

Jasper A. J. Smits · Jolene Jacquart ·
Jonathan Abramowitz · Joanna Arch ·
Jürgen Margraf *Editors*

Clinical Guide to Exposure Therapy

Beyond Phobias

 Springer

Clinical Guide to Exposure Therapy

Jasper A. J. Smits • Jolene Jacquart
Jonathan Abramowitz • Joanna Arch
Jürgen Margraf
Editors

Clinical Guide to Exposure Therapy

Beyond Phobias

 Springer

Editors

Jasper A. J. Smits
Department of Psychology and Institute
for Mental Health Research
The University of Texas at Austin
Austin, TX, USA

Jolene Jacquart
Department of Psychology
The University of Arizona
Tucson, AZ, USA

Jonathan Abramowitz
Department of Psychology
and Neuroscience
University of North Carolina – Chapel Hill
Chapel Hill, NC, USA

Joanna Arch
Department of Psychology
and Neuroscience
University of Colorado Boulder
Boulder, CO, USA

Jürgen Margraf
Mental Health Research and
Treatment Centre
Ruhr-Universität Bochum
Bochum, Germany

ISBN 978-3-031-04926-2

ISBN 978-3-031-04927-9 (eBook)

<https://doi.org/10.1007/978-3-031-04927-9>

© The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Switzerland AG 2022

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

Contents

1	The Basics of Exposure Therapy	1
	Jolene Jacquart, Jonathan Abramowitz, Joanna Arch, Jürgen Margraf, and Jasper A. J. Smits	
Section I Populations with Anxiety and Mental Health Comorbidities		
2	Exposure for Multiple Anxiety Disorders	35
	Kathleen E. Stewart and Martin M. Antony	
3	Exposure in the Context of Health Anxiety: Considerations for Assessment, Case Conceptualization, and Intervention	51
	Thomas A. Fergus, Steven Taylor, and Gordon J. G. Asmundson	
4	Exposure Therapy when Patients Present with Comorbid Depression	67
	Jonathan D. Huppert and Hila Sorka	
5	Exposure Therapy when Patients Present with Comorbid Substance Use Disorders	87
	Logan R. Harvey, Tanya C. Saraiya, Katherine L. Mills, Delisa G. Brown, Amber M. Jarnecke, Sudie E. Back, and Lexine A. Stapinski	
6	Exposure Therapy for Anxiety and Obsessive-Compulsive Disorders Among Individuals with Autism Spectrum Disorder	109
	Lindsey N. Landry, Rebecca J. Clayton, Morgan M. Mcneel, Andrew Guzick, Leandra N. Berry, Sophie C. Schneider, and Eric A. Storch	
7	Exposure Therapy When Patients Present with Comorbid Borderline Personality Disorder	125
	Melanie S. Harned, Natalia M. Garcia, and Trevor N. Coyle	

8 Exposure Therapy When Patients Present with PTSD and a Comorbid Psychotic Disorder	143
Wilson J. Brown and Anouk L. Grubaugh	
Section II Populations with Anxiety and Physical Health Comorbidities	
9 Treating Anxiety Disorders in Patients with Cardiovascular Disease: How to Formulate Exposure Therapy When Anxiety Mimics the Heart.	161
Phillip J. Tully, Susanne S. Pedersen, Susanne M. Cosh, and Guillaume Foldes-Busque	
10 Exposure Therapy when Patients Present with Asthma	183
Juliet Kroll and Alicia E. Meuret	
11 Exposure Therapy with Patients Who Are Pregnant.	201
Fiona L. Challacombe and Megan A. Jansen	
Section III Distinct Developmental Populations with Anxiety Disorders	
12 Applying Exposure Therapy with Children	221
Silvia Schneider, Verena Pflug, and Kristen L. Lavallee	
13 Applying Exposure Therapy with Older Adults	239
Simon Forstmeier and Jan Ochel	
Section IV Clinical Populations with Problems Outside of Anxiety Disorders	
14 Exposure Therapy in the Treatment of Substance Use Disorders	261
R. Kathryn McHugh, Jesse D. Kosiba, and Alexandra R. Chase	
15 Using Exposure Therapy for Eating Disorders	277
Carolyn Black Becker, Nicholas R. Farrell, and Glenn Waller	
16 Exposure Exercises for Overeating, Binge Eating, and Obesity.	299
Kerri N. Boutelle, Dawn M. Eichen, and Nicole E. Virzi	
17 The Application of Exposure Principles to the Treatment of Depression	317
Adele M. Hayes, Carly Yasinski, and Elizabeth Alpert	
Index.	347

List of Contributors

Jonathan Abramowitz, PhD is Professor and Director of Clinical Training in the Department of Psychology and Neuroscience at the University of North Carolina at Chapel Hill, USA. His research and clinical work focus on the treatment and study of anxiety and obsessive-compulsive disorder (OCD). He has authored over 300 scientific publications and 20 books, which have been translated into several languages. He served as president of the Association for Behavioral and Cognitive Therapies and as editor or associate editor of several academic journals. Dr. Abramowitz has received wide recognition for his scholarly work and contributions.

Elizabeth Alpert, PhD is an Advanced Fellow in Women's Health in the Women's Health Sciences Division of the National Center for PTSD at VA Boston Healthcare System. Her research focuses on processes of therapeutic change and dropout in evidence-based treatments for posttraumatic stress disorder. The goal of her work is to intervene to improve patient engagement and treatment outcomes.

Martin M. Antony, PhD is a professor in the Department of Psychology at Ryerson University and provincial clinical and training lead for the Ontario Structured Psychotherapy Program. Previously, he was founding director of both the Anxiety Treatment and Research Clinic and the Psychology Residency Program at St. Joseph's Healthcare Hamilton. He is a fellow of the Royal Society of Canada, and a past president of the Canadian Psychological Association and the Association for Behavioral and Cognitive Therapies. He has published more than 30 books and over 300 scientific articles and chapters in areas related to cognitive behavior therapy and anxiety-related disorders.

