and breathing. All of the behavioral training ultimately can impact a patient’s flexibility, health, and vitality (Taylor, 2015).

Discussion

Peer-reviewed published articles in which yoga- and meditation-based interventions were applied to children and adolescents were identified. The articles studied various psychiatry populations and healthy populations. This literature review included open-label designs, quasi-experimental formats, and randomized controlled trials. School-, clinical-, and community-based settings were considered in the studies. Interventions, some family-based, lasted from 5 weeks to a follow-up of one year. Assessments incorporated quantitative and qualitative data, considering self-reports, teacher reports, and parent reports.

Several limitations to the studies emerged within this review for both health and psychiatric populations. First, only half of the studies compared control groups, and of those most utilized a non-randomized, quasi-experimental design. In addition, only half of the studies followed up

with participants to assess the sustainment of benefits over the long term. This review suggests more research using randomized controlled methods and follow-up analysis. To further improve the generalizability of results, the use of a larger sample size is encouraged.

Furthermore, data reviewing neuroimaging changes to evaluate structural and functional brain changes after a yoga intervention in children and adolescents would beneficially supplement scales and clinical exams in supporting the efficacy of yoga for childhood psychiatric illnesses and aid in understanding the pathophysiological presentation of childhood mental illnesses. This facilitates our application of interventions and affirms an association between scale-reported changes in mood, energy, attention, mindfulness, and biological effects. Interventions prove their application for patients through evidence-based treatments and evaluations, such as imaging. In a recent review article by Aalst et al., international peer-reviewed neuroimaging studies of yoga using magnetic resonance imaging (MRI), positron emission tomography (PET), or single-photon emission computed tomography (SPECT): 11 morphological and 26 functional studies, including three studies that were classified as both morphological and functional were reviewed (Van Aalst et al., 2020). Increased gray matter volume in the insula and hippocampus, increased activation of prefrontal cortical regions, and functional connectivity changes mainly within the default mode network were some consistent findings. There is some variability in the neuroimaging findings with different yoga styles and approaches also sample size limitations. The hypotheses on the underlying neurobiology derived from the imaging findings are discussed in relation to the potential beneficial effects of yoga.

This literature review suggests that practicing yoga- and meditation-based techniques hold numerous benefits for children and adolescents, regardless of age group, gender, intervention setting, and diagnosis status. Improvements emerged in emotional, behavioral, cognitive, social, and physical domains, though this article focuses on youth’s mental health benefits.

Increasingly, research reviews CAM techniques in mental health for youth populations. More recent studies regarding CAM techniques' benefit in children, especially with mood disorders, arise, though most studies to date involved adult populations. As physical brain changes are associated with mental health conditions, future studies will incorporate imaging in analyzing the effects of yoga and meditation interventions. This review suggests promising results for future research to build on, increasing understanding of the biopsychosocial benefits of yoga and meditation practices.

Summary

While the popularity of yoga and meditation-based interventions in pediatric populations rises, research on their efficacy still falls short. This updated literature review confirms many benefits, including emotional well-being (e.g., anxiety, depression, anger, stress management, emotion regulation, self-esteem), behavior, executive function, interpersonal domains, and physical well-being, of these practices in children and adolescents. Benefits emerge in both healthy and psychiatric pediatric populations.

Although efficacious, pharmacological treatment comes with increased costs and side effects. CAM techniques offer another management option that mitigates these risks. These techniques still require further research, modified with randomized control groups, larger sample sizes, and follow-up evaluations. In addition, researchers need further exploration into the variety of yoga and meditative practices to determine the most appropriate and efficacious, and fitting frequency and length of intervention necessary for optimum results. Future research evaluating the impact of yoga and meditation techniques on the psychological and biological functioning of children with and without mental illness will benefit clinicians and patients.

References

- Berger, D. L., Silver, E. J., & Stein, R. E. (2009). Effects of yoga on inner-city children's Well-being: A pilot study. *Alternative Therapies in Health and Medicine, 15*(5), 36–42.
- Biegel, G. M., Brown, K. W., Shapiro, S. L., & Schubert, C. M. (2009). Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized clinical trial. *Journal of Consulting and Clinical Psychology, 77*(5), 855–866.
- Carei, T. R., Fyfe-Johnson, A. L., Breuner, C. C., & Brown, M. A. (2010). Randomized controlled clinical trial of yoga in the treatment of eating disorders. *The Journal of Adolescent Health: Official Publication of the Society for adolescent Medicine, 46*(4), 346–351.
- Chaya, M. S., Nagendra, H., Selvam, S., Kurpad, A., & Srinivasan, K. (2012). Effect of yoga on cognitive abilities in schoolchildren from a socioeconomically disadvantaged background: A randomized controlled study. *Journal of Alternative and Complementary Medicine (New York, N.Y.), 18*(12), 1161–1167.
- Conboy, L. A., Noggle, J. J., Frey, J. L., Kudesia, R. S., & Khalsa, S. B. (2013). Qualitative evaluation of a high school yoga program: Feasibility and perceived benefits. *Explore (New York, N.Y.), 9*(3), 171–180.
- Danielson, M. L., Bitsko, R. H., Holbrook, J. R., Charania, S. N., Claussen, A. H., McKeown, R. E., Cuffe, S. P., Owens, J. S., Evans, S. W., Kubicek, L., & Flory, K. (2021). Community-based prevalence of externalizing and internalizing disorders among school-aged children and adolescents in four geographically dispersed school districts in the United States. *Child Psychiatry and Human Development, 52*(3), 500–514.
- Data Resource Center for Child & Adolescent Health. (2005/2006). *National Survey of Children with Special Health Care Needs*. Portland, OR: The Child and Adolescent Health Measurement Initiative (CAHMI). childhealthdata.org/browse/survey/results?q=1099&r=1
- Ehud, M., An, B. D., & Avshalom, S. (2010). Here and now: Yoga in Israeli schools. *International Journal of Yoga, 3*(2), 42–47.
- Erb, M., & Schmid, A. A. (Eds.). (2021). *Integrative rehabilitation practice*. (p.389). Jessica Kingsley Publishers.
- Hagins, M., Haden, S. C., & Daly, L. A. (2013). *A randomized controlled trial on the effects of yoga on stress reactivity in 6th grade students* (p. 607134). Evidence-Based Complementary and Alternative Medicine: eCAM.
- Harrison, L. J., Manocha, R., & Rubia, K. (2004). Sahaja yoga meditation as a family treatment Programme for children with attention deficit-hyperactivity disorder. *Clinical Child Psychology and Psychiatry, 9*, 479–497.

- James-Palmer, A., Anderson, E. Z., Zucker, L., Kofman, Y., & Daneault, J. F. (2020). Yoga as an intervention for the reduction of symptoms of anxiety and depression in children and adolescents: A systematic review. *Frontiers in Pediatrics*, 8, 78.
- Janjhua, Y., Chaudhary, R., Sharma, N., & Kumar, K. (2020). A study on effect of yoga on emotional regulation, self-esteem, and feelings of adolescents. *Journal of Family Medicine and Primary Care*, 9(7), 3381–3386.
- Jensen, P. S., & Kenny, D. T. (2004). The effects of yoga on the attention and behavior of boys with attention-deficit/hyperactivity disorder (ADHD). *Journal of Attention Disorders*, 7(4), 205–216.
- Kaley-Isley, L. C., Peterson, J., Fischer, C., & Peterson, E. (2010). Yoga as a complementary therapy for children and adolescents: A guide for clinicians. *Psychiatry (Edgmont (Pa.: Township))*, 7(8), 20–32.
- Kataoka, S. H., Zhang, L., & Wells, K. B. (2002). Unmet need for mental health care among U.S. children: Variation by ethnicity and insurance status. *The American Journal of Psychiatry*, 159(9), 1548–1555.
- Kauts, A., & Sharma, N. (2009). Effect of yoga on academic performance in relation to stress. *International Journal of Yoga*, 2(1), 39–43.
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, 62(6), 593–602.
- Khalsa, S. B., Hickey-Schultz, L., Cohen, D., Steiner, N., & Cope, S. (2012). Evaluation of the mental health benefits of yoga in a secondary school: A preliminary randomized controlled trial. *The Journal of Behavioral Health Services & Research*, 39(1), 80–90.
- Khalsa, S. B., Butzer, B., Shorter, S. M., Reinhardt, K. M., & Cope, S. (2013). Yoga reduces performance anxiety in adolescent musicians. *Alternative Therapies in Health and Medicine*, 19(2), 34–45.
- Koenig, K. P., Buckley-Reen, A., & Garg, S. (2012). Efficacy of the get ready to learn yoga program among children with autism spectrum disorders: A pretest-posttest control group design. *The American Journal of Occupational Therapy: Official Publication of the American Occupational Therapy Association*, 66(5), 538–546.
- Leonard, N. R., Gwadz, M. V., Ritchie, A., Linick, J. L., Cleland, C. M., Elliott, L., & Grethel, M. (2015). A multi-method exploratory study of stress, coping, and substance use among high school youth in private schools. *Frontiers in Psychology*, 6, 1028.
- Mehta, S., Mehta, V., Mehta, S., Shah, D., Motiwala, A., Vardhan, J., et al. (2011). *Multimodal behavior program for ADHD incorporating yoga and implemented by high school volunteers: A pilot study*. ISRN Pediatr.
- Mehta, S., Shah, D., Shah, K., Mehta, S., Mehta, N., Mehta, V., Mehta, V., Mehta, S., Motiwala, S., Mehta, N., & Mehta, D. (2012). Peer-mediated multimodal intervention program for the treatment of children with ADHD in India: One-year followup. *ISRN Pediatrics*, 2012, 419168.
- Mendelson, T., Greenberg, M. T., Dariotis, J. K., Gould, L. F., Rhoades, B. L., & Leaf, P. J. (2010). Feasibility and preliminary outcomes of a school-based mindfulness intervention for urban youth. *Journal of Abnormal Child Psychology*, 38(7), 985–994.
- National Center for Complementary and Alternative Medicine: NCCAM Background. (2007). *Mind-body medicine: an overview*.
- Noggle, J. J., Steiner, N. J., Minami, T., & Khalsa, S. B. (2012). Benefits of yoga for psychosocial Well-being in a US high school curriculum: A preliminary randomized controlled trial. *Journal of Developmental and Behavioral Pediatrics: JDBP*, 33(3), 193–201.
- Ramadoss, R., & Bose, B. (2010). *Transformative life skills: Pilot study of a yoga model for reduced stress and improving self-control in vulnerable youth*. International Journal of Yoga Therapy.
- Rosenblatt, L. E., Gorantla, S., Torres, J. A., Yarmush, R. S., Rao, S., Park, E. R., Denninger, J. W., Benson, H., Frichione, G. L., Bernstein, B., & Levine, J. B. (2011). Relaxation response-based yoga improves functioning in young children with autism: A pilot study. *Journal of Alternative and Complementary Medicine (New York, N.Y.)*, 17(11), 1029–1035.
- Sarokte, A. S., & Rao, M. V. (2013). Effects of Medhya Rasayana and yogic practices in improvement of short-term memory among school-going children. *Ayu*, 34(4), 383–389.
- Saxena, K., Verrico, C. D., Saxena, J., Kurian, S., Alexander, S., Kahlon, R. S., Arvind, R. P., Goldberg, A., DeVito, N., Baig, M., Grieb, A., Bakhshaie, J., Simonetti, A., Storch, E. A., Williams, L., & Gillan, L. (2020). An evaluation of yoga and meditation to improve attention, hyperactivity, and stress in high-school students. *Journal of Alternative and Complementary Medicine (New York, N.Y.)*, 26(8), 701–707.
- Scime, M., & Cook-Cottone, C. (2008). Primary prevention of eating disorders: A constructivist integration of mind and body strategies. *The International Journal of Eating Disorders*, 41(2), 134–142.
- Scime, M., Cook-Cottone, C., Kane, L., & Watson, T. (2006). Group prevention of eating disorders with fifth-grade females: Impact on body dissatisfaction, drive for thinness, and media influence. *Eating Disorders*, 14(2), 143–155.
- Scope of Practice for Yoga Therapy. (2020). Retrieved from https://cdn.ymaws.com/www.iayt.org/resource/resmgr/docs_certification_all/2020_updates_scope_ethics/2020-09_sop_v2.pdf
- Sheth, C., McGlade, E., & Yurgelun-Todd, D. (2017). Chronic stress in adolescents and its neurobiological and psychopathological consequences: An RDoC perspective. *Chronic Stress (Thousand Oaks, Calif.)*, 1, 2470547017715645.
- Shreve, M., Scott, A., McNeill, C., & Washburn, L. (2021). Using yoga to reduce anxiety in children: Exploring school-based yoga among rural third- and

- fourth-grade students. *Journal of Pediatric Health Care: Official Publication of National Association of Pediatric Nurse Associates & Practitioners*, 35(1), 42–52.
- Stueck, M., & Gloeckner, N. (2005). Yoga for children in the mirror of the science: Working spectrum and practice fields of the training of relaxation with elements of yoga for children. *Early Child Development and Care*, 175(4), 371–377.
- Taylor, M. J. (2015). Yoga therapy for rehabilitation professionals. In L. Payne, T. Gold, & E. Goldman (Eds.), *Yoga Therapy & Integrative Medicine: Where ancient science meets modern medicine* (1st ed., pp. 263–285). Basic Health Publications.
- Telles, S., Singh, N., Bhardwaj, A. K., Kumar, A., & Balkrishna, A. (2013). Effect of yoga or physical exercise on physical, cognitive and emotional measures in children: A randomized controlled trial. *Child and Adolescent Psychiatry and Mental Health*, 7(1), 37.
- U.S. Department of Education. (2001). *Twenty-third annual report to congress on the implementation of the individuals with disabilities education act*. U.S. Department of Education.
- Van Aalst, J., Ceccarini, J., Demyttenaere, K., Sunaert, S., & Van Laere, K. (2020). What has neuroimaging taught us on the neurobiology of yoga? A review. *Frontiers in Integrative Neuroscience*, 14, 34.
- White, L. S. (2012). Reducing stress in school-age girls through mindful yoga. *Journal of Pediatric Health Care: Official Publication of National Association of Pediatric Nurse Associates & Practitioners*, 26(1), 45–56.
- Woodyard, C. (2011). Exploring the therapeutic effects of yoga and its ability to increase quality of life. *International Journal of Yoga*, 4(2), 49–54.
- Kirti Saxena**, MD is Associate Professor of Psychiatry at the Baylor College of Medicine and the Division Chief of Child/Adolescent Psychiatry at Texas Children's Hospital/Baylor College of Medicine. Her interests focus on the diagnosis and treatment of pediatric bipolar disorder. While working with youth with mood disorders, Kirti developed an interest in utilizing mind-body techniques such as yoga/meditation/mindfulness as adjunct therapies in the treatment of mood disorders in children and adolescents.
- Sherin Kurian**, MD Psychiatry researcher in Child and Adolescent Psychiatry at Baylor College of Medicine/Texas Children's Hospital. She completed her medical education from Sree Gokulam Medical College, India. Her research interests include disease biomarkers in Mood Disorders, neurophysiological, neuroimaging and neurocognitive biomarkers of bipolar disorder. She assisted in conducting a Yoga research study in high school students and in the development of new research projects for bipolar disorder. Dr. Kurian has presented at the American Academy of Child and Adolescent Psychiatry annual conferences, written papers and book chapters on topics of Pediatric Bipolar Disorder, Pediatric autoimmune neuropsychiatric disorder, and Complementary and Alternative treatment of mood disorders in children and adolescents.
- Soujanya Koduri**, MD Resident Physician in Psychiatry at John Peter Smith Hospital. While in medical school at the University of Texas Medical Branch at Galveston, Soujanya completed the Physician Healer Track, during which she was first exposed to third wave therapies and became certified in Mindfulness practices
- Suni Jani**, MD Board-Certified Child, Adolescent, and Adult Psychiatrist, Consultant Psychiatrist in the United Kingdom, a Medical Review Officer, and a Board Certified Independent Medical Examiner currently practicing in Maryland. Doctorate in Medicine from George Washington University, General Psychiatry Residency Training at the Baylor College of Medicine, Child and Adolescent Fellowship at Harvard Medical School's Massachusetts General Hospital. Adjunct Assistant Professor at the University of Maryland. Clinical Instructor at the George Washington University, Assistant Medical Director at Community Behavioral Health. Coeditor of *Handbook of Refugee Experience: Trauma, Resilience, and Recovery* and has published widely on numerous disciplines in mental health.
- Lauren Woods**, MSW, LCSW graduated from Wartburg College with a bachelor's degree in social work. She earned her Master of Social Work (MSW) degree from Saint Louis University, with a specialization in clinical practice with families. Lauren is credentialed as a Licensed Specialist Clinical Social Worker (LCSW). She currently works as Clinical Site Director at Embark Counseling Services located in Lenexa, Kansas. She provides therapeutic services to adolescent and adult clients, and she additionally serves as Clinical Supervisor to post-graduate clinicians working towards independent licensure
- Aproteem Choudhury**, BS is the Mind-body interventionist in the Division of Child/Adolescent Psychiatry at Texas Children's Hospital. At the Center for Mind Body Medicine (CMBM) Mr. Choudhury is the Partnerships and Research Manager, and a CMBM National Training Faculty/Supervisor. He is also a CMBM Certified Mind-Body Skills Group Facilitator and regularly leads groups in the Texas Medical Center and his community in Houston, TX. His background in neuroscience and biomedical research is foundational to his clinical practice which promotes people's innate potential to heal and develop resilience through the practice of mind-body practices. He is also involved in the research, development, and implementation of scalable systems for health transformation.



Meditation and Its Applications in Mind–Body Problems in Children and Adolescents

31

Kirkland Polk and Srinivasa Gokarakonda

Meditation as a Treatment Modality for Mood Disorders in Adolescents

The potential of meditative practices as a treatment modality for mood disorders is an area that several scientists have already begun to research in adolescents and young adults. Meditation can be defined as a practice that attempts to “clear the mind” of thoughts and attention to the environment. Also, it can be a strategy that focuses the mind on a particular thought, part of the body or another focus. It can be used to produce a state of relaxation and to “recenter” the mind and body to a baseline of well-being and calmness. There are several forms of meditation described below. According to one review article of medication use with children and adolescents, the most researched of these practices include mindfulness-based stress reduction, mindfulness-based cognitive therapy, yoga meditation, transcendental meditation (TM), mind–body techniques (including meditation and relaxation), and body-mind techniques (yoga poses, Tai Chi movements). The results of these meditative

practices do suggest promising results in the treatment for symptomatic anxiety, depression, and pain in younger populations (Simkin & Black, 2014). This indicates that the mental state of “meditation” can be arrived through several paths, from the body to the mind, from the mind to the body or a simultaneous intervention in both.

The available literature points to several studies that analyze the impact of cognitive behavioral programs combined with meditation. This combination can have a beneficial effect in the treatment of stress, anxiety, and depression in students. One of these studies provided a systematic review and meta-analysis of the effect of these treatment modalities. Looking at 34 studies that met the inclusion criteria, a number of determinants of success in the treatment of adolescents (González-Valero et al., 2019). The main treatment modalities were meditation strategies, mindfulness programs, and cognitive behavioral therapy as treatments for mood disorders. After reviewing and analyzing these studies, an average effect size was -0.41 for stress, -0.37 for anxiety, and -0.30 for depression. Moderating variables were also examined, and the authors of this review identified significant correlations in the type of treatment for stress and depression. This review provides insights into the impact meditation can play in the improvement of stress, anxiety, and depression.

K. Polk
Department of Pediatrics, University of Cincinnati,
Cincinnati, OH, USA

S. Gokarakonda (✉)
Medical Student Clerkship Director of Child &
Adolescent Psychiatry, University of Arkansas for
Medical Sciences, Little Rock, AR, USA
e-mail: Srinivasa.gokarakonda@arkansaschildren.org

A stratified randomized controlled trial compared the effectiveness of two of these meditative practices in college students for the treatment of depression and anxiety. Mindfulness meditation and yoga were the two interventions that were compared with a non-interventional control group (Falsafi, 2016). Ninety students were included who had a diagnoses of anxiety and/or depression. A stratified randomization process was utilized to create three groups of students were (randomly assigned): a mindfulness group, a yoga-only group, and a control group where no interventions were applied. The intervention groups both received 8 weeks of training and were assessed at baseline, at week 4, at week 8, and at week 12 for depression, anxiety, level of stress, self-compassion, and capacity for mindfulness. The results were promising for both yoga and mindfulness. Meditation seemed effective at reducing levels of depression, anxiety, and stress symptoms. By contrast, self-compassion scores were the only all the measurements that decreased significantly, but only in the mindfulness cohort. These results convey promising treatment results for two meditation-based interventions (Falsafi, 2016).

Another systemic review and subsequent meta-analysis (Werner-Seidler et al., 2017) aimed to examine randomized controlled trials of psychological programs in schools. These aimed to prevent depression and/or anxiety in children and adolescents. Due to the high likelihood of depression and anxiety emerging in younger populations, the school setting provides an effective environment for the diagnosis and treatment these conditions disorders. After using a number of pre-set inclusion criteria, 81 studies were included in this review that included 31,794 school students. Among the conclusions, a small effect size was noted for prevention of depression and anxiety in the immediate post-intervention period, as well as in a 12-month follow-up. This systematic review had limitations that included poor study quality in many of the studies included and moderate heterogeneity. These results did, however, convey the need for refinement of school-based treatment modalities that could include meditative practices to provide

treatment and improve outcomes for mood disorders in younger populations.

There have also been promising results in trials utilizing meditative practices in adults for the treatment of mood disorders. One of these studies examined the impact that laughter yoga could have on improving mood, anxiety, and stress symptoms in adults. Laughter yoga is a group-based meditative practice that prompts participants to engage in stretching, rhythmic breathing, meditation, and stimulated laughter. Fifty participants with clinically diagnosed depression were randomized to either a control group that included traditional treatments or an intervention group in which participants engaged in laughter yoga for eight sessions over 4 weeks. The Depression Anxiety Stress Scale and Short Form 12 Item Health Survey were completed by all participants at baseline, in the immediate post-intervention period, and 3 months post-treatment. The researchers found that the laughter group had statistically greater decreases in depression scores and improvements in mental health-related quality of life, but only in the immediate post-intervention scores, not in the three-month follow-up (Bressington et al., 2019). This study has limitations such as a small sample size and a control group that was treated with typical evidence-based treatments for depression. Nevertheless, these results convey promising outcomes immediately post-intervention.

Other meta-analyses and systemic reviews have shown promising results for meditative strategies as interventions mood disorders. One analysis of 19 studies investigated mindfulness meditation and acceptance-based exercises as interventions for patients with anxiety disorders (Vøllestad et al., 2012). The overall analysis found robust reductions in symptoms of anxiety as well as depressive symptoms. Advantages were seen in spite of adding specific psychotherapeutic content to mindfulness training and the results were better for individual over group treatment sessions. A limitation of this analysis is that none of the studies utilized control groups. Another analysis of 47 trials, with a total of 3,515 participants found that mindfulness meditation programs showed moderately improved anxiety,

depression, and pain both at 8 weeks and three–six months post-intervention. This review found low evidence of improved stress/distress and did not find evidence that mindfulness meditation practices were better than any other active treatment, including pharmacotherapy, exercise, and other behavioral therapies. Other limitations of this analysis included trials that were not registered as well as no assessment of the risk for bias in the trials (Goyal et al., 2014).

The benefits of meditative interventions may extend beyond improvements in symptoms of mood disorders when compared to other traditional non-pharmacologic treatments, such as physical exercise. One systematic review compared the outcomes across five studies of physical exercise compared to meditation for certain psychosocial outcomes, such as anxiety, altruism, and life changes. This study also comprehended physical outcomes, such as HDL cholesterol (High density lipoprotein cholesterol), LDL cholesterol (low density lipoprotein cholesterol), fasting blood glucose, and physical quality of life (Edwards & Loprinzi, 2018). This review found that meditation was more effective than physical exercise in improving those variables. Meditation was also found to reduce chronic neck pain at rest more effectively than exercise alone.

The benefit of medication in improvement in mood disorder symptoms, such as depression and anxiety, has been demonstrated throughout the literature in both adults and minors. There is still a need for more specific research in the latter population.

Attention Deficit/Hyperactivity Disorder in Children and the Role of Meditation

Attention Deficit/Hyperactivity Disorder (ADHD) is often thought of as a neurodevelopmental disorder with a high prevalence in younger populations and is a condition that often continues into adulthood, impacting multiple areas of life. There is a need for additional, cost-effective alternatives to pharmaco-

therapy for children. Many parents worry about the side and long terms of pharmacotherapy. If there were more alternatives, this would diminish the potential for side effects and a good quality of life. The nature of meditation involves two commonly studied practices: voluntary focusing of one’s attention on a specific object or non-reactive monitoring of moment-by-moment experiences. These activities provide opportunities, particularly in attention disorders, for positive neuropsychological outcomes from the regulatory functions of these meditative practices (Lutz et al., 2008).

A systematic review in 2018, with a subsequent meta-analysis of 13 randomized controlled trials found promising results for the role meditation can play as an intervention for ADHD in children. Results from the trials demonstrated that meditation-based therapies were significantly more effective in decreasing the severity of core symptoms of ADHD when compared to control groups. However, neuropsychological measurements of inattention and capacity for inhibition were not improved significantly in the meditation-based groups when compared to control groups. This analysis found several limitations to the randomized controlled trials (RCTs) included: these consisted of high risk of bias, heterogeneity across the studies, and paucity of the trials. These limitations prevented the review from supporting meditation-based therapies for ADHD despite the significant results in decreasing core symptoms (Zhang et al., 2018). Another systematic review included four studies utilizing mantra meditation and yoga meditation compared to pharmacotherapy, relaxation training, exercise, and standard treatments as a control group. This analysis found no statistically significant difference between meditation intervention and drug therapy group utilizing the teacher rating scale for participants. However, of the four studies included in this analysis, only one study met the inclusion criteria for subsequent analysis (Krisanaprakornkit et al., 2010). This further conveys a need for more sound trials with lower risk of bias to further investigate what role meditation might play in improving the quality of life for children with ADHD.

Several protocols have been proposed for better-quality studies that would utilize randomized controlled trials to compare meditation for children with ADHD to pharmacotherapy. One such proposal suggests recruiting children and adolescents between the ages of 9 and 18 with ADHD and comparing mindfulness meditation with a commonly used medication intervention, such as methylphenidate. A study aimed at understanding the cost-effectiveness and efficacy of such an alternative to standard treatments (Meppelink et al., 2016). Another proposal suggested that a study should investigate the impacts of mindfulness training as an intervention for children with ADHD as well as assessing the parent's impressions of improvement or not in their child parents (Zylowska et al., 2008).

Some studies have focused on the effect of meditation more narrowly on the ability to influence children and adolescents' attention skills. One such project utilized a quasi-experimental design to investigate whether 13–15-year-old children who received concentrative meditation training (CMT) in their school curriculum, had improved scores in attentional alerting, orienting, and conflict monitoring, this was measured utilizing an Attention Network Test (ANT) and compared the results with control subjects who did not receive any meditative training (Baijal et al., 2011). Those students in the CMT arm of the experiment received daily ten-minute meditative exercises, twice a day, for approximately 1–3 years prior to completing the ANT assessments. The control group students were recruited from a different school system that did not incorporate meditative practices into their daily curriculum. After analyzing the results, it was shown that attentional alerting and conflict monitoring differed between the experimental and control subjects. Orienting skills did not show any differences between the two groups. Despite the quasi-experimental design of this project, it is impossible to draw any definitive conclusions. However, these results suggest that a meditative practice, such as concentrative meditation training, may have useful and specific influences on the attention of children and adolescents (Baijal et al., 2011).

According to a systemic review article published in 2018, the methodology of many current studies appears to be of low quality which prevents any definitive statements to be made (Evans et al., 2018). Further research would give insights into possible treatment modalities with a lower side effect profile and high cost-effectiveness for children with ADHD and their families.

Meditation for Pain

Somatic pain has long been a condition that has proved challenging for clinicians to treat effectively with the current available treatments. This has prompted a need for more researched alternative treatments to provide more effective care for patients. The two most researched forms of meditation are mindfulness meditation and concentrative meditation. A recent review suggested that there are sufficient grounds to affirm the benefits of meditation in pain management in adults. However, there are less developed and definitive results of these benefits in children. The results so far suggest the possible benefits of meditation for both mental health and pain management in pediatric populations, but there is still a need for research in this area (McClafferty et al., 2016).

Headaches are a common form of pain that impairs the quality of life for patients and requires frequent attention from medical professionals, while the headaches prove to often be difficult to treat. This is true also in pediatric populations. A multi-center RCT (randomized controlled trial) investigated the benefits from hypnotherapy or TM (transcendental meditation) vs. progressive muscle relaxation exercise as possible treatment modalities for children with primary headaches (Jong et al., 2019). The progressive muscle relaxation intervention group served as the control group. Children were between the ages of 9–18 years and suffered from headaches more than twice per month. The groups were randomized into different intervention groups, and they received either TM (transcendental meditation), hypnotherapy, or progressive muscle relaxation for 3 months. After analyzing the results, the authors found that headache

frequency was significantly decreased in all intervention groups. There was no significant difference between them with regard to pain relief, coping, or anxiety and depressive symptoms. All three methods appeared to be safe as no adverse reactions were reported. This study provides additional insight into meditation as a safe, cost-effective, and efficacious modality to treat a common pain in younger populations.

While there is not extensive literature on the benefits of meditation for children and adolescents in pain management, there is substantial documentation of such benefits for adults with similar conditions. One form of meditation called Brahmakumaris spiritual-based, and also called Rajayoga meditation. This form of meditation is practiced without rituals or mantras (repetition of sounds) and is conducted with open eyes. This practice was investigated in a prospective randomized study to compare the treatment potential for chronic tension-type headaches compared to typical medical interventions, such as analgesics and muscle relaxants (Amritsar, 2014). Fifty total participants ranging in ages 18–58 years were recruited who suffered from regular tension headaches. They were divided into two intervention groups. The first received weekly sessions of Rajayoga meditation in addition to twice-a-day analgesics/muscle relaxants for pain management, while the control group received medication treatment twice a day only. The groups were followed and analyzed for an 8-week period. Both groups demonstrated significant reductions in headache severity, frequency, and duration of headaches after 8 weeks, yet the percentage of patients showing significant relief of these variables was higher in the group that included Rajayoga meditation compared with the second group. The group that received meditation also reported a higher headache relief via the headache index, 99%, compared with 51% calculated for the group that only received analgesics/muscle relaxants (Amritsar, 2014). The addition of this form of meditation to standard medical treatments for headaches appears to have promising results.

Other randomized controlled trials in adults have investigated the impact of meditation for

migraine headaches. Migraine headaches often are accompanied by comorbid mental health conditions, such as depression and anxiety. One such study investigated the benefits of spiritual meditation compared to secular meditation and relaxation techniques (Waldie & Poulton, 2002). This study recruited 83 participants who had never before practiced meditation and suffered from migraine headaches. They were divided into groups that were instructed on different forms of meditation, including Spiritual Meditation, Internally Focused Secular Meditation, Externally Focused Secular Meditation, and Muscle Relaxation. Participants were then instructed to practice their form of meditation in daily sessions for a month. Headache frequency, pain tolerance, and mental health symptoms were assessed in the participants. The results showed that participants who practiced Spiritual Meditation had more decreases in frequency of migraine headaches and symptoms of anxiety, as well as improved pain tolerance and headache-related self-efficacy. Similar study investigated how the use of spiritual meditation impacted analgesic usage in patients who suffered from migraine headaches but had never practiced meditation (Wachholtz & Pargament, 2008). Ninety-two participants were divided into groups that received different forms of meditation training. The different forms included Spiritual Meditation, Internally Focused Secular Meditation, Externally Focused Secular Meditation, and Progressive Muscle Relaxation. They practiced their assigned intervention daily for 1 month. The authors evaluated reported headache severity and frequency, as well as the amount of analgesics used by the patients during the 30 days. Spiritual meditation appeared to reduce migraine frequency compared to other groups, while headache severity did not appear to differ among the groups. Spiritual meditation led to an improved pain tolerance. There was no control group, but the results from these two studies suggest a benefit to this form of meditation intervention for migraine headaches (Wachholtz et al., 2017).

The results from these studies in adults as well as the limited studies in younger populations point to potential benefits for meditation for

children suffering from pain, such as headaches. More research is needed before definitive statements can be made as well as research into other common forms of pain beyond headaches, due to the burden and side effect profiles of many of the common treatment modalities used for pain currently.

Insomnia and the Benefits of Meditation

Insomnia and sleep disruption have a debilitating effect in the mental health of sufferers. Insomnia and sleep disruptions are common side effects of many medications and disorders seen within behavioral and neurological health. There have been numerous studies investigating the impact of meditation on sleep and as a treatment for insomnia. Insomnia is known to increase inflammatory markers associated with chronic diseases, such as markers for cancer and cardiovascular disease. It has been suggested that mindfulness meditation practices are easily employed by patients and they are an effective treatment of insomnia. There are current treatment options for children and adolescents, including cognitive behavioral therapy for insomnia (CBT-I). There is now a protocol for an RCT (randomized controlled trial) to compare CBT-I with mindfulness meditation in children suffering from insomnia. This protocol also proposes measuring a key inflammatory marker in these groups: nuclear factor kappa B (NF-KB). This proposal aims to recruit 70 participants suffering from insomnia and randomly assign them to either a CBT-I or the mindfulness meditation intervention group. Participants would practice weekly sessions for 8 weeks. The study will measure sleep quality and other sleep parameters, such as severity of insomnia symptoms utilizing different scoring systems, a sleep diary, and polysomnography testing. It would also measure serum NF-KB levels as well as mental health variables and symptoms, including stress, anxiety, and depression. The protocol would offer valuable insights into a non-pharmacologic technique, mindfulness meditation, which has been shown to have benefits

for the treatment of adults with insomnia, and to lower inflammatory markers (Creswell & Lindsay, 2014; Pan et al., 2019).

One meta-analysis study aimed to examine RCTs (randomized controlled trials) that investigate mindfulness meditation as a supplementary treatment for insomnia (Gong et al., 2016). This review article searched for articles up until July 2016 and after applying inclusion criteria, analyzed six trials with a total of 330 participants. The results showed that mindfulness meditation significantly improved sleep quality as well as decreasing total wake time. There were no significant results on sleep onset latency, total sleep time, sleep efficiency, and wake after sleep onset time. This calls for further research to be conducted utilizing this method in younger populations as insomnia and sleep disturbances are conditions that diminish quality of life and lead to many mental health burdens in children and adolescents.

Neurological Changes and Proposed Mechanisms of Action in Meditation

There is growing evidence in the literature of neurological changes both in children and older patients participating in regular meditation practices. A review article in 2011 examined the literature regarding the central nervous system changes utilizing neuroimaging in mindfulness meditation and the subsequent impacts that mindfulness had on attention regulation, body awareness, emotional regulation, and changes in perspective of the self (Hölzel et al., 2011). After reviewing many studies the authors conclude that mindfulness meditation is associated with neuroplastic changes in the insula, the front-limbic network, and anterior cingulate cortex. The neuroplastic changes seen in these regions of the brain function synergistically. This probably creates mechanisms for an enhanced sense self.

A clinical trial conducted in 2020 aimed to understand neurologic changes seen in the adolescent brain utilizing MRI scans in 38 adolescents

at baseline and after a 12-week meditation program. The specific meditation practice utilized was Training for Awareness, Resilience, and Action (TARA). This form of meditation combines elements from both yoga and mindfulness meditation. Gray matter changes were also measured via voxel-based morphometry (VBM). The results from the imaging studies demonstrated significant decreases in the volume of gray matter in the left posterior insula. There were also smaller decreases in the volume of gray matter in the left thalamus and left putamen. These are all regions of the brain involved with physical and emotional awareness. An interesting note from these results relates to the differences seen in prior studies in adults in which meditation was associated with structural increases. This finding indicates a difference in the neurologic impact meditation may have in the child and adolescent brain when compared to the more mature brain in adults (Yuan et al., 2020). Another review study aimed to specifically understand neurologic changes seen during yoga-based practices. This article analyzed 15 studies after applying inclusion criteria. The authors concluded that breathing, meditation, and posture-based yoga increased overall brain wave activity. These practices are all key components of yoga-based training. There were also increases in gray matter volume as well as increases in activation of the amygdala and frontal cortex during yoga (Desai et al., 2015). These findings give further evidence of the differences in changes in gray matter volume between the adult and adolescent brain.

Interesting findings were discussed in a review article that focused on mind–body therapies and their impact on inflammatory markers. In this article, 26 randomized controlled trials were reviewed to explore the impact of these mind–body therapies on circulating, cellular, and genomic markers of inflammation. The mind–body therapies studied included Tai Chi, Qigong, yoga, and meditation. Tai Chi and Qigong are practices from traditional Chinese medicine that include elements of coordinated breathing and mental focus. The majority of the studies included in this review focused on circulating markers, such as C-reactive protein. The evidence for these

therapies on circulating levels of C-reactive protein and IL-6 (interleukin 6 antibody) was mixed. Certain trials that demonstrated non-significant results in C-reactive protein and IL-6 did show positive impacts on symptoms reported by participants. Results were also mixed regarding measures of stimulated cytokine production. Genomic markers demonstrated more robust results, showing decreased expression of inflammation-related genes and decreased signaling via NF-KB (nuclear factor KB). NF-KB is a known proinflammatory transcription factor (Bower & Irwin, 2016),

These findings suggest alterations in neuroendocrine and neural pathways. With regard to possible neuroendocrine pathways, the autonomic nervous system and hypothalamic-pituitary-adrenal axis appear to be key elements. A study in 2006 showed that mind-body therapies appear to be associated with decreases in sympathetic activity and increases in parasympathetic activity (Audette et al., 2006) (Motivala et al., 2006) (Bower et al., 2014). An investigation carried out in 2016 demonstrated that Tai Chi participants had reduced activity of cAMP response element-binding protein (CREB) transcription factors. The decrease in these transcription factors further decreased Beta-adrenergic receptor signaling a reduced expression of the sympathetic nervous system (Irwin et al., 2015). The anti-inflammatory cholinergic pathway is thought to play a role in the increases seen in the parasympathetic nervous system during mind-body therapies (Tracey, 2009). With regard to the hypothalamic-pituitary-adrenal axis, there is mixed evidence about the impact that mind-body therapies have on cortisol levels, a compound with potent anti-inflammatory effects. Compassion meditation was found to have no effect on cortisol reactivity, while a study of brief mindfulness training found increased reactivity (Pace et al., 2009). Multiple studies have demonstrated that Tai Chi, mindfulness, and yoga are associated with increases in glucocorticoid receptor activity. This signals that these activities influence inflammatory processes as these results were seen alongside with decreases in NF-KB (Bower et al., 2014, 2015; Irwin et al., 2014, 2015).

The amygdala, dorsal anterior cingulate cortex, anterior insula, and periaqueductal gray matter, all appear to be neuronal regions that play a role in the autonomic nervous system and hypothalamic-pituitary-adrenal axis discussed previously (Eisenberger & Cole, 2012). This leads to the hypothesis that these regions of the brain may respond to mind–body therapies, such as meditation, as these are known as the “neural alarm” regions and thereby may mediate downstream effects on inflammation. Reduced amygdala reactivity and decreased functional connectivity of the amygdala with other regions of the brain that perceive potential threats have been demonstrated during mindfulness practices (Goldin & Gross, 2010; Taren et al., 2015). Mindfulness mediation has further been shown to increase the recruitment of the prefrontal cortex during emotion regulation tasks (Creswell & Lindsay, 2014).

There have been additional review studies that included electroencephalographic (EEG) and neuroimaging studies during concentrative meditation. Findings from one review found that EEG measures demonstrated an overall slowing of alpha activation after engaging in meditation. Increased regional cerebral blood flow was also seen during meditation in the anterior cingulate cortex and dorsolateral prefrontal areas (Cahn & Polich, 2006). The literature regarding the impact of meditation and subsequent neurological changes in adults is extensive, but there is a gap in similar studies within child and adolescent populations. Differences between results in older and younger populations as discussed earlier, give further reason to conduct more research in this area.

Summary

Meditation has gained interest and attention over the last decade and has been increasingly used for many psychological conditions, such as anxiety, depression, ADHD, and pain. Mediation has shown to improve depression and anxiety in the existing literature. In one notable case report, Blum et al. demonstrated that meditation can be

used as a quick and effective intervention to lower-state anxiety in adolescents in an inpatient psychiatric unit (Blum et al., 2021). In a 12-week RCT (randomized controlled trial), TM (transcendental meditation) demonstrated promising results in both adults and children for anxiety and externalizing behaviors (Gomes et al., 2021). Meditative therapies for ADHD may offer treatments with minimal side effects and are highly cost-effective. Mindfulness-Oriented Meditation (MOM) training has shown to alleviate cognitive and clinical symptoms associated with ADHD (Santonastaso et al., 2020). Mindfulness meditation has shown to increase performance, working memory, and visual short-term memory capacity (Youngs et al., 2021). Further research is needed to establish meditation as an effective and alternate intervention for children with ADHD in addition to current standards of treatments. In addition, meditation has some potential benefits in pain and headaches. Prior research has demonstrated that mindfulness meditation significantly improved sleep quality as well as decreasing total wake time. More research is needed to demonstrate the effectiveness of meditation in pain syndromes and sleep disturbances that diminish the quality of life and lead to many mental health burdens in children and adolescents.

References

- Amritsar, S. (2014). Effect of rajyoga meditation on chronic tension headache. *Indian Journal of Physiology and Pharmacology*, 58(2), 157–161.
- Audette, J. F., Jin, Y. S., Newcomer, R., Stein, L., Duncan, G., & Frontera, W. R. (2006). Tai Chi versus brisk walking in elderly women. *Age and Ageing*, 35(4), 388–393.
- Baijal, S., Jha, A. P., Kiyonaga, A., Singh, R., & Srinivasan, N. (2011). The influence of concentrative meditation training on the development of attention networks during early adolescence. *Frontiers in Psychology*, 2, 153.
- Blum, H., Rutt, C., Nash, C., Joyce, V., & Buonopane, R. (2021). Mindfulness meditation and anxiety in adolescents on an inpatient psychiatric unit. *Journal of Health Care Chaplaincy*, 27(2), 65–83.
- Bower, J. E., Crosswell, A. D., Stanton, A. L., Crespi, C. M., Winston, D., Arevalo, J., Ma, J., Cole, S. W., & Ganz, P. A. (2015). Mindfulness meditation for younger breast cancer survivors: A randomized controlled trial. *Cancer*, 121(8), 1231–1240.

- Bower, J. E., Greendale, G., Crosswell, A. D., Garett, D., Sternlieb, B., Ganz, P. A., Irwin, M. R., Olmstead, R., Arevalo, J., & Cole, S. W. (2014). Yoga reduces inflammatory signaling in fatigued breast cancer survivors: A randomized controlled trial. *Psychoneuroendocrinology*, *43*, 20–29.
- Bower, J. E., & Irwin, M. R. (2016). Mind-body therapies and control of inflammatory biology: A descriptive review. *Brain, Behavior, and Immunity*, *51*, 1–11.
- Bressington, D., Mui, J., Yu, C., Leung, S. F., Cheung, K., Wu, C., Bollard, M., & Chien, W. T. (2019). Feasibility of a group-based laughter yoga intervention as an adjunctive treatment for residual symptoms of depression, anxiety and stress in people with depression. *Journal of Affective Disorders*, *248*, 42–51.
- Cahn, B. R., & Polich, J. (2006). Meditation states and traits: EEG, ERP, and neuroimaging studies. *Psychological Bulletin*, *132*(2), 180–211.
- Creswell, J. D., & Lindsay, E. K. (2014). How does mindfulness training affect health? A mindfulness stress buffering account. *Current Directions in Psychological Science*, *23*, 401–407.
- Desai, R., Tailor, A., & Bhatt, T. (2015). Effects of yoga on brain waves and structural activation: A review. *Complementary Therapies in Clinical Practice*, *21*(2), 112–118.
- Edwards, M. K., & Loprinzi, P. D. (2018). Comparative effects of meditation and exercise on physical and psychosocial health outcomes: A review of randomized controlled trials. *Postgraduate Medicine*, *130*(2), 222–228.
- Eisenberger, N. I., & Cole, S. W. (2012). Social neuroscience and health: Neurophysiological mechanisms linking social ties with physical health. *Nature Neuroscience*, *15*, 669–674.
- Evans, S., Ling, M., Hill, B., Rinehart, N., Austin, D., & Sciberras, E. (2018). Systematic review of meditation-based interventions for children with ADHD. *European Child & Adolescent Psychiatry*, *27*(1), 9–27.
- Falsafi, N. (2016). A randomized controlled trial of mindfulness versus yoga: Effects on depression and/or anxiety in college students. *Journal of the American Psychiatric Nurses Association*, *22*(6), 483–497.
- Goldin, P. R., & Gross, J. J. (2010). Effects of mindfulness-based stress reduction (MBSR) on emotion regulation in social anxiety disorder. *Emotion (Washington, D.C.)*, *10*(1), 83–91.
- Gomes, A., Vieira Dos Santos, J., & Vieira, L. S. (2021). Meditation effects on anxiety and resilience of pre-adolescents and adolescents: A randomized controlled study. *Children (Basel, Switzerland)*, *8*(8), 689.
- Gong, H., Ni, C. X., Liu, Y. Z., et al. (2016). Mindfulness meditation for insomnia: A meta-analysis of randomized controlled trials. *Journal of Psychosomatic Research*, *89*, 1–6.
- González-Valero, G., Zurita-Ortega, F., Ubago-Jiménez, J. L., & Puertas-Molero, P. (2019). Use of meditation and cognitive behavioral therapies for the treatment of stress, depression and anxiety in students. A systematic review and meta-analysis. *International Journal of Environmental Research and Public Health*, *16*(22), 4394.
- Goyal, M., Singh, S., Sibinga, E. M., et al. (2014). Meditation programs for psychological stress and well-being: A systematic review and meta-analysis. *JAMA Internal Medicine*, *174*(3), 357–368.
- Hölzel, B. K., Lazar, S. W., Gard, T., Schuman-Olivier, Z., Vago, D. R., & Ott, U. (2011). How does mindfulness meditation work? Proposing mechanisms of action from a conceptual and neural perspective. *Perspectives on Psychological Science*, *6*(6), 537–559.
- Irwin, M. R., Olmstead, R., Breen, E. C., et al. (2015). Cognitive behavioral therapy and tai chi reverse cellular and genomic markers of inflammation in late-life insomnia: A randomized controlled trial. *Biological Psychiatry*, *78*(10), 721–729.
- Irwin, M. R., Olmstead, R., Breen, E. C., Witaranta, T., Carrillo, C., Sadeghi, N., Arevalo, J. M., Ma, J., Nicassio, P., Ganz, P. A., Bower, J. E., & Cole, S. (2014). Tai chi, cellular inflammation, and transcriptome dynamics in breast cancer survivors with insomnia: A randomized controlled trial. *Journal of the National Cancer Institute. Monographs*, *2014*(50), 295–301.
- Jong, M. C., Boers, I., van Wietmarschen, H., et al. (2019). Hypnotherapy or transcendental meditation versus progressive muscle relaxation exercises in the treatment of children with primary headaches: A multi-centre, pragmatic, randomised clinical study. *European Journal of Pediatrics*, *178*(2), 147–154.
- Krisanaprakornkit, T., Ngamjarus, C., Witoonchart, C., & Piyavhatkul, N. (2010). Meditation therapies for attention-deficit/hyperactivity disorder (ADHD). *The Cochrane Database of Systematic Reviews*, *2010*(6), CD006507.
- Lutz, A., Slagter, H. A., Dunne, J. D., & Davidson, R. J. (2008). Attention regulation and monitoring in meditation. *Trends in Cognitive Sciences*, *12*(4), 163–169.
- McClafferty, H., Sibinga, E., Bailey, M., Culbert, T., Weydert, J., & Brown, M. (2016). Mind-body therapies in children and youth. *Pediatrics*, *138*(3), e1.
- Meppelink, R., de Bruin, E. I., & Bögels, S. M. (2016). Meditation or Medication? Mindfulness training versus medication in the treatment of childhood ADHD: A randomized controlled trial. *BMC Psychiatry*, *16*, 267.
- Motivala, S. J., Sollers, J., Thayer, J., & Irwin, M. R. (2006). Tai chi Chih acutely decreases sympathetic nervous system activity in older adults. *The Journals of Gerontology: Series A: Biological Sciences and Medical Sciences*, *61*(11), 1177–1180.
- Pace, T. W., Negi, L. T., Adame, D. D., et al. (2009). Effect of compassion meditation on neuroendocrine, innate immune and behavioral responses to psychosocial stress. *Psychoneuroendocrinology*, *34*(1), 87–98.
- Pan, C., Wang, X., Deng, Y., et al. (2019). Efficacy of mindfulness-based intervention ('mindfulness-based joyful sleep') in young and middle-aged individuals with insomnia using a biomarker of inflammatory

- responses: A prospective protocol of a randomised controlled trial in China. *BMJ Open*, 9(7), e027061.
- Santonastaso, O., Zaccari, V., Crescentini, C., Fabbro, F., Capurso, V., Vicari, S., & Menghini, D. (2020). Clinical application of mindfulness-oriented meditation: A preliminary study in children with ADHD. *International Journal of Environmental Research and Public Health*, 17(18), 6916.
- Simkin, D. R., & Black, N. B. (2014). Meditation and mindfulness in clinical practice. *Child and Adolescent Psychiatric Clinics*, 23(3), 487–534.
- Taren, A. A., Gianaros, P. J., Greco, C. M., et al. (2015). Mindfulness meditation training alters stress-related amygdala resting state functional connectivity: A randomized controlled trial. *Social Cognitive and Affective Neuroscience*, 10(12), 1758–1768.
- Tracey, K. J. (2009). Reflex control of immunity. *Nature Reviews Immunology*, 9(6), 418–428.
- Vøllestad, J., Nielsen, M. B., & Nielsen, G. H. (2012). Mindfulness- and acceptance-based interventions for anxiety disorders: A systematic review and meta-analysis. *The British Journal of Clinical Psychology*, 51(3), 239–260.
- Wachholtz, A. B., Malone, C. D., & Pargament, K. I. (2017). Effect of different meditation types on migraine headache medication use. *Behavioral Medicine*, 43(1), 1–8.
- Wachholtz, A. B., & Pargament, K. I. (2008). Migraines and meditation: Does spirituality matter? *Journal of Behavioral Medicine*, 31(4), 351–366.
- Waldie, K., & Poulton, R. (2002). Physical and psychological correlates of primary headache in young adulthood: A 26 year longitudinal study. *Journal of Neurology, Neurosurgery & Psychiatry*, 72(1), 86–92.
- Werner-Seidler, A., Perry, Y., Calear, A. L., Newby, J. M., & Christensen, H. (2017). School-based depression and anxiety prevention programs for young people: A systematic review and meta-analysis. *Clinical Psychology Review*, 51, 30–47.
- Youngs, M. A., Lee, S. E., Mireku, M. O., Sharma, D., & Kramer, R. (2021). Mindfulness meditation improves visual short-term memory. *Psychological Reports*, 124(4), 1673–1686.
- Yuan, J. P., Connolly, C. G., Henje, E., Sugrue, L. P., Yang, T. T., Xu, D., & Tymofiyeva, O. (2020). Gray matter changes in adolescents participating in a meditation training. *Frontiers in Human Neuroscience*, 14, 319.
- Zhang, J., Díaz-Román, A., & Cortese, S. (2018). Meditation-based therapies for attention-deficit/hyperactivity disorder in children, adolescents and adults: A systematic review and meta-analysis. *Evidence-Based Mental Health*, 21(3), 87–94.
- Zylovska, L., Ackerman, D. L., Yang, M. H., et al. (2008). Mindfulness meditation training in adults and adolescents with ADHD: A feasibility study. *Journal of Attention Disorders*, 11(6), 737–746.

Kirkland Polk MD Resident physician at Saint Louis University in the Department of Psychiatry and Behavioral Neurosciences, Saint Louis, Missouri. He completed his medical degree at the University of Arkansas for Medical Sciences in 2021 where he cemented his interest in child and adolescent psychiatry. He has cultivated a growing interest to this point in his training in child and adolescent psychiatry, sports psychiatry, and mindfulness meditation practices.

Srinivasa Gokarakonda, M.D., MPH. Assistant Professor and Medical Student Clerkship Director of Child and Adolescent Psychiatry at the University of Arkansas for Medical Sciences. He is specialized in mental health disorders and co-occurring substance use disorders in adolescents and young adults. His interests include ADHD, adolescent substance use disorders, and mindfulness meditation.



Mindfulness and its Application for Mind–Body Challenges in Children and Adolescents

32

Aproteem Choudhury, Christina Clare, Soujanya Koduri, and Kirti Saxena

Introduction

Adolescence is a period of development and change for youth across multiple domains. Unfortunately, many children are at risk for exposure to stressors that lead to maladaptive coping, diminish mental health, or complicate other health conditions (Paus et al., 2008).

The use of mindfulness meditation practices to reduce distress has been central to Eastern philosophical and healing traditions for thousands of years (Kabat-Zinn). While the research of mindfulness-based interventions in adolescents is still very much in its infancy, it (Baer, 2003) has become incredibly popular with an outpouring of academic journal publications and mainstream media coverage. The American Mindfulness Research Association (AMRA) reports steady yearly growth in the number of published papers involving the word “mindfulness” in the title (ranging from 10 in the year 2000 to 842 in 2018 in the Web of Science database) (“American Mindfulness,” 2019) The integration of mindfulness-based interventions (MBIs) with traditional therapies is also increasing in a variety of clinical and institutional settings but almost exclusively in adult populations.

Only in the last few years has the focus shifted toward the application of MBIs with children (Perrier et al., 2020).

Mindfulness instruction is intended to enhance awareness of and attunement to what is happening internally and externally with friendly curiosity and without judgment. The nonjudgmental awareness that is enhanced in mindfulness interventions is theorized to facilitate self-regulatory processes and coping, particularly during stressful experiences (Perry-Parrish & Sibinga, 2014).

Mindfulness also has been shown to improve the possibilities of prosocial behavior, positive relationships, and general well-being (Brown, et al., 2015).⁷Therefore, mindful interventions may be useful in relieving suffering among youth dealing with life stress, illness, or externalized detriments to health (Perry-Parrish & Sibinga).

A systematic review on the effectiveness of self-regulation-based interventions suggests childhood and adolescence may be an ideal developmental period to introduce mindfulness to enhance cognitive development, particularly with respect to executive functions and self-regulation skills (Pandey, et al., 2018).

To this end, mindfulness interventions could be desirable and advantageous starting in early childhood to promote healthy development or forestall anticipated setbacks or mitigate the effects of existing illnesses or deficits (Perrier et al., 2020).

A. Choudhury (✉) · C. Clare · S. Koduri · K. Saxena
Division of Child/Adolescent Psychiatry, Texas
Children’s Hospital, Houston, TX, USA
e-mail: axchoudh@texaschildrens.org; kxsaxen1@
texaschildrens.org

With regard to disease, research has shown positive effects of mindfulness across several illnesses commonly encountered during adolescence leading to improvement in overall quality of life for patients suffering from chronic pain, sleep problems, chronic illness, and other conditions in which the primary focus of treatment is on the somatic presentation of disease (Lin et al., 2019). Furthermore, the integration of mindfulness practices into psychological treatment is known to support the health of children facing a wide range of behavioral symptoms, such as stress, anxiety, and depression (Perry-Parrish et al., 2016).

We are still very early in the hybridization of principles, values, and application of mindfulness, and equally nascent in our investigation of the mechanistic structures underlying mindfulness-based interventions. Therefore, it is understandable that the methodological limitations of many studies are significant. The heterogeneity of interventions and outcome measures, the exploratory nature of the research, and the limited numbers of randomized controlled trials are all limiting factors. However, the findings across many studies appear positive.

Through an understanding of the underlying mechanisms and potential clinical outcomes associated with mindfulness, we can provide holistic, individualized, respectful and empowering care (Erb & Schmid, 2021) where patients are seen as equal individuals with the capacity to participate actively in their health and health-care experience (Erb & Schmid, 2021).

The practice of mindfulness “may be very simple, but the effect can be great. - Thich Nhat Hanh (Hahn, 2011).

Mindfulness in Context

Mindfulness meditation originates from Buddhism (National Center for Complementary and Integrative Health, NCCIH), and through other forms of meditation exist, including Christian Meditation, Zen Meditation, Transcendental Meditation (TM) and others, mindfulness meditation is one of the most researched forms in the United States (NCCIH,

2016). Mindfulness is finding its way into mainstream culture, web and mobile applications, and the growing wellness industry (Erbe & Lohrmann, 2015).

The primary conceptual framing of mindfulness in clinical research was defined by Kabat-Zinn as a form of attention that is purposeful, non-reactive, non-judgmental, and in the present moment (Kabat-Zinn, 2007); and has subsequently shaped many of the standard evidence-based clinical mindfulness interventions, namely Mindfulness Based Stress Relief, its offshoots, and hybridizations with other preexisting therapies (Kabat-Zinn et al., 1998) such as Mindfulness-based Cognitive Therapy (MBCT) for prevention of depression relapse, Mindfulness-based Relapse Prevention (MBRP) for prevention of substance use relapse in addiction, Relaxation Response for cardiovascular health and wellness, Acceptance and Commitment Therapy (ACT) for a wide range of psychological problems, and Dialectical Behavior Therapy (DBT) for the treatment of borderline personality disorder (Vago & Silbersweig, 2012).

Mindfulness is often described as (1) A temporary state of non-judgmental, non-reactive, present-centered attention and awareness that is cultivated during meditation practice; (2) An enduring trait that can be described as a dispositional pattern of cognition, emotion, or behavioral tendency; (3) A meditation practice; (4) An intervention (Vago & Silbersweig, 2012).

Zen Master Thich Nhat Hanh played a key role in introducing mindfulness in the West. He has described mindfulness as what brings us back in touch with what’s happening in the present moment in our body, feelings, in our thinking, and also in our environment.

Roshi Joan Halifax, Ph.D., is a Buddhist teacher, who studied directly with Thich Nhat Hanh. In her book on Being With Dying Halifax invites us to approach care, mindfully, in the following way:

“If we strengthen our backs, metaphorically speaking, and develop a spine that’s flexible but sturdy, then we can risk having a front that’s soft and open, representing choiceless compassion. The place in your body where these two meet –

strong back and soft front – is the brave, tender ground in which to root our caring deeply.

With the clinical application of mindfulness, it is helpful to approach from an expansive and curious perspective, considering the perceptions of the patient around mindfulness, and the broader systems, physical, psychological, and environmental dimensions of health, we (patient and provider) participate with and are influenced by. We begin the process by:

- Examining factors we know to influence the quality and potential of a patient mindfulness experience
- Reviewing selected publications from the trove of research on mindfulness and its clinical applications for children
- Understanding how a personal practice of mindfulness, *with specific attention to compassion*, can cultivate essential attributes that improve potential outcomes for the patient and our own longevity as providers

Mechanisms Underlying Mindfulness-Based Interventions

Mindfulness meditation helps develop aspects of our awareness in four domains of experience:

toward the body, toward feelings/sensations or affective tone, one’s current mental state, and toward the matrix of interrelationships amongst all phenomena arising in one’s consciousness (Wallace, 2011).

Experience with these dimensions of awareness can help us see “below” the narrative self (Black, 2015; Craig, 2004) to operate within a medium that allows us to be more engaged in our own care.

This medium has been described by both fields of psychoneuroimmunology and Mind Body Medicine, in which aspects of the mind (thoughts, beliefs, emotions, and memories) are correlated to our physiology (Muehsam et al., 2017). In Mind Body Medicine, there is an understanding that physiological patterns underpin stress, resilience, mental and physical illness, comorbidity and recovery (Taylor et al., 2010).

Mindfulness-based interventions employ several training techniques which involve a huge number of diverse practices. A systematic review describes the many attempts made to classify mindfulness practices (Filipe et al., 2021).

One system classified practices based on Buddhist traditions, contemplative sciences, and neuroscientific research. The authors distinguished three broad classes of mental skills:

1. Present-moment attention and body awareness, including breathing meditation and body scan as core exercises
2. Socio-affective abilities such as gratitude, compassion, prosocial motivation, and accepting difficult emotions through loving-kindness meditation and dyadic exercises as core practices
3. Socio-cognitive capacities such as metacognition and perspective-taking that incorporate core practices like observing thoughts, meditation, and dyadic perspective-taking exercises (Singer et al., 2016)

In 2019, Matko and Sedlmeier developed a new classification system for meditation techniques to make it accessible and understandable to practitioners/researchers with different backgrounds. Through a survey with 100 experienced meditators, the authors found seven main clusters of techniques:

1. Body-centered meditation (i.e., concentrating on energy center or channeling, body scan, breath abdomen, observing the body, and breath nose)
2. Mindful observation (i.e., observation of thoughts or emotions, long meditation, and sitting in silence)
3. Contemplation (i.e., contemplating on a question, contradiction, or paradox)
4. Mantra meditation (meditation with sound, singing sutras or mantras, and repeating syllables)
5. Visual concentration (i.e., visualizations and concentrating on an object); (6) affect-centered meditation (i.e., cultivating compassion and opening up to blessings)

6. Meditation with movement (i.e., meditation with movement, manipulating the breath, walking, and observing senses) (Matko & Sedlmeier, 2019)

For the sake of simplicity, we can rely on David Vago's contextualization of the two general models for cultivating mindfulness through meditation: the 2500-year-old historical model that is rooted in Buddhist science and the 25-year-old contemporary model that is heavily influenced by Jon Kabat-Zinn's Mindfulness-Based Stress Reduction (MBSR) course, an adaptation of specific Buddhist techniques intended for general stress reduction (Kabat-Zinn, 1990, 1991).

Vago brings attention to the fact that the historical model for training the mind has similar goals to the contemporary western medical model: both are interested in reducing suffering, enhancing positive emotions, and improving quality of life (Vago & Silbersweig, 2012).

To help lay the framework for his model of understanding the neurobiological mechanisms of mindfulness, Vago first describes suffering through one of the most accepted models of psychopathology, where Beck (1964) originally proposed, "... the processing of external events or internal stimuli is biased and therefore systematically distorts the individual's construction of his or her experiences, leading to a variety of errors. Underlying these distorted interpretations are dysfunctional beliefs incorporated into relatively enduring cognitive structures or schemas" (Beck, 2008).

These schemas and affect-biased attention have been shown to play a major role in causally influencing and maintaining disordered affective states such as anxiety and depression (Beck, 1964). Mindfulness-based therapy relies on the removal of such dysfunctional beliefs and distortions (through different means). The same is true of cognitive-based therapies.

Vago posits that mindfulness practice can unravel the cycle of dysfunctional attitudes toward the self and toward one's relationship with the world. This thereby frees us to experience novel interpretations about ourselves (e.g., positively framed memories and self-schemas)

and the external sensory world (e.g., efficient engagement and disengagement). This can be accomplished through systematic mental training that develops meta-awareness (self-awareness), an ability to effectively modulate one's behavior (self-regulation), and a positive relationship between self and others that transcends self-focused needs and increases prosocial characteristics (self-transcendence).

This framework of self-awareness, -regulation, and -transcendence (S-ART) illustrates a method for becoming aware of the conditions that cause (and remove) distortions or biases. Relevant perceptual, cognitive, emotional, and behavioral neuropsychological processes are highlighted as supporting mechanisms for S-ART, including intention and motivation, attention regulation, emotion regulation, extinction and reconsolidation, prosociality, non-attachment, and decentering (Vago & Silbersweig, 2012).

Development and Implementation of Mindfulness-Based Interventions

The "Framework for Developing and Testing Mind and Body Interventions" issued by the National Center for Complementary and Integrative Health (NCCIH) and the National Institute of Health (NIH) "Stage Model of Intervention Development," offer specific recommendations based on the stage model of MBI development to guide the design, evaluation, implementation, and dissemination of MBIs in young persons (Saunders & Kober, 2020).

A few points to consider in the development of mindfulness-based intervention, for research or clinical application in children and adolescents are:

- Mindfulness is a psychological process that can be developed through practice (Bishop et al., 2004) and ongoing practice maybe necessary for MBI to be effective (Klingbeil et al., 2017).
- Mindfulness-based interventions have been adapted to pediatric populations can be tai-

lored to meet children’s and adolescents’ developmental needs (Perrier et al., 2020).

- Modifications for adolescent mindfulness interventions include shortening the duration, increasing the frequency of the sessions, and using age-appropriate vocabulary.
- Mindfulness can be incorporated into broader multicomponent treatment programs such as acceptance and commitment therapy and dialectical behavior therapy (Abujaradeh et al., 2018).

A 2010 qualitative review evaluated 15 studies of mindfulness-based interventions with children and concluded that mindfulness interventions were feasible and generally acceptable, and that, there were no indications that any of the programs evaluated did any harm (Burke, 2010).

- The type of facilitator can affect outcomes and should be considered when developing interventions (Carsley et al., 2017).

While research in mindfulness with children is not yet as extensive as with adults, it is growing rapidly, and, two recent meta-analyses indicated an increased interest in the utility of mindfulness training in young people (Filipe et al., 2021).

Mindfulness and the Mind

There is growing evidence to support that mindfulness meditation can lead to improvements in neurocognitive processes such as attention, executive functioning (EF), emotional reactivity, meta-cognition, and behavioral regulation in children (Tercelli & Ferreira, 2019).

Mindfulness practices have become increasingly used in schools for social-emotional learning. Programs appeared to produce better results when implemented for at least 6 weeks with children who had lower baseline social-emotional functioning (Sun et al., 2021).

A randomized controlled trial examining the effect of mindfulness meditation on working memory capacity in adolescents showed significant improvements in working memory capacity post-intervention in the mindfulness group. The

active control group, a yoga-based intervention and the waitlist showed similar reductions to the mindfulness intervention in anxiety and stress (Quach et al., 2016).

Self-regulation (SR) is a psychological construct that includes the capacity for controlling one’s emotions, the ability to have positive interactions with others, the capacity for avoiding inappropriate or aggressive actions, and the ability to carry out self-directed learning.

In a review of eight studies evaluating mindfulness and/or yoga techniques to enhance self-regulation in most adolescents, these interventions showed promise in improving SR in adolescents. All the interventions were of short duration (6 months or less) and school-based, with qualified mindfulness or yoga instructors and assistants delivering the intervention (Pandey et al., 2018).

With respect to affect mindfulness has been linked to rumination as an explanatory process. A prospective longitudinal study with adolescents predicted reductions in rumination, which in turn predicted reductions in negative affect (Tumminia et al., 2020). There is research to support mindfulness’ capacity to promote prosociality by increasing empathy in children and adolescents. A 2019 review by Cheang suggests that increases in self-compassion are correlated with an increase in mindfulness (Cheang et al., 2019).

Cognitive and Socioemotional Skills

Another review of the efficacy of specific meditation techniques used by mindfulness-based programs on the cognitive, social-emotional, and academic skills of children provided support for the use of mindfulness interventions to improve cognitive and social-emotional outcomes but found no support for the use of these interventions to enhance academic skills (Perry-Parrish et al., 2016).

Mindfulness-based approaches were also shown to reduce psychological symptoms, improve emotion regulation, improve attention and the ability to focus, and reduce maladaptive coping and rumination.

These improvements were further associated with increased calmness, improved relationships, and reduced stress (Perry-Parriah & Sibinga, 2014).

Findings suggest that MBI may offer an effective strategy for enhancing student dispositional resilience, and suggestions for further research are offered Felver et al., 2019).

Mood Disorders

Mindfulness-based interventions (MBIs) are an increasingly popular way of attempting to improve the behavioral, cognitive, and mental health outcomes of children and adolescents, though many researchers have suggested enthusiasm has moved ahead of the evidence base.

A meta-analysis of the effects of mindfulness-based interventions on cognition and mental health in children and adolescents in randomized controlled trials found significant positive effects of MBIs, relative to controls, for the outcome categories of Mindfulness, Executive Functioning, Attention, Depression, Anxiety/Stress and Negative Behaviours. When considering only those RCTs with active control groups, significant benefits of an MBI were restricted to the outcomes of Mindfulness ($d = 0.42$), Depression ($d = 0.47$) and Anxiety/Stress ($d = 0.18$) (Dunning et al., 2019).

A Systematic Review and Meta-Analysis on the effects of Mindfulness-Based Stress Reduction on depression in adolescents found a moderate effect in reducing depressive symptoms. No significant follow-up effect was seen and the longer the intervention duration, the larger the effect was seen (Chi et al., 2018).

A similar meta-analysis demonstrated increased self-reported mindfulness and decreasing symptoms of depression and anxiety (Charlton et al., 2020).

In comparison, another systematic search of RCTs Stratified meta-analyses as well as individual, random effects meta-regressions were performed to examine how effects varied by age group, intervention setting, control type, research location, and intervention dosage. Although

across all studies, there was a small beneficial effect of MBIs on anxiety post-treatment ($d = 0.26$), this was significantly moderated by research location, with RCTs conducted in Iran producing large effects ($d = 1.25$), and RCTs conducted in Western countries demonstrating no significant beneficial effect compared to controls (very small, $d = 0.05$). Post-treatment effects were significant for MBIs conducted with children ($d = 0.41$) and for MBIs when compared to passive controls ($d = 0.33$), but non-significant for adolescents ($d = 0.21$), for MBIs conducted in schools ($d = 0.30$) and in clinics ($d = 0.13$), and when MBIs were compared to active controls ($d = 0.12$) (Odgers et al., 2020).

Emergency departments (EDs) are often the first point of care for children experiencing mental health emergencies, particularly when other services are inaccessible or unavailable (Dolan & Fein, 2011). During March 29–April 25, 2020, when widespread shelter-in-place orders were in effect, ED visits for persons of all ages declined 42% compared with the same period in 2019; during this time, ED visits for injury and non-COVID-19-related diagnoses decreased, while ED visits for psychosocial factors increased (Hartnett et al., 2020). Data shows that beginning in March 16, 2020, the number of mental health-related ED visits among children decreased by 43% concurrent with the widespread implementation of COVID-19 mitigation measures; simultaneously, the proportion of mental health-related ED visits increased sharply beginning in mid-March 2020 and continued into October with increases of 24% among children aged 5–11 years and 31% among adolescents aged 12–17 years, compared with the same period in 2019 (Leeb et al., 2020). The need to manage the behavioral health needs of hospitalized children has become more acute with the coronavirus pandemic. A study researching the impact of mindfulness-based group therapy on psychiatrically hospitalized adolescents demonstrated significant improvement in mood disturbance was seen, including anger, confusion, depression, fatigue, tension, and vigor (Samms et al., 2018).

Aggression is a considerable behavioral problem that can further strain home life, school, or

the treatment of youth. There has been an increasing amount of research investigating the effectiveness of mindfulness-based intervention (MBI) in reducing levels of aggression. A 2021 review by Tao examined how effective mindfulness is in curbing aggressive behaviors in children and adolescents. Compared with non-clinical samples, MBI showed higher effectiveness for moderating aggressive behavior in clinical samples (Tao et al., 2021).

Mindfulness-based interventions are also being explored as a vehicle to help adolescents who are experiencing depression or suicidal ideations. A small sample of thirty adolescents with depression and suicidal behavior were exposed to an 8 weeks program on mindfulness-based cognitive behavior therapy. The analysis of pre and post-test revealed a significant enhancement in life satisfaction, life orientation, and family functioning as well as a reduction in depressive symptoms and suicidal ideation (Raj et al., 2019).

There are few well-established treatments for adolescent eating disorders with the most advanced protocols yielding remission rates reported to be between 30 and 40%. There is a clear need for the development and implementation of novel treatment approaches.

A review of mindfulness-related interventions to modify eating behaviors in adolescents identifies and summarizes studies that have used mindfulness approaches to modify eating behaviors and treat eating disorders in adolescents. Thirteen of the 15 studies reviewed reported at least one positive association between mindfulness treatment techniques and reduced weight/shape concerns, dietary restraint, decreased body mass index (BMI), eating in the absence of hunger (EAH), binge eating, increased willingness to eat novel healthy foods, and reduced eating disorder psychopathology.

While, incorporating mindfulness to modify eating behaviors in adolescents non-clinical and clinical samples is still in the early stages future studies with controlled conditions are warranted (Omiwole et al., 2019). Studies show promise for the treatment of substance abuse through mindfulness practice with evidence suggesting that major deficits in executive functions such as inhibitory

control, decision-making, psychological flexibility, and risky behavior are associated with a craving to use. A mindfulness-based substance abuse treatment demonstrated improved executive functions in the experimental group compared to controls (Alizadehgoradel et al., 2019). Another study from Riggs demonstrates that mindful awareness practice is associated with less substance use and cravings and a decrease in risk factors (Riggs & Grenberg, 2019).

Autism Spectrum Disorder

Despite the evidence, and enthusiasm for mindfulness-based therapies there is little research published on the effectiveness of mindfulness in reducing psychological distress and enhancing well-being for families living with autism spectrum disorder (ASD). Hartley published a systematic search that identified 10 independent studies, involving a pooled sample of 233 children and adults with ASD and 241 caregivers. Caregivers, children and adults who received mindfulness all reported significant gains in subjective wellbeing immediately post-intervention. Available data indicated intervention effects were maintained at a 3-month follow-up (Hartley et al., 2019).

Another critical review of eight empirical research studies that implemented yoga and mindfulness-based interventions for children with ASD reported little improvement in core symptoms of ASD, with preliminary data suggesting that yoga and mindfulness-based interventions are feasible and may improve a variety of prosocial behaviors, including communication and imitative behaviors; increased tolerance of sitting and of adult proximity; self-control; quality of life; and social responsiveness, social communication, social cognition, preoccupations, and social motivation. Reductions in aggressive behaviors, irritability, lethargy, social withdrawal, and noncompliance were also reported (Semple, 2019).

Youth with autism can experience emotional and behavioral challenges, which are associated with parental stress. *MYmind*, a concurrent mindfulness program in which youth with autism and

their parents simultaneously receive group-specific mindfulness training. Mindfulness-based programs are emerging as a promising support for these challenges, for both children and parents.

The current study evaluated the use of *MYmind*, a concurrent mindfulness program in which youth with autism and their parents simultaneously receive group-specific mindfulness training. Youth with autism can experience emotional and behavioral challenges, which are associated with parental stress. Mindfulness-based programs are emerging as a promising support for these challenges, for both children and parents. While two studies have documented the use of concurrent parent-child programs, neither involve control conditions.

A study evaluating the use of *MYmind* noted improvement in youth autism symptoms, emotion regulation, and adaptive skills, and in parent reports of their own mindfulness following the program (Salem-Guirgis et al., 2019).

The current body of research has significant limitations, including small sample sizes, no fidelity measures, and few control groups. Mindfulness presents a promising intervention strategy in ASD populations; however, more controlled research is required to determine its precise efficacy for affected families and subgroups.

There is great potential for mindfulness-based interventions to help relieve parental stress and improve family dynamics. A systematic review and meta-analysis on the effect of mindfulness interventions for parents on parenting stress and youth psychological outcomes revealed a reduction in parental stress up to 2 months post-intervention (Burgdorf et al., 2019). Mindfulness-based interventions have also been reported to have a positive role in managing distress in parents who care for children with disabilities (Rayan & Ahmad, 2018), including ADHD (Tercelli & Ferreira, 2019).

Mindfulness and the Body

Before 2010, there have been very few mindfulness studies of youth with clinical physical health conditions (Semple & Burke, 2019).

In the recent past, many investigators have begun phase one, exploratory research to explore the effects of mindfulness on children and adolescents with physical health conditions. Many of these studies can be found in the realm of oncology, where integrative approaches to care are more common, and mindfulness is generally well accepted by pediatric oncology patients. Preliminary research shows intervention effects to be beneficial with regard to symptoms that included procedural pain, distress, and quality of life (Tomlinson et al., 2020).

A 2021 review of three studies of mindfulness in pediatric oncology suggest that mindfulness could help to improve quality of life, reduce fatigue, improve activity and fitness levels, improve sleep quality, increase appetite and decrease anxiety in various stages of the disease and its treatment. The reviewed studies showed that mindfulness-based interventions for children and adolescents with oncological illnesses are feasible in different settings and are well received (Stritter et al., 2021).

All studies suffered limitations because of methodological flaws, including the lack of randomization, and small sample sizes. Despite the small numbers of studies and participants, MBIs delivered to children with cancer may have beneficial effects on certain symptoms.

Chronic Disease

Chronic disease encompasses a variety of physical or mental conditions that last longer than 3 months and interfere with child/adolescents' life activities. In addition to the physical symptoms, adolescents with chronic disease have higher levels of stress, which increase their risk for anxiety, depression, and psychological distress. Furthermore, chronic illness can limit an adolescent's functional ability and negatively affect the quality of life. A systematic review of MBIs among adolescents with chronic diseases in clinical settings included studies on adolescents with chronic physical diseases, chronic pain, psychiatric disorder, PTSD and substance abuse.

The main modality of the mindfulness interventions in the included studies was based on MBSR, MBCT, or both with interventions varying from 5 to 12 weeks, with each session ranging from 1 to 2 hours/week. Most studies used an adapted MBSR program that was suitable for adolescents; composed of three components of didactic material, experiential practice (mindfulness practices), and group discussion.

The effectiveness of MBI was inconsistent for different outcomes across studies.

For example:

MBI improved anxiety among adolescents with psychiatric, pain, and cardiac disorders, but it did not improve anxiety in other studies.

MBI improved depression among adolescents with psychiatric disorders and headaches, but it did not improve depression in other studies.

MBI were effective in improving psychological distress among adolescents with pain and effective in improving stress in adolescents with cardiac disorders.

The findings regarding pain were mixed across studies; although four research teams found that MBI significantly improved, two other groups did not find significant improvement in pain.

Finally, MBI improved the quality of life among adolescents with a headache but was not effective in improving the quality of life among adolescents with pain or cancer (Abujaradeh et al., 2018).

A mindfulness program adapted for adolescents with chronic pain led to an increased acceptance of pain at the three-month follow-up. The somatic engagement through the practice of mindfulness may have led to the reported improvements in body awareness and improved ability to cope with stress (Rushkin et al., 2017).

Mindfulness-based interventions are often paired with behavioral treatment, which is known to be as effective as a pharmacological treatment for headache management. In particular, Cognitive Behavioral Therapy (CBT) and mindfulness have proven to be very resolute both in the management of pain and in the management of stressful situations that can trigger the headache in children and adolescents with headaches (Faedda et al., 2019).

A modified MBSR intervention for Type 1 diabetes mellitus produced results suggesting significant pre-post improvements in 7-day blood glucose levels, and in participants' perceived diabetes stress and management (Ellis et al., 2018).

A study conducted with a similarly modified curriculum for HIV found significant improvements in self-reported mindfulness, coping, aggression, and on neuropsychological measures of selective attention and cognitive control. In addition, a significant change in HIV viral load between baseline and the 3-month follow-up was found for the MBSR group, which implies that the intervention resulted in a measure of improvement in HIV disease control (Webb et al., 2018).

A mindfulness-based group intervention for adolescents with inflammatory bowel disease found significant differences in emotional functioning, mindfulness, peer relationships, and depressive symptoms. Participants reported the incorporation of mindfulness in everyday life and the importance of shared experience but also indicated the time commitment to be challenging (Ahola Kohut, et al., 2020). Treatment programs featuring mindfulness meditation appear to be viable treatment options for people with insomnia (Ong & Smith, 2017) and may be effective in reducing stress and anxiety and improving the quality of life and lung function of children and adolescents with asthma (Lack et al., 2020).

The reviewed research aligns with the National Center for Complimentary and Integrative Health, National Institutes of Health, which aims to identify the usefulness and safety of complementary and integrative health interventions and their roles in improving health and health care through rigorous scientific investigation.

Research Considerations

As it stands, research of mindfulness-based interventions for children and adolescents consists mostly of Stage 1 studies, which typically include protocol development, therapist training, and feasibility and acceptability testing using uncontrolled open trial study designs. The shortcomings of the studies examined in this review include

low number of participants; lack of a control group; a limited follow-up period; and variable populations examined.

The application of the mindfulness intervention such as the type of intervention, frequency/length of the program, and the experience/training of the instructor varied across studies, which can increase the risk of bias and make it difficult to identify why MBI was effective in some studies but was not effective in others.

On the other hand, most of the studies tailored the intervention to the developmental stage and the disease of the adolescents, which makes them well established to be applied in clinical settings (Abujaradeh et al., 2018).

However, efforts should be made to improve methodological quality, including taking steps to minimize recall bias and provide a greater degree of transparency regarding how students are selected to attend qualitative interviews or focus groups (Sapthiang et al., 2019).

While the acceptability of mindfulness-based interventions are high, its feasibility is still controversial. Presently, there is a limited description of mindfulness facilitator training, the components of the MBI used, and if an MBI was adapted, descriptions of the adaptations. This is not to imply that we should rush towards standardization of the form and meaning of our interventions but that scaled-up definitive trial designs need rigorous attention given to controlling for the fidelity of instructor competencies and training.