Joanna Arch, PhD is Professor of Psychology and Neuroscience at the University of Colorado Boulder, Member in Cancer Prevention and Control at the University of Colorado Cancer Center, and a licensed clinical psychologist. Her research focuses on developing and evaluating interventions designed to address anxiety disorders and to improve well-being among adults with cancer, with a focus on

acceptance-based interventions. She has received funding in both mental health and cancer care populations from the National Institutes of Health, American Cancer Society, and the Templeton Foundation.

Gordon J. G. Asmundson, SOM, PhD, RD Psych, FRSC is a Registered Doctoral Psychologist, Full Professor of Psychology at the University of Regina, President's Research Chair, and Co-Director of the Psychology of Pandemics Network. He is editor-in-chief of the *Journal of Anxiety Disorders* and of *Clinical Psychology Review*. Dr. Asmundson has published more than 380 peer-reviewed journal articles, 70 book chapters, and 9 books. He is a Fellow of the Royal Society of Canada (2009), has received the Canadian Psychological Association (CPA) Donald O. Hebb Award for Outstanding Contributions to the Science of Psychology (2014), the Molson Prize for Outstanding Achievements in the Social Sciences, and was recently invested to the Saskatchewan Order of Merit (2020).

Sudie E. Back, PhD is a professor in the Department of Psychiatry and Behavioral Sciences at the Medical University of South Carolina and a Psychologist at the Ralph H. Johnson VA Medical Center in Charleston, SC, USA. Her research primarily focuses on the treatment (behavioral and pharmacological) of substance use disorders and co-occurring posttraumatic stress disorders.

Carolyn Black Becker, PhD is Professor of Psychology at Trinity University and licensed clinical psychologist who specializes in the treatment of PTSD, OCD, anxiety disorders, and eating disorders. She is board certified in behavioral and cognitive therapy, and is a past president of both the Society for a Science of Clinical Psychology and the Academy for Eating Disorders. Her research interests broadly encompass application of evidence-based interventions in clinical and other "real world" settings.

Leandra N. Berry, PhD is currently an assistant professor in the Section of Psychology within the Department of Pediatrics at Baylor College of Medicine (BCM). She is also a licensed psychologist and Director of the Autism Program within the Meyer Center for Developmental Pediatrics at Autism at Texas Children's Hospital (TCH). Dr. Berry provides clinical assessments to patients in the Autism Program and conducts evaluations for ASD phenotyping studies. Dr. Berry's research interests include early identification and diagnosis of ASD, comorbid conditions such as anxiety, evidence-based interventions, and factors associated with positive treatment outcomes.

Kerri N. Boutelle, PhD is a professor in the Department of Pediatrics, Herbert Wertheim School of Public Health and Human Longevity Science, and Psychiatry, UC San Diego, and is a licensed psychologist. She is the director of the Center for Healthy Eating and Activity Research (CHEAR) at UC San Diego, where she conducts randomized trials and basic behavioral and neuroscience studies focusing on treatments for overeating, obesity and binge eating. Dr. Boutelle has been

consistently funded by the NIH since 2002 and she is considered one of the pioneers of using exposure therapy to decrease overeating.

Delisa G. Brown, PhD is a research assistant professor in the Department of Psychiatry at the Medical University of South Carolina. Her research focuses on health disparities among African American and women with substance use and co-occurring trauma related disorders (e.g., racial trauma, PTSD); with the goal of developing culturally relevant treatments.

Wilson J. Brown, PhD is Assistant Professor of Clinical Psychology and Program Coordinator of the Applied Clinical Psychology (ACPSY) master's degree program at Pennsylvania State University, The Behrend College. He is a licensed clinical psychologist in Pennsylvania who specializes in the assessment and treatment of traumatic stress disorders across the lifespan. His current research interests include the utilization of translational research to understand emotion regulation in traumatized populations and the optimization of evidence-based treatments for posttraumatic stress.

Fiona L. Challacombe, PhD is a clinical psychologist and NIHR clinical lecturer at King's College London and the Centre for Anxiety Disorders and Trauma, SLAM NHS Trust, UK. She is a researcher in the field of perinatal anxiety disorders and conducted the first treatment trial of CBT for perinatal OCD. Her research focuses on improving treatments for women with anxiety disorders during pregnancy.

Alexandra R. Chase, PhD graduated from Northeastern University in 2020 and worked as a Clinical Research Assistant in the Alcohol and Drug Addiction Treatment Program at McLean Hospital from 2019–2021.

Rebecca J. Clayton, Med is a school psychological doctoral candidate at the University of Houston. Her scholarly interests are in autism spectrum disorder and treating associated comorbidities.

Susanne M. Cosh, PhD is registered psychologist and Associate Professor of Clinical Psychology at the University of New England, Australia. She has a strong research track record in comorbid depression and anxiety in chronic health conditions including cardiovascular diseases, having undertaken research projects in Australia and Europe. She is a clinical supervisor and has a strong focus on translating research into clinical practice.

Trevor N. Coyle, PhD is a Staff Psychologist at the VA Pacific Islands Health Care System in Honolulu, Hawaii. During graduate school, Dr. Coyle was a doctoral student under the mentorship of Drs. Marsha Linehan and Melanie Harned at the University of Washington researching treatment for suicidal behaviors, including DBT and DBT PE. His clinical and research interests include DBT, PTSD, DBT PE,

and traumatic invalidation. Dr. Coyle serves as a national consultant for DBT in the VA system, and he has trained in DBT PE.