Also, Mind-body interventions (MBIs) are one of the top ten complementary approaches utilized in pediatrics, but there is limited knowledge on associated adverse events (AE). Currently models employing telehealth are also being implemented (Chadi, 2020; Toivonen et al., 2017) as well as applications to teach the skill (Nunes, et al., 2020; Weekly et al., 2018).

A systematic review on AEs and MBIs from 2021 included 441 pediatric MBI studies of which 377 (85.5%) did not explicitly report the presence/absence of AEs or a safety assessment. There were 64 included studies: 43 experimental studies reported that no AE occurred, and 21 studies reported AEs. There were 37 AEs found,

of which the most serious was grade 3. Most of the studies reporting AEs did not report on severity (81.0%) or duration of AEs (52.4%) Gladwin et al., 2021).

Finally, publication bias, which is also known as the “file drawer problem”, affects all research, including the field of mindfulness. In published studies, positive findings tend to be emphasized, while null findings are downplayed or ignored. Many more mindfulness studies have likely been conducted, have found no effects, or possibly even adverse effects, and then were never published (Semple & Burke, 2019).

What About Us?

Workplace stress is high among healthcare professionals (HCPs) and is associated with reduced psychological health, quality of care and patient satisfaction (Burton et al., 2017).

A meta-analysis of randomized controlled trials reviewing mindfulness training for healthcare professionals (HCPs) and trainees suggests mindfulness-based interventions are effective in reducing distress and improving well-being in HCPs and trainees (Spinelli et al., 2019).

In his book *Decolonizing Pathways Towards Integrative Healing in Social Work*, Michael Yellow Bird, Dean of Social Work at the University of Manitoba outlines the premise of corporate mindfulness. Employees can be expected to manage their anxiety and even increase their happiness through meditation techniques as “stress is self-imposed through a lack of emotional self-regulation”. In this construct, the burden of the unethical choices that these organizations make are dumped onto the employees (Clarke & Bird, 2020).

In alignment with Dr. Yellow Bird, we are not suggesting that mindfulness will change the structural oppression of capitalism. Mindfulness-based *interventions* are inherently reductionist and so as we consider their application, please remember that at their core, mindfulness practices are designed to change the relationship to one’s experiences in a positive way (Perry-Parrish et al., 2016).

Again we turn to Thich Nhat Hanh, as he offers a practical blueprint for living mindfully, with compassion, in his book *Interbeing*.

When we grow a lemon tree, we want it to be vigorous and beautiful. But, if it isn't vigorous and beautiful, we don't blame the tree. We observe it in order to understand why it isn't growing well. Perhaps we have not taken good care of it. We know it is funny to blame a lemon tree, but we do blame human beings when they are not growing well... (Demerath et al., 2022).

As our review indicates, the current research is not strong enough to make any firm conclusions, however, the generally positive results, anecdotal clinical evidence, and roots of mindfulness practice suggest that mindfulness may be effective in improving the health and well-being of children and adolescents.

References

- Abujaradeh, H., et al. (2018). Mindfulness-based interventions among adolescents with chronic diseases in clinical settings: A systematic review. *Journal of pediatric health care: official publication of National Association of Pediatric Nurse Associates & Practitioners*, 32(5), 455–472.
- Ahola Kohut, S., et al. (2020). Feasibility and acceptability of a mindfulness-based group intervention for adolescents with inflammatory bowel disease. *Journal of Clinical Psychology in Medical Settings*, 27(1), 68–78.
- Alizadehgoradel, J., et al. (2019). Mindfulness-based substance abuse treatment (MBSAT) improves executive functions in adolescents with substance use disorders. In *Neurology, Psychiatry and Brain Research* (vol. 34, pp. 13–21). Elsevier BV.
- American Mindfulness Research Association. (2019). *Journal articles on mindfulness continue to grow in 2018*. <https://goamra.org/journal-articles-on-mindfulness-continue-to-grow-in-2018/>. Accessed 26 Oct 2020.
- Baer, R. A. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice*, 10(2), 125–143.
- Beck, A. T. (1964). Thinking and depression: II. Theory and therapy. *Archives of General Psychiatry*, 10, 561–571.
- Beck, A. T. (2008). The evolution of the cognitive model of depression and its neurobiological correlates. *The American Journal of Psychiatry*, 165, 969–977.
- Bishop, S. R., et al. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice*, 11, 230–241.
- Black, D. S. (2015). Mindfulness training for children and adolescents: A state-of-the-science review. In K. W. Brown, J. D. Creswell, & R. M. Ryan (Eds.), *Handbook of mindfulness: Theory and research* (pp. 283–310). Guilford Press.
- Burgdorf, V., Szabó, M., & Abbott, M. J. (2019). The effect of mindfulness interventions for parents on parenting stress and youth psychological outcomes: A systematic review and meta-analysis. *Frontiers of Psychology*, 10, 1336.
- Burke, C. A. (2010). Mindfulness-based approaches with children and adolescents: A preliminary review of current research in an emergent field. *Journal of Child and Family Studies*, 19, 133–144.
- Burton, A., et al. (2017). How effective are mindfulness-based interventions for reducing stress among healthcare professionals? A systematic review and meta-analysis. *Stress and health: Journal of the International Society for the Investigation of Stress*, 33(1), 3–13.
- Carlton, C. N., et al. (2020). JA. Mindfulness-based interventions for adolescent social anxiety: A unique convergence of factors. *Frontiers of Psychology*, 11, 1783.
- Carsley, D., Khoury, B., & Heath, N. L. (2017). Effectiveness of mindfulness interventions for mental health in schools: A comprehensive meta-analysis. *Mindfulness*, 9, 693–707.
- Chadi, N., et al. (2020). Mindfulness-based interventions for adolescents: Time to consider telehealth. *Journal of Alternative and Complementary Medicine*, 26(3), 172–175.
- Cheang, R., Gillions, A., & Sparkes, E. (2019). Do mindfulness-based interventions increase empathy and compassion in children and adolescents: A systematic review. *Journal of Child and Family Studies*, 28, 1765–1779.
- Chi, X., et al. (2018). Effects of mindfulness-based stress reduction on depression in adolescents and young adults: A systematic review and meta-analysis. *Frontiers of Psychology*, 9, 1034.
- Clarke, K., & Yellow Bird, M. (2020). *Decolonizing pathways towards integrative healing in social work* (1st ed.). Routledge.
- Craig, A. D. (2004). Human feelings: Why are some more aware than others? *Trends in Cognitive Sciences*, 8, 239–241.
- Demerath, P., et al. (2022). *A Grounded Model of How Educators Earn Students' Trust in a High Performing U.S. Urban High School*. The Urban review, (pp. 1–30). Advance online publication.
- Dolan, M. A., & Fein, J. A. (2011). Committee on pediatric emergency medicine. Pediatric and adolescent mental health emergencies in the emergency medical services system. *Pediatrics*, 127, e1356–e1366.
- Dunning, D. L., et al. (2019). Research review: The effects of mindfulness-based interventions on cogni-

- tion and mental health in children and adolescents - a meta-analysis of randomized controlled trials. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, 60(3), 244–258.
- Ellis, D. A., et al. (2018). Feasibility of mindfulness-based stress reduction for older adolescents and young adults with poorly controlled type 1 diabetes. *Health Psychology and Behavioral Medicine*, 6, 1–14.
- Erbe, R. G., & Lohrmann, D. K. (2015). Mindfulness meditation for adolescent stress and Well-being: A systematic review of the literature with implications for school health programs. *Health Educator*, 47(2), 12–19.
- Faedda, N., et al. (2019). Behavioral therapies in headache: Focus on mindfulness and cognitive behavioral therapy in children and adolescents. *Expert Review of Neurotherapeutics*, 19(12), 1219–1228.
- Felver, J. C., et al. (2019). School-based mindfulness intervention supports adolescent resiliency: A randomized controlled pilot study. *International Journal of School & Educational Psychology*, 7(Suppl 1), 111–122.
- Filipe, M. G., et al. (2021). Exploring the effects of meditation techniques used by mindfulness-based programs on the cognitive, social-emotional, and academic skills of children: A systematic review. *Frontiers in Psychology*, 12, 660650.
- Gladwin, K. K., et al. (2021). Adverse events of mind-body interventions in children: A systematic review. *Children (Basel, Switzerland)*, 8(5), 358.
- Hartley, M., Dorstyn, D., & Due, C. (2019). Mindfulness for children and adults with autism Spectrum disorder and their caregivers: A meta-analysis. *Journal of Autism and Developmental Disorders*, 49, 4306–4319.
- Hartnett, K. P., et al. (2020). National Syndromic Surveillance Program Community of practice. Impact of the COVID-19 pandemic on emergency department visits—United States. *Morbidity and Mortality Weekly Report*, 2020(69), 699–704.
- Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain and illness*. Delacorte.
- Kabat-Zinn, J. (1991). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. Dell Publishing, a division of Bantam Doubleday Dell Pub. Group.
- Kabat-Zinn, J. (2007). *Arriving at your own door: 108 lessons in mindfulness*. Hyperion.
- Kabat-Zinn, J., et al. (1998). Influence of a mindfulness meditation-based stress reduction intervention on rates of skin clearing in patients with moderate to severe psoriasis undergoing phototherapy (UVB) and photochemotherapy (PUVA). *Psychosomatic Medicine*, 60, 625–632.
- Klingbeil, D. A., et al. (2017). Mindfulness-based interventions with youth: A comprehensive meta-analysis of group-design studies. *Journal of School Psychology*, 63, 77–103.
- Lack, S., Brown, R., & Kinser, P. A. (2020). An integrative review of yoga and mindfulness-based approaches for children and adolescents with asthma. *Journal of Pediatric Nursing*, 52, 76–81.
- Leeb, R. T., et al. (2020). Mental health-related emergency department visits among children aged <18 years during the COVID-19 pandemic - United States. *Morbidity and Mortality Weekly Report*, 69(45), 1675–1680.
- Matko, K., & Sedlmeier, P. (2019). What is meditation? Proposing an empirically derived classification system. *Frontiers in Psychology*, 10, 2276.
- Muehsam, D., et al. (2017). The embodied mind: A review on functional genomic and neurological correlates of mind-body therapies. *Neuroscience and Biobehavioral Reviews*, 73, 165–181.
- Nunes, A., Castro, S.L. & Limpo, T. (2020). A Review of mindfulness-based apps for children. *Mindfulness*, 11, 2089–2101.
- Odgers, K., et al. (2020). The limited effect of mindfulness-based interventions on anxiety in children and adolescents: A meta-analysis. *Clinical Child and Family Psychology Review*, 23(3), 407–426.
- Omiwole, M., et al. (2019). Review of mindfulness-related interventions to modify eating behaviors in adolescents. *Nutrients*, 11(12), 2917. MDPI AG.
- Ong, J. C., & Smith, C. E. (2017). Using mindfulness for the treatment of insomnia. *Current Sleep Medicine Reports*, 3(2), 57–65.
- Pandey, A., et al. (2018). Effectiveness of universal self-regulation-based interventions in children and adolescents: A systematic review and meta-analysis. *The Journal of the American Medical Association Pediatrics*, 172(6), 566–575.
- Paus, T., Keshavan, M., & Giedd, J. N. (2008). Why do many psychiatric disorders emerge during adolescence? *Nature Reviews. Neuroscience*, 9(12), 947–957.
- Perrier, M. F., et al. (2020). Mindfulness-based interventions for children and adolescents across all settings: A scoping review protocol. *Systematic Reviews*, 9, 286.
- Perry-Parrish, C. K., & Sibinga, E. M. S. (2014). Mindfulness meditation for children. In R. D. Anbar (Ed.), *Functional symptoms in pediatric disease: A clinical guide* (pp. 343–352). Springer.
- Perry-Parrish, C., et al. (2016). Improving self-regulation in adolescents: Current evidence for the role of mindfulness-based cognitive therapy. *Adolescent Health, Medicine and Therapeutics*, 7, 101–108.
- Quach, D., Jastrowski Mano, K. E., & Alexander, K. (2016). A randomized controlled trial examining the effect of mindfulness meditation on working memory capacity in adolescents. *Journal of Adolescent Health*, 58(5), 489–496.
- Raj, S., et al. (2019). Effectiveness of mindfulness based cognitive behavior therapy on life satisfaction, and life orientation of adolescents with depression and suicidal ideation. *Asian Journal of Psychiatry*, 39, 58–62.
- Rayan, A., & Ahmad, M. (2018). Mindfulness and parenting distress among parents of children with disabilities: A literature review. *Perspectives in Psychiatric Care*, 54(2), 324–330.

- Riggs, N. R., & Greenberg, M. T. (2019). Mindful awareness: Can a neuro-developmentally timed approach prevent youth substance misuse. *The Journal of Primary Prevention, 40*(5), 493–503.
- Ruskin, D. A., et al. (2017). A mindfulness program adapted for adolescents with chronic pain. *The Clinical Journal of Pain, 33*(11), 1019–1029.
- Salem-Guirgis, S., et al. (2019). MYmind: A concurrent group-based mindfulness intervention for youth with autism and their parents. *Mindfulness, 10*(9), 1730–1743.
- Sams, D. P., Handley, E. D., & Alpert-Gillis, L. J. (2018). Mindfulness-based group therapy: Impact on psychiatrically hospitalized adolescents. *Clinical Child Psychology and Psychiatry, 23*(4), 582–591.
- Sapthiang, S., Van Gordon, W., & Shonin, E. (2019). Health school-based mindfulness interventions for improving mental health: A systematic review and thematic synthesis of qualitative studies. *Journal of Child and Family Studies, 28*, 2650–2658.
- Saunders, D., & Kober, H. (2020). Mindfulness-based intervention development for children and adolescents. *Mindfulness, 11*, 1868–1883.
- Semple, R. J. (2019). Review: Yoga and mindfulness for youth with autism spectrum disorder: Review of the current evidence. *Child and Adolescent Mental Health, 24*(1), 12–18.
- Semple, R. J., & Burke, C. (2019). State of the research: Physical and mental health benefits of mindfulness-based interventions for children and adolescents. *OBM Integrative and Complementary Medicine, 4*(1), 31.
- Singer, T., et al. (2016). *The ReSource project: Background, design, samples, and measurements* (pp. 11–21). Max Planck Institute for Human Cognitive and Brain Sciences.
- Spinelli, C., Wisener, M., & Khoury, B. (2019). Mindfulness training for healthcare professionals and trainees: A meta-analysis of randomized controlled trials. *Journal of Psychosomatic Research, 120*, 29–38.
- Stritter, W., et al. (2021). Yoga, meditation and mindfulness in pediatric oncology – A review of literature. *Complementary Therapies in Medicine, 63*, 102791.
- Sun, Y., et al. (2021). Yoga and mindfulness interventions for preschool-aged children in educational settings: A systematic review. *International Journal of Environmental Research and Public Health, 18*(11), 6091.
- Tao, S., Li, J., et al. (2021). The effects of mindfulness-based interventions on child and adolescent aggression: A systematic review and meta-analysis. *Mindfulness, 12*, 1301–1315.
- Taylor, A. G., et al. (2010). Top-down and bottom-up mechanisms in mind-body medicine: Development of an integrative framework for psychophysiological research. *Explore (New York, N.Y.), 6*(1), 29–41.
- Tercelli, L., & Ferreira, N. (2019). A systematic review of mindfulness based interventions for children and young people with ADHD and their parents. *Global Psychiatry, 2*(1), 79–95.
- Thich Nhat Hahn. (2011). Peace is every breath.
- Toivonen, K. I., Zernicke, K., & Carlson, L. E. (2017). Web-based mindfulness interventions for people with physical health conditions: Systematic review. *Journal of Medical Internet Research, 19*(8), e303.
- Tomlinson, D., et al. (2020). Mindfulness-based interventions for symptom Management in Children and Adolescents with Cancer: A systematic review. *Journal of pediatric oncology nursing: official journal of the Association of Pediatric Oncology Nurses, 37*(6), 423–430.
- Tumminia, M. J., et al. (2020). How is mindfulness linked to negative and positive affect? Rumination as an explanatory process in a prospective longitudinal study of adolescents. *Journal of Youth and Adolescence, 49*(10), 2136–2148.
- Vago, D. R., & Silbersweig, D. A. (2012). Self-awareness, self-regulation, and self-transcendence (S-ART): A framework for understanding the neurobiological mechanisms of mindfulness. *Frontiers in Human Neuroscience, 6*, 296.
- Wallace, B. A. (2011). *Minding closely: The four applications of mindfulness*. Snow Lion Publications.
- Webb, L., et al. (2018). Mindfulness instruction for hiv-infected youth: A randomized controlled trial. *AIDS Care, 30*, 688–695.
- Weekly, T., et al. (2018). A review of apps for calming, relaxation, and mindfulness interventions for pediatric palliative care patients. *Children, 5*(2), 16. MDPI AG.
- Aproteem Choudhury**, BS is the Mind-body interventionist in the Division of Child/Adolescent Psychiatry at Texas Children’s Hospital. At the Center for Mind Body Medicine (CMBM), Mr. Choudhury is the Partnerships and Research Manager, and a CMBM National Training Faculty/Supervisor. He is also a CMBM Certified Mind-Body Skills Group Facilitator and regularly leads groups in the Texas Medical Center and his community in Houston, TX. His background in neuroscience and biomedical research is foundational to his clinical practice which promotes people’s innate potential to heal and develop resilience through the practice of mind-body practices. Mr. Choudhury is also involved in the research, development, and implementation of scalable systems for health transformation.
- Clare** Christina Clare is an aspiring Neonatologist at the V.N. Karazin Kharkiv National University and Research Volunteer in pediatric bipolar disorder. Her passion is to discover new ways to integrate various related research interests to further the horizon of medicine in a sustainable manner. Her main areas of interest includes the neurological underpinnings of non-substance addictions, neonatology, genetics and psychiatric disorders such as depression/anxiety/trauma. Her introduction to Mind-Body techniques came in the wake of the war in Ukraine, through professional training at The Center of Mind Body Medicine, which she aims to harness in order to promote sustainable personal and community health and wellness.
- Koduri** Soujanya Koduri is a Resident Physician in Psychiatry at John Peter Smith Hospital. While in medical

school at the University of Texas Medical Branch at Galveston, Soujanya completed the Physician Healer Track, during which she was first exposed to third wave therapies and became certified in Mindfulness practices.

Kirti Saxena, MD is Associate Professor of Psychiatry at the Baylor College of Medicine and the Division Chief of

Child/Adolescent Psychiatry at Texas Children's Hospital/Baylor College of Medicine. Her interests focus on the diagnosis and treatment of pediatric bipolar disorder. While working with youth with mood disorders, Kirti developed an interest in utilizing mind-body techniques such as yoga/meditation/mindfulness as adjunct therapies in the treatment of mood disorders in children and adolescents.



Hypnosis with Children and Adolescents with Mind-Body Problems

33

J. Martin Maldonado-Duran

In the current field of child and adolescent psychiatry at present, hypnosis and hypnotherapy are almost like outdated interventions. Most fellows in child psychiatry in the US do not receive formal instruction on what hypnosis is, how to practice it and its uses. In the field of child psychology, there are branches of organizations devoted to hypnosis but the technique and therapeutic applications are somewhat relegated to specialists.

In the mind of the public hypnosis often has the halo of a somewhat esoteric if not suspicious technique. It has fallen almost into oblivion in the wide field of child and adolescent mental health. This is regrettable as there are multiple uses for hypnosis and the practice can be a powerful strategy in dealing with multiple mind-body conditions and posttraumatic events and in helping the side effects or pain associated with various medical treatments, among other applications. Here we attempt a brief review of its main techniques and applications, which can be used alone or in combination with a broader psychotherapeutic process involving the child, adolescent and family. Hypnosis was utilized quite regularly in psychiatry in the seventies and eighties of the XX century and now is having a “renaissance” in

terms of research, interest in its neurophysiology and what it tells about the functioning of the brain. Also, in terms of clinical applications (Jamieson, 2007).

Hypnosis: What It Is and Is Not

The term hypnosis is derived from the Greek “hypnos,” which means sleep Hypnos was one of the Greek Gods in attendance when a wounded soldier or a sick person was between life and death, together with Thanatos, the death god. The public may think of hypnosis as a form of sleep, which indeed was a belief in the XIX century. This is no longer the case. It is described presently as a state of deep concentration in which the mind is highly focused and can lead to a state of high suggestibility. It is a state of modified attention (Cojan et al., 2009, Van der Hart, 2015). The child participates voluntarily and is in control of him or herself. In this state, he or she can visualize and “feel sensations suggested by the clinician, or self-generated, and experience different phenomena, from a state of relaxation and calmness, absence of pain, and a state of well-being to one of “diminished defenses” in which the irrational part of the mind is more accessible and where repressed memories can be approached and explored.

Contrary to the public perception, the clinician “does not take control” of the mind of the

J. M. Maldonado-Duran (✉)
Menninger Department of Psychiatry, Baylor College of Medicine, Houston, TX, USA
Complex Care Clinic, Texas Children’s Hospital, TX, Houston, USA
e-mail: jesusmam@bcm.edu

other or in any way is in charge of the other person. Rather, it is the subject who puts his or her confidence in the clinician to “remove barriers” or “open doors” to experiences that the person may not be able to access by him or herself. Any patient generally has an ambivalence toward change, to do things differently and abandons certain feelings and emotions in favor of new ones. Only when there is a trusting, therapeutic alliance between the patient and the clinician can a therapeutic use of hypnosis be attempted. The patient should want to participate and cooperate in the process of discovery or change. It is obvious that this needs a minimum of support from the family members of the minor, to assist and facilitate the process.

The Origins of Hypnosis

A brief review of the history of the application of hypnosis is useful, given its relevance to our current conceptions of mind-body problems and how to address them. Two centuries ago, hypnosis was associated with animal magnetism and Mesmerism (Pichot, 2010). Later on, Jean Martin Charcot, a neurologist, in Paris, conducted his observations and “demonstrations” at the Salpêtrière hospital in Paris. In these sessions, some of which were staged, Charcot and his disciples could remove or produce some symptoms in patients under hypnosis, such as paralysis, sensations and actions. These symptoms were deemed “hysterical” in nature. Charcot and his students were also clear in describing that some of these symptoms were due to a condition they called “traumatic neurosis,” i.e., the appearance of symptoms as a result of traumatic experiences in the past of the patient. Pierre Janet, a psychologist and psychiatrist and a student with Charcot, recognized the importance of hypnosis and dissociation in the origin of many symptoms, and also the potential for its therapeutic use in treating the effects of trauma. Janet referred to “automatisms”, i.e. the carrying out of actions and sequences of behavior that the person may not be aware of and which represent an important theme in the emotional life of the patient. Janet

often referred to the automatism, which is carried out during a somnambulistic state of lady Macbeth in Shakespeare’s play. She was tormented by guilt, and in the night would wake up and through her behavior, her feelings were represented by the act of washing her hands from blood, which would not come off (“damn spots”). This was an example of actions that were a representation of unconscious forces, such as guilt, a desire, or a reenactment of traumatic experiences. The person was in a sort of hypnotic state while displaying all these behaviors meant to represent, repair or alter the originally distressing event. Janet’s work has gained renewed interest in the clinical work on dissociative states, which are clearly a representation of mind and body in action (Van der Hart et al., 2006).

Milton Erickson, a psychiatrist and psychotherapist who worked in Arizona in the United States, was involved with the authors who originated systems theory in Palo Alto, California, and used techniques that involved not only the traditional “catalepsy” inducing, and guided imagery, but also he employed “storytelling” or narratives that had an embedded suggestion and which might be particularly applicable to younger children (Scott et al., 2008). One of the goals was to focus the attention of the patient on the clinician and then introduce a suggestion in the narrative that would have a strong emotional impact on the child or adolescent.

Hypnosis in Childhood and Adolescence

Hypnosis is a form of dissociation, which is a very common and normal phenomenon. Children, like adults, dissociate when they lose track of time when they are not engaged with the outside world, when they are daydreaming, or when they focus intensely on an activity or a fantasy. All people can engage in those mental activities. Some have a more “vivid imagination”, or are more prone to fantasy or to daydreaming. These abilities can be correlated with hypnotizability, i.e. the ability to go into a trance state, in hypnosis, with the help of a clinician. It can start as a

form of *reverie*, in which visual and auditory experiences appear very vivid. Also, it is a strategy to access what is normally the “unconscious” part of the mind in which there are lively perceptions and in which memories from the past can be accessed. Also, in the unconscious mind, the past can appear as the present, and the realization of desires is possible. This is also a mental state in which changes can be made, a person can feel healthy, calm, strong, brave, etc. even if in a normal state this is very different. Also, some negative emotional aspects of the past can be changed so they no longer exert a negative impact on the present.

In their classic book on hypnosis with children, Kohen and Olness (2011), as well as other authors (Berghmans & Tarquinio, 2009; Fuks, 2007, Signer-Fisher, 2006) emphasize the relative ease with which children and adolescents can achieve a state of trance. Some of these reasons are associated with the way children think and feel. The child’s tendency to imagine and to “make believe” is one of those features. Children have vivid imaginations that make them prone to be able to experience visual, auditory, tactile, olfactory and gustatory sensations while in a state of trance (Revensdorf, 2015). Also, a powerful ally in hypnosis is the child’s wish to improve and to grow, to develop more capacities. The child also has a strong urge to relate to others and generally to put their trust in adults whose parents endorse as trustworthy.

To a certain degree, any trance is a sort of “regression into childhood” even in adults, in the sense that the person experiences things with a liveliness rooted in the concrete material surroundings, and in this state, many things are possible. This may consist of making something appear or disappear, one could fly, be completely healthy and experience well-being, even if in the “real world” the child “should “experience physical pain, emotional pain or anxiety, etc. A person who has died can be imagined alive and the subject can talk to that person, etc. All of these “infantile functions” are put in the service of healing and solving problems.

The Neurobiology of Hypnosis or the Hypnotic Brain

Traditionally, neurophysiologists have referred to the brain as being able to be in three predominant states: the awake brain, the brain during REM (rapid eye movement) sleep and the brain in other phases of sleep. One could add the “hypnotic brain” (DeBenedittis, 2013) and the meditative brain state. Studies with functional MRI imaging support the notion that hypnosis is an altered state of consciousness (Rainville & Price, 2003).

In electroencephalographic (EEG) terms, an increase in theta waves is associated with greater hypnotizability and greater capacity to respond in the hypnotic state (DePascalis, 2007). A more complex model of electroencephalography is called bispectral analysis. It has been described as composite of multiple advanced electroencephalography (EEG) signal processing techniques, including bispectral analysis, power spectral analysis and time domain analysis. With this technique, one can objectively distinguish between a waking brain state and a trance state. A number called the Bispectral analysis index (BIS index) indicates that an index between 77 and 92 (100 being a completely awake brain state) is a “hypnotic zone” or hypnotic state. Incidentally, the BIS index is used in anesthesia to determine the amount of anesthesia that is required in surgical procedures, so it is considered a reliable measurement of the status of brain activity and perception, for instance of pain. In order to obtain these measurements, a device called Brain Function Monitoring system is used.

New techniques in neuroimaging have also contributed to documenting what occurs in the brain during the hypnotic state. There are studies using functional magnetic resonance imaging (fMRI) and PET (positron emission tomography) imaging. With these strategies, various regions of the brain have been studied. For instance in visualization during hypnosis, activation of the occipital (visual) cortex is noted. Regarding “imagery” or “seeing with the mind’s eye” activation of areas such as the anterior cingulate cortex, the

inferior parietal cortex, and the area called the precuneus region involved in the experience of self-awareness and imagery, a cortical area in the occipital lobe) is activated, as well as the dorso-lateral prefrontal cortex (Cojan et al., 2009). In experiential terms, in hypnosis, the subject is encouraged to focus attention on some specific sensations or objects, while “disconnecting” other operational systems in brain functioning or mental operations (e.g. stop paying attention to outside noise, to other body parts, etc.) and to inhibit responses to extraneous stimuli (Cojan et al., 2009). In a hypnotic state, there is a dissociation or decoupling between subjective intentionality and the motor system carrying out that representation. In studies focused on diminished pain perception, a reduction in the function of the anterior cingulate cortical area has been noted, which is involved in the emotional appraisal of pain. Conversely in “hypnotically induced leg paralysis” experiments with functional imaging, it is the anterior cingulate cortex that is stimulated, suggesting its inhibitory role in the actual motor cortical areas involved with the leg movement (Ward et al., 2003).

Common Induction Techniques

In most psychotherapy practices (interpersonal, mentalization-based, psychodynamic, rational emotive therapy) therapists would agree that each psychotherapeutic process is unique and is the result of a co-construction between the child or adolescent and the psychotherapist. This may or may not apply to “manualized” psychotherapies, but even in those cases, an experienced therapist would adapt the manual to the patient and not the converse.

In the same way, induction techniques can be described in very broad terms. The particulars are to be decided “on the spot” based on the therapist’s knowledge of the child he or she has in the setting, and on the unique characteristics, age, preferences and problems that the child presents.

Generally, it is accepted by therapists that in most hypnotic strategies a minimum of knowledge about the child, his or her developmental stage, and preferences as to play, television programs, foods, games and everyday activities would be useful to have. It should go without saying that a minimum of trust from the child (and the family) toward the therapist is essential for the process to be successful.

Like in adults, the child or the adolescent patient has a part of him or herself who “wants to get better” and another that does not or wants to remain the same. The therapist is going to try to advocate with the child to favor the part that wants to change and remove the obstacles for that to occur, if possible. If the patient does not want to see any change or there are powerful forces in operation to keep the child troubled, symptomatic or in bed, then this would be the first order of the intervention, to explore these forces and work on them. The model in which the therapist would “dominate the mind” of the patient has been abandoned and the role of the therapist in hypnosis is more of a guide, a coach or a facilitator who helps the child solve certain conflicts or challenges. The role of the family has to be taken into account. If the therapist attempts, through hypnosis, to help the adolescent to gain more autonomy, it is essential to know that the family is going to agree to these changes. It would be counterproductive if the family insisted on keeping the child in a highly dependent state and would not let him or her grow up emotionally. If a mother or father is insistent on seeing their child “as a baby” and “totally dependent” the efforts of the therapist would put the child in a difficult situation. It would be better to first allow the caregiver to “release the child” and then try to help the youngster overcome his or her own fears of being different.

In general, a child who is very young does not have to necessarily lie down on a couch or close his or her eyes, the child can talk and move around.

Favorite Place (Multisensory Induction)

Through a conversation with the child or adolescent, the clinician has elicited the youngsters' view of a favorite place. This could be a garden, the beach, the woods, his house or even a room. The clinician encourages the child to focus the mind on the clinician's voice and to realize that other stimuli seem less important at present. The clinician suggests that if the child wants, he or she may feel tired, the limbs may seem heavy (legs, arms, hands, feet, neck) and also warm and tired, but in a nice way. This is done while the child is lying down on a couch or sitting on a comfortable chair. The legs should not be crossed as this may lead to discomfort once the trance has started. Time should be given for the child to relax the limbs while breathing slowly. The clinician speaks calmly and offers suggestions, rather than instructions. Most clinicians recommend not using "negative suggestions" like "you don't feel worried" and instead using positive or affirmative statements like "you may feel calm" "you may feel refreshed" etc. the essence of the trance is the "experiencing" of various sensations, including visual, auditory, tactile proprioceptive, vestibular and olfactory. For instance, the clinician may say, "you are in a beautiful garden.... You see flowers of different colors, maybe your favorite color... you may touch the plants and flowers, they are soft....you may smell the flowers, very calming and nice.... If you look at the sky...it is clean, of a beautiful blue and everything seems nice. you may see some birds in the distance... flying.. and you can hear them singing..." the child may be able to move the head to say whether he or she is experiencing these phenomena or whether this is a good place to be...". the child may choose to be with a reassuring person, like a mother, father, a friend and feel reassured in their presence. Before the experience is finished, the clinician reassures the child that he or she might want to stay here longer but the child can always come back to this place by just remembering all these sensations. Some practitioners help the child reexperience the feeling of well-being and

calmness by associating "being there" with a certain hand movement, touching the index finger with the thumb of the same hand, or other simple movements. This may help the child eventually reexperience calmness and well-being without having to go through the whole process of induction. The clinician may also make an audio recording of the induction process and give it to the child to practice at home.

The minor is told that he or she will remember everything that was seen, heard, and experienced during the trance, and when the process is finished, he or she will feel stronger, relaxed and at peace.

The general tenor of the experiences during trance is to imagine that the subject is of preschool age and to "anchor" the suggestions on concrete sensory experiences, like the colors, the sounds, the feeling of something on the hands or face, etc. All of this helps in the process of "regression" making the mind more suggestible to the statements of the clinician. The process tends to be more successful if the therapist has gained information previously as to the things the child likes and prefers, places, video games, stories, and themes.

A very traumatized 14-year-old boy who had suffered extensive and prolonged traumatic experiences clearly indicated he would not feel safe in any of the places mentioned above, not even a room. However, he felt very competent in basketball. He preferred to be "all by himself" in a gym where he could bounce the basketball and score by throwing the ball. This was a place that succeeded in giving him a feeling of "safety" as he could not trust anybody and in the basketball court he felt totally in control, competent and at ease. This allowed him to use the technique when he felt "triggered" by people speaking loudly or yelling, which tended to elicit in him aggressive behavior.

If the child likes animals, he or she may imagine himself in a farm or petting rabbits or other animals that are not dangerous or likely to hurt the child. For some children who are very hyper-alert, the image of a soft puppy who is very calm and soft may be reassuring and may favor the feeling of calmness and safety. In these visualizations the clinician emphasizes the softness of the animals, the color, the different soft parts, and the

closeness to the animal which leads to reassurance and contentment. The clinician may suggest to change the color of the animal to the child's favorite ones and the same with other properties in order to focus the attention of the child on the physical properties of the animal, giving the sense of being in control and calm.

Applications of Hypnosis

We restrict our focus here to the more common "mind body" issues in which hypnosis could be applied successfully. Hypnosis is used for multiple other problems, including anxiety and tension in autistic children, in children and adolescents with anxiety difficulties (separation, posttraumatic, generalized anxiety and specific phobias), in states of unresolved grief and in other similar situations (Kohen & Olness, 2011). Here we focus on the most usual "mind body interactions" in which hypnosis can be applied.

As in all treatments of a psychological/psychiatric nature, the intervention strategy has to be adapted or adjusted for the particular patient. The induction technique, the preliminary work, and the actual hypnosis intervention will vary with many factors, including the age of the child, his or her hypnotizability, their preference for a particular sort of intervention and the degree of trust in the therapist. Therefore, no "uniform" intervention strategies are recommended for "all patients", but some general principles can be described.

There is always a dilemma on the question of "who should be in the room" when a hypnotic procedure is performed. In general, it is desirable if at least one of the child's caregivers is present and supporting the child, making him or her feel more at ease, and the benevolent presence of a mother, father or other caregivers can facilitate the procedure. However, if the child is more tense or more uneasy around a caregiver, this may be counterproductive. Also, there are questions of "what is happening in the room" during hypnosis, for example between a male therapist and a teenage girl. If the child feels confident around the caregiver, mother or father, this would be

desirable so that they are aware of all that happened and what was said. At times the child may wish his or her parents not to be present due to the nature of their revelations or they might feel inhibited if the parent or caregiver were there. If possible a videotape of the session could be made in case there are some misperceptions of the induction technique or of what is being said and done. This will help everyone to feel more confident. In this connection, it might be useful to remember that Gilles de la Tourette practiced hypnosis with very troubled patients and once he was falsely accused of having raped a young woman patient (this was the patient's perception). Then, she came back after the session and shot him in the head, leading to a number of neurological complications.

Hypnosis and Posttraumatic Phenomena

Hypnosis should be considered as a part of a multimodal set of interventions that can be employed in the rehabilitation of anxiety states, as well as posttraumatic abuse or chronic disturbances, besides pharmacotherapy, psychotherapy and other strategies for self-regulation.

Chronic maltreatment, abuse and constant stress in the child can lead to a number of negative consequences, one of which is a "disorganized attachment style". This is a problematic development in that the child cannot develop a consistent and predictable strategy to relate to and seek protection from the attachment figure (mother, father, other caregivers). This is so because the attachment figure is at times protective and at others is the source of fear and frightening experiences. The child is unable to predict for the most part which "state" of the caregiver he or she may encounter and develops behaviors that are contradictory when the child is in distress. Going to the caregiver for comfort and "stopping in mid-air" because of the scary memories in relationship with the caregiver. When the child is in distress there is no predictable source of comfort.

The constant arousal and dissociative experiences which develop as a result of multiple frightening experiences can be approached through hypnosis (Degun-Mather, 2006). Dissociation (and spontaneous self-hypnosis in childhood) is a way of surviving the negative experiences of child abuse.

The specific techniques will not be described here, but a description of general principles is useful.

There are youngsters that only have had “one” severe traumatic experience, which has led to constant anxiety, phobias or posttraumatic stress disorder. This could be defined as “simple” trauma. This generally should be easier to treat with hypnosis, as the treatment may consist of “repairing” the events that occurred and giving the child or adolescent a sense of competence in order to overcome the after-effects of the trauma.

It is quite another issue to discuss constant maltreatment which has lasted for years. In these cases, the child may barely remember ever ‘feeling safe’ and the maltreatment could have consisted of multiple and repeated experiences, such as being ignored, humiliated, physical and sexual maltreatment, by one or two caregivers or by several people. The ravages that these years of deprivation and abuse cause on the development of the child are quite severe and more difficult to overcome. Despite this, the child or adolescent who comes to the office of the therapist somehow may have “survived” (at least physically) the traumatic events and, in the present, be in a physically safe place. It is very important to ascertain that the child indeed is in a safe environment, i.e. in a nurturing foster home, in an adoptive family, or with a parent or other caregiver that was not an abuser or is not presently abusive or neglectful (e.g. a parent who has undergone drug rehabilitation and acknowledges the previous maltreatment of their child).

The rehabilitation may be quite complex in these cases and involve not only the child but also the adult caregiver. Very often, substitute caregivers may apply the “usual” discipline strategies that are commonly used with normal children, such as time-outs, sending the child to the room, depriving of “privileges”, etc. these techniques

may be felt by the maltreated child as a reminder of the trauma and the reaction of the boy or girl may appear disproportionate until one realizes that the “normal discipline” triggers in the child memories of maltreatment. The new caregiver may require some assistance to modify their parenting strategies and instead of promoting “independence” in the child, it may be necessary first to work on the development of trust on another person (the new caregiver) and only then when an intimate relationship has been established, the child may endure and interpret disciplinary strategies in a less “malignant” light.

It must be underlined that there is no “menu” of hypnotic interventions which could be uniformly applied to children/families where the child has gone through severe traumatic experiences and manifests posttraumatic symptoms. Every treatment must take the child’s preferences, symptoms, and strengths into account and the treatment is always a venture between the therapist and the patient/family that may or may not be equally successful in all cases.

The hypnotic techniques generally involve the introduction of a psychological “safe place” where the child can go inside the mind and “feel safe” again. This can consist of one or several sessions of practice in which the induction and the trance are geared toward the child experiencing (perhaps for the first time) what “it feels like” to be calm and safe. This is usually done through a trance in which the imagery can consist of the child’s room, the woods, a beautiful beach, a garden or what the child says he or she imagines would make him feel at ease. This is practiced and anchored in the mind with some physical maneuver (e.g. rubbing the index finger and the thumb lightly) to remind the child that at any time she or he can return to this safe place.

Once this has been established, the task of working on traumatic memories can begin. Some children benefit or are able to ‘relive’ their experience and imagine a ‘competent self’ (the self now) comforting the child who is suffering in their visualization of the trauma. Another strategy is to create a sort of ‘bubble’ on a screen in which the child imagines he can remember what happened but not feel the fears that he or she had

then. In the case of previous physical attacks by an adult, the child may be instructed to defend him or herself in some way and prevent the attack, giving the child a sense of competence and having prevented the damage from happening again. There is always the fear of re-traumatization and the work may have to be done in small increments, the child signaling when she or he might feel scared, so that the child is not “flooded” and re-traumatized by the new experience of the abuse. The general idea is to strengthen the self and appeal to the competent self of now, which can leave behind the feelings and somatic sensations of the past and be freed from the past, i.e. leaving it in the past and focusing on the present and the future.

A 14-year-old boy treated by us complained of anxiety being around people and particularly anxiety at home. He had a rather suspicious view of his parents, whom he perceived as intrusive and very controlling. He reacted with fear to the onset of puberty because he said now that he was older his parents would expect too much from him and the “punishments would get worse”. When he was brought for consultation he had frequent panic attacks and a “feeling of heaviness on his chest” like a heavyweight. We corroborated that indeed his parents were highly anxious and worried intensely about everything the boy did or “might do”. The child was in constant tension and felt observed all the time. We encouraged him to use a “safe place” technique which he readily accepted to calm himself. During that procedure, when the child was lying on the couch the clinician asked him if he would like to have the weight removed. He said yes and the clinician touched him on two points of his chest suggesting he was “lifting the weight and taking it away”. When after the exercise the boy opened his eyes he said he felt free and as though he could breathe better. This persisted several weeks later and there were no further panic attacks. Now the work of helping the parents to “allow the child to be” and to occupy themselves with additional things came to the fore, which was the harder part of the process.

Dissociative Experiences

There are several conceptualizations of dissociative experiences and disturbances. From the phenomenological point of view, it is defined as a break or alteration in the continuity of conscious-

ness, thought, identity or the perception of one's surroundings. It has been noted elsewhere in the description of conversion states that they are conceptualized as a form of somatic dissociation. Another point of view is that a dissociation is a form of coping, or initially a defense mechanism against overwhelming stressful or traumatic situations. It is a form of “escape” or the creation of an imaginary narrative that allows the child or adolescent to endure difficult situations by “compartmentalizing” some of these experiences. The person undergoing the stress will “create” alternative states of self in order to cope with those events or situations. This could be for example a “bad self” or a “sexualized self” while other parts of the personality are very different. When these defenses are used repeatedly or chronically they can become a fixed characteristic of the child, which may “appear” or surface, depending on the situation the child is facing. These states of self, not necessarily alternative “personalities” or identities, develop a sort of “specialization” and manifest themselves depending on what the child or adolescent has to face at different times: For example, academic tasks, fighting, hiding, performing sexual acts, etc. in a sense these states are “imagination” that achieve a certain reality for the person and through subsequent elaborations could be given different “names” or attributes depending on ongoing circumstances. They turn out to be maladaptive when they become fixated and appear in an inappropriate situation. They could be “triggered” or brought about by memories, situations, or reminders of the need to perform a certain act or act in a specific way.

Hypnotic strategies can be used to explore the different aspects of the self and to understand the purpose and meaning of those states (Van der Haart, 2015). It is commonly believed that individuals who have experienced trauma and dissociation are highly hypnotizable. Before such exploration can proceed, it is necessary to provide the patient with strategies to achieve a feeling of safety and calmness. Then, to stabilize the patient if there is intense acting out (self-mutilation, use of substances, etc.) and hypnosis can be used for that feeling of calmness and safety.

Only then, if possible and at a pace and detail that should be dictated by the patient, can the traumatic memories be explored. Also, the reactions and resistances of the child or adolescent to discussing these memories can be ameliorated, eventually this would lead to addressing the most salient or the most difficult ones. This can lead to a discussion of the compartmentalization of experiences. Then the attempt is made to “integrate” the different specializations as a part of the “same personality”. The patient can always retreat, so to speak. To the “safe place” when he or she becomes anxious, extremely angry, or tends to act out emotions. The purpose is to integrate the different states of self into a person with different emotions like most normal children or teenagers.

Psychogenic Amnesia

This may be particularly a problem found in adolescents, although at times in children also. The minor may complain of “having forgotten everything” about a particular event in their life and be troubled by this. It may relate to a major stressful event, such as somebody’s death, a divorce, a move, an accident, a hospitalization, surgery, etc. The child and/or the family may be troubled by the absence of “processing” of the previous events, since the child does not recall those particularly emotional or impacting events. Here we are not discussing the problem of “very early traumatic memories” which is a controversial one. Some clinicians feel that the child may “invent memories” in order to satisfy the clinician or parents who wish to know about “what happened”. We focus on the approach to a relatively recent period of the child’s life which has been repressed or “forgotten” and which to the child and family it appears unnatural not to remember, so it cannot be processed emotionally.

A sixteen-year-old boy, Alex, requested a consultation with his mother due to his total absence of memories for a period of about three months, which had occurred around the time of his maternal grandfather’s diagnosis of cancer and death,

funeral, and events after that loss. He had been very emotionally close to his grandfather and found it alarming that he could not recall anything around that time. He had a psychotherapist who recommended to attempt hypnosis in order to see if he could recover the memories of the events. The youngster was a very anxious and perfectionistic boy, whose parents had divorced when he was 11 years old and who had a very difficult relationship with his father. The latter often humiliated him for not being better at sports and not having the “killer instinct” required to play basketball more aggressively. The child had a very ambivalent relationship with his father and tried to avoid seeing him. Alex was assisted to first achieve a state of relaxation through guided imagery about a safe place. After this, he was invited, if he wanted, to think of his grandfather and his condition, during a hypnotic trance. While lying down, his mother present in the room, he started thinking of the painful reaction to the news of his grandfather’s cancer, his feelings of guilt that he had not been able to visit him more often, or help in his care, and the day the grandfather died. He felt like a bad grandson and started to cry. At the end of the trance, as instructed, he remembered everything and was able to feel more in contact with sadness and feelings of guilt, of which he had not talked about, or had cried after the death and the funeral. He was able to return to his therapist and continue to work on his multiple feelings about the death of his grandfather, his difficult relationship with his father, and his struggles as an adolescent.

Hypnosis and Gastrointestinal Conditions

Hypnosis can be used with benefit in various gastrointestinal conditions, some of which are examples of functional gastrointestinal disorders but also in chronic conditions that are influenced by anxiety, stress and tension. A strategy has been designed as “gut oriented hypnosis” (Chiarioni et al., 2006). The authors just mentioned reported on the use of gut-oriented hypnosis to promote gastric emptying and showed a positive effect compared with medications that promote gastric motility. A similar approach has been used to reduce the frequency and severity of relapses of inflammatory bowel disease (Keefer & Keshavarzian, 2007, Pemberton et al., 2020, Webb et al., 2005). Often the imagery used here is of a river flowing, or picturing nutritious food

traveling down the stomach to other areas and feeling healthier for it.

Asthma and Other Respiratory Symptoms Associated with Anxiety

Even though asthma is not “caused” by psychological factors, episodes can be triggered by strong emotions in young children (as well as multiple other factors). Also, once the wheezing has started the child (and his or her parents) can become very worried about the course of the condition and what might happen. This is particularly the case when there have been previous visits to the emergency room and hospitalizations.

The child or adolescent with asthma can be taught to regain control of the breathing and to achieve a state of relaxation through self-hypnosis or through achieving a trance assisted by caregivers. This should alleviate the superimposed effect of anxiety in a clinician problem of bronchial spasm and anguished breathing (Eckhold Huynh et al., 2008).

Other Psychosomatic Conditions

As has been described elsewhere, many children and adolescents, as well as their families, can be quite difficult to approach psychologically when there are “psychosomatic” or conversion states. Some families would prefer to see their child diagnosed with a “real disease” than with one that is “functional” such as tension headaches, hyperventilation, vertigo, astasia abasia, pseudo-seizures, etc. Elsewhere in this book, the problems of alexithymia, symbolization and an over-identification with the sick role have been described. These may impede the traditional work along psychodynamic lines and exploring the psychic space of a child or family (Meiss, 2015). Also, many patients with panic attacks experience utter anxiety as “coming from nowhere” and do not understand what might be happening. It is hard for them, also for their families, to reflect on life situations that might be

associated with those anxious states or somatic symptoms. Also, when the chronically stressful situations are chronic, and the onset of the psychosomatic condition or functional disorder is slower, it is frequent to hear “nothing has changed” or “everything is as usual”. Only through careful attention to details, can the clinician identify what might be very difficult or stressful. The use of hypnosis at some points in the diagnosis and treatment of these patients may help them to get in touch with emotions and experiences that are difficult to access in a completely conscious state of mind, which may consist of the child being fearful of experiencing emotional pain, fear, etc. In the hypnotic situation, the patient may be able to picture the symptoms in the form of concretized metaphors, like a “pain in the neck”, a “burden to carry, a cross”, etc. this may bring about intense emotions that might help with the relief of symptoms, even though this is only one step in the psychotherapeutic process.

An 18-year-old girl who was an immigrant from Mali, Africa, was seen in consultation while in the hospital due to the diagnosis of astasia abasia. That is, difficulty to stand alone, maintain her balance and inability to walk, of a rather sudden onset when she was at school. She had been a recent immigrant to the United States and was feeling rather homesick and very burdened with her studies and the problems of her family. She was “their hope” so to speak. She was a very good student and was a girl of “great expectations”. She found the adaptation to the American school system difficult and felt much pressure from her parents to “take advantage of all the opportunities available here in the US”. When she was seen at the bedside, without her parents, she only wanted to focus on pain in her neck (she had fallen once and hurt her neck slightly) and on neurological studies, imaging, etc. the neurological team had indicated that there was no neurological damage and her legs were normal. She was most reticent to talk about her feelings and said she wanted “to be very strong”. She wanted to terminate the interview several times, as she would start talking about her pressures, her fears and her sadness. We suggested to practice a simple relaxation technique. She agreed to that. During the relaxation process, which in effect was a short hypnotic trance, she started to answer questions about her feelings and eventually started to cry. She spoke of the feeling of a “terrible burden” and “not being able to

go on”, which was perhaps a metaphor for the symptoms she was experiencing, not being to stand on her two feet or walk. She was much relieved after the exercise and took off the neck device. She started to move her legs. This was the beginning of a process that would take place later on, of helping her family understand the teenager, and for her to find a way to convey her need to relieve the pressure and the excessive expectations for “success” academically, which was the parent’s primary interest, with a narrow view about the word success.

Pain Control

Hypnotic strategies can be used in the multidisciplinary management in patients with chronic pain (Violon, 2011; Wood & Bioy, 2008), particularly self-hypnosis.

There is considerable evidence that in some individual children and adolescents who experience chronic painful conditions, hypnosis and self-hypnosis can be a useful adjunct in the management of pain. It can diminish its severity and impact on the everyday life and activities of the child. Pain is processed and assigned meaning in the central nervous system. In the use of hypnosis the child is “isolated” from the experience of pain and focuses his or her attention elsewhere, with which the perception of pain diminishes (Peter, 2005). This involves a maneuver inducing dissociation and focusing the attention on something different than the pain or its site. The child is not in a state similar to sleep, but not focusing on the pain experience.

Hypnosis as One of the Interventions in Multi-modal Psychotherapy

In therapeutic work with minors, sometimes there is a need to “accelerate” or make the interventions more compact, so to speak, because of a number of pressures. For instance, the phobia of attending school due to anxiety may lead to further problems with school absence and academic problems, as well as the negative effects of social isolation. There is a certain degree of pressure on

the child and the clinician to alleviate some symptoms perhaps sooner than it might be in an ordinary psychodynamic psychotherapy, in which the patient is expected to bring to the session themes which are important for him or her. The family may also play a role in “accelerating” therapeutic interventions as they may need to return to work, or hope the child will be able to face common problems in everyday life without much impairment in psychosocial functioning. Hypnosis can be helpful in addressing certain themes that may be particularly difficult for the child, such as picturing or imagining going to school, facing peers, humiliation or bullying. Also, there may symptoms that may need to be addressed in short order such as a “functional paralysis” or astasia abasia, which may practically leave the child confined to the bed. There are other issues such as functional abdominal pain, chest pains, and others that have a “concretized metaphoric” meaning for the child and parents. However, addressing them through insight and interpretation may be a “longer way “to achieve some improvements or modifications. A hypnotic trance may inspire the child in certain ways and address a specific conflict. For instance, in a case of functional leg paralysis, the child may be assisted to realize that he or she feels they “cannot go any longer” and that they are overwhelmed and feel unable to “stand’ what is happening around them. During the therapeutic trance the clinician may suggest the notion to the child or adolescent that he or she in reality “is walking” and “keeps going” be it in a park, at the beach, in a garden, etc. This may be accompanied by a feeling of renewed energy and strength, and of strategies to address the “burdens” the child may be experiencing in his or her family or surroundings.

A 16-year-old girl had been hospitalized and was seen in the pediatric unit due to sudden loss of the ability to walk or “move her legs”, she could not support her own weight and also had episodes of anxiety, panic attacks and what appeared as pseudo-seizures when she was under stress, which predated the sudden “paralysis”. The girl was very histrionic and defensive when she was seen in her room. She had a great deal of unexpressed anger toward her parents. She felt that they “worked too

much” and paid her little attention and were quite cold and distant from her, except when she was sick. In that case, her mother would take her to the emergency room, treat her with special care and take time off work. The father less so, but was more attentive to her. The neurological examination was completely normal, as well as imaging studies of the brain which ruled out any major cause of the paralysis. The neurological examination indeed revealed some pathognomonic signs of a “functional” condition when the neurologist would ask her to move her legs on the bed. The child was told that she seemed very burdened and rather lonely after it was learned how she felt about her parents, and being the youngest child, whose sister had left home to go to college. The patient expressed her resentment that her parents were very proud of her sister, who was an academic success, beautiful and very accomplished, while our patient was “more plain” and struggled also at school. She had also experienced some difficulty making friends as she was prone to conflicts with peers. We recommended hypnotic strategies to help the patient ‘imagine’ that she could walk. She agreed to it, perhaps hoping to “prove” to the clinicians that she really could not walk or stand. During the trance, she was told that she might not be able to move her limbs shortly after the session but was told that in a few days she could walk again. The clinician empathized with her loneliness and encouraged her to “recognize her strength”, to stand on her feet and to tell her parents how she felt, and that she needed them still. The child participated in only two sessions. After a few days, she requested to try to stand up and the next day she went back to walk. Her therapy process had just started and needed to continue in family therapy sessions so that she could communicate her needs to her parents, and for them to try to meet them, as they were developmentally appropriate.

Hypnosis with Child and Parent

Particularly with younger children, it may be necessary that the caregiver participate in the sessions of psychotherapy with his or her child. Other family members may be present for different sessions in which systemic issues are being addressed. It is not rare for a child who suffers from anxiety to have one or two parents or caregivers who themselves are also very anxious. In the case of post-traumatic phenomena, it is well documented that many of these families have a transgenerational pattern of maltreatment or experiences of abuse.

In these circumstances at least for the hypnotic experiences having to do with ‘finding a safe place in the mind’, to find calmness and relaxation, the practice of “simultaneous hypnosis” with the child and one or two parents may be useful for all concerned. Parents can reinforce the strategies with the child at home, and the parents themselves may benefit greatly from being able to experience a feeling of feeling secure and relaxed, which may be novel for them.

References

- Berghmans, C., & Tarquinio, C. (2009). L'Hypnose. In *Comprendre et pratiquer les nouvelles psychothérapies* InterEditions. Dunod. 153–184.
- Chiarioni, G., Vantini, I., De Iorio, F., & Benini, L. (2006). Prokinetic effect of gut-oriented hypnosis on gastric emptying. *Alimentary Pharmacology and Therapeutics*, 23(8), 1241–1249.
- Cojan, Y., Waber, L., Schwartz, S., Rossier, L., Forster, A., Vuilleumier, P. (2009). The brain under self-control: Modulation of inhibitory cortical networks during hypnotic paralysis. *Neuron*. 62. 6. 862–785.
- De Pascalis, V. (2007). Phase-ordered gamma oscillations and the modulations of hypnotic experience. In G. A. Jamieson (Ed.), *Hypnosis and conscious states: The cognitive neuroscience perspective* (pp. 67–89). Oxford University Press.
- DeBenedittis, G. (2013). Neural mechanisms of hypnosis and meditation. *Journal of Physiology-Paris*, 109(4–6), 152–164.
- Degun-Mather, M. (2006). *Hypnosis, dissociation and survivors of child abuse*. Understanding and treatment.
- Eckhold Huynh, M., Vandvik, I. H., & Diseth, T. H. (2008). Hypnotherapy in child psychiatry: The state of the art. *Clinical Child Psychology and Psychiatry*, 13(3), 377–393.
- Fuks, M. (2007). L'hypnose et l'enfant. In A. Bioy & D. Michaux (Eds.), *Traite d'hypotherapie. Fondements, méthodes, applications* (pp. 247–270). Dunod.
- Jamieson, G. A. (Ed.). (2007). *Hypnosis and conscious states: The cognitive neuroscience perspective*. Oxford University Press.
- Keefer, L., & Keshavarzian, A. (2007). Feasibility and acceptability of gut-directed hypnosis on inflammatory bowel disease: A brief communication. *International Journal of Clinical and Experimental Hypnosis*, 55(4), 457–466.
- Kohen, D. P., & Olness, K. (2011). *Hypnosis and hypnotherapy with children*. Routledge.
- Meiss, O. (2015). Psychosomatische störungen. In D. Revenstorf & P. Burkhard (Eds.), *Hypnose in*

- Psychotherapie, psychosomatik und medizin* (pp. 542–552). Springer.
- Pemberton, L., Kita, L., & Andrews, K. (2020). Practitioners' experiences of using gut directed hypnosis for irritable bowel syndrome: Perceived impact upon client wellbeing: A qualitative study. *Complementary Therapies in Medicine*, 55, 1–5.
- Peter, B. (2005). Hypnose und hypnotherapie. *Psychotherapie im Dialog*, 6(1), 34–39.
- Pichot, P. (2010). *Un siglo de psiquiatría* (pp. 105–160). Fundación española de psiquiatría y salud mental. Madrid.
- Rainville, P., & Price, D. D. (2003). Hypnosis phenomenology and the neurobiology of consciousness. *International Journal of Clinical and Experimental Hypnosis*, 51(2), 105–129.
- Revensdorf, D. (2015). Trance und die ziele und zirkungen der zypnotherapie. In: Revensdorf, D., Peter, B. (Hrsg). *Hypnose in psychotherapie, psychosomatik und medizin* (pp. 13–36). Manuel für die Praxis. Springer.
- Scott, E. L., Laggas, A., & LaClave, L. (2008). Treating children using hypnosis. In M. R. Nash & A. J. Barnier (Eds.), *The Oxford handbook of hypnosis* (pp. 593–610). Oxford University Press.
- Signer-Fischer, S. (2006). Hypnose mit Kindern und Jugendlichen. *Psychotherapie im Dialog*, 7(1), 29–34.
- Van der Hart, O. (2015). Dissoziative identitätstörung. In D. Revenstorf & P. Burkhard (Eds.), *Hypnose in Psychotherapie, psychosomatik und medizin* (pp. 486–494). Springer.
- Van der Hart, O., Nijenhuis, E. R., & Steele, K. (2006). *The haunted self: Structural dissociation and the treatment of chronic traumatization*. WW Norton & Company.
- Violon, A. (2011). Integrer l'hypnose en psychothérapie de la douleur. *Douleur et Analgésie*, 24, 28–371.
- Ward, N. S., Oakley, D. A., Frackowiak, R. S., & Halligan, P. W. (2003). Differential brain activations during intentionally simulated and subjectively experienced paralysis. *Cognitive Neuropsychiatry*, 8, 295–312.
- Webb, A., Kukuruzovic, R., Catto-Smith, A., & Sawyer, S. (2005). Hypnotherapy for treatment of irritable bowel syndrome. *Cochrane Database of Systematic Reviews*. 4. <https://doi.org/10.1002/14651858.cd005110>.
- Wood, C., & Bioy, A. (2008). Pratiques de l'hypnose chez l'enfant douloureux. *Douleur et Analgésie*, 21, 20–26.
- J. Martín Maldonado-Duran**, M.D., is an infant, child, and adolescent psychiatrist and family therapist. He is Associate Professor of Psychiatry at the Menninger Department of Psychiatry, Baylor College of Medicine and works at the complex care service in the Texas Children's Hospital. He edited the book *Infant and Toddler Mental Health*, published by American Psychiatric Press, and has coedited or edited five additional books in Spanish on topics of child and infant mental health. Coeditor of the book "Clinical Handbook of Transcultural Infant Mental Health" (Springer). He has written numerous papers and book chapters on topics of child development and psychopathology in several countries.



Eye Movement, Desensitization, and Reprocessing for Children and Adolescents

34

J. Martin Maldonado-Duran

Eye movement and desensitization and reprocessing (EMDR) strategies are a relatively new development in psychological interventions, particularly in their use with children and adolescents. It should be considered among the evidence-supported or evidence-based psychotherapies with children for a number of difficulties, primarily those anxieties related to trauma, including complex and prolonged trauma (Ahmad et al., 2007; de Roos et al., 2011; Hensel, 2006; Hensley, 2016; Rodenburg et al., 2009). It is necessary to underline the importance of traumatic losses, as many children who are deprived suddenly of a loved one through police arrests at home, or through acts of violence against a loved one also are traumatic in nature (Ehnholt & Yule, 2006).

Traumatic experiences, particularly if severe or repeated and prolonged often have manifestations not only in the mind in terms of narrative memories of them, but also in somatic experiences. Several authors have underlined the importance of the body as the repository of trauma. This occurs clearly in many children who have unexplained sensations or symptoms in the body that are related to traumatic experiences.

The phrase “the body keeps the score” proposed by van der Kolk and others illustrates the importance of paying attention to body phenomena and experiences to understand the nature of trauma and its manifestations. The phenomenon of body dissociation can be an illustration of this, in which the child or adolescent is unaware of the reason for somatic symptoms, but which are associated with traumatic experiences that might have been suppressed through a process of amnesia as an involuntary defensive operation.

EMDR is based on a neurophysiological phenomenon that “trains” the brain to achieve a state of calmness, or neutralizing the anxiety responses (Shapiro, 2018). The person with traumatic experiences is encouraged to “re-process” experiences that in the normal state of consciousness lead to autonomic arousal, fear responses, anguish, dissociation and other consequences of traumatic and anxiety-producing events. EMDR is one of several therapies that have proven useful, including traditional child psychotherapy, narrative exposure psychotherapy, cognitive and behavioral therapy, and testimonial psychotherapy (Ehnholt & Yule, 2006).

The term “eye movement” is the way the original intervention was practiced, i.e., with the bilateral movement of the eyes, as the main strategy to achieve the mental state required to be able to “de-couple” the episodic memories of trauma from their association with negative intense emotions. In this way, the past could actually be “left

J. M. Maldonado-Duran (✉)
Menninger Department of Psychiatry, Baylor College
of Medicine, Houston, TX, USA

Texas Childrens Hospital, Houston, TX, USA
e-mail: jesusmam@bcm.edu

in the past” as a memory and not reexperienced constantly in the form of panic attacks, flashbacks, and reenactments of previous difficult and traumatic experiences.

Neurophysiological Aspects of EMDR

There is information that severe and chronic traumatic experiences are associated with changes in the functioning of areas of the brain, for instance, the limbic system (amygdala, cingulate cortex), and even with some morphological changes. The essence of this is a predominance of overactivation or alteration in the functioning of the limbic system (associated with fear and emotional arousal) and diminished activation of cortical areas associated with thought (and verbal or episodic processing of experiences), such as the prefrontal cortex (Bremner, 2007; Fernandez et al., 2010; Pagani et al., 2013). This has been shown with studies looking at the electrical activity of cortical areas, as well as the circulation and metabolic activity of deeper areas of the brain. The electrical activity is measured with EEG and other methods such as magnetic EEG. The metabolic activity and circulation in the brain, as well as the oxygen saturation in different areas, and neuroreceptor density can be evaluated with a number of techniques, predominantly positron emission tomography, single photon emission tomography, and with functional magnetic resonance imaging (Francati et al., 2007).

The concept of “information processing” by the brain is important in attempting to explain the neurophysiology of traumatic events and of the desirable effects of eye movement desensitization and reprocessing. The concept refers to how the brain, or specific centers and areas of the brain deal with experiences and with memories of those experiences.

It is well known that the phenomenology of posttraumatic stress disorder involves the activation not only of the brain but of the whole body of the child or adolescent, particularly when it involves dangers or frightening events. The child reacts obviously with a sense of fear, of confu-

sion and is overwhelmed by the events. There is no sense of control over them and the child is vulnerable to whatever happens during the traumatic experience. When the experiences of vulnerability or being hurt happen repeatedly and over a long period of time, they can produce devastating effects on the sense of security of the child, his or her ability to feel calm, safe or to experience well-being again. Many children and adolescents with those antecedents are “always scared” or always on edge in the sense that they fear that something terrible might happen at every step, in an unpredictable way. This requires the child to be always “on guard” for what might happen and to take measures to protect him or herself. There is a high activation of the sympathetic system, and stress mediators and hormones are produced abundantly at first. With time, and repeated trauma, a number of different responses install themselves.

In neurophysiological terms, during traumatic/frightening experiences there is an underfunctioning of the medial prefrontal cortex and the opposite, an overactivation of the amygdala (particularly its central nucleus). This translates into an “animal response,” so to speak, that leads to fight, flight, or freezing responses, as well as total surrender among others. There is a decrease in the “thinking brain”, processed in the prefrontal cortex. The fear is experienced in the more “primary” or emotional level. There is of course also a cortical component, mostly to see the situation in context and for the memory of the episodes. In normal circumstances, there is a process described as “extinction of fear” that may not occur in situations leading to posttraumatic stress.

There are several theories about the effects of eye movements or bilateral stimulation on the brain, and what might be the effect of such stimulation on the memories of traumatic experiences that a child or adolescent has endured. None of these theories has been proven so far, but there are studies that point in the direction of possible effects. Most of the research has been carried out in adults, and it is clear that not everything can be generalized or extrapolated to children or adolescents.

Modifications of EMDR Applications for Children

Younger children and many adolescents may feel uncomfortable with the saccadic movements expected in the original eye movement technique. The back and forth of the eye movements could lead to dizziness or general unpleasantness, while other subjects might feel comfortable with the technique. Other bilateral stimulation strategies have been used. In the original use, the therapist would move his or her hand, waving it to right and left in front of the patient, with the instruction for the subject to follow the movement of the therapist's fingers in order to elicit the saccadic movements (right and left movement) of the eyes. Later on, a horizontal device was invented, a bar in which a light moves right and left, and the patient is instructed to follow the light which is adjusted to the height of the child, who is sitting.

It was also discovered that a similar effect could be achieved with bilateral stimulation of a tactile nature, for instance, in which the therapist touches alternatively the right and left hand of the patient, or the knees, while the patient is sitting (Hensel, 2007). After this, a device was created that could be controlled by the therapist and would be held by the patient in each hand. The device would alternatively stimulate one and the other side. The advantage of these devices is that they are fairly easy to implement even with pre-school children.

Another important difference in the EMDR with children is the use of alternatives to "talking about the past" (Adler-Tapia & Settle, 2008). As it is done with play psychotherapy, the child could use drawings and miniature objects to display themes or events which occurred, fantasies and associations. In the adult, this is often done through narratives and "chains of associations." The therapist may encourage the adult to focus on memory and then ask the patient "what else comes up in your mind," which could also be done with adolescents. With younger children it may be done through play with a doll house, miniature people, animals on a sand tray, playing with putty or plasticine, and also with puppets. All of these are mere ways in which the child

"talks" or communicates what is in his fantasies or memories. The manipulation of memories and the "chains of associations" are exactly like the telling of a dream in an adult or adolescent. The child spontaneously brings up topics events and alternatives through the play and this leads to the therapist understanding and "processing" (ergo the term reprocessing) what occurred one time or multiple times. This technique also can be used to express feelings, not only memories, such as anger, fear, and others that are similar to "bodily feelings". In the adult there is a phase called "body scan" in which the therapist inquires of the patient "what do you feel in your body?" or what are the bodily sensations associated with the traumatic recollections: These could be a weight on the chest, a feeling of being strangled, not being able to breathe, a punch in the stomach, etc. in the play sequences the child may enact precisely those "sensations" through a theatrical representation of what he or she feels in the body.

Eventually, the negative statements and feelings of "being bad", "guilty," and "stupid," which may be associated with the traumatic events, can be replaced with "alternate statements". This can also be accomplished with children through alternatives in the play: "the child pushes the mean guy," "the girl did not do anything wrong" or "this is not his fault". Those would be the equivalents of the technique called "Implantation" of different thoughts and different "associative chains" that would replace the negative cognitions and feelings previously associated with the negative experiences (DeRoos & de Jongh, 2008; Tarquinio & Tarquinio, 2015). As in other therapies, the expression of feeling and feeling contained may be important therapeutic components of the intervention.

Particularly with younger children, the participation of the caregivers or parents may be essential in order to help the child feel comfortable or secure, and also to reinforce the desired outcomes in the home. As we will describe below there may be also therapeutic interventions with the parents, who are participating in the session and the events could be re-awakening their own feelings and traumatic experiences.

Even though many adaptations and modifications are recommended for children, the use of EMDR is fairly standardized in the general principles and phases in which it is recommended to use it (Kelley & Benbadis, 2007). Indeed one of the drawbacks of the technique is that the clinician has to undergo formal training in the methods, techniques, and language of the therapeutic application in order to claim to use this in part or in total as a therapeutic tool. This might limit its general applicability, although as we will see it has been used with large groups of children.

In general, there are several phases to the application of EMDR to the individual child or adolescent. The main phases are:

Preparatory Phase

This is the general introduction of the use of eye movement (or other bilateral signals). There is always the notion of a “stop signal” if the child were to be flooded with fear or other very intense emotion while recalling a traumatic event or general fear of remembering or reliving the experiences. Also, the notion of having a “calm place” or a “safe place” in the mind is introduced so that the child could implement going into that place if necessary. The reason to use the techniques that are going to be used is explained from the beginning. The different forms of bilateral stimulation are presented and the child may select to try one of them. If memories would arise while the child is at home, there are exercises to “contain the emotion” or container exercises so the child is not inundated with emotion or fear. A metaphor can be used to assist the child to recognize that thoughts are passing, such as “being in a bus” or “being in an airplane” and changing seats when he or she wants to. The notion of a safe place is very similar to the one used in guided imagery or hypnosis, in which the child is assisted to imagine he or she is in a pleasant place and all the accompanying experiences are highlighted, auditory, visual, tactile, olfactory, etc. To ground the child in this notion of feeling safe and calm. He or she can go there when he needs to go to this

“part of the mind”. The container exercise is the notion of “leaving the memories” and experiences in the office “inside a container” for future use in other sessions. This is so that the child is not flooded with memories much of the time when he or she is not in the treatment sessions.

Assessment and Installation Phases

This should proceed cautiously as precisely getting an idea of how much trauma or violence a child has been subjected to, can lead to an exacerbation of symptoms and a reluctance to continue the treatment as the child is reminded of the past. In this phase, the therapist could ascertain what could be the “target experiences” or memories that are most disturbing to the child or lead to more symptoms, such as reexperiencing.

In any case, the therapist gains an impression of the general functioning of the child or how much there is impairment in interpersonal relationships, the ability to focus, to be calm, and to engage in learning and play. The therapist tries to allow the child to determine the “target” that he or she wants to address first, e.g. a disturbing memory or recollection, and proceed stepwise. This can be then the object of desensitization and of re-processing. The child can represent the memory through a narrative, a drawing, or a play scene. This can be identified as a target for future work. The experience can then be explored in terms of negative cognitions and positive cognitions that can be associated with it. A younger child may refer to himself in the third person, which further distances the child emotionally from it. Many children do not use complex sentences to refer to cognitions and may just say “bad, stupid” or “good, happy” regarding those cognitions. As in any psychotherapy, the expectations of the therapy are adjusted to the child’s cognitive state and language development.

Installation phase. It is also useful to ask the child if there are certain bodily sensations associated with a particular experience, for instance with an image or “picture” in the mind, and if

possible to label the emotions or feelings associated with those sensations: “scared” or “sad”, etc. Identifying the place in the body where there are negative emotions is important for future evaluation of results and to alleviate psychosomatic symptoms, such as “a hole in the heart” or “a ball in my chest”.

At this point, the therapist can introduce the notion of desensitization, and proceed with some bilateral stimulation tolerable to the child. It could be bilateral touching, eye movement, auditory stimulation on one side at a time etc. The essence of the desensitization process is to discuss the traumatic image or target in a step-wise fashion, up to the level in which the child may feel intense emotional discomfort. The child is instructed to think about the image, then the bilateral stimulation takes place, then he or she talks a little more about it and speaks of “what comes up to the mind”. As noted above, the child can stop at any time if he or she is feeling intensely affected by the procedure. With older children and adolescents the level of discomfort can be “given a number” or the younger child can represent this with the distance of his or her hands to illustrate “how big” the negative emotion is. The discussion of “positive thoughts” and “negative thoughts” associated with the recounting or representation in play of the memory is the “reprocessing” phenomenon. Using calming strategies such as mindfulness, and deep breathing can be useful to manage anxiety that may be elicited by the memories or images. Gradually, other memories can be worked on when the child has been able to be desensitized and has reprocessed a memory.

In the subsequent sessions, the child explores whether a memory or image that was worked on or reprocessed has or has not a “zero” level of emotional discomfort associated with it and can progress to other images or experiences.

Installation of positive cognitions is a process of reinforcements of positive thoughts that can be associated with the processing of traumatic memories. Such as “being strong”, being healthy, and being safe. These are not only intellectual statements but also have to “feel real” to the child.

Body Scan Phase

In this phase, the child is asked to retrieve a previously explored memory and try to identify if a negative sensation takes place in any part of the body. If the child reports discomfort the memory or image has to be “reworked” until the discomfort is absent and this means that the negative somatic feelings associated with the traumatic events now are processed.

After each session, the clinician engages in a “closure phase” of the procedure to ensure that the patient is not “activated” or frightened still at the end of the session but is comfortable and feels reassured. If the child has further thoughts or memories between sessions he or she is invited to write them or draw or talk with a caregiver so that these can be explored in the following sessions.

Eventually, the child feels comfortable enough that the memories are no longer disturbing and then a reassessment explores what further needs of treatment, or not, the child might have.

EMDR as a Part of Child and Adolescent Psychotherapy

In the process of the psychological treatment of any child, it is necessary to have flexibility as to the personality style and temperament and his or her preferences for a vehicle of self-expression. This often is verbal in the older child, but there are many children who experience difficulties to speak about their feelings and experience, particularly those who tend to have “somatization” phenomena.

Children can have multiple problems, and the effects of trauma are often of paramount importance when its after-effects or symptoms are severe. Therefore, a focus on trauma can be an important adjunct to the general process of psychotherapy with the child or family. This can take several weeks, but may resolve the most difficult symptoms, and the child has still an interest in processing thoughts and emotions in a “regular” psychotherapy.

At times the trauma itself or “traumatic relationships” are an important obstacle in the process of a relational psychotherapeutic process. A child who has been repeatedly abused or betrayed by caregivers or others can find it very difficult to trust a stranger or a therapist, because of the fear of closeness and dependency, which only would render the young person “more vulnerable” to rejection, mistreatment and being hurt emotionally. The boy or girl may be in an impossible situation, needing to trust in order to process the past, and at the same time being afraid of closeness and trust.

A 14-year-old boy, Karl seen by us was referred for individual psychotherapy. He was in a residential facility after a potentially adoptive placement had failed. He had been in multiple foster homes and he tended to lose these placements. The main problems were an explosive temper when he “felt controlled” and also encopresis. Even at this age, he had repeated “soiling accidents” and then he would refuse to clean himself or take a shower. He felt humiliated when the defecations were pointed out to him. When he had been in the potentially adoptive home, he would seat on the couches or chairs and leave residues of the feces, sometimes also on other furniture, to the dismay of the foster parents. They very much wished to adopt him. Karl was seen for several months without achieving much. In his history from the child protective services it was clear that his mother had abandoned the children, his mother had been neglectful. Karl had been sexually abused by a maternal uncle for several years, with the knowledge of his mother, who let this be as a *quid pro quo* in order to get financial help from her brother. Karl would say “I don’t remember” or “I don’t know” or “I don’t talk about that” when the therapist would try to address his past even in the slightest way. This went on for months. Only when the therapist first implemented the notion of a “safe place” in Karl’s mind he started to trust the therapist, this was through hypnosis. Then he agreed to attempt EMDR to address his past he started to describe his uncle’s assaults in great detail. One of the themes was the way in which this occurred, making the child “feel controlled” by the uncle, unable to move and escape as he was being “choked” during the sexual assaults. Then he started to recognize how even the slightest request from his foster parents was equated by him to “being controlled” as well as the reminders to clean himself. Then he started moving forward in dealing with normal parenting practices and achieve further sphincter control.

EMDR Uses with Families

There is evidence of a transgenerational transmission of anxiety, from grandparents to parents to children (Schwab, 2010). Also, grandparents and parents who have suffered intense or prolonged traumatic experiences, who experience chronic uncertainty, have an impact on the emotional life of their children, and through them, to their grandchildren (Bakó & Zana, 2020; Cohn & Morrison, 2018; Phipps & Degges-White, 2014). This has been shown with survivors of the Holocaust and other horrific events. Also, in the adult attachment literature, Main and other authors (Main & Hesse, 1990) referred to the phenomenon of a mother or a father of a child being alternatively “frightened and frightening” toward the child. This means that a parent who was traumatized and has “unresolved mental states” regarding those experiences, at times will appear scared *vis a vis* her child, even as an infant (who may cry or throw a temper tantrum), and at other times unwittingly scaring the child, perhaps when the caregiver’s mind is “taken over” by memories of the abuser or perpetrator of the maltreatment. This would be a reenactment of the maltreatment which is embedded in the mind of the adult.

In the clinical setting, it is common to encounter families in which a child who has been physically or sexually abused, has parents who have also been the victims of maltreatment, and this sometimes, when it is explored, is found in a grandparent. The question then arises, if one wants to help a child with his or her anxieties, would it be desirable to alleviate the chronic anxiety, tension or actual posttraumatic symptoms in a parent? If this occurred, it would give the child a better opportunity to feel at ease at home, protected by parents.

Also, there are situations in which the entire family has been subjected to horrific experiences at the same time, for instance in “war zones” or in urban areas. In many parts of the world unfortunately a family could experience a kidnapping of one of its members, a home invasion, or witnessing someone being killed. In those situations, the

issue arises, *a posteriori*, as to how to rehabilitate a family, all of whose members have been traumatized by those events.

Shapiro and colleagues (2007) have explored a number of models for the use of EMDR interventions in various family members in order to help them with their negative- unresolved- previous experiences in caregivers.

There are several possibilities for the use of EMDR strategies in a family therapy paradigm (Kaslow et al., 2001). One of these approaches consists in using EMDR when there is an obstacle or an impasse in the progression of a family therapy process. For example, if the posttraumatic symptoms of a parent interfere with the capacity to parent a child this might be a useful application of EMDR to address that problem. A parent may have very intense posttraumatic experiences when a son or daughter cries or becomes upset. A mother may have suffered a lot with men in her past, starting with a father figure and then with other men in the course of her adult life, like domestic violence. When now she is in the role of a parent, when her son cries, it reminds her of the past. The sheer crying of even a young child can bring about flashbacks, a sense of fright, and resentment, which make it impossible for her to deal with the child crying, or when the child becoming angry. She may be quite an adequate mother in many other respects, empathic and kind, as long as the child is not upset or angry. This might make it very hard for her to set limits to her child as she fears the new representation of discontent “from a man”(even a little boy). At this point, family therapists could make room to use EMDR strategies to process those memories and to allow her to tolerate distress in her child.

A mother-infant dyad was referred for a family therapy intervention as the mother appeared very depressed and found that her eighteen-month-old infant was defiant, very irritable and insisted on “getting his way” no matter what. The young mother indeed was depressed and spoke of a very difficult life, having been in foster care as a child and having difficulties in her relationship with men. In one of the sessions, she reported a particularly difficult day. She said that when her little boy became angry he acquired an enormous strength and could do things that one would not imagine. She was a strong and tall woman, and yet she

reported that the infant was “stronger than her” and therefore she could not contain him. At those times, when the child cried, she felt that she was “not inside her body”. She would look in the mirror and start wondering if this indeed was her body or if “this is the body she was supposed to have”. The relational treatment only could proceed only once we were able to process some of the worse traumatic memories from her childhood, particularly in relationships with men.

The distortion of the parent–infant relationship could only be addressed if she stopped “being afraid of her child” and addressed previous traumatic events.

Something similar can occur in a family when there is some degree of marital conflict or mistrust. This mistrust may be based on earlier traumatic relationships in one of the partners. When a spouse becomes angry or disagrees, the other partner may experience this as “being mean” or “hating me” or putting the entire relationship in question, when it is only a difference of opinion. The traumatized partner may live in a state of exaggerated alertness and fear of abandonment due to not having the experience of a disagreement or argument being “repaired” by compromise and in which the parties do not yell or hit each other. If the traumatized partner avoids conflict at all cost, this may make the relationship very superficial and the fearful one may just bury all the resentment and disagreements “inside” creating resentment and further mistrust

A couple seen in our clinic consisted of a young man 28 years old (Andres) and his 27-year-old fiancée (Ana). Andres initiated the consultation because he felt that he had to agree to everything Ana wanted and somehow felt resentful and very angry when she criticized him, for the way he did things. Andres tended to agree to every suggestion or decision his fiancée made because he said he did not care. In exploring the couples’ interactions it became clear that Andres “really” did not agree with her opinions (like buying a 12 000 dollar engagement ring, when they scarcely could afford it). Andres avoided disagreement as much as he could, and then after months, he might explode and then he felt very guilty and as a bad person. In exploring Andres’ past, he had a highly intrusive and domineering mother. His mother, when he was a little boy, constantly belittled him and made him feel feminine if he cried or if he was afraid of something. She encouraged him to be brave while

at the same time she would yell and scold him for long periods of time. As an adult, Andres feared disagreement and any disagreement with his fiancé, with whom he already lived, made him feel like a bad person. He “swallowed” his anger and resentment until he had to explode. Then this cycle would start all over again.