Dawn M. Eichen, PhD is an assistant professor at UC San Diego and licensed clinical psychologist. She has conducted eating and weight research since 2006 and has been working on exposures for the treatment of obesity since 2015. She received her undergraduate degree in Psychology from Duke University and then her PhD from the Clinical Psychology program at Temple University.

Nicholas R. Farrell, PhD is a licensed clinical psychologist and a Clinical Director at NOCD where he provides clinical leadership and direction for teletherapy services. He is a recognized expert in researching and treating eating disorders, anxiety disorders, and other related conditions. He has published numerous scholarly works, including peer-review journal articles, book chapters, and books, and he frequently gives presentations at international conferences and other training workshops on maximizing the effectiveness of evidence-based treatment for common mental health conditions. He has considerable experience designing and overseeing several successful training programs that have enhanced the dissemination of evidence-based psychotherapy.

Thomas A. Fergus, PhD is an associate professor in the Department of Psychology and Neuroscience at Baylor University. He specializes in the nature and treatment of anxiety and related disorders, having published over 100 peer-reviewed articles related to these disorders. He serves as the associate editor of *Assessment* and the *Journal of Obsessive-Compulsive Related Disorders*.

Guillaume Foldes-Busque, PsyD, PhD is Professor of Psychology at Université Laval, in Quebec, Canada. As a clinical psychologist, he is actively involved with patients suffering from anxiety disorders and cardiovascular diseases. His research program aims to improve the effectiveness of psychological interventions targeting anxiety and related difficulties in individuals with cardiovascular symptoms or conditions. Dr. Foldes-Busque cofounded and is a director of the Study and Intervention Center for Mental Health at Université Laval.

Simon Forstmeier, PhD is Professor of Developmental Psychology and Clinical Psychology of the Lifespan at the University of Siegen, Germany. He started his career as clinical psychologist and psychotherapist in a psychosomatic hospital, before he focused on research on clinical gerontopsychology, psychotherapy with the elderly, and lifespan psychology. He conducted psychotherapy research on depression, posttraumatic stress disorder, and dementia in old age. In 2008, he received the Vontobel prize for aging research and 2012 the Margret and Paul Baltes prize for gerontological research.

Natalia M. Garcia, PhD is a licensed clinical psychologist at VA Puget Sound – Seattle. She has research interests in PTSD, trauma recovery, and providing

culturally responsive mental health care. She is trained in DBT, PE, DBT PE and has received supervision from Drs. Marsha Linehan and Melanie Harned at the University of Washington and VA Puget Sound, respectively. Natalia has specific expertise working with Veterans, sexual assault survivors, and individuals with Borderline Personality Disorder.

Anouk L. Grubaugh, PhD is Associate Professor of Psychiatry at the Medical University of South Carolina and a Research Health Scientist at the Veterans Affairs Medical Center in Charleston South Carolina. She is a clinical psychologist by training with expertise in the assessment and treatment of posttraumatic stress disorder (PTSD) in public sector practice settings. Along this theme, she has conducted several clinical trials and published extensively on the application of evidence-based treatments for PTSD among individuals with comorbid forms of severe mental illness.

Andrew Guzick, PhD is a clinical psychologist and assistant professor in the Department of Psychiatry and Behavioral Sciences at Baylor College of Medicine. His research interests are in the assessment and treatment of individuals with anxiety, obsessive-compulsive, mood, and related disorders. He also provides therapy and supervises trainees in the Baylor College of Medicine OCD and Mood Disorders Programs.

Melanie S. Harned, PhD is a Psychologist and Coordinator of the DBT Program at the VA Puget Sound Health Care System, Seattle Division as well as an associate professor in the Department of Psychiatry and Behavioral Sciences at the University of Washington. Previously, Dr. Harned worked as the Research Director of Dr. Marsha Linehan's Behavioral Research and Therapy Clinics at the University of Washington (2006–2018), Director of Research and Development for Behavioral Tech, LLC (2014–2017), and Director of Behavioral Tech Research, Inc. (2013–2016). Dr. Harned's research focuses on the development and evaluation of the DBT Prolonged Exposure (DBT PE) protocol for PTSD as well as methods of disseminating and implementing this and other evidence-based treatments into clinical practice. She regularly provides training and consultation internationally in DBT and DBT PE.

Logan R. Harvey, MPsych is a Clinical Psychologist with a background in the treatment of comorbid substance use and mental health problems. Logan has a particular interest in comorbid trauma and substance use disorders and is engaged in research and clinical work in this area. Logan's research focuses on the relationship between Complex PTSD and substance use disorders, and how treatment processes can be improved in this area.

Adele M. Hayes, PhD is a professor in the Department of Psychological and Brain Sciences at the University of Delaware. Her research focuses on identifying common therapeutic change processes in current treatments for depression and PTSD

and using this research to develop new, more mechanism-focused treatments for these disorders. This treatment development research has been funded by the National Institute of Mental Health (NIMH). She has published extensively in psychotherapy process research and has been an associate editor of *Journal of Consulting and Clinical Psychology* and *Cognitive Therapy and Research* for this expertise.

Jonathan D. Huppert, PhD is Helen and Sam Beber Chair of Clinical Psychology and Professor in the Department of Psychology at The Hebrew University of Jerusalem in Israel. He is the former department chair and former head of the clinical program. He has been working for over 25 years treating, studying, and working to improve treatments for anxiety and related disorders. He has published over 150 articles and chapters on processes and outcomes in CBT, experimental psychopathology, assessment, emotion regulation, cognitive biases, and theories of treatment.