In this situation, it would be useful to help Andres with some separate sessions to address his posttraumatic memories through EMDR, at least the most difficult ones, in order to diminish the autonomic activation and great fear he experienced in the present, based on the past negative experiences with his mother.

EMDR in Groups of Children

Unfortunately, there is an abundance of traumatic situations in which groups of children or an entire population are involved. It can be natural events such as earthquakes, a tsunami, or flooding from a hurricane. Also, there are sadly thousands of children all over the world who live in war zones, not only in literal wars, such as in Palestine, Libya, Ethiopia, and many others, but in urban “war zones,” such as in large cities all over the world, where there may be chronic stress (street shootings, school shootings). In the US now it is customary in most schools to have practice drills for an “active shooter situation”, so there is stress from the mere “real” possibility of a shooter, but the news frequently depicts such situations.

In the scenarios where hundreds of children have been affected, there have been a number of interventions that involve elements of EMDR interventions that have proven to be useful. These have been implemented by agencies that are in war zones or assist children in various parts of the world. In situations of a country with scarce resources, with hardly any mental health professionals available, the traditional individual models may be impossible to implement, except for the most affected children. The group EMDR or EMDR-like interventions are useful and have been proven to assist in the amelioration or prevention of posttraumatic effects. The intervention should occur with a group of children that is not

massive and then done with another group of children, etc. the trials reported involve groups of several tens of participants (Korkmazlar et al., 2020).

The technique here involves one or various therapists “coaching” children, the bilateral stimulation is implemented with children practicing a “butterfly hug”, i.e. crossing the arms and with the finger from one hand stimulating the arm on the other side of the body (Jarero et al., 2008). Jarero et al. described a process called integrative group psychotherapy protocol, which has been used also with children and proven very useful. In this model, the various phases of the original EMDR protocol are followed but the individuals are the ones practicing the bilateral stimulation themselves. In this strategy drawings made by the participants are used as a part of the recollection of previous events and to describe feelings and images. The pictures are used also to measure the “subjective units of distress” or to quantify how much distress the imagining of the previous event is causing.

References

- Adler-Tapia, R., & Settle, C. (2008). *EMDR and the art of psychotherapy with children*. Springer.
- Ahmad, A., Larsson, B., & Sundelin-Wahlsten, V. (2007). EMDR treatment for children with PTSD: Results of a randomized controlled trial. *Nordic Journal of Psychiatry*, 61(5), 349–354.
- Bakó, T., & Zana, K. (2020). *Transgenerational trauma and therapy: The transgenerational atmosphere*. Routledge.
- Bremner, J. D. (2007). Functional neuroimaging in post-traumatic stress disorder. *Expert Review of Neurotherapeutics*, 7, 393–405.
- Cohn, I. G., & Morrison, N. M. (2018). Echoes of transgenerational trauma in the lived experiences of Jewish Australian grandchildren of Holocaust survivors. *Australian Journal of Psychology*, 70(3), 199–207.
- de Roos, C., & de Jongh, A. (2008). EMDR treatment of children and adolescents with a choking phobia. *Journal of EMDR Practice and Research*, 2(3), 201–211.
- de Roos, C., Greenwald, R., den Hollander-Gijsman, M., Noorthoorn, E., van Buuren, S., & De Jongh, A. (2011). A randomised comparison of cognitive behavioural therapy (CBT) and eye movement desensitisation and reprocessing (EMDR) in disaster-exposed

- children. *European Journal of Psychotraumatology*, 2(1), 5694.
- Ehnholt, K. A., & Yule, W. (2006). Practitioner review: Assessment and treatment of refugee children and adolescents who have experienced war-related trauma. *Journal of Child Psychology and Psychiatry*, 47(12), 1197–1210.
- Fernandez, I., Fernandez, I., & Solomon, R. M. (2010). Neurophysiological components of EMDR treatment. In *International CIANS Conference (CIANS: Collegium Internationale Activitatis Nervosae Superioris; International Association for Integrative Nervous Functions, Neurobiology of Behaviour and Psychosomatics)*, pp. 137–140.
- Francati, V., Vermetten, E., & Bremner, J. D. (2007). Functional neuroimaging studies in posttraumatic stress disorder: Review of current methods and findings. *Depression and Anxiety*, 24(3), 202–218.
- Hensel, T. (2006). Effectivität von EMDR bei psychisch traumatisierten Kindern und Jugendlichen. *Kindheit und Entwicklung*, 15(2), 107–117.
- Hensel, T. (Ed.). (2007). *EMDR mit Kindern und Jugendlichen. Ein Handbuch*. Hogrefe.
- Hensley, B. J. (2016). *An EMDR therapy primer. From practicum to practice*. Springer.
- Jarero, I., Artigas, L., Montero, M., & Lena, L. (2008). The EMDR integrative group treatment protocol: Application with child victims of a mass disaster. *Journal of EMDR Practice and Research*, 2(2), 97–105.
- Kaslow, F. W., Nurse, A. R., & Thompson, P. (2001). EMDR in conjunction with family systems therapy. In F. Shapiro (Ed.), *EMDR as an integrative psychotherapy approach* (pp. 289–318). American Psychological Association.
- Kelley, S. D. M., & Benbadis, S. (2007). Eye movement desensitization and reprocessing in the psychological treatment of trauma-based psychogenic non-epileptic seizures. *Clinical Psychology and Psychotherapy*, 14, 134–144.
- Korkmazlar, Ü., Bozkurt, B., & Tunca, D. T. (2020). EMDR group protocol with children: A field study. *Journal of EMDR Practice and Research*, 14(1), 13–30.
- Main, M., & Hesse, E. (1990). Parents' unresolved traumatic experiences are related to infant disorganized attachment status: Is frightened and/or frightening parental behavior the linking mechanism? In M. T. Greenberg, D. Cicchetti, & E. M. Cummings (Eds.), *Attachment in the preschool years: Theory, research, and intervention* (pp. 161–182). The University of Chicago Press.
- Pagani, M., Högberg, G., Fernandez, I., & Siracusano, A. (2013). Correlates of EMDR therapy in functional and structural neuroimaging: A critical summary of recent findings. *Journal of EMDR Practice and Research*, 7(1), 29–38.
- Phipps, R. M., & Degges-White, S. (2014). A new look at transgenerational trauma transmission: Second-generation Latino immigrant youth. *Journal of Multicultural Counseling and Development*, 42(3), 174–187.
- Rodenburg, R., Benjamin, A., de Roos, C., Meijer, A. M., & Stams, G. J. (2009). Efficacy of EMDR in children: A meta-analysis. *Clinical Psychology Review*, 29(7), 599–606.
- Schwab, G. (2010). *Haunting legacies: Violent histories and transgenerational trauma*. Columbia University Press.
- Shapiro, F. (2018). *Eye movement desensitization and reprocessing*. The Guilford Press.
- Shapiro, F., Kaslow, F. W., & Maxfield, L. (Eds.). (2007). *Handbook of EMDR and family therapy processes*. Wiley.
- Tarquino, C., & Tarquino, P. (2015). *L'EMDR. Peserver la sante et prendre en charge la maladie*. Elsevier Masson.
- J. Martin Maldonado-Duran**, M.D., is an infant, child, and adolescent psychiatrist and family therapist. He is Associate Professor of Psychiatry at the Menninger Department of Psychiatry, Baylor College of Medicine and works at the complex care service in the Texas Children's Hospital. He edited the book *Infant and Toddler Mental Health*, published by American Psychiatric Press, and has coedited or edited five additional books in Spanish on topics of child and infant mental health. Coeditor of the book "Clinical Handbook of Transcultural Infant Mental Health" (Springer). He has written numerous papers and book chapters on topics of child development and psychopathology in several countries.



Ayurvedic Medicine in Children and Adolescents

35

Nihit Kumar and MariAlison Bowling

Introduction

Ayurveda is probably the world's oldest system of medicine that is in practice today. This health-care system originated in India around 4500–1600 BC, and this vast wealth of knowledge was passed down verbally by the early sages (Mishra et al., 2001; Singh et al., 2021). This knowledge was eventually transcribed into books which form the basis of modern practices of treatment in Ayurveda.

These ancient texts are written as hymns and discuss treatments ranging from the use of herbs and minerals to heal diseases of the body and mind (Mishra et al., 2001). These texts are organized into the Senior Triad (*Vridhdha Triya*), namely, *Charak Samhita*, *Susrut Samhita*, and *Ashtang Hridaya Samhita*. Then there is the Junior Triad (*Laghu Triya*), which includes *Madhav Nidan Samhita*, *Sarangdhar Samhita*, and *Bhavprakash Samhita*. These texts draw parallels to the modern textbooks of medicine wherein each discusses a specific branch of medicine or surgery.

There were probably two established schools of Ayurveda by 600 BC, the School of Physicians

(the *Atreya* school, with Charaka at the lead) and the School of Surgeons (the *Dhanvantri* school, with Susrut at the lead). Each school had its own prescribed texts and procedures, specializing in Internal medicine, Pediatrics, Psychiatry, Surgery, Ophthalmology and ear, nose, and throat. They also included Toxicology, Geriatrics, and Eugenics/Aphrodisiacs (Mishra et al., 2001).

There is evidence that early scholars from around the world including China, Tibet, Greece, Italy, Egypt, Afghanistan, and Iran attended the ancient Indian Universities at Nalanda and Kashi to be formally trained in Ayurvedic practices (Mishra et al., 2001). Contemporary schools of Ayurveda in India focus on training, research, and integration of Ayurvedic practices in day-to-day life.

Ayurvedic Philosophies

Ayurveda is a Sanskrit word that derives from *ayuh* or “life” and *veda* or “science.” Life or the living being is comprised of four essential elements – *sarira* (body), *indriya* (sensory organs), *manas* (mind, cognition), and *atman* (soul, spirit). It is only when all of these elements amalgamate that life in the human form is possible (Pal, 1989).

The concept of health encompasses disease management, disease prevention as well as health promotion. The human body is believed to be composed of individual cells or “*parmanu*,”

N. Kumar (✉)

University of Arkansas for Medical Sciences
(UAMS), Little Rock, AR, USA
e-mail: NKumar@uams.edu

M. Bowling

University of Utah Health, Salt Lake City, UT, USA

varying in shape and multiplied by division (Balodhi, 1987). Cells communicate with each other and exchange nutrients and metabolic waste via minute pores (*sukhma srotas*).

Three somatic components make up the body – *dhatu*s (cell aggregates that make up the tissues), *malas* (body waste), and *doshas* (psychic abnormalities, pollutants, humors) (Pal, 1999).

The *Charak Samhita* describes seven *dhatu*s that make up the physical structures in the body: *rasa* (plasma, chyle), *rakta* (blood), *mansa* (flesh, muscle, protein), *asthi* (bone), *meda* (fat, adipose tissue), *majja* (marrow), and *sukra* (semen, reproductive tissue). *Ojas* (vital fluid, activator, or hormones), which course through the *dhatu*s and has specific functions. *Malas* (waste products) include urine, feces, sweat, hair, and nails, which are released or excreted from the body.

The Tridosha (Three Humors) Theory

Doshas play an important role in the conceptualization of health and disease in Ayurveda. There are two kinds of *doshas*; those related to the body (*saririk*, somatic), and those of the mind (*manasik*, psychological). The mind and body *doshas* are believed to be closely dependent (mind-body integration) and dysregulation of one affects the other (Mishra et al., 2001). Traditional Ayurvedic practitioners believe that it is the imbalance of the *doshas* (*dosha-vaishamya*) that leads to emergence of disease (Balodhi, 1987). This conceptualization of the harmony or lack thereof of the *doshas* is referred to as the *Tridosha* theory that is a central concept in Ayurvedic healing.

Saririk (Body) Doshas

Three types of *saririk doshas* are described by Charaka: *vata*, *pitta*, and *kapha*.

Vata is associated with speed, movement, adjustment, and conduction of particles, and is responsible for various neurological and physiological functions in the body. States like over-

working, grief, worry, lack of sleep, intentional retention of bodily waste, excessive exercise, and sexual indulgence can cause disturbance. The same goes for ingestion of some bitter, pungent, astringent, or dry foods, which could cause disturbance of *vata* and lead to irregular limb movements, neuralgia, throbbing and tearing pain, suppression of secretions, muscle spasms, skin roughness, bone alterations and constipation.

Pitta denotes fire, and may be disrupted by ingestion of salty, hot, irritating, or sharp-tasting foods as well as intense anger. *Pitta* disturbances may cause burning sensation, redness, gastrointestinal disorders, excess sweating, fainting, intoxication, pungent and sour taste in the mouth.

Kapha includes the lymphatic system, body fat, muscle and mucus-producing glands. Disturbances of *kapha* lead to excessive moisture, itching, feeling cold and heavy, low or increased mucus, reduced limb activity, and a variety of symptoms of malaise.

Dosha-samyata or the dynamic and harmonious equilibrium of these three *doshas* constitute a state of health. Treatment of disorders or *chikitsa* involves practices that restore this balance to its previous balanced state.

Manasik (Mental) Doshas

There are three categories of *manasik doshas*: *satogun*, *rajogun*, and *tamogun*.

Manifestations of *satogun* (godly qualities) are compassion, self-control, proper conduct, intelligence, resolution, comprehension, and non-attachment to external objects or things.

Manifestations of *rajogun* (kingly attributes) are sensitivity to pain, restlessness of mind, egoism, lack of honesty, lack of compassion, false pride, overconfidence, buoyancy of spirit, excessively strong desires, and anger.

Manifestations of *tamogun* are despondency, agnosticism, and atheism, tendency to evil conduct, dull intellect, lack of knowledge and insight, physical and mental inertia, and somnolence.

The dominance of one of these *manasik doshas* in an individual person determines their *prakriti* (constitution or temperament). The

possible outcomes here are: *satvik* (pure minded, compassionate, loving, righteous): *rajasik* (egotistic, ambitious, proud, competitive, controlling, power-hungry) and *tamasik* (lazy, sleepy, depressed, greedy, irritable, irresponsible, selfish).

Ayurvedic Concepts of Mental Health

Although not much is specifically written about children's mental health in the Ayurvedic medical system, these concepts apply to children and adolescents as well.

The Mind

The scholar Charaka explained the existence of mind as the presence of cognition or "that entity which is responsible for thinking". The mind is considered an *ateendriya* or super-sense and is made up of the finest matter in the hierarchy of the human body. The *indriyas* or sense organs are capable of perceiving the environment at the instance of the mind, which is also connected to the motor centers of the brain (*karmendriya*). Therefore the mind is referred to as the combined psychomotor entity (*ubhayatmaka*). The functions of the mind include directing the senses (*indriyabhigrah*), control of the mind itself (*manonigrah*, *svasyanigraha*), reasoning (*ooh*), and deliberation (*vichara*).

Mind–Body Connections

It has been suggested that the *manasik* (mental) *doshas* are inextricably linked to *vata*, *pitta*, and *kapha*, the disturbances of which also affect mental well-being (Balodhi, 1987). For example, an excited *vayu* causes fear, grief, depression, helplessness, and delirium.

The overarching term used to describe mental disorders in Ayurveda is "Unmada," which literally translates into frenzy, madness, or mental derangement (Tripathi & Deole, n.d.). However,

the word encompasses symptoms of all modern categories of mental health disorders to include depression, anxiety, mania, psychotic disorders, and schizophrenia. In contrast to the primarily demonic or magical etiology of mental illness that was prevalent in most parts of the world until a few centuries ago, *unmada* has roots in a naturalistic understanding of the *doshas* and is considered a mental health disorder amenable to treatment by ancient Ayurvedic practitioners.

In fact, Ayurvedic practitioners recognize mental illness as purely caused by mental factors (*manas vikara*; e.g., desire, grief, jealousy), a combination of mind-body disorders (*ubhayatmaka manasvikara*; e.g., epilepsy), and mental illness causing bodily symptoms (somatoform disorders, *saririk vikara*).

Clearly these are arbitrary demarcations since diseases affect the human body as a whole and cause disruptions in the function of the body (*sarira*), sense organs (*indriyas*), mind (*manas*), and soul (*atman*).

Etiology and Pathogenesis of Emotional and Behavioral Disturbances

Unlike the symptom cluster-based classification of modern emotional and behavioral disorders diagnostic criteria, the classification of mental disorders in Ayurveda is based on etiology. The pathogenesis of mental disorders based on Ayurvedic concepts is broadly described as a combination of predisposing and precipitating factors.

Predisposing Factors

Certain human qualities or afflictions diminish the individual's psychological resilience and increase their risk of developing sub-clinical or clinical mental disorders. These include individuals who are fearful, gullible, "weak-minded" (those who possess low levels of *sattva guna*), who do not acknowledge societal norms and lead erratic lifestyles (Tripathi & Deole, n.d.).

Diet and nutrition play a significant role in the predisposition toward mental illness, as the mind is believed to be composed of the finest portions of food. Individuals who have untimely eating habits, or neglect prescribed dietetic rules are at risk of poor mental health. Other factors include not having healthy lifestyle habits especially when the body is ailing from disease; when it is exceedingly weak and cachexic; when the mind is impaired by anger, excitement, fear, excessive attachment to outside things, over-exertion, anxiety or grief; or when the individual is subject to mental or physical trauma.

Precipitating Factors

Unmada or psychiatric alteration is thought to be caused by the imbalance of the mental *doshas* (*rajas*, *tamas*) as well as body *doshas* (*vata*, *pitta*, *kapha*) in individuals prone to mental illness.

This concept can be described as something similar to the two-hit hypothesis of schizophrenia (Maynard et al., 2001) where the *dosha* imbalance precipitates a “second hit” causing symptoms of the mental disorder. The two hit hypothesis of schizophrenia suggests that there is a genetic predisposition and then precipitating events in the person’s life experience have the impact of precipitating symptoms of schizophrenia.

It is assumed that when pollutants move upwards toward the head transmitted through microscopic channels (*manovahasrotasas*), they cause functional disturbances in the mind (or *hridaya*, the seat of intellect), leading to a state of *mada* or delusion/intoxication.

Rajas and *tamas* cause negativities, whereas *sattva* leads to a positive outlook. For example, a predominance of *raja* and *vata* causes symptoms consistent with panic attacks, generalized anxiety, as well as schizophrenia; a predominance of *tama/kapha* causes depressive disorders; while aberrations in *raja/pitta* may lead to manic symptoms.

The treatise *Charak Samhita* describes a total of five (5) types of mental illness (*unmada*) based on etiology, which can be broadly classified into two categories: those caused by endogenous fac-

tors (*nijja*) and those by exogenous factors (*agantu nimitta*).

1. Endogenous (*nijja*) alterations: caused by internal imbalance of the *doshas*.
2. Exogenous (*agantu*) – caused by external factors.

Symptoms of Mental Illness (*Unmada*)

Charak Samhita describes in detail the faculties that are deranged when an individual develops *unmada*. These include the following:

- Derangement of all the activities of *manas* (mind), *buddhi* (intellect), *ahamkara* (ego), and *indriyas* (sense organs).
- Thought disturbances: abnormalities of *chintana* (thinking), *vichara* (discrimination abilities of the mind), and *uha* (capacity for analysis).
- Derangement of memory: *smriti nasa* (memory loss), and *smriti bhramsha* (memory impairment).
- Behavioral, social, and emotional disturbances: abnormalities of *achara* (behavior), *dharma* (eternal duties), and *bhavas* (mental factors).
- Functional derangement of *indriyas*: leading to disturbed speech, incoherence (*abaddha vakyam*), thought blocking (*hridaya shunyata*), loosening of associations, neologism and echolalia.
- Psychomotor disturbances.

Endogenous *Unmada*

Warning signs and symptoms may be present in an individual due to the internal imbalance of the *doshas*. There are a number of symptoms: blankness of thought, restless eyes, tinnitus, prolonged exhalation, hypersalivation, anorexia and repeated indigestion, chest tightness, fatigue, confusion, panic, piloerection, frequent fever, erythematous rashes over the body, distorted

faces (as in Bell's palsy or facial paralysis), dreams with recurrent themes (such as dreams of wandering/moving terrifying and inauspicious objects; riding over the wheel of an oil press).

Exogenous Unmada

An individual with exogenous *unmada* is characterized by great strength, enthusiasm, power of understanding and retention, memory, scientific knowledge, and power of speech that is untimely, uncertain, or uncalled for.

Assessment

There are eight psychological and behavioral abnormalities associated with an individual with emotional difficulties or mental illness, and these form the basis of an eight-point empirical assessment of mental faculties (*astha manas bhava pariksha*) in the person (Ramu & Venkataram, 1985). A proposed scheme of objectively assessing a patient includes evaluation of:

1. *manas* (thought, affect, emotions, perceptions)
2. *buddhi* (intellect, decision making, problem-solving)
3. *sanjna jnana* (awareness of surroundings, orientation, response to external stimuli)
4. *smriti* (memory-recent and remote, retention, recall)
5. *bhakti* (desires related to food, dress, entertainment, study, work, hobby)
6. *sheela* (habits, temperament)
7. *chesta* (psychomotor activity, speech, facial expression, posture)
8. *aachara* (personal and social conduct/ behaviors)

The classic Ayurvedic texts cover not only the diagnosis and management of diseases but also aspects of health prevention and promotion. Practitioners focus on the imbalance of *doshas* as well as the interdependence of mind (*manas*), body (*sarira*), and soul (*atman*) to prescribe

guidelines for an overall state of physical, mental, and social well-being.

Daily regimen (*dinacharya*), seasonal regimen (*ritucharya*), dietetic rules (*ahara vidhi*), and code of conduct (*sadvritta*) are prescribed for a healthy and long life.

For example, guidelines for waking up early in the morning, gut hygiene (*shaucha vidhi*), oral hygiene, eye and skin care, exercise, taking baths, daily conduct, and proper sleep are suggested as part of *dinacharya*.

Ahara vidhi (dietary guidelines) describe the quality and properties of food, descriptions of wholesome and unwholesome foods, quantity, timing and sequence of eating food, and the environment in which to consume food. *Rasayanas* or herbal dietary supplements can be taken with food for relaxation, sound sleep, and mitigation of stress, fatigue and mental strain also, to promote immunity and to increase life span. In addition, the regular practice of yoga, vital-points therapy (*marmasthan*), and massage with medicated oils are thought to improve psychological well-being (Deole Y. Ahara Vidhi, n.d.). *Sadvritta* or rules of good conduct are essential in the maintenance of health and include: being respectful to all individuals, keeping one's body clean, and one's mind clean via self-control.

In Ayurvedic medicine, it is thought that an individual's thought processes, attitudes, emotions, desires, and behaviors can change the *manas* and *saririk doshas*, *agni* (metabolism and digestion), and *ojas* (hormones) quantitatively and qualitatively. Further, structural and functional changes in *dhatu*s (body tissues), *malas* (body waste), and *srotasas* (channels) may result from this imbalance in psychological factors. This points to the interdependence of one's thoughts and behaviors with psychological and physiological changes in the body.

Treatment of Emotional Disturbances

The treatment for mental illnesses as described in Ayurvedic literature encompasses a broad category of management principles to include ratio-

nal/drug therapy (*yukti vyapashraya*), spiritual therapy (*daiva vyapashraya*), psychotherapy (*sattvavajaya chikitsa*), and consolation or support (*upayabhipluta*).

Rational Therapy (Yukti Vyapashraya Chikitsa)

Diet and medications/herbs/drugs should be used to purify the *doshas* (*vata*, *pitta*, *kapha*) and bring them into balance. Various types of medicines (*ausadha*), tonics (*rasayana*), and procedures (*upakrama*) or a combination of them, are prescribed based on the specific *dosha* imbalances.

Spiritual Therapy (Daiva vyapashraya chikitsa) can be considered as part of therapy as per the individual's preference.

Psychotherapy (Sattvavajaya chikitsa) treats psychological problems with an emphasis on the therapist to be compassionate (*suhrt*) (Behere et al., 2013).

Ayurveda and Anxiety Disorders

Ayurvedic herbal preparations as well as stress-management and wellness practices based on Ayurvedic principles have been studied for their effects on reducing anxiety.

Most of the information available from studies comes from adult populations. It is impossible to transpolate these effects directly to children or even adolescents. Also, there is the associated uncertainty with using "medicinal extracts" which may have varying quantities of the desired substance and additional or extraneous components. Despite this, it is worthwhile mentioning some studies which point in the direction of future research and possibilities.

Among herbs, *Ashwagandha* (*Withania somnifera* or winter cherry) appears to have the most robust evidence in the management of anxiety symptoms. This compound is thought to enhance the release of the calming neurotransmitter GABA (gamma amino butyric acid) For instance, there is a double-blind, placebo-controlled randomized study examining the use of *Withania*

somnifera in reducing anxiety (Fuladi et al., 2021). Participants with a confirmed diagnosis of Generalized Anxiety Disorder (GAD; $N = 40$) were grouped into placebo or treatment arms. The treatment group received *Withania somnifera* extract at a dose of 1 g/day for six weeks. Both groups received concurrent treatment with a selective serotonin reuptake inhibitor (SSRI). Outcomes were measured at baseline, weeks 2, and 6 using the Hamilton anxiety rating scale (HAM-A). A significant reduction in HAM-A scores was noted in the treatment group versus placebo (14 and 8 units respectively). That is, there was a greater reduction of anxiety in the patients who received the *Withania somnifera*. No adverse effects were reported.

Another double-blind, placebo-controlled randomized control trial examined the effects of *Ashwagandha* root and its effects on stress and anxiety in adults (Salve et al., 2019). *Ashwagandha* is a shrub that gives fruits similar to raspberries, also known as "Indian ginseng". Sixty male and female participants with a Perceived Stress Scale (PSS) score more than 20 were randomized to receive *Ashwagandha* extract 250 mg daily, 600 mg daily, or placebo. Anxiety was assessed using the HAM-A (also known as Hamilton Anxiety instrument) and serum cortisol levels were measured at baseline and at eight weeks after starting the trial. Stress was assessed using the PSS at baseline, and at four and eight weeks. Sleep quality was also considered. There was a significant reduction in PSS scores and serum cortisol levels as compared to placebo with both groups who took real doses of *Ashwagandha*, with a larger effect seen with the higher dose of the *Ashwagandha* extract. Significant improvement in HAM-A scores was seen in the 600 mg daily group as compared to placebo, but not in the 250 mg daily group.

Another double-blind, placebo-controlled randomized control trial studied the effects of *Withania somnifera* on anxiety and insomnia in adults (Langade et al., 2019). Individuals diagnosed with DSM-IV criteria for insomnia ($N = 60$) were randomly assigned to receive *Ashwagandha* root 300 mg daily or placebo for 10 weeks. Outcome measures included the

HAM-A and sleep. HAM-A scores collected at baseline, weeks 5 and 10; significantly decreased between baseline and week 10 ($p = 0.002$). The compound seemed to help both the insomnia and anxiety.

A randomized, placebo-controlled study examined adjunctive treatment effects of *Withania somnifera* on symptoms of depression and anxiety in 66 individuals diagnosed with schizophrenia and experiencing an exacerbation of positive symptoms. In this context positive symptoms refers to hallucinations, delusions, behavioral activation, etc. (Gannon et al., 2019). Over a 12-week study period, the treatment group received *Withania somnifera* extract 1000 mg/day. Outcomes were measured via the depression and anxiety-depression cluster subscores from the Positive and Negative Syndrome Scale. Moderate effect sizes favoring *Withania somnifera* over placebo were observed. Only mild adverse effects were noted.

Finally, a systematic review examined *Ashwagandha* root as a treatment for anxiety, with only five studies meeting inclusion criteria (Pratte et al., 2014). Each study compared various doses of *Ashwagandha* (range 125–12,000 mg daily) to placebo or psychotherapy. Instruments used to measure outcomes included the HAM-A, GRS (Global rating scale), BAI (Beck anxiety inventory), the PSS (Perceived stress scale) among others. Indeed, *Ashwagandha* appeared to be superior to placebo or psychotherapy for treatment of anxiety and stress relief. Limitations to the review included the small number of studies included, the diversity of methods and outcomes, and the lack of a meta-analysis due to the wide variety in study designs.

One double-blind, placebo-controlled study evaluated the anxiolytic activity of *Gotu Kola* (*Centella asiatica*, known also as “brain food” in India) in adults by evaluating the acoustic startle reflex (ASR). This is reaction to unexpected stimuli characterized by signs including an eye blink (Bradwejn et al., 2000). The study was performed in 40 healthy individuals with no lifetime history of mental disorders as assessed by the DSM-IV. Each individual was randomly assigned to a single 12 g dose of *Gotu Kola* ($N = 20$) or

placebo ($N = 20$). Individuals who received *Gotu Kola* significantly attenuated the peak ASR amplitude 30 min and 60 min after treatment. No significant effects were found on mood, heart rate, or blood pressure. A study concluded that the attenuation of ASR indicates potential anxiolytic properties of *Gotu Kola*.

A randomized control trial examined the effects of Ayurvedic preparation *Manasamitra Vatakam* or *Vataka* on relieving anxiety (Tubaki et al., 2012). *Manasamitra Vatakanm* is a compound of multiple herbal remedies. Individuals with GAD and comorbid social phobia ($N = 72$) were divided into three treatment groups. Group 1 received *Manasamitra Vatakam* tablets at a dose of 100 mg twice daily. Group 2 received the same dosage of *Manasamitra Vatakam* as Group 1 with the addition of *Shirodhara* treatment (an Ayurvedic therapy involving dripping medicated oil over the forehead) for the first 7 days of treatment. Group 3 received clonazepam 0.75 mg daily in divided doses. The treatment lasted 30 days. Outcomes were measured using the HAM-A, BDI (Beck Depression Inventory), the Epworth Sleepiness Scale (ESS), the World Health Organization Quality of Life BREF, and the Clinical Global Impression scales. The effects on anxiety were comparable between the three groups, with improvement in ESS scores only observed in Group 2.

A case control trial compared a holistic wellness program based on Ayurvedic Medicine principles to a vacation control group in assessing spirituality, mindful awareness, psychological flexibility, mood, and anxiety (Patel et al., 2019). 154 adults (mean age 54.7 years) were recruited from individuals who signed up to attend holistic wellness courses offered at the a Center for Wellbeing in Carlsbad, California, US. The control group ($N = 36$) was present at the same resort for vacation purposes and did not attend the holistic programs. Data was assessed via pre- and post-course questionnaires including the Patient-Reported Outcomes Measurement System Anxiety Scale (PROMIS) and there was a 1 month follow up assessment. Three separate holistic programs lasting 4–6 days were included and employed various Ayurvedic principles and

techniques, including yoga, meditation, lectures, and breathing exercises. Study participants in all three wellness programs showed decreases in anxiety as measured by PROMIS. Limitations to this study included a disproportionate number of female participants ($N = 137$) as well as the fact that participants were recruited from a convenience sample already enrolled to attend a wellness course.

Another review article focused on Ayurvedic principles of stress (*sahasa*) management (Arora et al., 2003). These authors discuss the role of stress, anxiety, and depression in medical conditions and the role of *rasayana* herb therapy in the management of stress. *Rasayana* is a herbal compound thought to aid in rejuvenation.

An exploratory correlation study compared the Ayurvedic concept of *dosha* imbalances (*Vikruti*) to Western measures of psychological states (Mills et al., 2019). Study participants ($N = 101$) completed the following assessments: *Vikruti* Questionnaire, Patient-Reported Outcomes Measurement System (PROMIS) Anxiety Scale, Center for Epidemiology Studies-Depression (CES-D), PSS (perceived stress scale), Mindful Attention Awareness Scale (MAAS), Rumination-Reflection Questionnaire (RRQ), and the Ryff Scale of Wellbeing. *Vata* imbalance was significantly associated with anxiety, mental rumination, less mindfulness, and lower overall quality of life. *Pitta* imbalance was significantly associated with low mood, anxiety, stress, and less mindfulness. *Kapha* imbalance was significantly associated with stress, mental rumination, and less reflection. Thus, Ayurvedic *dosha* assessment may be a useful tool to evaluate physical and emotional well-being in research and clinical settings due to its differential association with Western assessments of psychological states.

Attention-Deficit Hyperactivity Disorder (ADHD)

A placebo-controlled trial evaluated the reaction time in children with ADHD when treated with Ayurvedic compounds and procedures (Singhal

et al., 2010). Fifty-five children (6–16 years) enrolled in the study and were divided into three treatment arms—Group A was treated with Ayurvedic compound I; Group B was treated with Ayurvedic compound I and *Shirodhara*; and Group C was given placebo. Ayurvedic compound I contained three herbs and was given at a dose of 1 mg/kg/day in three divided doses for a total of 3 months. *Shirodhara* is a method where cow's milk is poured over the forehead from a height of 3.14 inches in an oscillatory motion and was performed for 45 min daily for 2 weeks. Pre- and post-treatment reaction time was measured using the Vernier chronoscope in response to visual or auditory stimuli. Participants showed statistically significant decrease in reaction time in groups A and B, but not in C. Further, the combination of compound I and *Shirodhara* led to a statistically significant improvement in reaction time as compared to treatment with compound I alone. Both the Ayurvedic compound I and *Shirodhara* were effective in improving reaction time in children with ADHD, and the combination was more effective than individual treatments.

A systematic review summarized clinical trials of *Bacopa monnieri* (a plant also known as waterhyssop and Indian Pennywort or thyme-leaf gratiola) as a single extract and its effects on cognition, memory, and behaviors in children and adolescents in clinical and non-clinical cohorts (Kean et al., 2016). Five studies were included in this review which demonstrated improvements in hyperactivity and inattention, as well as in domains related to language, cognition, and behaviors with small to medium effect sizes. Overall, *Bacopa monnieri* was well tolerated with only 2.3% of all participants reporting mild side effects. A year later, the same authors described clinical trials examining the effects of *Bacopa monnieri*-dominant poly-herbal formulations on cognition, memory, learning, and behavior in children and adolescents (Kean et al., 2017). Nine studies met inclusion criteria, out of which five studies had sufficient data for effect size analysis and demonstrated improvement primarily in behavioral outcomes. Six studies demonstrated improvements in visual perception, impulsivity, and attention. Thus, *Bacopa monn-*

ieri in poly-herbal formulations can be used as a cognitive enhancer and to improve behavioral outcomes in children and adolescents.

Depressive Disorders

Multiple studies have described the use of Ayurvedic drugs and practices in the management of depressive symptoms in individuals.

There is one randomized control trial which evaluated the effects of an Ayurvedic treatment (*Panchakarma* and Ayushman-15) on psychopathology, heart rate variability (HRV) and neuroendocrine modulation in individuals with major depressive disorder (MDD) (Kishore et al., 2014). *Panchakarma* denotes a sort of cleansing therapy. Depressed individuals recruited from an outpatient setting ($N = 81$), first underwent the Ayurvedic treatment module *Virechana* (therapeutic purgation). Following this, they were randomized to one of four groups - Ayushman A formulation (4.5 g, contains *Ashwagandha*, *Withania somnifera*) with or without *shirodhara*, and Ayushman B formulation (4.5 g, does not contain *Ashwagandha*) with or without *Shirodhara* (*Shirodhara* is a treatment with various ayurvedic oils). The study period lasted 2 months. Psychopathology was assessed using the Hamilton Depression Rating Scale (HDRS), Montgomery Asberg Depression Rating Scale (MADRS) and the Clinical Global Impression (CGI) scale. Serum cortisol and ACTH (adrenocorticotrophic hormone) levels as well as HRV (heart rate variability) measurements were also assessed. Significant reductions in HDRS, MADRS, and CGI scale scores were seen, as well as an increase in vagal tone, decrease in sympathetic tone, and reduced cortisol levels. The increase in vagal tone is thought to have a calming or relaxing effect on the body. No significant differences were seen between groups receiving Ayushman A or B formulations. Limitations of the study included a lack of placebo control.

Researchers in one case-control study examined the efficacy of the previously mentioned *Bacopa monnieri*, in the treatment of

anhedonia (Micheli et al., 2020). Rating scales used in the study included the Hamilton Depression Rating Scale (HDRS), the Snaith-Hamilton Pleasure Scale (SHAPS), and the strengths and difficulties questionnaire (SDQ). Participants were recruited from a psychiatric facility (outpatient and day hospital; $N = 42$). Inclusion criteria included a significant degree of anhedonia (as screened by SHAPS score), a diagnosis of major depression, and being on citalopram for 4 weeks with an unsatisfactory response. The treatment period lasted 4 weeks, during which individuals received either citalopram 40 mg/day or citalopram 40 mg/day + *Bacopa monnieri* extract 600 mg/day. Significant improvement in HDRS, SHAPS, and SDQ scores were seen in the *Bacopa monnieri* group after treatment in comparison with the citalopram alone group.

A single cohort treatment study examined the Ayurvedic formulation *Kushmanda Ghrita* and its treatment effects on depressive illness (Chandre et al., 2011). *Kushmanda Ghrita* is a compound of multiple herbs. The main ingredients of the *Kushmanda Ghrita* formulation included *Kushmanda* (*Benincasa hispida*) *phala rasa*, *Ghrita*, and *Yastimadhu* (*Glycyrrhiza glabra*). Individuals meeting DSM-IV diagnostic criteria for minor or major depressive disorder ($N = 40$) were recruited from an Indian hospital system and, received *Kushmanda Ghrita* 20 ml twice daily for 1 month. Psychometrics included the Hamilton Depression Rating Scale (HDRS). 35 individuals completed the study. Overall, depression significantly improved in participants as measured by HDRS.

One review article (Ramaholimihaso et al., 2020) highlighted the various effects and mechanisms of action of curcumin (one of the components contained in turmeric) in relation to systems in the body associated with depressive disorders, including the hypothalamic-pituitary-adrenal axis and inflammatory pathways. Curcumin is noted to have mild adverse effects including yellow stool, headache, or diarrhea. The authors concluded that curcumin has diverse mechanisms of action that may be useful when treating depres-

sion and particularly emphasized the anti-inflammatory properties of this treatment.

Another review article compared the Ayurvedic focus on the digestive system and its impact on depressive symptoms with the Western idea that the gut microbiome and enteric nervous system may be linked to major depressive disorder (Steer, 2019). According to Ayurvedic ideology, one contributor to depression is the spreading of *doshas* from digestive tissues to various tissue sites.

Additionally, other authors discuss a case study (Posmontier & Teitelbaum, 2009) in which a postpartum female screened positive for PPD (postpartum depression) via the Edinburgh Postnatal Depression Scale and the Mini-International Neuropsychiatric Interview. Objective information included health history, resistance to illness, lifestyle practices, behaviors, diet, general appearance, speech, voice, weight, skin, stool, and the quality of the pulse. The patient was diagnosed with imbalances in *Prana Vata*, *Apana Vata*, and *Ranjaka Pitta* and, adjustments were prescribed in sleep habits and diet, as well as a daily oil massage with almond oil. At the 2-week follow-up visit, the Edinburgh Postnatal Depression Scale score was significantly reduced and the patient no longer met criteria for PPD. It was stated that if symptoms persist longer than 2 weeks, it is likely that various transdermal herbal regimens, such as *Gotu kola*, *Bacopa monnieri*, *Shankapushpi*, *Celastrus panniculatus*, *Ashoka*, *Terminalia arjuna*, or *Jatamansi* may have been used.

Finally, a randomized controlled pilot study explored the effects of Ayurvedic dietary and lifestyle counseling on burnout syndrome (Kessler et al., 2017). Mothers with a biological child under twelve years old who were employed or training at least 20 h per week ($N = 34$) were included in the study. Recruited individuals endorsed a subjective feeling of physical and mental exhaustion for at least 3 months prior to entering the study and were also evaluated via the Maslach Burnout Inventory (MBI-D). Other rating scales included the Cohen Perceived Stress Scale (CPSS), the Hospital Anxiety and Depression Scale (HADS-D), the Medical

Outcomes Study 36-Item Short Form (SF-36), Aspects of Spirituality (ASP), and the Pittsburgh Sleep Quality Index (PSQI). Individuals were randomized to conventional lifestyle and nutritional counseling or recommendations and lifestyle modifications based on traditional Ayurvedic principles (the *tridosha*-approach, self-massage, and various recipes). No significant differences were observed between groups. However, significant intra-group mean changes for burnout, sleep, stress, and depression were only found in the Ayurveda group.

Safety of Ayurvedic Medicines

There are concerns about the use of heavy metals in Ayurvedic medicines. Saper et al. systematically searched Boston-area stores that sold Ayurvedic herbal medicine products manufactured in South Asia and analyzed their contents by X-ray fluorescence spectroscopy (Saper et al., 2004). They found that approximately 20% of these herbal products contained lead, mercury and/or arsenic and recommended mandatory testing of these products for the presence of toxic heavy metals.

A case report described a 18-month-old child with global developmental delay who was diagnosed with lead poisoning secondary to an Ayurvedic medicine (Datta-Mitra & Ahmed Jr, 2015). This child had significantly elevated lead levels (54.0 $\mu\text{g/dL}$) at his 18-month well child visit. Parents reported that the child had been taking a powered Ayurvedic medication twice daily with honey to enhance his muscle strength for the past 5 months. He did not have any constipation, abdominal pain, or other neurological symptoms despite this increased lead concentration. The medication was stopped immediately and his blood lead levels decreased after chelation therapy. The Ayurvedic medication was sent for analysis and was found to have lead, mercury, iron, gold, calcium, copper, and arsenic. Of note, the presence of lead in Ayurvedic medicines could be due to ecological contamination, contamination during manufacturing and packaging, or due to purposeful inclusion

due to the belief that heavy metals have a therapeutic role.

Even though the presence of heavy metals in Ayurvedic preparations raises concern, it appears that these concerns were well understood for centuries. For example, there are multiple references to the strict guidelines used for step-wise and highly complex processing of minerals, heavy metal preparations and most other Ayurvedic drugs with the intent to render them non-toxic for human consumption (Galib et al., 2011).

Summary

Ayurveda is perhaps one of the oldest systems of healthcare that has proved to be a viable alternative to modern Western medicine in some cases. Its focus on health promotion, and not just management of disease sets it apart from the contemporary concept of “health” as a mere absence of disease. Ayurvedic practices have a foundation based on the Tridosha theory and follows a rigorous methodology when it comes to the diagnosis and management of illness. The references to treatment of mental health disorders are abundant in Ayurvedic literature, but primarily in the adult population. However, the concept of pediatrics is well described in other sections of its classic textbooks, leading one to believe that the core concepts of Ayurvedic mental health treatment could be applied to children and adolescents as well.

From a modern ‘evidence-based practices’ lens, Ayurvedic medicines and practices does not appear to have the strength of research to be considered as mainstream as some of the other forms of medical interventions. However, one must remember that these practices have stood the test of time and have been practiced in some parts of the world for thousands of years with relatively good efficacy and without reports of significant adverse events. More rigorous clinical trials and scientific exploration into Ayurvedic health practices could help bring about greater trust among the uninitiated and improve utilization. At this point in time, one must certainly consider Ayurveda as a viable adjunct or alternative treat-

ment for their ailments, especially if Western allopathic medicine has not been effective.

Resources

1. Charak Samhita- New Online Edition (web-page); https://www.carakasamhitaonline.com/index.php?title=Main_Page
2. The Ayurvedic Institute; <https://www.ayurveda.com/about/the-ayurvedic-institute>
3. Chopra; <https://chopra.com/>

References

- Arora, D., Kumar, M., Dubey, S. D., & Baapat, S. K. (2003). Stress-management: Leads from ayurveda. *Ancient Science of Life*, 23(1), 8–15.
- Balodhi, J. P. (1987). Constituting the outlines of a philosophy of Ayurveda: Mainly on mental health import. *Indian Journal of Psychiatry*, 29(2), 127–131.
- Behere, P. B., Das, A., Yadav, R., & Behere, A. P. (2013). Ayurvedic concepts related to psychotherapy. *Indian Journal of Ppsychiatry*, 55(Suppl 2), S310.
- Bradwejn, J., Zhou, Y., Koszycki, D., & Shlik, J. (2000). A double-blind, placebo-controlled study on the effects of Gotu Kola (*Centella asiatica*) on acoustic startle response in healthy subjects. *Journal of Clinical Psychopharmacology*, 20(6), 680–684.
- Chandre, R., Upadhyay, B. N., & Murthy, K. N. (2011). Clinical evaluation of Kushmanda Ghrita in the management of depressive illness. *Ayu*, 32(3), 230–233.
- Datta-Mitra, A., & Ahmed, O., Jr. (2015). Ayurvedic medicine use and lead poisoning in a child: A continued concern in the United States. *Clinical Pediatrics*, 54(7), 690–692.
- Deole Y. A. V., & Basisht, G. K. (Eds.). (n.d.). *Charak Samhita New Ed* (1st ed.). Charak Samhita Research, Training and Skill Development Centre (CSRTSDC). https://www.carakasamhitaonline.com/index.php?title=Ahara_vidhi. Accessed 20 July 2021.
- Fuladi, S., Emami, S. A., Mohammadpour, A. H., Karimani, A., Manteghi, A. A., & Sahebkar, A. (2021). Assessment of the efficacy of *Withania somnifera* root extract in patients with generalized anxiety disorder: A randomized double-blind placebo-controlled trial. *Current Reviews in Clinical and Experimental Pharmacology Formerly Current Clinical Pharmacology*, 16(2), 191–196.
- Galib, M. B., Mashru, M., Jagtap, C., Patgiri, B. J., & Prajapati, P. K. (2011). Therapeutic potentials of metals in ancient India: A review through Charaka Samhita. *Journal of Ayurveda and Integrative Medicine*, 2(2), 55–63.

- Gannon, J. M., Brar, J., Rai, A., & Chengappa, K. R. (2019). Effects of a standardized extract of *Withania somnifera* (Ashwagandha) on depression and anxiety symptoms in persons with schizophrenia participating in a randomized, placebo-controlled clinical trial. *Annals of Clinical Psychiatry, 31*(2), 123–129.
- Kean, J. D., Downey, L. A., & Stough, C. (2016). A systematic review of the Ayurvedic medicinal herb *Bacopa monnieri* in child and adolescent populations. *Complementary Therapies in Medicine, 29*, 56–62.
- Kean, J. D., Downey, L. A., & Stough, C. (2017). Systematic overview of *Bacopa monnieri* (L.) Wettst. Dominant poly-herbal formulas in children and adolescents. *Medicine, 4*(4), 86.
- Kessler, C. S., Eisenmann, C., Oberzaucher, F., et al. (2017). Ayurvedic versus conventional dietary and lifestyle counseling for mothers with burnout-syndrome: A randomized controlled pilot study including a qualitative evaluation. *Complementary Therapies in Medicine, 34*, 57–65.
- Kishore, R. K., Abhishekh, H. A., Udupa, K., et al. (2014). Evaluation of the influence of ayurvedic formulation (Ayushman-15) on psychopathology, heart rate variability and stress hormonal level in major depression (Vishada). *Asian Journal of Psychiatry, 12*, 100–107.
- Langade, D., Kanchi, S., Salve, J., Debnath, K., & Ambegaokar, D. (2019). Efficacy and safety of Ashwagandha (*Withania somnifera*) root extract in insomnia and anxiety: A double-blind, randomized, placebo-controlled study. *Cureus, 11*(9), e5797.
- Maynard, T. M., Sikich, L., Lieberman, J. A., & LaMantia, A. S. (2001). Neural development, cell-cell signaling, and the “two-hit” hypothesis of schizophrenia. *Schizophrenia Bulletin, 27*(3), 457–476.
- Micheli, L., Spitoni, S., Di Cesare Mannelli, L., Bilia, A. R., Ghelardini, C., & Pallanti, S. (2020). *Bacopa monnieri* as augmentation therapy in the treatment of anhedonia, preclinical and clinical evaluation. *Phytotherapy Research, 34*(9), 2331–2340.
- Mills, P. J., Peterson, C. T., Wilson, K. L., Pung, M. A., Patel, S., Weiss, L., et al. (2019). Relationships among classifications of ayurvedic medicine diagnostics for imbalances and western measures of psychological states: An exploratory study. *Journal of Ayurveda and Integrative Medicine, 10*(3), 198–202.
- Mishra, L., Singh, B. B., & Dagenais, S. (2001). Ayurveda: A historical perspective and principles of the traditional healthcare system in India. *Alternative Therapies in Health and Medicine, 7*(2), 36–42.
- Pal, M. N. (1989). Ayurveda: An international overview—part I. *Ancient Science of Life, 8*(3–4), 235–240.
- Pal, M. N. (1999). Ayurveda: An international overview—part II. *Ancient Science of Life, 9*(1), 1–6.
- Patel, S., Klagholz, S., Peterson, C. T., Weiss, L., Chopra, D., & Mills, P. J. (2019). Psychosocial effects of a holistic ayurvedic approach to well-being in health and wellness courses. *Global Advances in Health and Medicine, 8*, 2164956119843814.
- Posmontier, B., & Teitelbaum, M. (2009). An Ayurvedic approach to postpartum depression. *Holistic Nursing Practice, 23*(4), 201–214.
- Pratte, M. A., Nanavati, K. B., Young, V., & Morley, C. P. (2014). An alternative treatment for anxiety: A systematic review of human trial results reported for the Ayurvedic herb ashwagandha (*Withania somnifera*). *The Journal of Alternative and Complementary Medicine, 20*(12), 901–908.
- Ramaholimihaso, T., Bouazzaoui, F., & Kaladjian, A. (2020). Curcumin in depression: Potential mechanisms of action and current evidence—a narrative review. *Frontiers in Psychiatry, 11*, 572533.
- Ramu, M. G., & Venkataram, B. S. (1985). Manovikara (mental disorders) in Ayurveda. *Ancient Science of Life, 4*(3), 165–173.
- Salve, J., Pate, S., Debnath, K., & Langade, D. (2019). Adaptogenic and anxiolytic effects of ashwagandha root extract in healthy adults: A double-blind, randomized, placebo-controlled clinical study. *Cureus, 11*(12), e6466.
- Saper, R. B., Kales, S. N., Paquin, J., Burns, M. J., Eisenberg, D. M., Davis, R. B., & Phillips, R. S. (2004). Heavy metal content of ayurvedic herbal medicine products. *Journal of the American Medical Association, 292*(23), 2868–2873.
- Singh, R., Singh, G., Sodhi, J., & Dixit, U. (2021). Deerghanjiviteeya Adhyaya (I Sutra Sthana, chapter 1). In G. K. Basisht (Ed.), *Charak Samhita New Ed* (1st ed.). Charak Samhita Research, Training and Skill Development Centre (CSRTSDC). [https://www.carakasamhitaonlinecom/indexphp?title=Adhyaya\(chapters\)&oldid=36456](https://www.carakasamhitaonlinecom/indexphp?title=Adhyaya(chapters)&oldid=36456). Accessed 15 July 2021
- Singhal, H. K., Neetu, A. K., & Rai, M. (2010). Ayurvedic approach for improving reaction time of attention deficit hyperactivity disorder affected children. *Ayu, 31*(3), 338.
- Steer, E. (2019). A cross comparison between Ayurvedic etiology of major depressive disorder and bidirectional effect of gut dysregulation. *Journal of Ayurveda and Integrative Medicine, 10*(1), 59–66.
- Tripathi, J., & Deole, Y. (n.d.). Unmada Nidana Adhyaya (II Nidana Sthana, chapter 7). In G. K. Basisht (Ed.), *Charak Samhita New Ed* (1st ed.). Charak Samhita Research, Training and Skill Development Centre (CSRTSDC). [https://www.carakasamhitaonlinecom/indexphp?title=Adhyaya\(chapters\)&oldid=36456](https://www.carakasamhitaonlinecom/indexphp?title=Adhyaya(chapters)&oldid=36456). Accessed 24 May 2021
- Tubaki, B. R., Chandrashekar, C. R., Sudhakar, D., Prabha, T. N. S., Lavekar, G. S., & Kutty, B. M. (2012). Clinical efficacy of Manasamitra Vataka (an Ayurveda medication) on generalized anxiety

disorder with comorbid generalized social phobia: A randomized controlled study. *The Journal of Alternative and Complementary Medicine*, 18(6), 612–621.

Nihit Kumar, MD Associate Professor and the Program Director of Child and Adolescent Psychiatry Fellowship at the University of Arkansas for Medical Sciences. He is specialized in the assessment and management of children with mental health and co-occurring substance use disorders. He also works with patients with rare genetic syn-

dromes who have comorbid behavioral problems. He is interested in exploring the role of complementary and alternate treatment in the management of mental health disorders.

MariAlison Bowling, MD Assistant Medical Director for Residential Services at the Centers for Youth and Families in Little Rock, Arkansas. She has a special interest in childhood trauma and currently works with a team that provides intensive residential services to *adolescent human trafficking survivors*.



Acupuncture. Its Uses for Mind-Body Problems in Children and Adolescents

36

Caroline Nardi, Toby Belknap, and Nihit Kumar

Introduction

Acupuncture is a popular form of complementary and alternative medicine (CAM) which is incorporated into modern medical practice worldwide (Chon & Lee, 2013). It constitutes an important form of therapy in East Asian medicine (Kaptchuk, 2002) and is also commonly used in Western medicine. In 2007, approximately 3.1 million US adults and 150,000 children received acupuncture in the previous year. Acupuncture has been practiced in China for more than 4000 years (Chon & Lee, 2013). It potentially derived from practices like opening abscesses, tattooing, heat stimulation, and blood-letting. By the first century, BC acupuncture was its own distinct practice (Kaptchuk, 2002). The practice was brought from the western world by Jesuit missionaries in the seventeenth century. In the early 1970s, a New York Times reporter wrote about his experience with acupuncture which

brought the practice to the attention of the American public (Chon & Lee, 2013). Research into acupuncture from the 1970s forward helped meld the pre-scientific theoretical basis with a growing supportive evidence base (Kaptchuk, 2002).

In Chinese medicine, acupuncture is regarded as a preventative and treatment modality for most ailments; however, in the United States, it is most commonly utilized as an adjunctive treatment for conditions involving acute and chronic pain (Chon & Lee, 2013). Philosophically, by evaluating sensory perceptions and responses, much like in our Western physical exam, a Chinese medicine practitioner can come to understand the human condition including health and illnesses. An astute practitioner can recognize different patterns and use this information clinically. For example in Chinese medicine, Yin and Yang are basic “root intuitions”, and complementary opposites which are used to help qualitatively describe and interpret a person’s health (Kaptchuk, 2002). In Chinese medical philosophy, all living beings are believed to have an inner energy flow, or life force, called Qi. Disruptions in the balance of Qi lead to illness and disease (Chon & Lee, 2013). The treatment of disharmony, an imbalance of yin and yang and its connecting Qi, is the core concept behind Chinese medicine (Kaptchuk, 2002). Acupuncture is a practice used to maintain a balance of Qi for the prevention of illness and also is utilized to restore the balanced flow of Qi.

C. Nardi
Division of Child and Adolescent Psychiatry, Medical
University of South Carolina, Charleston, SC, USA

T. Belknap (✉)
University of Arkansas for Medical Sciences,
Little Rock, AR, USA
e-mail: Toby.belknap@arkansaschildren.org

N. Kumar
Psychiatric Research Institute, University of Arkansas
for Medical Sciences, Little Rock, AR, USA
e-mail: Nihit.kumar@arkansaschildren.org

During the practice, thin needles are inserted into the body at specific points and manipulated for therapeutic purposes (Chon & Lee, 2013). Different forms of stimulation at acupuncture points can include: for example the addition of heat (moxibustion), hand pressure (acupressure), and electrical current (electroacupuncture) (Kaptchuk, 2002). In China, Japan, and Korea different and distinct versions of acupuncture have developed, and specialized acupuncture for the hands, scalp, and ear have also been developed (Kaptchuk, 2002). There are multiple modern theories behind the practice as well. Acupuncture is theorized to release endogenous opioids which may mediate analgesia (Chon & Lee, 2013). In electroacupuncture, neuropeptides in the CNS (central nervous system) can be mobilized by electrical stimulation of different frequencies applied at peripheral sites (Han, 2004). Traditional Chinese medicine acupuncture has been found to have a direct effect on the up-regulation of μ -opioid receptor binding availability in the central nervous system, and this leads to increased endorphins in the cerebrospinal fluid of patients. Animal research has found that acupuncture can modulate the neurotransmission of serotonin, norepinephrine, and γ -amino-butyric acid. This evidence suggests that acupuncture can impact mental health and well-being. Acupuncture is also theorized to indirectly affect the autonomic nervous system, also, it is thought to produce changes in circulation and immune function. The common thought behind all of these theories is that acupuncture likely has an effect on the nervous system. In modern practice, acupuncture is generally thought to be safe when administered by a licensed acupuncturist (Chon & Lee, 2013).

Evidence Base for Acupuncture

Research into acupuncture has increased substantially over the past few decades along with acceptance in Western medicine (Chon & Lee, 2013). The strongest evidence for the use of acupuncture is in the treatment of acute dental pain and of nausea and vomiting in patients post-surgery and

post-chemotherapy (Kaptchuk, 2002). The use of acupuncture in youth is informed by the practice studied primarily in adults.

General Mental Health

A prospective observational study at a large US academic medical center was conducted from 1998-2001 (Greeson et al., 2008) to assess health-related quality of life changes associated with an integrative medical treatment in the short term, and to gain a better understanding of patients who sought out integrative medicine. This study included adolescents aged 14 and up, though the majority of participants were adults. 763 patients participated in the study. CAM (complementary and alternative medicine) treatment modalities offered included acupuncture, as well as anthroposophical medicine, homeopathy, and nutritional medicine and counseling. The study did not clarify how many participants received acupuncture. Eight percent of participants suffered from depression or anxiety; other common afflictions were malaise and fatigue, myalgia and myositis, lower back pain, and irritable bowel syndrome. At 3 months follow-up, a significant improvement in all quality-of-life measures assessed (physical functioning, role limitations, bodily pain, general health perception, vitality, social functioning, and mental health) was documented for those receiving integrative medicine. Though this study did not focus on acupuncture in depth, it does suggest that thinking outside of the limits of Western medicine may help improve quality of life. It also must be pointed out there was no control group.

A 2007 study investigated if acupuncture was a viable treatment for women suffering from comorbid depression, anxiety, and substance use disorders (Courbasson et al., 2007). About 300 women, aged 15 and above, in a 21-day treatment program, were enrolled to assess if adjunctive acupuncture compared to treatment as usual could improve outcomes. Auricular acupuncture was delivered by trained acupuncturists 3 days a week for 45-min sessions. Participants completed a series of measures at four points in time during

and after their treatment program (day 1 and day 21 of the program, 1 month after program completion, and 3 months after program completion). The Beck Depression Inventory and Beck Anxiety Inventory were used to assess depression, anxiety, and somatic symptoms. The Reflective Activity Scale was used to determine participants' traits such as introspection, ability to take action, and problem-solving capacity. The Drug-Taking Confidence Questionnaire was used to determine participants' coping self-efficacy. Women who received acupuncture in addition to treatment as usual, reported significant reductions in depression, anxiety, Other indicators were improved problem-solving, coping self-efficacy and confidence in the ability to resist relapse in high-risk situations, compared to women who only received treatment as usual. A significant difference in coping self-efficacy between the groups was maintained at 1 and 3 months follow-up after program completion. This study suggests that acupuncture may be viable as an adjunctive treatment for comorbid depression, anxiety, and substance use disorders in the short term. One should keep in mind the fact that patients may have a placebo effect and that the instruments used are very elementary indicators of the patient's emotional state.

Mood Disorders

Depression

The default mode network in the brain includes areas such as the hippocampus, amygdala, anterior cingulate cortex, and medial prefrontal cortex and is believed to be involved in affective cognition and emotional regulation. Transcutaneous auricular vagus nerve stimulation (tVNS) involves stimulation of the auricular acupuncture point. tVNS could significantly modulate the functional connectivity of the default mode network and is a non-invasive treatment option for individuals with treatment-resistant depression. A 2016 study assessed the use of tVNS in 49 patients ages 16–70 years with mild to moderate major depressive disorder (Fang et al., 2016). These subjects received either

tVNS or sham tVNS treatments over the course of 1 month. Depression symptoms were assessed using the Hamilton Depression Rating Scale (HAM-D) and fMRI was conducted to assess functional connectivity. 35 participants completed 2 fMRI scans, at baseline and at 4 weeks. After the end of treatment, a significant decrease in HAM-D scores was noted in the tVNS group compared to the sham group. This decrease correlated with decreased functional connectivity between the default mode network and the anterior insula and the parahippocampus, as well as increased functional connectivity between the default mode network and the precuneus and the orbital prefrontal cortex.

Another blinded placebo-controlled trial evaluated transcutaneous auricular vagus nerve stimulation (tVNS) as a potential treatment modality for depression (Rong et al., 2016). The study included 2 cohorts of participants with mild to moderate depression ages 18–70. The first cohort of 91 participants received tVNS for 12 weeks, while the second cohort of 69 participants received 4 weeks of sham tVNS followed by 8 weeks of actual tVNS. The Hamilton Depression Rating Scale (HAM-D) was used to assess treatment effects at weeks 0, 4, 8, and 12. A time lag analysis was used to compare the two cohorts at different points in the study. Participants who received 4 weeks of treatment with tVNS demonstrated greater improvement in depression symptoms on the HAM-D compared to those who received 4 weeks of sham tVNS. Also, clinical improvements in depression symptoms were noted through week 12 of treatment.

A 2004 case series of 68 subjects, ages 14–28, suffering from melancholia (severe depression) in Germany discussed the benefits of acupuncture as a treatment (Zhang et al., 2004). All subjects received acupuncture every other day for 10–20 days. Acupuncture was determined to be 95.59% effective at reducing or resolving melancholic symptoms. 40 subjects had a resolution of symptoms, 25 subjects had a marked reduction in symptoms, and only 3 subjects had no change in symptoms.

Multiple randomized controlled trials assessing acupuncture versus sham treatment in adults

with depression have been conducted that suggest potential benefits for acupuncture as a treatment modality for depression (Potter et al., 2009).

Insomnia and Depression

Acupuncture has been proposed as a potential treatment for insomnia in depression, as insomnia is one of the most common symptoms of depression. In this study, 105 participants between the ages of 16 and 50 were randomized to participate and 89 participants completed the study (Wen et al., 2018). Participants received either standard acupuncture treatment or augmented acupuncture treatment for 12 sessions over the course of 6 consecutive weeks. Outcomes were assessed using the HAM-D and the Pittsburgh Sleep Quality Index at baseline, week 3, end of treatment, and at 4 weeks post-treatment. Compared to the standard acupuncture protocol, the augmented protocol was determined to be more effective in treating depression and improving sleep quality in depressed patients.

Depression in Pregnancy

A 2017 meta-analysis examined acupuncture as one of the potential treatment options for mental disorders during pregnancy (van Ravesteyn et al., 2017). In this analysis, acupuncture was determined to show a medium-sized reduction in depressive symptoms. Two adult studies were identified that examined acupuncture use in pregnancy. In the first study, there was no significant difference between those receiving a depression-specific acupuncture versus non-specific acupuncture and massage. The second larger study involving 150 participants found that those who received depression-specific acupuncture had a statistically greater reduction in depression scores on the HAM-D as compared to control acupuncture or massage or control acupuncture alone.

Bipolar Disorder

A review article explored alternative treatments for pediatric bipolar disorder (Potter et al., 2009); however, no studies evaluating the use of acupuncture as a primary treatment modality for pediatric depression or bipolar disorder were found by us. One adult study assessed the use of traditional Chinese medicine acupuncture as an adjunct to medication, compared to control acupuncture in 26 patients with treatment-refractory bipolar depression. Both the traditional acupuncture and control acupuncture groups showed improvement in outcome measures, but there was no statistical difference between the two groups.

Self-Injurious Behaviors

Non-suicidal self-injurious behaviors frequently occur in adolescents with depression, as well as with multiple emotional difficulties. A 2003 open-label pilot study sought to assess if auricular acupuncture could be a viable treatment option for repetitive self-injury in this population (Nixon et al., 2003). Nine adolescents with depression or dysthymia and repetitive urges to self-harm, and who were enrolled in inpatient or partial hospitalization programs, were included in this study. Each participant received 3 acupuncture treatments over the course of 3 weeks. Between treatments, metallic press balls were applied to the acupuncture sites which could be pressed when the participants felt urges to self-harm. Of the 9 participants, 7 completed the 4-weeks post-treatment follow-up. While there was no significant decrease in urges to self-injure, there was a significant decrease in acts of self-harm over time. There was also a significant decrease in mean internalizing anger scores at the 4-week post-treatment assessment. No adverse effects were noted and the study suggested that auricular acupuncture was accepted and well tolerated by depressed adolescents with self-injurious behaviors.

Eating Disorders

Acupuncture has been investigated as a potential treatment adjunct for the treatment of eating disorders.

A randomized cross-over pilot study was published in 2010 examining acupuncture as an adjunctive treatment for females aged 17 and above with eating disorders (Fogarty et al., 2010). A total of 9 women (mean age of 23.7 years) with anorexia nervosa or bulimia nervosa were enrolled and randomized into either treatment as usual (TAU) or an adjunctive acupuncture group, and then crossed over to the other treatment arm of the study. Acupuncture was delivered for 10 sessions over 13 weeks. Regarding eating disorder symptoms, there was a statistically significant improvement in perfectionism in the acupuncture + TAU group compared to the TAU group. Significant improvements in secondary outcomes such as state and trait anxiety and psychological and physical-cognitive aspects of quality of life were also found on the Eating Disorders Quality of Life Scale. This study suggested that acupuncture could be a useful adjunctive treatment strategy for patients with eating disorders at decreasing anxiety and improving quality of life.

A 2013 randomized pilot study assessed patient perspectives in individuals with anorexia nervosa who received acupuncture versus acupressure and light massage control as part of their treatment regimen (Fogarty et al., 2013). 26 patients with anorexia from an inpatient treatment program were enrolled and received either acupuncture or acupressure treatment over the course of 6 weeks in addition to treatment as usual. Patients were at least 15 years of age and medically stable. Patient questionnaires were used to investigate the subjects' experiences during their treatment, regarding aspects such as empathy and the therapeutic relationship. The development of a therapeutic relationship is a key aspect of acupuncture in clinical practice. Study participants perceived the therapeutic relationship and empathy as important aspects of both acupuncture and acupressure intervention as an adjunct therapy for the treatment of anorexia ner-

vosa. Other important aspects of the therapeutic relationship that were reported in the study included positive regard and acceptance, a non-judgmental attitude, and trust.

Obsessive Compulsive Disorder

A 2016 randomized controlled trial assessed transcutaneous electrical acupoint stimulation (TEAS) as a potential adjunct treatment option for obsessive compulsive disorder (OCD) (Feng et al., 2016). TEAS was developed as an alternative to needle penetration. In this study, 360 patients with OCD were randomized into 3 treatment arms study of the over 12 weeks. The first group participated in TEAS with Cognitive Behavioral Therapy (CBT) and clomipramine. The second group received TEAS with CBT and placebo. The third group received sham TEAS with CBT and clomipramine. Serotonin reuptake inhibitors and CBT are considered first-line treatments for OCD. In the study, both groups who received TEAS had a higher rate of clinical response and remission than the group that received sham TEAS. No severe adverse events occurred in the study, and the authors concluded that TEAS augments the efficacy of CBT.

A randomized controlled trial assessing the effect of point-stimulation and clomipramine on obsessions was published in 2007 (Feng et al., 2007). In the study, 60 participants were randomized to receive either clomipramine alone or clomipramine with point stimulation. The study included adolescents and adults, ages 16 and above. All participants had a total score of 16 or above on the Yale-Brown Obsessive Compulsive Scale (CY-BOCS). The clomipramine dose ranged from 125-200 mg daily. Point stimulation was delivered daily for 30 min over the course of 8 weeks. Treatment effectiveness, defined in the study as a reduction in CY-BOCS score of at least 50%, was 83.3% in the control group, while treatment effectiveness in the group who received point stimulation was 93.3%, demonstrating a statistically significant increase in treatment efficacy. Notably, the point stimulation group had significantly lower instances of side effects as

compared to the medication alone group (47% versus 73% respectively). The study concluded that point stimulation as an adjunct to medication was superior to the medication alone and resulted in less side effects; thus, it was determined to be a safe augmentation strategy.

Anxiety Disorders

A randomized controlled trial assessing the anxiolytic effects of acupuncture was published in 2016 (Shayestehfar et al., 2016). Study participants were 45 male athletes between the ages of 16 and 18 who were randomized to receive acupuncture, sham treatment, or a waitlist control group. Subjects' anxiety prior to athletic competition was measured by an anxiety questionnaire, heart rate, and skin conductance (two physiological markers for anxiety) 5 h before the competition. Study interventions were delivered 4 h prior to the competition. Anxiety assessments were again completed 30 min after study interventions were applied. A significantly greater decrease in skin conductance and heart rate was noted in the acupuncture group as compared to the sham or control groups. There were no significant differences in changes in heart rate or skin conductance between the sham and control groups. The acupuncture group also had a significantly greater decrease in cognitive and somatic anxiety compared to sham and control groups as measured on the Competitive State Anxiety Inventory- 2 Questionnaire. The study concluded that acupuncture was an effective intervention for decreasing the cognitive and physiological symptoms of performance anxiety prior to athletic competition.

In 2008, the efficacy of acupressure as an adjunctive treatment of preprocedural anxiety for youth undergoing anesthesia was investigated (S. M. Wang et al., 2008). 52 children between ages 8 and 17 who were scheduled to undergo gastrointestinal endoscopic procedures were enrolled in the study. They were randomized to receive acupressure at the Extra-1 acupoint or sham acupressure prior to their procedure. The study intervention was performed the day of their

endoscopic procedure. Baseline anxiety was assessed using the State Trait Anxiety Inventory for Children prior to the study intervention. Thirty minutes following the intervention, the anxiety assessment was again completed. No preprocedural sedative medications were administered before the second anxiety assessment to avoid confounding variables. Then during the endoscopic procedure, propofol requirement was measured to explore if acupressure would also have hypnotic effects. At baseline, anxiety between the acupressure and sham groups did not differ. Thirty minutes following acupressure intervention, the group who received acupressure had a reduction in anxiety, while the group who received sham treatment had an increase in anxiety. The propofol requirement between the two groups was not statistically different. The study concluded that pre-procedural acupressure reduced anxiety in children prior to general anesthesia for endoscopic procedures.

Autism Spectrum Disorder

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by the core features of impaired social communication and interaction, restricted and repetitive patterns of behavior or interests, and cognitive rigidity. These features are also frequently accompanied by sensory issues. The DSM-5 diagnostic criteria for ASD center on these core features and the severity of the disorder is based on the level of impairment for the child and how much assistance is therefore needed.

There are currently no medications that are either FDA-approved (food and drug administration) or that have been found to be consistently beneficial for the core features of ASD. The most evidence-based and first-line treatments for children with ASD continue to be developmental, sensory, behavioral, and educational interventions versus pharmacological treatment. Medications may be helpful in treating comorbid conditions such as mood disorders or ADHD (attention deficit hyperactivity disorder), though current research has demonstrated that

medications for these conditions often prove less effective for children with ASD than for neurotypical children. There is an overall paucity of evidence supporting the use of medications to target behavioral challenges in this patient population. Risperidone and aripiprazole are FDA-approved to treat ASD-associated irritability in children, though clinical effects may be modest and side-effect profiles may limit their use for some patients. Other medications have either failed to separate significantly from placebo, have shown mixed/insufficient evidence, or have data limited to case reports in the literature. This can make children with ASD and severe behavioral disturbances a challenging population to treat. This also highlights why continued research is needed and why there is particular interest in CAM therapies for this patient population.

In addition to the inherent challenges in studying acupuncture as an intervention as described in the limitations section below, studying ASD can be extremely problematic in its own right as children with ASD make up a patient population that is incredibly varied in the severity of impairment and symptoms. While all patients with ASD share the core characteristics previously mentioned, any accompanying impairment from intellectual, speech/language deficits, or behavioral difficulties can be extremely variable among patients. Further, the tools used to evaluate the features and symptoms associated with ASD are numerous and varied. For the studies reviewed here, over twenty different outcome measures were used and ranged from objective clinician-administered scales to parent-report questionnaires to laboratory or EEG results. See the Table of Clinical Assessments for a comprehensive list of measures and their subheadings that were used for the studies reviewed, although only relevant ones are mentioned in the subsequent text.

As mentioned previously, the vast majority of studies investigating the use of acupuncture in child/adolescent mental health have been conducted in Eastern countries, and only published research with an available English translation was utilized in writing this chapter. Consequently, the bulk of data presented here concerning the use of acupuncture for ASD comes from four sys-

tematic reviews, including one Cochrane Database Review, published between 2011 and 2019.

Reviews/Meta-analyses

A Systematic Review published in 2012 included eleven randomized clinical trials (RCTs) which utilized any form of needle acupuncture (with or without electrical stimulation) (Lee et al., 2012b). The control group in these trials used sham acupuncture (2 trials) (which generally involves needles that are placed near but not at the actual acupuncture sites but may also be used to describe shallow-penetrating or non-penetrating acupuncture), sensory integration training (1 trial), language therapy (1 trial), behavioral and developmental therapies (3 trials), or no treatment/waitlist controls (4 trials). The eleven studies comprised a total of 498 participants (with studies ranging from N = 20 to N = 80) aged 2–14 years old. Overall, the results appear mixed with some studies suggesting statistically significant improvement in subscales of the measures used (e.g. self-care). The authors concluded that the results of this review provide limited evidence for acupuncture improving functional independence for children with ASD.

A Cochrane Review of acupuncture for ASD was published in 2011 (Cheuk et al., 2011) and included ten RCTs, conducted in China or Egypt, with a total of 390 participants aged 3–18 years old. Control groups were either subject to sham acupuncture or conventional treatment for ASD. Many of the results from the treatment groups failed to differ significantly from those of the control groups. Some results were suggestive of possible benefits for certain developmental and functional outcomes, but overall the results showed that acupuncture does not appear to be an effective treatment for the core features of ASD. The authors concluded that current evidence does not support the use of acupuncture for the treatment of ASD.

A more recent review and meta-analysis were published in 2018 where 27 studies were included in the review and 17 were included in the meta-analysis (Lee et al., 2018). These studies totaled 1736 participants, all under 18 years old. Of the

studies that used conventional treatment as their control groups, there were statistically significant improvements in total scores on the Childhood Autism Rating Scale (CARS) and Autism Behavior Checklist (ABC). For the two studies that used sham acupuncture as a control, there were no significant differences in the overall Ritvo-Freeman Real Life Scale (RFRLS) score between the treatment and control groups. The authors concluded that the results from this review indicate that acupuncture may improve the overall symptoms of ASD.

Finally, Liu et al. published a systematic review and meta-analysis of scalp acupuncture for ASD in 2019 (Liu et al., 2019). This review consists of fourteen RCTs, eleven of which were included in the meta-analysis. Collectively there were 968 participants under the age of 18 years. Of the eight RCTs that used the CARS as a primary outcome measure, six showed a statistically significant improvement in the total CARS score. There was greater heterogeneity in results for participants older than 3 years old. Of the five studies that utilized the ABC2 as a primary outcome measure, four reported statistically significant improvement in total score with the use of scalp acupuncture. Three studies used the Psycho-educational Profile – 3 (PEP-3) as a primary outcome measure out of which two showed statistically significant improvement for all three domains of the PEP-3, while one study showed significant improvement in communication only. The authors concluded that scalp acupuncture may be an effective treatment for children with ASD, and perhaps better tolerated by younger children than other forms of acupuncture as scalp acupuncture does not restrict limb movement.

The CARS and the ABC2 were among the more commonly used measures to evaluate overall improvement in children with ASD (Lee et al., 2018; Liu et al., 2019). Of the studies that reported total CARS scores, eleven showed significant improvement while three reported results that failed to differ significantly from control groups. Similarly, there were seven studies that showed significant improvement in ABC2 total scores while one study did not. Another measure

used to evaluate the overall effectiveness of an intervention for ASD, though used less frequently in these studies than either the CARS or ABC, is the Autism Treatment Evaluation Checklist (ATEC). The results from this measure are also less promising as only one of four studies reported statistically significant improvement in ATEC total score with acupuncture treatment (Cheuk et al., 2011; Lee et al., 2018).

Symptom Categories (Based on Scales)

Apart from the total scores, many of the outcome measures used in the studies reported subscale scores for symptom categories that are frequently of interest when treating a child with ASD (e.g., language and social interaction). Although not all subscale scores were separately and explicitly reported, an attempt was made to summarize the available findings in the section below.

Four studies in the social skills/interaction category reported significant improvement while 15 studies had negative results. Similarly, nine studies reported improvement in some components of speech/language ability while 20 studies reported negative results in this symptom category. For stereotypy and irritability/behavior, each symptom category had at least one measure that showed positive results while each had at least three measures that failed to show significant improvement. Concerning self-care ability, five measures showed improvement and at least four failed to reach statistical significance.

Regarding the variability of studies included in these reviews, there were no studies that were included in all four reviews, only four studies were included in three of the four, nine studies were included in two reviews, while 29 studies were included in only one review. Further, the authors of all four reviews commented on the limited number of studies, small sample sizes, risk for bias, and poor/varied methodologies used in the studies reviewed that limit the ability to draw any firm conclusions about the effectiveness of acupuncture for the treatment of ASD.

Attention-Deficit/Hyperactivity Disorder

Complementary and alternative medicine therapies have also been used in the treatment of attention-deficit/hyperactivity disorder (ADHD), including acupuncture (Xu et al., 2007). Included here are two systematic reviews of available studies evaluating the treatment of ADHD with acupuncture.

The first is a Cochrane Collaboration Review published in 2011 (Li et al., 2011) which included randomized or quasi-randomized control trials comparing acupuncture with either placebo, sham acupuncture, or conventional treatment for children age 18 and under with a diagnosis of ADHD. Fourteen studies were identified but all were excluded due to various reasons (e.g. poor study design, inappropriate randomization, presence of other confounding CAM treatments, etc.). The authors concluded that the evidence base to support the use of acupuncture as a treatment for ADHD in children and adolescents is extremely limited.

The second review, also published in 2011, had similar difficulties recruiting good quality studies (Lee et al., 2011). Of 114 articles initially identified, only three RCTs met inclusion criteria. One RCT, published in 2010 by Li et al., used sham acupuncture combined with conventional treatment as a control group, while the other two studies compared acupuncture with medication treatments (haloperidol and methylphenidate). Li et al. reported significant improvement in ADHD symptoms with acupuncture treatment (Li et al., 2010). Their study included 180 participants ages four to six, and the risk of bias was considered to be generally low or uncertain. The other two studies had smaller sample sizes with 60–68 participants (age range of 5–16 years old) and the overall bias risk was assessed to be high (Liu, 2007). No significant difference was found between acupuncture and the use of haloperidol in the reduction of ADHD symptoms while the study that compared auricular acupuncture to methylphenidate reported significant improvement with acupuncture treatment. The authors concluded that their review provided some evi-

dence for the effectiveness of acupuncture in the treatment of ADHD, although firm conclusions could not be drawn due to limited data and the risk of bias.

Post-traumatic Stress Disorder

Limited studies are available regarding the use of acupuncture in treating adults with post-traumatic stress disorder (PTSD), and are largely restricted to survivors of the Wenchuan earthquake in May 2008 in the Sichuan province of China. No published studies specific to children and adolescents were available.

A randomized controlled study examined treatment outcomes comparing acupoint stimulation with CBT (cognitive behavioral therapy) versus CBT alone (Zhang et al., 2011). Outcome measures used were the Chinese version of the Incident Effect Scale Revised (IES-R; yields a total score and subscores for intrusion, evasion, and high alert, all symptoms of emotional trauma) and a patient questionnaire. This study included 91 participants aged 4–89 years. Although post-treatment scores significantly improved in both groups, the improvement was larger in the treatment group suggesting that the combination of acupoint stimulation and CBT may be more efficacious than CBT alone in treating trauma symptoms. Of note, the intervention was carried out only a week after the Wenchuan earthquake, thus the authors acknowledged that the patient sample likely better represented a population with acute stress disorder versus PTSD.

Another RCT compared electro-acupuncture to a paroxetine treatment group (Wang et al., 2012) again among survivors of the Wenchuan earthquake with PTSD. A total of 138 patients (mean age of 50 years) were randomized to receive either scalp electro-acupuncture or 20 mg of paroxetine nightly for 12 weeks. Outcome measures included the Clinical-Administered PTSD Scale (CAPS), the Hamilton Depression Scale (HAMD), and the Hamilton Anxiety Scale (HAMA), and participants were evaluated at 6 weeks, at the treatment's endpoint, and at 3 and 6 months post-treatment follow-up. Both the

acupuncture and paroxetine groups showed significant improvement post-treatment on all three scores. A subsequent analysis showed a statistically significant difference that favored the acupuncture group. Paroxetine is no longer recommended for use in children in the US due to the side effect profile.