Jolene Jacquart, PhD is an assistant clinical professor in the Department of Psychology at the University of Arizona and the director of the Psychology Department's Behavioral Health Clinic. Dr. Jacquart received her PhD in Clinical Psychology from the University of Texas at Austin and completed her pre-doctoral internship at Vanderbilt University Medical Center. Her research and clinical areas of focus are on the dissemination and implementation of evidence-based treatments for anxiety and depression-based disorders, developing strategies that enhance treatment outcomes, and in understanding and improving the training of clinicians in the evidence-based treatments.

Megan A. Jansen, PhD is in her final year of her Doctorate in Clinical Psychology at King's College London. She is currently working clinically at the Mother and Baby Unit at the Bethlem Royal Hospital and is conducting research in perinatal mental health.

Amber M. Jarnecke, PhD is a clinical psychologist and Assistant Professor at the Medical University of South Carolina. She received her BA, MS, and PhD from Purdue University and completed her clinical psychology internship and postdoctoral fellowship at the Medical University of South Carolina. Dr. Jarnecke's research focuses on individual and contextual factors that contribute to or protect against substance use disorders, posttraumatic stress disorder (PTSD), and interpersonal violence.

Jesse D. Kosiba, PhD is an Assistant in Psychology at McLean Hospital. His research focuses on better understanding and treating substance use in the context of anxiety-related disorders and chronic pain.

Juliet Kroll, PhD is a clinical psychologist and currently a postdoctoral fellow at the University of Texas MD Anderson Cancer Center. She earned her PhD from Southern Methodist University and completed her clinical internship at UCLA's

Semel Institute, in the Health and Behavior track. Her research focuses on psychosomatic medicine, including the role of stress and mood disorders in patients with chronic medical conditions including respiratory disease and cancer.

Lindsey N. Landry, BS is a school psychological doctoral candidate at the University of Houston. Her research and clinical interests are in autism spectrum disorder and treating associated comorbidities.

Kristen L. Lavalley, PhD is a developmental and school psychologist, and has worked with children in educational and clinical settings in the U.S. and Switzerland. She has co-authored empirical studies, book chapters, and a children's book on treatment for separation anxiety, among other topics on mental health. She is also managing editor of the scientific journal *European Psychologist*. She lives in Providence, RI and is affiliated with Ruhr University Bochum and Humboldt University, Berlin, Germany.

Jürgen Margraf, PhD is Alexander von Humboldt Professor of Clinical Psychology and Psychotherapy at Ruhr-University Bochum, where he is Director of the Mental Health Research and Treatment Center. In his work on mental health, he is particularly interested in the link between etiological and therapeutic research and the interplay of psychological, biological and social factors. His work has led to over 500 publications as well as leading textbooks, clinical dictionaries, and therapy manuals. Prof. Margraf was founding chairman of the Scientific Advisory Board for Psychotherapy of the Federal Republic of Germany, director of the Swiss National Research Center sesam (Swiss etiological study of adjustment and mental health), president of the European Association for Behavioural and Cognitive Therapies, and president of the German Psychological Society (DGPs). He is a member of the Academy of Sciences Leopoldina (German National Academy of Sciences) and a Fellow of the Association for Psychological Science. His work has been repeatedly honored, including the Franz Emanuel Weinert Award for outstanding scientific achievement in research on anxiety and the Young Members' Supervisor Award of the Division of Clinical Psychology and Psychotherapy of the DGPs for outstanding dissertation supervision. He was the first psychologist to receive the Humboldt Professorship, the most highly endowed German research award.

R. Kathryn Mchugh, PhD is an Associate Professor at Harvard Medical School and the Director of the Stress, Anxiety and Substance Use Laboratory at McLean Hospital. Her research focuses on the nature and treatment of substance use and psychiatric disorders and is currently funded by the National Institute on Drug Abuse. She is also a practicing clinical psychologist and the Director of Behavioral Treatment Research, Development and Training in the Division of Alcohol, Drugs and Addiction at McLean Hospital.

Morgan M. Mcneel, BA Ms. Morgan McNeel is a school psychological doctoral candidate at the University of Houston. Her scholarly interests are in autism spectrum disorder and treating associated comorbidities.

Alicia E. Meuret, PhD is a professor in the Department of Psychology at Southern Methodist University (SMU), the Director of the SMU Anxiety and Depression Research Center, and a licensed clinical psychologist. She completed her doctoral studies at Stanford University Department of Psychiatry and Behavioral Sciences and her postdoctoral studies at the Affective Neuroscience Laboratory at Harvard University and the Center for Anxiety and Related Disorders at Boston University. Her research program focuses on novel treatment approaches for anxiety and mood disorders, biomarkers in anxiety disorders and chronic disease (asthma), fear extinction mechanisms of exposure therapy, and mediators and moderators in individuals with affective dysregulations, including non-suicidal self-injury. Dr. Meuret has published over 100 scientific publications and authored over 200 conference presentations. Her work has received ongoing funding from the National Institutes of Health and other funding agencies, and she has received multiple honors, including from the Anxiety and Depression Association of America, the Psychiatric Research Society, the American Psychosomatic Society.

Katherine L. Mills, PhD is the Director of Early Intervention and Treatment Research at The Matilda Centre for Research in Mental Health and Substance Use, University of Sydney, Australia. Her awarding winning program of work focuses on evaluating innovative treatment approaches for co-occurring mental and substance use disorders, improving our understanding of the relationship between disorders, and improving the translation of research into practice. In particular, Prof. Mills' work focuses on the treatment of trauma, posttraumatic stress disorder and substance use. She is recognized as a leader in the field and has published and presented widely in the area.

Jan Ochel, PhD is working as psychotherapist since 2006 and has a special focus on psychotherapy with older traumatized clients since 2008 when he started to work with cognitive behavioral trauma therapy and metacognitive training with old patients. In his PhD studies, he explores topics concerning trauma therapy and attachment theory at the University of Siegen, Germany.

Susanne S. Pedersen, PhD is Professor of Cardiac Psychology at the University of Southern Denmark and affiliated with the Department of Cardiology Odense University Hospital. She has published more than 250 papers in peer-reviewed scientific journals on the interface between psychology and cardiology. She has contributed to several books in the field, including *Textbook of Applied Medical Psychology*, *ESC Textbook of Cardiovascular Medicine*, *Cardiovascular Behavioral Medicine*, *Percutaneous Interventional Cardiovascular Medicine – The PCR-EAPCI Textbook*, and *Heart and Mind: The Practice of Cardiac Psychology*.

Verena Pflug is a clinical psychologist and licensed child- and adolescent psychotherapist. She works at the Clinical Child and Adolescent Psychology and at the Mental Health Research and Treatment Center at the Ruhr-University Bochum, Germany. She conducts research on emotional disorders in children and adolescents, diagnostics of mental disorders, school absenteeism and optimizing psychotherapy for anxiety disorders.

Tanya C. Saraiya, PhD is a licensed clinical psychologist and Assistant Professor at the Medical University of South Carolina in Charleston, South Carolina. Her research focuses on the development and adaptation of integrated psychotherapy treatments for posttraumatic stress disorder (PTSD) and co-occurring substance use disorders (SUD) to historically marginalized populations, such as women, racial and ethnic minorities, and individuals with complex, clinical presentations, such as opioid use disorders. She is passionate about the incorporation of individual identity into the design and implementation of treatments for PTSD and SUD and immensely enjoys working with patients.

Sophie C. Schneider, PhD is Adjunct Professor of Psychology in the Department of Psychiatry and Behavioral Sciences at Baylor College of Medicine. Her interests are in body dysmorphic disorder and obsessive-compulsive disorder.

Silvia Schneider, PhD is Professor of Clinical Child and Adolescent Psychology at the Ruhr-University Bochum and Head of the Mental Health Research and Treatment Center in Bochum, Germany. She conducts research on the etiology of emotional disorders in children and adolescents, clinical research in babies and toddlers, familial transmission of anxiety disorders, and diagnostics of mental disorders.

Jasper A. J. Smits, PhD is Professor of Psychology at the University of Texas at Austin, where he directs a research lab and clinic that focus on the treatment of anxiety and related disorders. Among his core interests are developing strategies that enhance exposure therapy outcomes and the training of clinicians in the delivery of this empirically supported intervention.

Hila Sorka, MA is a PhD candidate in the Laboratory for the Study and Treatment of Mental Health and Wellbeing under the direction of Jonathan Huppert. Her interests focus on intrapersonal and interpersonal emotion regulation in depression and anxiety disorders as well as the use of imagery-based interventions for treatment. In particular, she is interested in the mechanisms and moderators of change in imagery rescripting.

Lexine A. Stapinski, PhD is a Clinical Psychologist, Associate Professor and Lead in Intervention and Implementation at the Matilda Centre for Research in Mental Health and Substance Use, University of Sydney. Her research focusses on improving early intervention and treatment for co-occurring anxiety and substance use disorders. Her contributions include developing the first integrated CBT

program for co-occurring social anxiety and alcohol use disorders, and collaborating with youth to co-design a web-based early intervention for anxiety and alcohol misuse. A/Prof. Stapinski has secured >\$23 M in research funding and led 7 large trials to evaluate new intervention approaches. She has produced >100 publications, and her research impact has been recognized by 11 awards, most recently the Elsevier Mental Health and Prevention Mid-Career Researcher award.

Kathleen E. Stewart, MA is currently completing her PhD in Clinical Psychology at Ryerson University in Toronto, Canada. Her doctoral research examines cognitive and emotional reactions to uncertainty in individuals with chronic worry. She has completed clinical training at St. Michael's Hospital (Department of Family and Community Medicine), St. Joseph's Healthcare Hamilton (Anxiety Treatment and Research Clinic), and Sunnybrook Health Science Centre (Frederick W. Thompson Anxiety Disorders Centre). She also has also worked at the Cognition and Psychopathology Lab and the Investigating Methods to Prevent, Assess, and Care for Trauma (IMPACT) Lab at Ryerson University.

Eric A. Storch, PhD is a professor and McIngvale Presidential Endowed Chair in the Department of Psychiatry and Behavioral Sciences at Baylor College of Medicine (BCM). He serves as Vice Chair and Head of Psychology, and oversees the CBT for OCD program at BCM. Dr. Storch specializes in the nature and treatment of childhood and adult obsessive-compulsive disorder, anxiety disorders, PTSD, and anxiety among youth with autism. He has received multiple grants to investigate treatment efficacy, mechanisms of action and how to enhance outcomes for those struggling with these conditions.

Steven Taylor, PhD is a Professor and Clinical Psychologist in the Department of Psychiatry at the University of British Columbia, Canada. Dr. Taylor's work focuses on anxiety disorders and on the psychology of pandemics. He has authored over 300 scientific publications and more than 20 books, which have been translated into many languages. His most recent book, published a few weeks before the outbreak of COVID-19, is *The psychology of pandemics: Preparing for the next global outbreak of infectious disease*.

Phillip J. Tully, PhD has a master's and PhD in clinical psychology and is Senior Lecturer in Clinical Psychology at the University of New England. He has extensive expertise in providing clinical psychology support to adult cardiac patients with recent myocardial infarction, heart failure, arrhythmia, left ventricular assist device, heart transplant, and implantable cardioverter defibrillator. He is editor of the book *Cardiovascular Diseases and Depression Treatment and Prevention in Psychocardiology* and has authored over 100 peer-reviewed papers primarily on the neuropsychiatric outcomes of cardiovascular diseases including cognitive impairment, depression, and anxiety.