A systematic review evaluated the effectiveness of acupuncture on a collection of symptoms that comprised a “trauma spectrum response” (Lee et al., 2012a). The authors concluded that acupuncture appeared to be a promising treatment option (results were generally mixed with some reports of positive outcomes) for symptoms such as anxiety, depression, and sleep disturbance. However, the authors noted that no reviews on PTSD met their inclusion criteria and therefore were unable to comment on the effectiveness of acupuncture for PTSD.

Limitations of Acupuncture Studies

Research involving acupuncture poses multiple inherent challenges, not least of which is the inability to implement proper blinding. Even when employing sham acupuncture techniques as a control, it is not possible for the practitioner to be blinded. Further, there are multiple variables to consider with acupuncture treatment including which acupoints to use, the number and length of sessions, needle retention times, and needle insertion depth. As acupuncture treatment is often tailored to individual patients, it can be difficult to standardize treatments and likely gives rise to biases (Edwards et al., 2013). This creates significant challenges when attempting to compare results across studies and draw conclusions about the treatment’s efficacy. Also, additional components of traditional Chinese medicine are frequently used concurrently with acupuncture and are often not controlled for.

Another limitation of the studies reviewed in this chapter is the fact that the overwhelming majority were conducted in an Eastern country, particularly China, which may limit the generalizability of the findings to Western populations. Specifically, there may be considerable cultural

differences regarding the acceptance of acupuncture as a potential treatment. For example, studies evaluating the effects of acupuncture conducted in the United States have faced challenges in recruiting participants, which illustrates the lack of acceptance of acupuncture as a mainstream treatment option (Warren et al., 2017).

Risks of Treatment/Side Effects

Another significant limitation is that adverse events or side effects from acupuncture interventions were not consistently reported among the studies reviewed. Those that did report adverse events reported that they tended to be mild such as crying, minor superficial bleeding, and at least one case of sleep disturbance. However, serious adverse events associated with acupuncture have been reported and may include infection and tissue damage (eg: pneumothorax with some reported fatalities) (Ernst, 2010).

Conclusions

The literature reviewed above suggests that acupuncture may have potential benefits for children and adolescents suffering from various mental health conditions. Multiple studies (including RCTs) and case reports have shown improvement in depressive symptoms with the use of acupuncture. Likewise, there may be benefits to pretreating individuals with acupuncture to relieve symptoms of performance or pre-procedural anxiety. It is worth noting that many of the positive results were from studies using acupuncture as an adjunct rather than a stand-alone treatment. For example, studies looking at eating disorders, OCD, and PTSD suggest that acupuncture may be an effective adjunctive treatment when added to cognitive behavioral therapy or medication. Conversely, acupuncture’s ability to alleviate symptom burden for those with neurodevelopmental disorders such as ADHD or ASD is less promising.

Overall, given the centuries-long history of acupuncture as a mainstream form of medical

treatment in some cultures, the relatively mild side effects, and its promising efficacy as an adjunctive treatment in clinical trials, acupuncture holds an important place in the holistic treatment of mental health disorders in children, adolescents, and adults. It should strongly be considered when talking to youth and their families as a complement to traditional psychotherapy or psychopharmacology in managing their mental health issues. Acupuncture may be especially useful for patients with less severe symptoms, those who are hesitant about pharmacotherapy, or those who wish to explore more holistic options. When administered by a certified and knowledgeable practitioner, acupuncture is generally considered to be low risk for significant adverse events. It can be easily incorporated into a patient's existing treatment plan and may possibly be conducive to helping them practice and master certain skills learned in other evidence-based therapies (e.g. mindfulness). Clinicians should familiarize themselves with the effectiveness of acupuncture for the treatment of a wide variety of conditions so they can advocate for the holistic well-being of their patients. Any misconceptions or myths about the use of needles or other aspects of treatment with acupuncture should be addressed and it would be prudent to consider the patient's tolerance to and acceptability of this treatment modality before making a recommendation.

In summary, acupuncture may be a useful adjunct when treating children and adolescents with mental health or pain disorders.

Resources

For patients and families interested in learning more about acupuncture, the National Institute of Health's National Center for Complementary and Integrative Health may be a good place to start [<https://www.nccih.nih.gov/health/acupuncture-in-depth>]. As with other practitioners, it is suggested that patients check an acupuncturist's credentials before undergoing treatment. Although requirements differ from state to state, most do require acupuncturists to become cre-

denialed or pass exams. The National Certification Commission for Acupuncture and Oriental Medicine (NCCAOM) "is the only national organization that validates entry-level competency in the practice of acupuncture and Oriental medicine (AOM) through professional certification" [<https://www.nccaom.org/about-us/>]. As of February 2021, all but three states (SD, OK, AL) have an acupuncture practice act that regulates the requirements for practicing acupuncturists. California has its own licensing regulations, and the other 46 states, as well as Washington D.C., require either NCCAOM certification or the passing of NCCAOM examinations. When assessing a practitioner's training, it is helpful to check that they were trained in an accredited institution or program. The Accreditation Commission for Acupuncture and Herbal Medicine (ACAAM – formerly ACAOM or Accreditation Commission for Acupuncture and Oriental Medicine) is an accrediting body for acupuncture educational institutions and training programs that are recognized by the U.S. Department of Education [<https://acaom.org/about-us/>]. The availability of acupuncture is also highly variable within the United States. For example, the number of NCCAOM-certified acupuncturists in Alabama as of February 2021 was 8, while in California there were 3282 [<https://www.nccaom.org/advocacy-regulatory/state-relations/>]. Patients and families may wish to use the "Find a Practitioner" tool on the NCCAOM website to help find acupuncturists in their area.

Acknowledgments We would like to thank Dianna Esmaeilpour, MD for assisting with the conceptualization of this chapter as well as for performing the literature review.

Table of Clinical Assessments

Name	Subscales/What is measured
ABC ¹ – (Abberant Behavior Checklist)	<ul style="list-style-type: none"> • Irritability • Lethargy • Stereotypy • Hyperactivity • Inappropriate speech

Name	Subscales/What is measured
ABC ² – (Autism Behavior Checklist)	<ul style="list-style-type: none"> • Sensory • Relating • Body and object use • Language • Social and self-help
ALT – (Arabic Language Test)	<ul style="list-style-type: none"> • Language test
ATEC – (Autism Treatment Evaluation Checklist)	<ul style="list-style-type: none"> • Speech/Language Communication • Sociability • Sensory/cognitive Awareness • Health/Physical/Behavior
CARS – Childhood Autism Rating Scale	<ul style="list-style-type: none"> • None
CGI-I – (Clinical Global Impression-Improvement scale)	<ul style="list-style-type: none"> • None
C-PEP – (Revised Chinese version of Psycho-educational Profile)	<ul style="list-style-type: none"> • Assesses multiple functional areas such as fine-motor and verbal skills
Leiter-R – (Leiter International Performance Scale-Revised – non-verbal intelligence)	<ul style="list-style-type: none"> • Visualization & Reasoning (VR) battery (Full IQ) • Attention & Memory (AM) battery (Composite score) • VR battery (Growth composite score) • AM battery (Growth composite score)
PEDI – (Pediatric Evaluation of Disability Inventory – functional ability)	<ul style="list-style-type: none"> • Self-care • Mobility • Social function • Self-care caregiver assistant • Mobility caregiver assistant • Social caregiver assistant
PEP-3 – (Psycho-educational Profile)	<ul style="list-style-type: none"> • Communication <ul style="list-style-type: none"> ◦ Cognitive verbal/preverbal ◦ Expressive language ◦ Receptive language • Motor <ul style="list-style-type: none"> ◦ Fine motor ◦ Gross motor ◦ Visual-motor imitation • Maladaptive behavior <ul style="list-style-type: none"> ◦ Affective expression ◦ Social reciprocity ◦ Characteristic motor behaviors ◦ Characteristic verbal behaviors
PPVT – (Peabody Picture Vocabulary Test)	<ul style="list-style-type: none"> • Tests receptive language vocabulary

Name	Subscales/What is measured
RDLS – (Reynell Developmental Language Scale)	<ul style="list-style-type: none"> • Comprehension age • Expression age
RFRLS – (Ritvo-Freeman Real Life Scale)	<ul style="list-style-type: none"> • Sensory-motor • Social • Affectual • Sensory response • Language
SPT – (Symbolic Play Test)	<ul style="list-style-type: none"> • Evaluates early skills needed for language development through play
WeeFIM (Pediatric version of the Functional Independence Measure or FIM)	<ul style="list-style-type: none"> • Self-care • Mobility • Cognition <ul style="list-style-type: none"> ◦ Comprehension ◦ Expression ◦ Social interaction ◦ Problem solving ◦ Memory

References

Cheuk, D. K., Wong, V., & Chen, W. X. (2011). Acupuncture for autism spectrum disorders (ASD). *Cochrane Database of Systematic Reviews*, 9, CD007849.

Chon, T. Y., & Lee, M. C. (2013). Acupuncture. *Mayo Clinic Proceedings*, 88(10), 1141–1146.

Courbasson, C. M., et al. (2007). Acupuncture treatment for women with concurrent substance use and anxiety/depression: An effective alternative therapy? *Family & Community Health*, 30(2), 112–120.

Edwards, E., et al. (2013). Building an evidence base in complementary and integrative healthcare for child and adolescent psychiatry. *Child and Adolescent Psychiatric Clinics of North America*, 22(3), 509–529.

Ernst, E. (2010). Acupuncture—a treatment to die for?. *Journal of the Royal Society of Medicine*, 103(10), 384–385.

Fang, J., et al. (2016). Transcutaneous Vagus nerve stimulation modulates default mode network in major depressive disorder. *Biological Psychiatry*, 79(4), 266–273.

Feng, B., et al. (2007). Thirty cases of obsession treated by point-stimulation and with small dose of chlorimipramine. *Journal of Traditional Chinese Medicine*, 27(1), 3–6.

Feng, B., et al. (2016). Transcutaneous electrical acupoint stimulation as an adjunct therapy for obsessive-compulsive disorder: A randomized controlled study. *Journal of Psychiatric Research*, 80, 30–37.

Fogarty, S., et al. (2010). Acupuncture as an adjunct therapy in the treatment of eating disorders: A randomised

- cross-over pilot study. *Complementary Therapies in Medicine*, 18(6), 233–240.
- Fogarty, S., et al. (2013). Patients with anorexia nervosa receiving acupuncture or acupressure; their view of the therapeutic encounter. *Complementary Therapies in Medicine*, 21(6), 675–681.
- Greeson, J. M., et al. (2008). Integrative medicine research at an academic medical center: Patient characteristics and health-related quality-of-life outcomes. *Journal of Alternative and Complementary Medicine*, 14(6), 763–767.
- Han, J. S. (2004). Acupuncture and endorphins. *Neuroscience Letters*, 361(1-3), 258–261.
- Kaptchuk, T. J. (2002). Acupuncture: Theory, efficacy, and practice. *Annals of Internal Medicine*, 136(5), 374–383.
- Lee, M. S., et al. (2011). Acupuncture for treating attention deficit hyperactivity disorder: A systematic review and meta-analysis. *Chinese Journal of Integrative Medicine*, 17(4), 257–260.
- Lee, C., et al. (2012a). The effectiveness of acupuncture research across components of the trauma spectrum response (tsr): A systematic review of reviews. *Systematic Reviews*, 1, 46.
- Lee, M. S., et al. (2012b). Acupuncture for children with autism spectrum disorders: A systematic review of randomized clinical trials. *Journal of Autism and Developmental Disorders*, 42(8), 1671–1683.
- Lee, B., et al. (2018). The efficacy and safety of acupuncture for the treatment of children with autism Spectrum disorder: A systematic review and meta-analysis. *Evidence-Based Complementary and Alternative Medicine*, 2018, 1057539.
- Li, S., et al. (2010). Randomized-controlled study of treating attention deficit hyperactivity disorder of preschool children with combined electro-acupuncture and behavior therapy. *Complementary Therapies in Medicine*, 18(5), 175–183.
- Li, S., et al. (2011). Acupuncture for attention deficit hyperactivity disorder (ADHD) in children and adolescents. *Cochrane Database Systematic Reviews*, 4, 2.
- Liu, M. (2007). Clinical observation of auricular pressing therapy for 40 patients with attention deficit hyperactivity disorder. *Zhejiang Journal of Traditional Chinese Medicine*, 42, 533.
- Liu, C., et al. (2019). Scalp acupuncture treatment for children's autism spectrum disorders: A systematic review and meta-analysis. *Medicine (Baltimore)*, 98(13), e14880.
- Nixon, M. K., Cheng, M., & Cloutier, P. (2003). An open trial of auricular acupuncture for the treatment of repetitive self-injury in depressed adolescents. *The Canadian Child And Adolescent Psychiatry Review*, 12(1), 10–12.
- Potter, M., Moses, A., & Wozniak, J. (2009). Alternative treatments in pediatric bipolar disorder. *Child and Adolescent Psychiatric Clinics of North America*, 18(2), 483–514, xi.
- Rong, P., et al. (2016). Effect of transcutaneous auricular vagus nerve stimulation on major depressive disorder: A nonrandomized controlled pilot study. *Journal of Affective Disorders*, 195, 172–179.
- Shayestehfar, M., et al. (2016). Acupuncture anxiolytic effects on physiological and psychological assessments for a clinical trial. *Scientifica (Cairo)*, 2016, 4016952.
- van Ravesteyn, L. M., et al. (2017). Interventions to treat mental disorders during pregnancy: A systematic review and multiple treatment meta-analysis. *PLoS One*, 12(3), e0173397.
- Wang, S. M., et al. (2008). Extra-1 acupressure for children undergoing anesthesia. *Anesthesia & Analgesia*, 107(3), 811–816.
- Wang, Y., et al. (2012). Clinical studies on treatment of earthquake-caused posttraumatic stress disorder using electroacupuncture. *Evidence-Based Complementary and Alternative Medicine*, 2012, 431279.
- Warren, L. R., Rao, P. A., & Paton, D. C. (2017). A pilot observational study of an acupressure/acupuncture intervention in children with autism Spectrum disorder. *Journal of Alternative and Complementary Medicine*, 23(11), 844–851.
- Wen, X., et al. (2018). Randomized single-blind multicenter trial comparing the effects of standard and augmented acupuncture protocols on sleep quality and depressive symptoms in patients with depression. *Psychology, Health & Medicine*, 23(4), 375–390.
- Xu, X. B., Liu, H. J., & Peng, J. H. (2007). Comparative observation on acupuncture and western medicine for treatment of minimal brain dysfunction. *Zhongguo Zhen Jiu*, 27(12), 904–906.
- Zhang, C., Li, J., & Wang, S. (2004). Treatment of melancholia in Germany by acupuncture method for resuscitation. *Journal of Traditional Chinese Medicine*, 24(1), 22–23.
- Zhang, Y., et al. (2011). Clinical study on treatment of the earthquake-caused post-traumatic stress disorder by cognitive-behavior therapy and acupoint stimulation. *Journal of Traditional Chinese Medicine*, 31(1), 60–63.

Caroline Nardi, MD Assistant Professor with the Medical University of South Carolina's Division of Child and Adolescent Psychiatry. Medical and psychiatric training at the University of Arkansas for Medical Sciences. She works with youth with comorbid neurodevelopmental disorders, attention deficit hyperactivity disorder, and autism spectrum. She also has a special interest in yoga and completed a 200-hour yoga teacher training program.

Toby Belknap, MD Assistant Professor of Psychiatry at the University of Arkansas for Medical Sciences and

Co-medical Director of the Psychiatric Research Institute's Child Diagnostic Center within the Division of Child/Adolescent Psychiatry. Psychiatrist in the Child Psychiatry consult-liaison service at Arkansas Children's Hospital. His interests include educational research and curriculum development.

Nihit Kumar, MD Associate Professor and the Program Director of Child and Adolescent Psychiatry Fellowship

at the University of Arkansas for Medical Sciences. He is specialized in the assessment and management of children with mental health and co-occurring substance use disorders. He also works with patients with rare genetic syndromes who have comorbid behavioral problems. He is interested in exploring the role of complementary and alternate treatment in the management of mental health disorders.



Biofeedback and its Uses in Mind Body Problems in Children and Adolescents

37

Aproteem Choudhury, Christina Clare,
Snigdha Srivastava, Samuel Tullman,
Lance Westendarp, Sana Younus, and Kirti Saxena

Introduction

As stated by the Association for Applied Psychology and Biofeedback, the formal definition of biofeedback (BF) is as follows:

Biofeedback is a process that enables an individual to learn how to change physiological activity for the purposes of improving health and performance. Precise instruments measure physiological activity such as brainwaves, heart function, breathing, muscle activity, and skin temperature. These instruments rapidly and accurately "feed back" information to the user. The presentation of this information – often in conjunction with changes in thinking, emotions, and behavior – supports desired physiological changes. Over time, these changes can endure without continued use of an instrument (About biofeedback, 2022).

BF offers a diverse toolkit that includes hardware (sensors that monitor physiological activity) and software that can be used to analyze the obtained data while also helping patients to gain a visual representation of physiologic stress responses that might otherwise go unrecognized. While any measurable physiological process in the body could technically be used for BF training, the primary functions measured are respira-

tion, heart rate variability (HRV), muscle tension, temperature and galvanic skin response.

In the context of the pediatric population, BF provides a valuable opportunity for children and adolescents to develop a set of self-regulatory tools that can serve them with a particular condition, and throughout their lives. When applied effectively, the skills developed in BF can open a doorway into deeper understanding of the physical body and how it relates to the mental faculties. Definitive research on the efficacy of BF in pediatric populations is limited and has been focused on conditions including pediatric headache, asthma, ADHD, GI and urological disorders (Moss, 2014).

Heart Rate Variability: A Primary Marker of Nervous System Regulation

In the context of BF, one of the most important and best-researched objective measures of autonomic nervous system balance is heart rate variability, or the amplitude of difference between the highest and lowest heart rate over a specific measure of time, as will be explained below. The greater the amplitude, the more relaxed and balanced the nervous system is. Amplitude also speaks to the general "pliability" of the nervous and cardiovascular systems. If the heart is more capable of rapid shifts in heart rate, this means

A. Choudhury (✉) · C. Clare · S. Srivastava ·
S. Tullman · L. Westendarp · S. Younus · K. Saxena
Division of Child/Adolescent Psychiatry, Texas
Children's Hospital, Houston, TX, USA
e-mail: axchoudh@texaschildrens.org; kxsaxen1@texaschildrens.org

that the nervous system is more capable of adapting effectively and quickly to changes in the external environment. More recent research has associated this increased adaptability with greater longevity and a decrease in all-cause mortality (Hernández-Vicente et al., 2020). To clarify further, nervous system relaxation or balance means that the parasympathetic (PNS) and sympathetic nervous system (SNS) are working together to create a neutral state. There is often a misperceived notion that a calm state equates to PNS activity.

Basic Physiology of HRV

Now let's explore a bit of basic physiology surrounding heart rate variability (HRV). HRV is defined as a physiologic fluctuation in heart rate. In instances where this fluctuation shows up on an EKG, it's known as sinus arrhythmia. It's important to establish that the term HRV differs from heart rate, which is a more general physiological marker. Whereas HR is defined as the average number of beats per minute, HRV is measuring what's known as the interbeat interval, clinically abbreviated as IBI. Note that HRV can be small enough that it would not be readily monitored on an EKG as sinus arrhythmia.

Physiologic Factors that Produce Heart Rate Variability

There are two primary physiologic mechanisms involved in the creation of heart rate variability - respiratory sinus arrhythmia and the baroreceptor reflex (BR). This section will outline the physiology of each, starting with the BR.

In the wall of both the aortic arch and bifurcation of the internal carotid arteries, there are pressure-sensitive receptors that constantly monitor changes in arterial blood pressure. When these receptors register any decrease in blood pressure, they send a signal to the SNS leading to a compensatory increase in cardiac output that's meant to correct the pressure change. When an increase in pressure is registered, the PNS via the

vagus nerve inhibits sympathetic stimulation of the heart, leading to a decrease in cardiac output to counteract the increased pressure. These changes are happening constantly on an imperceptible level in order to maintain cardiovascular allostasis.

Now let's consider respiratory sinus arrhythmia (RSA). An RSA is a physiologic phenomenon by which the pulse rate changes in synchronization with each inhale and exhale. RSA is generally considered to be a benign anomaly, with the study of HRV and autonomic balance, research has found potential associations between a more pronounced RSA and decreased mortality in specific cardiovascular conditions. A 2016 study found that a more pronounced RSA was associated with decreased post-MI mortality (Sinnecker et al., 2016).

The underlying concept of respiratory sinus arrhythmia is that the heart rate increases upon inhalation and decreases upon exhalation and is integrally linked with the BR. While there are many mechanisms involved, one simple way of looking at the RSA is that when inhalation occurs, the change in pressure gradient in the lungs leads to an influx of blood to the alveolar-capillary beds, necessary for the oxygenation of venous blood. This change in blood flow results in a decrease in the amount of blood in circulation, which the baroreceptors register as a drop in blood pressure. They then signal the SNS leading to a temporary increase in heart rate and arterial pressure meant to make up for the blood that has pooled into the lungs. With the exhale, nutrient-rich blood leaves the lungs, thereby increasing blood pressure. The receptors once again respond to this change and signal the heart to beat more slowly.

The RSA and BR contribute jointly and independently to HRV. While RSA and HRV can occur simultaneously, HRV often exists even without the presence of RSA. The connection between the two, however, explains why respiration BF and more specifically coherent or paced breathing training are a primary tool for increasing HRV. Some research shows that practicing coherent or paced breathing can be one of many ways to consciously improve HRV.

Biofeedback Modalities

While HRV is one of our primary markers of training, there are many other functions that can be measured and trained depending on the condition being treated. As mentioned earlier, the major areas of measurement are respiration, HRV, muscle tension/EMG, temperature, EEG and GSR or galvanic skin response.

EMG is frequently used in the context of musculoskeletal pain conditions to assess for chronic muscular tension that may be a contributing factor. With EMG sensors, tension can be monitored and shown to the patient on a computer screen in real-time. The feedback can then be used to help learn how to consciously relax the tension and change habituated muscular patterning.

Temperature is also a valuable measure of SNS activation. When the SNS is activated, blood is diverted away from the peripheral tissues leading to a drop in skin temperature. As the nervous system down-regulates, the peripheral capillaries and blood vessels dilate, increasing peripheral temperature. A common BF technique is to place a temperature sensor on the finger to train the patient on how to change the temperature using mindfulness.

Galvanic skin response is a BF measure that monitors electrical activity in the sweat glands on the skin surface. It's considered a fairly sensitive measure of fluctuations in SNS activation and tends to register change before other sensors. Under stress, the electrical activity of surface sweat glands increases. Even though the patient may not register sweat on the hands, electrical activity still occurs. This can provide feedback to the patient to help them learn how to quickly regulate stress.

As noted previously, the data on the efficacy of specific modalities for the pediatric population is fairly limited, and research has focused primarily on seems to focus most heavily on the use of EMG for chronic pain conditions.

Clinical Biofeedback Challenges and Tools Specific to Pediatric Populations

Practicing BF within the pediatric population offers a unique set of challenges that require consideration and a wider array of tools. Some of the most commonly encountered hurdles are fear, short attention span and boredom (Attanasio et al., 1985). Addressing sensor and treatment-related fear is an important factor for success with BF. Explaining the procedure and sensors not only helps children to feel safer but allows the clinician an opportunity to involve the child in active learning about the function of their body and how they can learn to control it. Moss (2014) notes that “children are often delighted to discover that they can control aspects of their body, which previously were troublesome. They often succeed in modifying their physiology easily and quickly compared to adults” (Moss, 2014).

Attention is often addressed through the use of specific game-oriented BF programs that allow children to use video games as training tools (Moss, 2014). One good example is a car racing game that's attached to EMG sensors on the body. As the child learns how to either relax muscle tension or engage more functionally, the race car in the game speeds up, whereas when muscle tension increases, the car slows down. The programming can provide a fun and interesting incentive not only for home practice but can be a motivating factor for return visits as regular training is an important element for treatment success.

Neuro-Biofeedback

Neurofeedback is a specific form of BF that rewards or “penalizes” a person for physiological data coming from the brain in real time, typically using audio and visual feedback stimuli. Historically, “neurofeedback” referred almost

exclusively to “EEG biofeedback,” and the two terms were used interchangeably because EEG (electroencephalogram, which attempts to measure the electrical activity of the brain based on electrical current picked up from the scalp which is subsequently filtered and analyzed) was the only accessible means of acquiring and feeding data back to an individual in realtime. EEG BF, and its successor qEEG (quantitative EEG, which digitizes the EEG, now the majority of EEG) neurofeedback, is the most common form of neurofeedback and has the most precedent for use clinically and in research.

On the whole, neurofeedback represents an incredible opportunity for the clinical treatment of adolescents, both in combination with chemical approaches and as an alternative altogether to chemical treatment. Indeed, it is quite aligned with what German physician Johann Christian Reil, who coined the term “psychiatry” (in German, “*psychiaterie*”) in 1808 originally envisioned for the field, “to denote all medical treatment directed at the patient’s mind” (Marx, 1990), or “to heal through the powers of the psyche... a medicine through the psyche ... not – as it is today – a medicine of the diseased psyche.” Indeed, using *technology* to create a way to help adolescents direct their minds in a way that moves them toward wellness and gamify improving health. Neurofeedback gives a user a window into their physiological state using primarily visual and audio feedback – in this case, feedback of brain activity.

Operant Conditioning and Neuro-Feedback

As neurofeedback relies on operant conditioning of a physiological signal, like other forms of BF, it has overwhelmingly been shown to be safe physically and mentally. Operant conditioning by nature requires ongoing positive environmental feedback. This means that while a skill or new type of activity can be introduced and trained in a focused session, it is only fully “learned” when it is engaged and rewarded in the everyday environ-

ment. An excellent example of this is a child learning to regulate the brain activity associated with ADHD symptoms through neurofeedback, which will be discussed later on in this section: while they may demonstrate the ability to produce more functional brain activity in a session, full learning happens when they are back in the classroom, having the incredible experience of being fully engaged with a lesson and really “getting it” in a way they previously didn’t.

ADHD and Neuro-Biofeedback

There are three main protocols that have been research-validated in cases of ADHD. All three have shown tremendous promise in symptom reduction in children and adolescents with ADHD in various individual studies, including numerous randomized controlled trials, and meta-analyses (Arns et al., 2009; Strehl et al., 2006; Steiner et al., 2014). Indeed, while a pharmacological approach to ADHD is often seen as the standard in severe cases, there are multiple papers that seem to show NFB as being as effective in symptom reduction and management as methylphenidate (Duric et al., 2012; Fuchs et al., 2003), and many more suggest it as effective as an adjunct treatment along with a pharmacological approach. The amount of sessions needed to see and maintain significant symptom reduction varies by individual, but commonly cited numbers in research range between 15 and 30 sessions.

Stress and Anxiety – Neuro-Biofeedback

Adolescence is generally – physiologically, behaviorally, and societally – an incredibly stressful time for most. In some adolescents, this becomes pathological, to the point of developing one of the myriad anxiety disorders. A primary question for this population, in particular, is how to give individuals healthy skills and coping mechanisms to deal with this stress and anxiety, which is actually quite normal. Neurofeedback

offers some promising strategies for dealing with stress and anxiety. Generally, these strategies involve training the client to increase their production of and control over slower brain rhythms, specifically alpha and theta band activity, which often (depending on context) indicate lower arousal.

Alpha amplitude training appears to reduce anxiety, especially in subjects that start with high anxiety (Hardt & Kamiya, 1978). Researchers find alpha amplitude neurofeedback to be an extremely effective intervention for PTSD patients in randomized controlled trials (Nicholson et al., 2020). A review of neurofeedback for mood disorders seems to agree with the potential for neurofeedback with psychiatric rehabilitation (Markiewicz, 2017). Like ADHD, the numbers of sessions often range from 15 to 30 sessions, depending on severity. Alpha-theta neurofeedback has been used at length as part of treatment for recovering addicts, especially by Eugene Peniston (Saxby & Peniston 1995), but also supported by the work of others (Dalkner et al., 2017).

Nearly all of this research was conducted in adults, with the inclusion of a few studies on older adolescents. However, research that is less specific to anxiety and stress has shown that neurofeedback using the same principles and techniques has indeed induced physiological and behavioral change in adolescents.

Depression and Neuro-Biofeedback

Needless to say, depression is a huge and growing burden to the populations of developed countries, and adolescence is a common time for symptoms to begin. Research in adults has shown that Alpha Asymmetry training may be highly efficacious for the treatment of depression in as little as 10 sessions (Choi et al., 2011). Additional literature suggests that Alpha-Theta NFB is also efficacious for the treatment of depression (Lee et al., 2019).

Sleep and Neurofeedback

Sleep is clearly a huge issue for adolescents, who are undergoing social and physiological changes that lead to major disruptions and shifts in circadian rhythm. One study on healthy young adults (university age, just emerging from adolescence) showed that just 10 sessions of sensorimotor rhythm (SMR) neurofeedback allowed participants to learn to increase SMR activity, decrease sleep onset latency, and increase declarative memory recall upon waking (Hoedlmoser et al., 2008). Gomes et al. 2016 showed that not only did this training improve sleep, but also mild anxiety (Gomes et al., 2016). Time to show initial improvement in symptoms in sleep appears to be within one to three sessions, though most studies with sustained improvement included 10 or more sessions.

Neuro-Biofeedback and Performance (Musical, Athletic, and Otherwise)

Various forms of neurofeedback are effective in aiding both musical and athletic performance. In general, a review by Xiang et al. 2018 of neurofeedback for athletic performances concludes that there is real potential here (Xiang et al., 2018). Alpha theta training, which helps guide individuals into a deeply relaxed, hypnotic state, has been shown in numerous studies to support musical and other creativity and general well-being in performers in the child, adolescent, and young adult range (Gruzelier, 2014).

Biofeedback and Mental Health

Mental health disorders are highly prevalent in children and adolescents with a national prevalence ranging from 7.6% to 27.2% (Whitney & Peterson, 2019). The etiology of mental health disorders is multifactorial in children and adolescents with biological, psychological, and social

factors playing a significant role in the development of these disorders. Hence, the recommended management of these disorders is also biopsychosocial. Medications, various types of psychotherapies, and social interventions have been used and studied for the management of mental health disorders in children and adolescents.

Biofeedback, Stress and Anxiety Disorders

Anxiety disorders are the most common mental health disorders in children and adolescents with a lifetime prevalence of 31.9% (Merikangas et al., 2010). The effect of anxiety on the autonomic nervous system is well established. Since BF can modify physiological functions which are altered due to sympathetic arousal in times of stress and anxiety, it is commonly used in their management. Many studies have been conducted to examine the impact of BF on symptoms of stress and anxiety. One study showed improvement in anxiety symptoms in children and adolescents with medical disorders after BF training (Culbert et al., 1996). Wenck et al. conducted a study to observe the impact of BF state and trait anxiety and found a significant reduction in both state and trait anxiety (Wenck et al., 1996).

HRV-BF is shown to improve HRV measures leading to improvement in anxiety symptoms. A study on medically admitted children and adolescents showed improvement in anxiety in children with anxiety symptoms after biofeedback relaxation (BART) but did not show higher HRV in this cohort (McKenna et al., 2015).

The data for children and adolescents is supported by studies performed on adults that investigated the impact of BF on anxiety disorders and have shown significant improvement in symptoms in the adult population (Alneyadi et al., 2021). So far, the research has shown positive results for this intervention however the quality of these studies is variable due to heterogeneity in research methodology. Further research is needed to develop evidence-based standardized protocols and guidelines which can be univer-

sally used for the treatment of anxiety disorders in children and adolescents.

Biofeedback and Depression

About 3.2% of children and adolescents in the United States are diagnosed with depression (Ghandour et al., 2019). Like anxiety disorders, HRV is decreased in major depressive disorder however successful treatment of treatments for depression has not shown to return the HRV to normal levels (Kemp et al., 2010). Decreased HRV is a predictor of poor health outcomes and hence studies have been conducted to investigate interventions which can improve HRV in individuals with depression. These studies are predominantly conducted on adults leading to a significant dearth of literature on children and adolescents. As physiological processes are broadly similar in children, adolescents, and adults, we can cautiously apply the results from studies performed on adults to the child and adolescent population.

Varied by the number and duration of BF sessions, types of psychometric tools used for the assessment of depression, and symptoms showing improvement after the intervention, many studies have been conducted to assess the impact of BF on major depressive disorder. A small open-label study with a total of 10 training sessions per participant showed improvement in Beck's Depression Inventory (BDI) scores from the fourth session onwards. This study also reported improvement in energy, motivation and sleep in participating individuals (Karavidas et al., 2007). Adding HRV-BF to psychotherapy for individuals with major depressive disorder showed larger increase in HRV when compared to the group with psychotherapy alone (Caldwell & Steffen, 2018).

The available literature suggests some benefits of HRV-BF on major depressive disorders in adults. Due to heterogeneity in research, it is difficult to apply these findings to the child and adolescent population. However, no negative effects of this treatment modality have been identified so

far hence further research is warranted to determine an evidenced-based role of HRV-BF in the management of depression.

Biofeedback and Other Mental Health Disorders

Low HRV indices are also seen in individuals with post-traumatic stress disorder (PTSD). Like HRV-BF, respiratory sinus arrhythmia (RSA) BF also increases HRV. A controlled pilot study compared respiratory sinus arrhythmia (RSA) BF to progressive muscle relaxation (PMR) for a patient with PTSD in a residential facility for substance use disorder. The RSA-BF group showed a significantly greater reduction in depressive symptoms and an increase in HRV indices. Both groups had significantly reduced PTSD and insomnia symptoms (Zucker et al., 2009). Low HRV has also been observed in individuals with substance use disorder. A study in 2016 examined HRV in individuals with opioid use, major depression, and healthy controls. HRV-BF was found to increase HRV in individuals with opioid use (Lin et al., 2016). The data on the effect of BF on PTSD and substance use is limited at this time and is restricted to the adult population. Since HRV indices are found to be low in PTSD and substance use disorders like anxiety and depressive disorders, future research is warranted to understand the role of BF in the management of these disorders. It is also important to note that research is limited to these disorders in the child and adolescent population and may require further evidence before application of these interventions to this population.

Biofeedback and Mental Health – Discussion

BF is an intervention of interest for mental health disorders like anxiety disorders, depression, PTSD, and substance use disorder. Studies have been conducted on the impact of BF on anxiety disorders in children and adolescents and have shown promising results. However, heterogeneity

and quality of some of these studies highlight the need for future higher-quality studies which will expand our understanding of the role of BF in the management of anxiety disorders. Research is scantily related to the role of BF in the management of depressive disorders in children and adolescents however data from adult literature can be cautiously applied to the child and adolescent population. Studies on the function of BF in the management of other mental health disorders are limited in both adult & child and adolescent populations. Future research may guide the possible benefit of BF in the management of other mental health disorders in children and adolescents.

Biofeedback for Physical Health and Well-Being

In parallel with the rise of mental illness, children and adolescents have suffered from an increased prevalence of chronic physical health conditions. As of 2010, 27.0% of children in the U.S. have been diagnosed with one or more chronic health conditions, and this number is on the rise (Anderson, 2010). Given the increasing prevalence of chronic health conditions and the limited treatment options that currently exist for pediatric populations, biofeedback presents a promising new avenue for adjuvant therapy. Due to a limited number of studies possible with pediatric populations, we will provide an overview of studies from varied age and sex populations evaluating the efficacy of potential adjuvant biofeedback therapy.

Biofeedback and the Genitoruinary System

Urinary incontinence is a major public health issue, affecting over a third of women and about half as many men over the age of 65 in the United States (Mardon et al., 2006). A randomized control trial in geriatric women showed biofeedback as a more effective treatment than both drug treatment and placebo-treated control groups (Burgio et al., 1998). Another study performed in

children ages 5–14 reported that biofeedback and training exercises improved secondary but not primary enuresis and that further treatments may be needed in such cases (Khen-Dunlop et al., 2006). As such, biofeedback presents a promising potential option for common urinary disorders such as incontinence and voiding disorders.

Similar to the mechanism of pelvic floor retraining exercises for urinary incontinence, EMG biofeedback was also reported to be effective in treating symptoms of *vulvar vestibulitis* (Glazer et al., 1995). However, further trials must be completed to validate these results. Thus, biofeedback represents the potential to improve quality of life for patients suffering from a wide range of genitourinary health conditions.

Biofeedback and the Gastrointestinal System

In cases of fecal incontinence and constipation, biofeedback trials have shown mixed results. A study focused on fecal incontinence published in 2003 revealed no added benefit of biofeedback therapy – however, suggested that pelvic floor retraining exercises may serve as an effective biofeedback mechanism to control fecal incontinence (Solomon et al., 2003). Additionally, a review of case-control studies published in 2004 showed that biofeedback was somewhat beneficial for pelvic floor dyssynergia in constipation (Bassotti et al., 2004). Biofeedback therapy was found to be effective in a clinical follow-up study in patients with irritable bowel syndrome (IBS). In this study, patients received behavioral biofeedback therapy for IBS and came back for a four-year follow-up, revealing that biofeedback therapy improved IBS symptom scores effectively (Schwarz et al., 1990). These results, along with the results from the fecal incontinence and constipation studies indicate that biofeedback may be beneficial for patients with these gastrointestinal health conditions.

Biofeedback and Pain

Chronic pain is one of the most common complaints among the elderly population (Anderson, 2010). Some of the standard-of-care treatments for chronic pain include steroid injections, over-the-counter (OTC) and prescription analgesics, physical therapy and heat/cold treatments, among others. While effective in many cases, some patients are unable to find relief through these methods. In cases of treatment-resistant chronic pain, a randomized control study from 2003 revealed that biofeedback and relaxation training were effective at reducing symptoms of anxiety and somatic complaints compared to a control pain education group (Corrado et al., 2003). Additionally, another study focused on patients suffering from *fibromyalgia* indicated that biofeedback improved pain, psychological and physical functioning (Mueller et al., 2001). These studies indicate that biofeedback is highly promising as an alternative treatment for cases of chronic pain.

Biofeedback and the Nervous System

The potential for biofeedback therapy for neurological and psychiatric diseases has been an area of growing interest due to the limited scope and availability of current options to these patients. As such, patient studies have revealed biofeedback to be helpful in the symptomatic treatment of **ADHD, autism spectrum disorders, seizure disorders, headaches, Bell's palsy, cerebral palsy and hand dystonia** (Monastra et al., 2005; Coben & Padolsky, 2007; Sterman, 2000; Arndorfer & Allen, 2001; Dalla et al., 2005; Bolek, 2003; Deepak & Behari, 1999). Additional studies, while less conclusively effective, shows biofeedback as a promising candidate for symptomatic relief of **insomnia, traumatic brain injury** (biofeedback revealed spontaneous reversal of anosmia, but further studies are warranted

to study other effects on other symptoms), **stroke**, **eating disorders** – especially **anorexia and hyperphagia**, as well as **motor function recovery after spinal cord injury** (NIH Consensus Statement Online, 1996; Hammond, 2007; Woodford & Price, 2007; Pop-Jordanova, 2000; Brucker & Bulaeva, 1996).

Biofeedback and the Cardiovascular System

Hypertension (HTN) affects approximately 45% of adults in the United States (Muntner et al., 2018). Notably, a review of over 100 randomized control trials found that thermofeedback and electrofeedback were found to be beneficial in cases of HTN (Linden & Moseley, 2006). This indicates that biofeedback has a strong potential to be used as a treatment option in cases of HTN where individuals may not be eligible for current drug options. **Coronary artery disease** (CAD) has become the leading cause of hospitalizations and death worldwide (Raseghian-Jahromi et al., 2022; Roth et al., 2020). In studies focused on patients with CAD, biofeedback was found to be effective at increasing heart rate variability, a measure of beat-to-beat fluctuations with low variability being an independent risk factor for death and cardiac events (Del Pozo et al., 2004). These results indicate that biofeedback presents the potential to be a major component of CAD treatment. Studies have shown that biofeedback therapy is effective in the treatment of **Raynaud's phenomenon** (Karavidas et al., 2006). These results combined with the efficacy of biofeedback in HTN and CAD indicate that biofeedback is well-suited for the treatment of vascular diseases.

Biofeedback and the Respiratory System

The efficacy of biofeedback in the treatment of respiratory conditions shows mixed results. Controlled studies of biofeedback in **asthma** showed little evidence to support biofeedback as

a substantial treatment (Ritz et al., 2004). However, interestingly, studies in **COPD** patients support biofeedback as an effective treatment (Giardino et al., 2004). Furthermore, in cases of **respiratory failure**, biofeedback was shown to be effective in reducing the time to weaning patients off of mechanical ventilation – a metric that is strongly correlated with successful recovery outcomes (Holliday & Lippmann, 2003). While the studies in patients with COPD and respiratory failure show promise for biofeedback therapy, further studies will be required to determine the size of its role in standard-of-care practice. To this point, a randomized control study in **cystic fibrosis** patients showed potential improvement of lung function in response to respiratory muscle feedback and breathing re-training (Delk et al., 1994).