Nicole E. Virzi, BA is a PhD candidate at the San Diego State University/UC San Diego Joint Doctoral Program in Clinical Psychology, emphasizing in behavioral medicine. Her research and clinical interests center around health behavior change with a specific focus on the biobehavioral underpinnings of eating, exercise, dieting, and weight management behavior. Nicole's experience working with clinical populations spans various leading institutions, including the Icahn School of Medicine at Mount Sinai (Eating and Weight Disorders Program), Drexel University (Biobehavioral Study of Eating and Weight Lab), the Perelman School of Medicine at the University of Pennsylvania (Center for Studies of Addiction), University of California, San Diego (Center for Healthy Eating and Weight Lab), and the San Diego VA Medical Center (Center for Pain and Headache Research).

Glenn Waller, PhD is Professor of Clinical Psychology at the University of Sheffield, UK. He has an extensive record of clinical work and research publications in the field of eating disorders, and is a co-author on four CBT books in the field. He has delivered a large number of training workshops nationally and internationally. He is a former president of the Academy for Eating Disorders, and is on the editorial board of several international journals. He was on the team who wrote the NICE guidelines on treatment of eating disorders.

Carly Yasinski, PhD is a licensed clinical psychologist and assistant professor in the Department of Psychiatry and Behavioral Sciences at the Emory University School of Medicine. Dr. Yasinski specializes in the treatment of depression and PTSD using exposure-based approaches, and provides clinical services and supervision of trainees through the Emory Healthcare Veterans Program and the Emory Adult Outpatient Psychiatry Program. Her research interests focus on better understanding the process of change during psychotherapy for these disorders and using novel methods to improve clinical outcomes. She had published numerous articles and book chapters in these areas.

Chapter 1

The Basics of Exposure Therapy



**Jolene Jacquart, Jonathan Abramowitz, Joanna Arch, Jürgen Margraf,
and Jasper A. J. Smits**

Abstract Exposure therapy is a widely utilized and researched psychological intervention for the treatment of anxiety disorders, posttraumatic stress disorder (PTSD), and obsessive-compulsive disorders (OCD). Chap. 1 sets the stage for the chapters that follow by providing a brief overview of the history and the evidence base underlying exposure therapy's use in the treatment of anxiety disorders. Also included in Chap. 1 is an overview of *how* exposure therapy is used to treat anxiety disorders, what it targets, and how to implement it with a patient. The focus of Chap. 1 is to provide the reader with a review of the application of exposure therapy in the treatment of anxiety disorders in order to aid the reader's understanding of the adaptations presented in later chapters, which describe using exposure therapy with anxious populations with unique comorbidities and sets of populations with primary issues other than anxiety disorders.

J. Jacquart (✉)

Department of Psychology, The University of Arizona, Tucson, AZ, USA
e-mail: jolenejacquart@arizona.edu

J. Abramowitz

Department of Psychology, University of North Carolina – Chapel Hill,
Chapel Hill, NC, USA
e-mail: jabramowitz@unc.edu

J. Arch

Department of Psychology and Neuroscience, University of Colorado Boulder,
Boulder, CO, USA
e-mail: joanna.arch@colorado.edu

J. Margraf

Mental Health Research & Treatment Centre, Ruhr-Universität Bochum, Bochum, Germany
e-mail: juergen.margraf@rub.de

J. A. J. Smits

Department of Psychology and Institute for Mental Health Research, The University of Texas
at Austin, Austin, TX, USA
e-mail: smits@utexas.edu

Keywords Exposure therapy · Anxiety · Posttraumatic stress disorder · Obsessive-compulsive disorder · In vivo exposure · Imaginal exposure · Interoceptive exposure

Introduction

Exposure therapy is a widely utilized and researched psychological intervention for the treatment of anxiety disorders, posttraumatic stress disorder (PTSD), and obsessive-compulsive disorders (OCD). This Clinical Guide to Exposure Therapy: Anxiety and Beyond aims to complement the existing resources guiding therapists in the use and personalization of exposure therapy for the treatment of anxiety disorders by providing evidence-based clinical guidance for adapting and tailoring traditional exposure therapy principles and strategies to serve the multitude of clinically diverse patients who may benefit from it. Specifically, the chapters that follow will describe using exposure therapy with four different sets of clinical populations: (1) anxiety disorder populations with mental health comorbidities (e.g., substance use disorders, psychosis), (2) anxiety disorder populations with physical health comorbidities (e.g., cardiovascular disease, asthma) or distinct physical states (e.g., pregnancy), (3) distinct developmental populations with anxiety disorders (e.g., children, older adults), and (4) clinical populations with problems outside of anxiety disorders that may benefit from exposure-based treatment (e.g., depression, eating disorders).

As such, our aim for Chap. 1 is to set the stage for the chapters that follow by providing a brief overview of the history and the evidence base underlying exposure therapy's use in the treatment of anxiety disorders. We also include an overview of *how* exposure therapy is used to treat anxiety disorders, what it targets, and how to implement it with a patient. The focus of this chapter is to provide the reader with a review of the traditional application of exposure therapy in the treatment of anxiety disorders to aid in the reader's understanding of the adaptations presented in later chapters. As the scope of this chapter is limited to a brief overview, readers unfamiliar with exposure therapy are encouraged to consult other works (Abramowitz et al., 2019; Smits et al., 2019) to obtain a more detailed foundational understanding of the traditional application and personalization of exposure therapy in the treatment of anxiety disorders.

History and Efficacy of Exposure Therapy

A History of Exposure Therapy

Exposure, as a psychological treatment for reducing clinical fear, has its origins in the behavior therapy movement of the 1950s (e.g., Krasner, 1971; Krasner & Houts, 1984). Some of the earliest efforts to treat phobias and other anxiety-related problems came from research-oriented psychologists and psychiatrists in South Africa,

many of whom eventually made their way to England and the Maudsley Hospital training program directed by Hans Eysenck.