Biofeedback and the Musculoskeletal System

Perhaps one of the most fundamental systems that requires further treatments to improve quality of life is the musculoskeletal (MSK) system. As our population ages, many MSK conditions such as arthritis, muscle strain and injury become increasingly common. Current therapies for such conditions include physical therapy, steroid injections, and heat/cold treatment. However, it is often the case that individuals suffering from such conditions experience only temporary relief, if any.

Biofeedback presents a promising option for the treatment of MSK diseases. Studies in **headache** patients found that biofeedback effectively reduced symptoms of headache activity, especially in the trapezius muscle (Arena et al., 1995). Furthermore, several randomized control trials focused on **temporomandibular disorders** suggest therapeutic benefit of biofeedback-assisted relaxation and surface electromyographic training (Crider et al., 2005). Interestingly, a study focused on **repetitive strain injury** showed that group biofeedback therapy was more effective than individual treatment (Peper et al., 2004). These studies provide evidence for the potential

therapeutic value of various forms of biofeedback therapy in MSK diseases.

Biofeedback and the Immune System

The efficacy of biofeedback therapy for immune-related conditions remains a contentious topic. While there currently is no proven benefit of biofeedback therapy to patients with immune-related conditions, it remains an open area of investigation. Studies in patients with **rheumatoid arthritis** (RA) revealed that biofeedback therapy reduces the number of RA-related clinic visits and costs (Young et al., 1995). However, these are indirect measures of efficacy and more studies focused on symptomatic relief would be required to determine if biofeedback is benefiting RA patients. Additionally, a study of **immune regulation in breast cancer patients** found inconclusive but suggestive results indicating that biofeedback can regulate stress levels and immune function (Gruber et al., 1993). While these studies imply a therapeutic potential for biofeedback in immune regulation, further studies are required to determine the ultimate role that biofeedback may have in the treatment of immune-related conditions.

A Concluding Thought

The current literature seems to suggest that the biofeedback tool set stands poised to be a pivotal asset in enhancing care for mental health disorders and physical health, among pediatric populations, such as anxiety disorders, sleep disorders, depression, PTSD, substance use disorder, as well as genitourinary system, gastrointestinal system, cardiovascular systems, chronic pain, as well as the respiratory, nervous, musculoskeletal and immune systems. It is demonstrated that processes of measurement and operant conditioning, under-pining the science, are considerably safer than approved pharmacological interventions, and generally have much less side effects than the same. At variance with some clinical reticence,

there is evidence suggesting that changes can be maintained without the continued use of an instrument.

Although the data is sparse for adolescent use of BF for mental health and there is even less availability for physical health, what has been found from reviewing the literature, can be cautiously applied to the child and adolescent population with consideration to the challenges of application to that population including but not limited to treatment-related fear, short attention span, and boredom. These challenges require special consideration and a varied array of tools and techniques, which rather than deter further exploration, should encourage creative exploration of innovative and tested solutions based on and supported by scientific study.

Neurofeedback, in particular EEG biofeedback, hails as very acceptable in pediatric populations because children are observed to enjoy the more active role they get to play in their own healing as they play games that reward them as they use these self-regulatory skills. This is a unique feature of BF in general, unlike other forms of intervention, which provides the child with a unique element of agency, to actively engage in their own treatment, usually sparking enthusiasm, encouraging attention and possibly attracts sustainability.

While it may be seen that the greatest difficulty in the use of neurofeedback may be in finding the most suitable thresholding, it can be approached as a question of how to increase efficiency. Mounting research affirms that EEG activity is able to be trained by operant conditioning, that it is incredibly safe and that well-guided changes in neurophysiological activity can lead to various observable lifetime benefits.

Notwithstanding the proven fact that neurofeedback is safe and beneficial, a question of economy concerning its use as an intervention with adolescents, calls out a need to ensure that the intervention is cost-effective, both monetarily and with time, and efficacious during such a critical development period.

With these in mind, there remains a call for more definitive research on the efficacy of biofeedback in the pediatric populations to be

expanded, particularly focusing more on general indicators of well-being in addition to specific conditions, modified with larger sample sizes, randomized control groups, with greater transparency of neutral or mixed findings, and subsequent evaluations yielding a more balanced understanding of the biofeedback tool in pediatric populations. For clinicians and researchers alike, the compiled research ought to engender anticipation for deepened research which stands to be a very promising undertaking.

References

- About biofeedback. (2022). *Association for applied psychophysiology and biofeedback*. Retrieved February 18, 2022, from <https://www.aapb.org/i4a/pages/index.cfm?pageid=3463>
- Alneyadi, M., et al. (2021). Biofeedback-based connected mental health interventions for anxiety: Systematic literature review. *Journal of Medical Internet Research MHealth and UHealth*, 9(4), e26038.
- Anderson, G. (2010). *Chronic care: Making the case for ongoing care*. Robert Wood Johnson Foundation. <http://www.rwjf.org/content/dam/farm/reports/reports/2010/rwjf54583>
- Arena, J. G., et al. (1995). A comparison of frontal electromyographic biofeedback training, trapezius electromyographic biofeedback training, and progressive muscle relaxation therapy in the treatment of tension headache. *Headache*, 35(7), 411–419.
- Arndorfer, R. E., & Allen, K. D. (2001). Extending the efficacy of a thermal biofeedback treatment package to the management of tension-type headaches in children. *Headache*, 41(2), 183–192.
- Arns, M., et al. (2009). Efficacy of neurofeedback treatment in ADHD: The effects on inattention, impulsivity and hyperactivity: A meta-analysis. *Clinical EEG and Neuroscience*, 40(3), 180–189.
- Attanasio, V., et al. (1985). Clinical issues in utilizing biofeedback with children. *Clinical Biofeedback & Health: An International Journal*, 8(2), 134–141.
- Bassotti, G., et al. (2004). Biofeedback for pelvic floor dysfunction in constipation. *British Medical Journal (Clinical Research Ed.)*, 328(7436), 393–396.
- Bolek, J. E. (2003). A preliminary study of modification of gait in real-time using surface electromyography. *Applied Psychophysiology and Biofeedback*, 28(2), 129–138.
- Brucker, B. S., & Bulaeva, N. V. (1996). Biofeedback effect on electromyography responses in patients with spinal cord injury. *Archives of Physical Medicine and Rehabilitation*, 77(2), 133–137.
- Burgio, K. L., et al. (1998). Behavioral vs drug treatment for urge urinary incontinence in older women: A randomized controlled trial. *The Journal of the American Medical Association*, 280(23), 1995–2000.
- Caldwell, Y. T., & Steffen, P. R. (2018). Adding HRV biofeedback to psychotherapy increases heart rate variability and improves the treatment of major depressive disorder. *International Journal of Psychophysiology*, 131, 96–101.
- Choi, S. W., et al. (2011). Is alpha wave neurofeedback effective with randomized clinical trials in depression? A pilot study. *Neuropsychobiology*, 63(1), 43–51.
- Coben, R., & Padolsky, I. (2007). Assessment-guided neurofeedback for autistic Spectrum disorder. *Journal of Neurotherapy: Investigations in Neuromodulation, Neurofeedback and Applied Neuroscience*, 11(1), 5–23.
- Corrado, P., Gottlieb, H., & Abdelhamid, M. (2003). The effect of biofeedback and relaxation training on anxiety and somatic complaints in chronic pain patients. *American Journal of Pain Management*, 13(4), 133–139.
- Crider, A., Glaros, A. G., & Gevirtz, R. N. (2005). Efficacy of biofeedback-based treatments for temporomandibular disorders. *Applied Psychophysiology and Biofeedback*, 30(4), 333–345.
- Culbert, T. P., Kajander, R. L., & Reaney, J. B. (1996). Biofeedback with children and adolescents: Clinical observations and patient perspectives. *Journal of Developmental & Behavioral Pediatrics*, 17(5), 342–350.
- D. Corydon Hammond PhD. (2007). Can LENS neurofeedback treat anosmia resulting from a head injury? *Journal of Neurotherapy: Investigations in Neuromodulation, Neurofeedback and Applied Neuroscience*, 11(1), 57–62.
- Dalkner, N., et al. (2017). Short-term beneficial effects of 12 sessions of neurofeedback on avoidant personality accentuation in the treatment of alcohol use disorder. *Frontiers in Psychology*, 8, 1688.
- Dalla Toffola, E., et al. (2005). Usefulness of BFB/EMG in facial palsy rehabilitation. *Disability and Rehabilitation*, 27(14), 809–815.
- Deepak, K. K., & Behari, M. (1999). Specific muscle EMG biofeedback for hand dystonia. *Applied Psychophysiology and Biofeedback*, 24(4), 267–280.
- Del Pozo, J. M., et al. (2004). Biofeedback treatment increases heart rate variability in patients with known coronary artery disease. *American Heart Journal*, 147(3), E11.
- Delk, K. K., et al. (1994). The effects of biofeedback assisted breathing retraining on lung functions in patients with cystic fibrosis. *Chest*, 105(1), 23–28.
- Duric, N. S., et al. (2012). Neurofeedback for the treatment of children and adolescents with ADHD: A randomized and controlled clinical trial using parental reports. *BMC Psychiatry*, 12, 107.
- Fuchs, T., et al. (2003). Neurofeedback treatment for attention-deficit/hyperactivity disorder in children: A comparison with methylphenidate. *Applied Psychophysiology and Biofeedback*, 28(1), 1–12.

- Ghandour, R. M., et al. (2019). Prevalence and treatment of depression, anxiety, and conduct problems in US children. *The Journal of Pediatrics*, 206, 256–267.e3.
- Giardino, N. D., Chan, L., & Borson, S. (2004). Combined heart rate variability and pulse oximetry biofeedback for chronic obstructive pulmonary disease: Preliminary findings. *Applied Psychophysiology and Biofeedback*, 29(2), 121–133.
- Glazer, H. I., et al. (1995). Treatment of vulvar vestibulitis syndrome with electromyographic biofeedback of pelvic floor musculature. *The Journal of Reproductive Medicine*, 40(4), 283–290.
- Gomes, J. S., et al. (2016). A neurofeedback protocol to improve mild anxiety and sleep quality. *Revista brasileira de psiquiatria (Sao Paulo, Brazil: 1999)*, 38(3), 264–265.
- Gruber, B. L., et al. (1993). Immunological responses of breast cancer patients to behavioral interventions. *Biofeedback and Self-Regulation*, 18(1), 1–22.
- Gruzelier, J. H. (2014). EEG-neurofeedback for optimising performance. III: A review of methodological and theoretical considerations. *Neuroscience and Biobehavioral Reviews*, 44, 159–182.
- Hardt, J. V., & Kamiya, J. (1978). Anxiety change through electroencephalographic alpha feedback seen only in high anxiety subjects. *Science (New York, N.Y.)*, 201(4350), 79–81.
- Hernández-Vicente, A., et al. (2020). Heart rate variability and exceptional longevity. *Frontiers in Physiology*, 11, 566399.
- Hoedlmoser, K., et al. (2008). Instrumental conditioning of human sensorimotor rhythm (12–15 Hz) and its impact on sleep as well as declarative learning. *Sleep*, 31(10), 1401–1408.
- Holliday, J. E., & Lippmann, M. (2003). Reduction in ventilatory response to CO₂ with relaxation feedback during CO₂ rebreathing for ventilator patients. *Chest*, 124(4), 1500–1511.
- Karavidas, M. K., et al. (2006). Thermal biofeedback for primary Raynaud's phenomenon: A review of the literature. *Applied Psychophysiology and Biofeedback*, 31(3), 203–216.
- Karavidas, M. K., et al. (2007). Preliminary results of an open label study of heart rate variability biofeedback for the treatment of major depression. *Applied Psychophysiology and Biofeedback*, 32(1), 19–30.
- Kemp, A. H., et al. (2010). Impact of depression and antidepressant treatment on heart rate variability: A review and meta-analysis. *Biological Psychiatry*, 67(11), 1067–1074.
- Khen-Dunlop, N., et al. (2006). Biofeedback therapy in the treatment of bladder overactivity, vesico-ureteral reflux and urinary tract infection. *Journal of Pediatric Urology*, 2(5), 424–429.
- Lee, Y.-J., et al. (2019). Neurofeedback treatment on depressive symptoms and functional recovery in treatment-resistant patients with major depressive disorder: An open-label pilot study. *Journal of Korean Medical Science*, 34, e287.
- Lin, I.-M., et al. (2016). Heart rate variability and the efficacy of biofeedback in heroin users with depressive symptoms. *Clinical Psychopharmacology and Neuroscience*, 14(2), 168–176.
- Linden, W., & Moseley, J. V. (2006). The efficacy of behavioral treatments for hypertension. *Applied Psychophysiology and Biofeedback*, 31(1), 51–63.
- Mardon, R. E., et al. (2006). Management of urinary incontinence in Medicare managed care beneficiaries: Results from the 2004 Medicare Health Outcomes Survey. *Archives of Internal Medicine*, 166(10), 1128–1133.
- Markiewicz, R. (2017). The use of EEG biofeedback/neurofeedback in psychiatric rehabilitation. *Psychiatria Polska*, 51(6), 1095–1106.
- Marx, O. M. (1990). German romantic psychiatry: Part 1. *History of Psychiatry*, 1(4), 351–380.
- McKenna, K., et al. (2015). Ready, set, relax: Biofeedback-Assisted Relaxation Training (BART) in a pediatric psychiatry consultation service. *Psychosomatics*, 56(4), 381–389.
- Merikangas, K. R., et al. (2010). Lifetime Prevalence of Mental Disorders in U.S. Adolescents: Results from the National Comorbidity Survey Replication–Adolescent Supplement (NCS-A). *Journal of the American Academy of Child & Adolescent Psychiatry*, 49(10), 980–989.
- Monastra, V. J., et al. (2005). Electroencephalographic biofeedback in the treatment of attention-deficit/hyperactivity disorder. *Applied Psychophysiology and Biofeedback*, 30(2), 95–114.
- Moss, D. P. (2014). The use of biofeedback and neurofeedback in pediatric care. In R. D. Anbar (Ed.), *Functional symptoms in pediatric disease: A clinical guide* (pp. 285–303). Springer.
- Mueller, H. H., et al. (2001). Treatment of fibromyalgia incorporating EEG-driven stimulation: A clinical outcomes study. *Journal of Clinical Psychology*, 57(7), 933–952.
- Muntner, P., et al. (2018). Potential US population impact of the 2017 ACC/AHA high blood pressure guideline. *Circulation*, 137(2), 109–118.
- Nicholson, A. A., et al. (2020). A randomized, controlled trial of alpha-rhythm EEG neurofeedback in post-traumatic stress disorder: A preliminary investigation showing evidence of decreased PTSD symptoms and restored default mode and salience network connectivity using fMRI. *NeuroImage. Clinical*, 28, 102490.
- NIH Consensus Statement Online. (1996). *Cervical Cancer* 43(1), 1–38. <https://consensus.nih.gov/1996/1996cervicalcancer102html.htm>
- Peper, E., Gibney, K. H., & Wilson, V. E. (2004). Group training with healthy computing practices to prevent repetitive strain injury (RSI): A preliminary study. *Applied Psychophysiology and Biofeedback*, 29(4), 279–287.
- Pop-Jordanova, N. (2000). Psychological characteristics and biofeedback mitigation in preadolescents with eating disorders. *Pediatrics International*, 42(1), 76–81.

- Razeghian-Jahromi, I., Karimi Akhormeh, A., & Zibaeenezhad, M. J. (2022). The role of ANRIL in atherosclerosis. *Disease Markers*, 2022, 8859677.
- Ritz, T., Dahme, B., & Roth, W. T. (2004). Behavioral interventions in asthma: Biofeedback techniques. *Journal of Psychosomatic Research*, 56(6), 711–720.
- Roth, G. A., et al. (2020). Global Burden of Cardiovascular Diseases Writing Group. Global Burden of Cardiovascular Diseases and Risk Factors, 1990–2019: Update From the GBD 2019 Study. *Journal of the American College of Cardiology*, 76(25), 2982–3021.
- Saxby, E., & Peniston, E. G. (1995). Alpha-theta brain-wave neurofeedback training: An effective treatment for male and female alcoholics with depressive symptoms. *Journal of Clinical Psychology*, 51(5), 685–693.
- Schwarz, S. P., et al. (1990). Behaviorally treated irritable bowel syndrome patients: A four-year follow-up. *Behaviour Research and Therapy*, 28(4), 331–335.
- Sinnecker, D., et al. (2016). Expiration-triggered sinus arrhythmia predicts outcome in survivors of acute myocardial infarction. *Journal of the American College of Cardiology*, 67(19), 2213–2220.
- Solomon, M. J., et al. (2003). Randomized, controlled trial of biofeedback with anal manometry, transanal ultrasound, or pelvic floor retraining with digital guidance alone in the treatment of mild to moderate fecal incontinence. *Diseases of the Colon and Rectum*, 46(6), 703–710.
- Steiner, N. J., et al. (2014). In-school neurofeedback training for ADHD: Sustained improvements from a randomized control trial. *Pediatrics*, 133(3), 483–492.
- Sterman, M. B. (2000). Basic concepts and clinical findings in the treatment of seizure disorders with EEG operant conditioning. *Clinical EEG (Electroencephalography)*, 31(1), 45–55.
- Strehl, U., et al. (2006). Self-regulation of slow cortical potentials: A new treatment for children with attention-deficit/hyperactivity disorder. *Pediatrics*, 118(5), e1530–e1540.
- Wenck, L. S., Leu, P. W., & D'Amato, R. C. (1996). Evaluating the efficacy of a biofeedback intervention to reduce children's anxiety. *Journal of Clinical Psychology*, 52(4), 469–473.
- Whitney, D. G., & Peterson, M. D. (2019). US national and state-level prevalence of mental health disorders and disparities of mental health care use in children. *The Journal of the American Medical Association Pediatrics*, 173(4), 389–391.
- Woodford, H., & Price, C. (2007). EMG biofeedback for the recovery of motor function after stroke. *The Cochrane Database of Systematic Reviews*, 2007(2), CD004585.
- Xiang, M. Q., et al. (2018). The effect of neurofeedback training for sport performance in athletes: A meta-analysis. *Psychology of Sport and Exercise*, 36, 114–122.
- Young, L. D., Bradley, L. A., & Turner, R. A. (1995). Decreases in health care resource utilization in patients with rheumatoid arthritis following a cognitive behavioral intervention. *Biofeedback and Self-Regulation*, 20(3), 259–268.
- Zucker, T. L., et al. (2009). The effects of respiratory sinus arrhythmia biofeedback on heart rate variability and posttraumatic stress disorder symptoms: A pilot study. *Applied Psychophysiology and Biofeedback*, 34(2), 135–143.
- Aproteem Choudhury**, BS is the Mind-body interventionist in the Division of Child/Adolescent Psychiatry at Texas Children's Hospital. At the Center for Mind Body Medicine (CMBM), Mr. Choudhury is the Partnerships and Research Manager, a CMBM National Training Faculty/ Supervisor. He is also a CMBM Certified Mind-Body Skills Group Facilitator and regularly leads groups in the Texas Medical Center and his community in Houston, TX. His background in neuroscience and biomedical research is foundational to his clinical practice which promotes people's innate potential to heal and develop resilience through the practice of mind-body practices. Mr. Choudhury is also involved in the research, development, and implementation of scalable systems for health transformation.
- Christina Clare** is an aspiring Neonatologist at the V.N. Karazin Kharkiv National University and Research Volunteer in pediatric bipolar disorder. Her passion is to discover new ways to integrate various related research interests to further the horizon of medicine in a sustainable manner. Her main areas of interest includes the neurological underpinnings of non-substance addictions, neonatology, genetics and psychiatric disorders such as depression/anxiety/trauma. Her introduction to Mind-Body techniques came in the wake of the war in Ukraine, through professional training at The Center of Mind Body Medicine, which she aims to harness in order to promote sustainable personal and community health and wellness.
- Snigdha Srivastava**, MD/PhD candidate at Baylor College of Medicine in the Department of Molecular and Human Genetics. Her research interests focus on uncovering the basic mechanisms underlying neurological and psychiatric diseases from addiction to mood and developmental disorders.
- Sam Tullman** works and studies primarily in the fields of Health Behavior and Behavioral Neuroscience. He currently serves as Head of Experiential Neuroscience at FIELD Neuroscience Solutions, and is a member of the Emergent Phenomena Research Consortium (EPRC) working to bring study of altered experiences into the mainstream of society. Sam was also a 2021 Fulbright scholar to Brazil studying the impacts of regular Ayahuasca ceremonies on spontaneous thought processes, and joined Mind & Life's Summer Research Institute in 2020 and 2021 as an Emerging Researcher. In addition to his work in Neurofeedback and meditation practices with adolescents, Sam also has specifically studied the best practices for communicating about these practices with

early adolescents, who can be a particularly hard population to keep engaged in health behaviors.

Lance Westendarp is a Washington-licensed naturopathic physician and acupuncturist who practices in Houston, TX as an acupuncturist, herbalist and movement teacher specializing in mind-body medicine. He obtained his naturopathic and acupuncture education in Seattle, WA at Bastyr University and completed a primary care residency affiliated with that institution. He is board certified in biofeedback (BCB) through the Biofeedback Certification International Alliance (BCIA). Dr. Westendarp's area of clinical interest and research lies in exploring the connection between the autonomic nervous system, psycho-emotional trauma, chronic illness and pain. He uses acupuncture, herbal medicine, breath training, yoga and movement therapy as primary modalities in helping his patients recover from chronic illness and pain along with addressing the psychological stress associated with their diagnoses and symptoms. Lance has lectured extensively on mind-body medicine at multiple institutions including the Jung Center and the non-profit organization United Way.

Sana Younus completed her medical education from Dow Medical College, Pakistan. She then pursued her career in Mental Health and completed her training in adult, child, and adolescent psychiatry from the Aga Khan University in Pakistan. She is a third-year psychiatry resident at Baylor College of Medicine. She has a special interest in child and adolescent mental health and plans to further her career in the domain of global mental health policy and mental health advocacy for children and adolescents.

Kirti Saxena, MD is Associate Professor of Psychiatry at the Baylor College of Medicine and the Division Chief of Child/Adolescent Psychiatry at Texas Children's Hospital/Baylor College of Medicine. Her interests focus on the diagnosis and treatment of pediatric bipolar disorder. While working with youth with mood disorders, Kirti developed an interest in utilizing mind-body techniques such as yoga/meditation/mindfulness as adjunct therapies in the treatment of mood disorders in children and adolescents.

Index

A

Abnormal eye movements, 212–213
Academic skills, 42–43, 339, 439
Acne excoricee, 270
Acupuncture, 254, 327, 487–497
Acute pain, 294, 295, 381
Adolescents, vii, ix, xi, xii, 5, 14, 49–60, 63–66, 68, 69, 73, 81, 82, 84–87, 90, 94, 99, 100, 102–104, 107, 109, 110, 112, 115, 116, 118–120, 123, 125, 126, 132, 133, 143, 149, 157–160, 163, 164, 167–177, 181–190, 193–202, 205–214, 217–226, 229–239, 243–256, 259–270, 273–280, 283–289, 293–303, 305–314, 317, 321–324, 327, 328, 331–344, 349–352, 359, 360, 371, 377, 379–381, 385, 386, 391–395, 400, 405–421, 425–432, 435–445, 449–460, 463–470, 473–483, 487–497, 501–511
Aerophagia, 233, 248, 249
Affective agnosia, 157
Aggressive behavior, 27, 33, 81, 87, 106, 108, 126, 323, 325, 352, 357, 359, 396, 441, 453
Agitation, 177, 211, 323, 325, 353, 382, 385
Alexithymia, xiv, 157–164, 250, 267, 458
Alice in Wonderland syndrome, 211
Alopecia areata, 265, 266, 270
Altruism, 427
Anaclitic depression, 131
Anguish, 87, 92, 133, 158, 233, 236, 262, 284, 307, 319, 352, 353, 463
Anorgasmia, 289
Antipathy, xiii, 80, 82–84, 86–90, 92, 93, 125
Anxiety, xiv, 14, 22, 33, 40, 51, 54, 56, 59, 60, 66–70, 73, 80, 86, 92, 101, 104–108, 110, 111, 115, 120, 125, 126, 131–133, 135, 144, 149–151, 157, 160, 162, 168–174, 182–189, 195, 197, 199, 200, 214, 219, 220, 222, 223, 225, 226, 230–236, 244, 245, 247, 249, 250, 252, 254, 256, 260–270, 273, 274, 276–278, 280, 283–289, 296–298, 300, 301, 305–308, 310–314, 321, 322, 324, 325, 336, 350–352, 359, 365–367, 378, 383, 384, 391, 392, 399, 401, 402, 405, 408, 409, 412–415, 417–419, 421, 425–427, 429, 430, 432, 436, 438–440,

442–444, 451, 454–460, 463, 467, 468, 475, 476, 478–480, 482, 488, 489, 491, 492, 495, 496, 504–508, 510

Anxiety and dyspnea, 384

Astasia abasia, 197, 201, 458, 459

Atopic dermatitis, 261, 262, 305–307

Attachment, xiii, 6, 7, 22, 46, 50, 86, 90, 94, 101, 111, 112, 119, 122, 137, 138, 150, 158, 159, 189, 220, 221, 357–359, 454, 468, 476

Atypical neurodevelopment, 331

Authoritarian parenting beliefs, 308

Aversion to touch, 131

Avoidance of feeling, 367

Avoidant attachment style, 158

Ayurveda, 473–475, 478–480, 482, 483

B

Behavioral and emotional dysregulation, 50

Behavioral communication, 60, 337, 441, 492

Benign paroxysmal vertigo, 224

Biofeedback, xiv, 214, 239, 263, 264, 276, 280, 285, 286, 302, 309, 312, 313, 327, 367, 402, 501–511

Body distress syndrome, 168

Body image, ix, 6, 14, 84, 172, 211, 322

Bötzinger complex expiratory neurons, 231

Broken heart syndrome, 278–279

Bronchial asthma, 232, 307

Burden of care, 363

Burnout, 95–96, 124, 343, 351, 482

C

Campimetry, 206, 208

Cannabinoid induced hyperemesis, 245, 247–248

Cardiac-focused anxiety, 277–278

Cerebral palsy, ix, 38, 334, 335, 337, 340, 353, 366, 508

Child chronic distress, 189

Child exploitation, 46

Child psychiatry practice, 394

Child psychotherapy, xi, 393, 463

- Children, v, vii, ix, xi–xiv, 3, 5–17, 21–33, 35–46, 49–51, 53–60, 63–70, 72–74, 79–95, 99–112, 115–123, 125, 126, 129–137, 141–151, 157–164, 167–177, 181–190, 193–202, 205–214, 217–226, 229–239, 243–256, 259–270, 273–280, 283–289, 293–303, 305–314, 317–328, 331–344, 349–360, 363–373, 377–386, 391–402, 405–421, 425–432, 435–445, 449–460, 463–470, 473–483, 487–497, 501–511
- Chronic fatigue, xiv, 71, 163, 167–177, 256
- Chronic pain, 123, 132, 160, 254, 287, 288, 293–299, 301, 302, 328, 349, 381, 401, 436, 442, 443, 459, 487, 503, 508, 510
- Chronic pruritus, 261–262
- Chronic stress in childhood, 277
- Client-centered consultation, 322–325
- Cognitive and behavioral psychotherapy, 188, 225, 312, 392
- Communicating through symptoms, 68, 70, 378–380
- Complex care needs, 349–360, 363–373
- Computer vision syndrome, 206–207
- Concrete operations, 320
- Consultation-liaison, xiv, 317–321, 325, 327
- Consultee-centered consultation, 325–326
- Corporal language, 160
- Crohn's disease, 313
- Cyclic vomiting, 246–248
- D**
- Delirium, 176, 177, 211, 319, 321, 325, 328, 385, 475
- Depression, 33, 56, 69, 73, 82, 83, 85, 87–88, 90, 91, 110–112, 115, 119, 125, 131, 144, 150, 151, 169–171, 173, 174, 184, 194, 224, 250, 254, 256, 260, 262, 266, 269, 274, 277, 279, 289, 296, 299, 300, 308, 310–312, 314, 325, 326, 336, 350–352, 359, 363, 365, 366, 383, 385–386, 392, 399, 401, 402, 414, 415, 417, 419, 421, 425–427, 429, 430, 432, 436, 438, 440–443, 475, 479–482, 488–490, 495, 496, 505–507, 510
- Developmental disability, xiv, 331–344, 359, 360, 398
- Dissociation, xiv, 14, 22, 70, 99, 102, 109, 123, 126, 133–134, 173, 263, 450, 452, 455, 456, 459, 463
- Doctor shopping, 147
- Dysbiosis, 314
- E**
- Early painful experiences, 132
- Eczema, 259, 305–307
- Embodied mind, 6, 21
- Embodiment of neglect, 79–96
- Embodiment of the self, xiii, 3–17, 35–46, 286
- Embodiment of trauma, 99–113, 115–126
- Emotional abuse, 79–82, 84–87, 89–93, 150
- Emotional distance, 136, 320, 402
- Emotional invisibility, 87
- Emotional needs, 33, 55, 81, 94, 350, 351, 360, 366–368
- Emotional pain, xiii, 11, 107, 136, 164, 237, 299, 301, 355, 377, 399, 451, 458
- Emotional regulation, 56, 69, 158, 407, 412, 413, 489
- End of life care, 377
- Episodic fainting, 274
- Erectile dysfunction, 288, 289
- Erythrophobia, 264
- Excessive masturbation, 289
- Executive functions, 40, 168, 421, 435, 441
- Eye Movement desensitization, xiv, 263, 367, 402, 464
- F**
- False belief, 26
- Family dysfunction, 170
- Family resilience, 363, 368
- Family stress, 173
- Family therapy, xi, 67, 125, 161, 162, 172, 187, 202, 220, 223, 225, 232, 247, 252, 269, 276, 277, 280, 302, 327, 393, 399–401, 460, 469
- Fear of emotions, 160
- Fibromyalgia, xiv, 170–172
- Flashback, 225, 367, 464, 469
- Flexible psychotherapy, 263
- Foreign accent syndrome, 220
- Functional blepharospasm, 213, 214
- Functional cardiovascular symptoms, 273
- Functional dizziness, 226
- Functional dyspepsia, 250, 251, 254
- Functional gastrointestinal disorders, 245, 246, 251, 457
- Functional hearing loss, 217–218
- Functional itch disorder, 260–261
- Functional paralysis, 5, 459
- Functional paresthesias, 234, 327
- Functional strabismus, 212
- Functional vertigo, 224–225
- G**
- Genital dysfunction, 288–289
- Globus hystericus, 222, 223
- Goosebumps, 265
- Gorlin–Likoff syndrome, 278
- Guided imagery, 118, 309, 383, 450, 457, 466
- Gut–brain interactions, 243–256
- H**
- Harsh parenting, 232, 393
- Headache, 68, 101, 123, 148–150, 157, 159, 160, 167, 169, 171, 183, 189, 199, 201, 206, 224, 234, 246, 251–252, 254, 268, 294, 298–301, 309–312, 327, 352, 401, 428–430, 432, 443, 481, 501, 508, 509
- Healthy children, 364–367, 406
- Holistic treatment, 497
- Home care, 363, 366, 370
- Hospitalism, 131, 132
- Hyperacusis, 169, 218–220
- Hyperhidrosis, 187, 264–265, 270
- Hypersensitivity to pain, 254
- Hyperventilation syndrome, 233, 234, 239

Hypnosis, xiv, 133, 172, 189, 194, 226, 232, 238, 239, 254, 263, 268, 270, 285, 301, 302, 314, 327, 402, 449–460, 466, 468
 Hypochondria, xiv, 167, 181–190, 280

I

Identity, 45, 50, 51, 56, 58, 60, 109, 121–124, 135, 146, 222, 262, 331–333, 335, 336, 338, 340, 342, 343, 359, 391, 456
 Idiographic psychiatry, 42
 Illness anxiety, 149–151, 181–190
 Illness behavior, 185, 299
 Incongruent symptoms, 338
 Induction technique, 452, 454
 Infancy, ix, xiii, 3–17, 29, 30, 52, 82, 87, 104, 120, 131, 132, 246, 249, 255, 296, 305, 325, 331, 394, 396, 435
 Inflammatory bowel disease, 254, 313, 314, 443, 457
 Intellectual disability, ix, 195, 319, 333, 335–340, 381, 385
 Interpersonal trauma, 115
 Intersubjectivity, 4–9, 16, 17, 394
 Intestinal flora, 253, 255, 313, 314
 Irritable bladder, 284–285
 Irritable bowel syndrome, 157, 171, 251–256, 288, 314, 488, 508
 Itching, 234, 259, 261, 262, 305–307, 474

J

Juvenile fibromyalgia, 171

K

Kangaroo care, 130

L

Liaison mental health, 327

M

Magical thinking, 25, 182, 322, 381
 Marital conflict, 85, 237, 469
 Medical child abuse, xiv, 141, 142, 147–151
 Medicalizing families, 160–163
 Medical trauma, 99
 Meditation, xiv, 250, 302, 406, 409, 410, 412, 414, 416, 418, 421, 425–432, 435–439, 443, 444, 480
 Mental health, v, xii, 22, 66–70, 73, 79, 86, 87, 91, 94, 95, 100, 102, 110, 111, 116, 118–120, 124, 125, 136, 138, 151, 163, 164, 217, 230, 235, 237, 239, 252, 260, 262, 270, 300–303, 317–319, 321, 322, 324–328, 336, 337, 343, 351, 356, 357, 359, 360, 366, 367, 369, 370, 372, 386, 405, 406, 409, 410, 420, 421, 426, 428–430, 432, 435, 440, 449, 470, 475, 476, 483, 488, 489, 493, 496, 497, 505–507, 510

Migraine, xiv, 206, 211, 213, 224, 225, 246, 251, 279, 298, 309–313, 429
 Mind-body interactions, 454
 Mindfulness, vii, xiv, 172, 236, 280, 285, 300, 301, 308, 409, 412, 413, 420, 425–428, 430–432, 435–445, 467, 480, 497, 503
 Mindfulness-based intervention (MBI), 435, 438, 440–444
 Mindless psychiatry, 63–74
 Mirroring, 6, 15, 88–89
 Mothering, 174
 Motor disability, 337, 338
 Motor skills, 22–24, 36, 37, 131
 Multidisciplinary team, 151, 301, 326, 379
 Munchausen by proxy, xiv, 141–151
 Myalgic encephalopathy, 167

N

Nail biting, 230, 266
 Naming feelings, 367
 Neglect, ix, xi, xiii, 80–84, 86–87, 89–95, 100, 115, 117, 125, 131, 150, 159, 172, 288, 296, 476
 Neonatal assessment and intervention, 382
 Neonatal Intensive Care Unit (NICU), 5, 104, 129–137, 142
 Neurasthenia, 167, 168, 181
 Neurofeedback, 503–505, 510
 Neurophysiological development, 52–53
 Nomothetic psychiatry, 64, 65
 Non-epileptic seizures, 194
 Non-specific chest pain, 278
 Non-verbal communication, 395

O

Onychophagia, 266, 268

P

Pain hypersensitivity, 254
 Pain in children, 236, 293–303
 Pain management, 171, 172, 381, 383, 428, 429
 Pain physiology, 294–295
 Palliative care, 377–383, 385, 386
 Parental hostility, 90, 308
 Parentification, 246, 342
 Parenting strategies, 256, 368, 455
 Paruria, 285, 286
 Passive aggression, 256
 Patient narratives, 69, 378
 Patient satisfaction, 369, 444
 Peer group, 57, 74, 104, 108, 248, 254, 339
 Perfectionism, 69, 169, 195, 250, 312, 418, 491
 Phonophobia, 218–220, 310, 311
 Physical abuse, 81, 86, 99, 115–118, 131, 150, 185, 269, 398
 Physical discipline, 33, 124
 Play psychotherapy, 395, 465
 Playground politics, 46

Posttraumatic stress disorder (PTSD), 101, 102, 111, 144, 225, 273, 301, 367, 442, 455, 464, 495, 496, 505, 507, 510

Posttraumatic symptoms, 135, 248, 363, 367, 402, 455, 468, 469

Premature ejaculation, 289

Preoperational thinking, 22

Primary chronic pain, 300

Process of dying, 385

Pseudohypoacusis, 217–218

Pseudoseizures, 72, 73, 207, 458, 459

Psychiatric consultation, 235, 328

Psychiatric disorders, 309, 339, 343, 442, 443

Psychodynamic psychotherapy, 157, 188, 223, 247, 254, 264, 266, 308, 392, 459

Psychodynamics, xiii, 36, 49, 67, 71, 81, 112, 141, 173, 188, 189, 231, 247, 255, 259, 263, 298, 302, 324, 358, 391, 394, 395, 397, 452, 458

Psychogenic cough, 231, 232

Psychogenic diplopia, 210

Psychogenic pain, 217, 252, 298–300

Psychogenic purpura, 268–269

Psychogenic stridor, 238, 239

Psychogenic stuttering, 219, 221

Psychogenic syncope, 274–276

Psychogenic tics, 196

Psychosomatic dermatology, 260

Psychosomatic families, 160–162

Psychosomatics, vii, ix, xiv, 5, 14, 67–68, 70–73, 157–162, 209, 213, 225, 260, 262, 273, 327–328, 392, 458, 467

Puberty, 51–52, 57, 298, 355, 359, 456

R

Reenactment, 450, 464, 468

Reexperiencing, 263, 466

Reexperiencing traumatic memories, 263

Reflux hypersensitivity syndrome, 249

Repeated hospitalization, 133, 246, 318, 350

S

School readiness, 123

Self-concept, 336, 411

Self-esteem, 84, 86, 90, 116, 173, 260, 262, 264, 338, 407, 409, 411–414, 417, 418, 421

Sensory integration, 37, 40, 256, 493

Sexual abuse, xiii, 81, 87, 89, 99, 115, 116, 118–124, 172, 195, 287, 398

Sexuality, 49, 50, 57, 119, 120, 122, 220, 286, 289, 322, 338, 359

Sick role, 143, 146, 150, 299, 401

Sighing dyspnea, 233

Simulation of symptoms, 144, 145

Skin picking, 66, 102, 259, 266, 268, 269

Skin to skin contact, 8, 11, 12

Social media, 45–46, 108, 145, 148, 163, 196

Somatic narcissism, 189

Somatization, ix, 54, 68, 69, 100, 109, 119, 120, 123, 126, 144, 157, 160, 169, 173, 209, 224, 229, 254, 256, 299, 303, 327, 401, 467

Somatoform autonomic dysfunction, 278

Somatoform disorder, vii, ix, 72, 168, 295, 325, 475

Spirituality, 479, 482

Staff turnover, 95

Stigmatization, 66, 100, 202, 338

Suggestion, 151, 163, 176, 189, 210, 232, 237, 238, 261, 266, 319, 371, 394, 440, 450, 453, 469

Symbolic play, 26, 31, 395, 397, 398, 498

T

Takotsubo myopathy, 279

Team centered consultation, 326

Tension headache, 310, 311, 429, 458

Tertiary level care, 350, 369

Theory of mind, 25, 26, 157, 398

Thinking in actions, 157

Throat-clearing tic, 230

Tilting table test, 275

Total pain syndrome, 378–379

Tracheostomy, 134–137, 143, 144, 355, 356, 358, 364

Trance, 231, 238, 254, 270, 314, 450, 451, 453, 455, 457–460

Trauma, vii, ix, xiii, 22, 71, 87, 99–104, 109–113, 115–126, 137, 159, 172, 174, 198, 217, 222, 263, 268, 273, 294, 300, 301, 309, 401, 419, 450, 455, 456, 463, 464, 466–468, 476, 495, 496

Trauma-informed care, 103, 123–125

Traumatic loss, xiv, 99, 125, 188, 463

Traumatic neurosis, 11, 450

Trauma triggers, 263, 307

Trichotillomania, 265–268

Tussis nervosa, 230–232

U

Ulcerative colitis, 313, 315

Unexplained abdominal pain, 251–252

Unexplained chest pain, 236

Unexplained dysphonia, 219–220

Unexplained pelvic pain, 288

Urinary frequency, 283, 284

Urinary retention, 283, 286, 385

Urinary urgency, 284

Urticaria, 141, 142, 261–264

V

Vaginismus, 287

Visual behavior, 206, 208

Visualization, 118, 314, 413, 437, 451, 453, 455, 498

W

Wish to control, 125, 185

Y

Yoga, vii, xiv, 172, 236, 250, 254, 285, 301, 327, 405–421, 425–427, 431, 439, 441, 477, 480

Youth rebellion, 399