Joseph Wolpe (1915–1997) was a psychiatrist who often sought out clinical psychologists to discuss his patient's problems from a behavioral point of view. Among those he consulted was James G. Taylor (1897–1973) at the University of Cape Town, South Africa. In the 1950s, Taylor had used behavioral therapy procedures for the treatment of anxiety, but did not publish most of his case studies, and therefore only traces of his work survive in published form. Taylor, however, described treating several patients with anxiety using techniques we would today call *exposure and response prevention* (Krasner, 1971). For example, in a case of driving phobia, he accompanied the patient on drives designed to provoke anxiety. He also exposed patients with compulsive handwashing behaviors to more and more anxiety-provoking circumstances and blocked their washing behavior. Although Taylor might have been the first behavior therapist to systematically use exposure techniques, more prolific investigators usually receive credit for this treatment's popularity.

Systematic Desensitization

One of the first forms of exposure to emerge in the era of behavior therapy was *systematic desensitization (SD)*. Initially described by Salter (1949) but later elaborated by Wolpe (1958), SD involves weakening the association between anxiety and an objectively non-dangerous phobic stimulus by pairing the phobic stimulus with a physiological state that is incompatible with anxiety. Procedurally, the patient and therapist first develop a list of the patient's phobic situations and objects. Next, the therapist helps the patient use progressive muscle relaxation. Then, the anxiety-provoking stimuli are either gradually visualized or actually presented while the patient is in the relaxed state. Stimuli are confronted in order from the least to the most distressing. The goal is for the patient to be completely relaxed while in the presence of the phobic stimuli.

Clinical and experimental research demonstrates the efficacy and effectiveness of SD, particularly for specific phobias, social anxiety, and agoraphobia (e.g., Paul, 1966). However, as other behavioral therapies that de-emphasized the relaxation part of SD emerged in the 1970s and 1980s, research and clinical interest in SD began to decline (McGlynn et al., 2004).

Flooding and Implosive Therapy

Other precursors to contemporary exposure include flooding and implosive therapy (implosion). *Flooding* refers to a nongraduated approach in which patients rapidly confront their most feared stimuli, either in imagination or in real life. For example, a child with a phobia of large dogs might be placed in a room with such a dog and prevented from leaving until his anxiety subsides. Alternatively, the child might

imagine strongly anxiety-eliciting scenes involving a large dog for a prolonged period of time. The assumption is that flooding results in the activation of anxiety, which then subsides over time in the absence of avoidance patterns and results in the extinction of the fear.

Implosive therapy, a variation of flooding (Stampfl & Levis, 1967), involved presenting fear stimuli in imagination only, but the imagined scenes were exaggerated or impossible situations designed to provoke as much anxiety as possible. Moreover, although derived from learning theory, implosive therapy contained psychodynamic elements. Specifically, the scenes were often based on dynamic sources of anxiety such as hostility toward parental figures or concepts such as the Oedipus complex. For example, Hogan (1968) described implosive therapy scenes for snake phobia that included the snake crawling in the patient's lap, biting the patient's face, and crawling into the eyes and nose.

Both flooding and implosive therapies derive from the principle of *extinction*, in which the repetition of the feared stimulus in the absence of the feared consequence and any escape or avoidance behaviors results in the reduction of fear. The use of these strategies to successfully treat phobias, posttraumatic stress reactions, and obsessive-compulsive problems proliferated in the 1960s and 1970s. Soon, influential behavior therapists and researchers such as Victor Meyer (1966), Jack Rachman (Rachman et al., 1971, 1973), and Isaac Marks (1973) realized that flooding, implosion, and SD all involved exposure to fear-provoking stimuli and abstinence from fear-reducing escape and avoidance responses. In the 1970s and 1980s, this recognition led to the development and testing of gradual (hierarchy-driven) exposure therapy that is devoid of the relaxation component of SD and the psychodynamic element of implosive therapy.

Cognitive Behavioral Therapy

Throughout the 1990s and 2000s, manualized cognitive behavioral treatments (CBT) to address clinical anxiety proliferated and were tested in numerous randomized controlled trials. Popular empirically supported programs from this tradition include the Coping Cat for anxious youth (Kendall & Hedtke, 2006) and panic control treatment (Barlow & Craske, 2006). These multicomponent manuals typically include exposure along with strategies to manage or reduce anxiety, such as cognitive restructuring, controlled breathing, and relaxation training. In some programs, patients are encouraged to use anxiety management strategies as coping skills during exposure tasks, in order to be able to tolerate and benefit from confronting feared stimuli. Although this approach is understandable, given that exposure has the potential to provoke high levels of anxious responding, many therapists emphasize anxiety-reducing coping skills with their anxious patients due to concerns that exposure is dangerous, intolerable, and unethical (e.g., (Deacon, Farrell, et al., 2013).

Beyond Fear Reduction

Reduction of subjective fear within and between sessions has traditionally been considered a key indicator of therapeutic change (e.g., Foa & Kozak, 1986), and therapists often use a gradual approach to exposure by which patients work their way (i.e., using a fear hierarchy) from lesser to greater anxiety-provoking stimuli (in part) to foster fear habituation. More recently, however, some authors have pointed to limitations of this emphasis on anxiety reduction during exposure. Craske et al. (2008, 2014), for example, noted research showing that subjective distress levels during exposure are not consistently reliable or valid indices of extinction. Indeed, some patients who seemingly experience habituation in treatment later have a return of their fears, whereas others who do not experience habituation somehow show durable extinction. Moreover, some authors (e.g., Jacoby & Abramowitz, 2016) have argued that stressing gradual exposure and fear reduction (habituation) shames the experience of subjective distress; reinforces the maladaptive belief that fear and other forms of distress are inherently bad, dangerous, or intolerable; and promotes the detrimental idea that exposure therapy is only successful if one is free of distress.

Accordingly, a more updated model to account for the effects of exposure focuses on inhibitory learning mechanisms to explain the discrepancies between performance during exposure and postexposure levels of fear. Within the context of exposure therapy, *inhibitory learning* refers to the notion that threat-based cognitions (e.g., thunderstorms are dangerous) are not *removed* during extinction, but rather remain *intact* as new learning about the feared stimulus occurs (e.g., thunderstorms are safe; Bouton, 1993). Put another way, following successful exposure, the feared stimulus is thought to possess two meanings: the original threat-based (excitatory) meaning and a safety-based (inhibitory) meaning. Thus, even if distress subsides following successful exposure, the original threat-based meaning is retained in memory and may be recovered under certain circumstances, such as a change in context or the passage of time (i.e., spontaneous recovery; Bouton, 2002). From this perspective, the aim of exposure therapy is to help patients develop (1) new non-threatening cognitions and (2) ways of enhancing the accessibility of these new safety-based cognitions (relative to the older fear-based cognitions) in different contexts and over time.

One implication of inhibitory learning is that instead of teaching patients to resist, control or “fix” their distress, exposure is used to promote *distress tolerance*, given that psychological distress—fear, anxiety, or otherwise—are universal, inevitable, and safe experiences. This idea is consistent with recent developments in acceptance-based models and treatments (e.g., Twohig et al., 2015). In the context of inhibitory learning, distress tolerance is accomplished by introducing *desirable difficulties* (Bjork, 1994) into the implementation of exposure therapy, for example, by restricting the use of coping strategies or by choosing exposure stimuli randomly rather than using a hierarchy. Such procedures may be considered “difficulties” because they present added challenges for the patient during exposure and may slow the rate of within- and between-session habituation. On the other hand, they are “desirable” in that they help maximize long-term learning by introducing

ubiquitous real-world challenges (e.g., surprise) that have the added benefit of maximizing the retrieval of newly learned information (Bjork, 1994). These desirable difficulties are thought to strengthen distress tolerance (Craske et al., 2008), as patients learn that they can operate with distress, as opposed to seeing it as a sign of relapse or failure.

Efficacy of Exposure Therapy for Clinical Anxiety

The efficacy and effectiveness of contemporary exposure therapy in the treatment of anxiety-related clinical problems are supported by a vast empirical literature. Whereas a comprehensive review is outside the scope of this chapter, we highlight evidence from meta-analyses indicating that exposure can be highly effective in reducing fear, avoidance behavior, and other anxiety-related phenomena, as well as in improving quality of life. Accordingly, effect sizes (ES) of 0.2, 0.5, and 0.8 correspond to small, medium, and large treatment effects. The reader should note that, in many instances, these meta-analyses date back a decade or more. This reflects the fact that for some anxiety-related problems, the effects of exposure (and multicomponent CBT programs involving exposure) are so well-established that few efficacy studies are still conducted. In addition, because most of this literature has been built around DSM-defined mental disorders, we use this convention as well.

Specific Phobia

The effectiveness, efficiency, and tolerability of exposure for specific phobias are illustrated by the success of a single extended session, without additional training in cognitive restructuring or relaxation strategies (Zlomke & Davis, 2008). In the only meta-analysis to date, Wolitzky-Taylor et al. (2008) examined 33 studies with adults conducted between 1977 and 2004 and found exposure-based treatment more effective than no treatment, with a large ES of 1.05. In addition, exposure outperformed placebo and non-exposure-based interventions at posttreatment (ESs = 0.48 and 0.44) and follow-up (ESs = 0.80 and 0.35).

Panic Disorder

CBT is the best supported intervention for panic with or without agoraphobia (Pompoli et al., 2016). In such programs, in vivo exposure and exposure to feared bodily sensations (i.e., interoceptive exposure) are often combined with (1) education about the nature and physiology of anxiety and panic, (2) cognitive techniques designed to modify catastrophic misinterpretations of bodily sensations, and (3) coping skills for managing somatic arousal. Multiple meta-analyses support the effectiveness of such programs. For instance, Westen and Morrison (2001) found

that exposure-based treatments led to a large improvement at posttreatment ($ES = 1.55$), which was greater than the change in the control conditions, resulting in a median between-group ES of 0.80.

Obsessive-Compulsive Disorder

Until the 1960s, obsessive-compulsive disorder (OCD) was considered unresponsive to psychotherapy, which at the time included only psychoanalytic and supportive approaches. However, with the introduction of exposure and response prevention (Meyer, 1966) approaches, the prognosis for this problem improved substantially. Olatunji et al. (2013) examined controlled studies in which exposure and response prevention (sometimes combined with cognitive therapy techniques) was compared to control treatments, finding a large effect size in favor of the former ($ES = 0.92$).

Illness Anxiety Disorder

As demonstrated by Cooper et al. (2017), a substantial body of literature supports the use of CBT that incorporates psychoeducation, cognitive techniques, as well as situational, imaginal, and interoceptive exposure for health-related anxiety. In a meta-analysis of 14 controlled trials, these authors reported a mean ES of 1.01 at posttreatment compared to a collection of various control groups, including other active treatments. In addition, the positive effects of CBT were evident at 6- and 12-month follow-up.

Posttraumatic Stress Disorder

Most CBT programs for posttraumatic stress disorder (PTSD) involve a combination of exposure, cognitive restructuring, and/or anxiety management skills. Exposure-based treatments emphasize confrontation with fear-evoking memories of the traumatic event (i.e., imaginal exposure) as well as situations or stimuli that are avoided or anxiety-provoking (i.e., situational exposure). Foa et al. (1989) asserted that the purpose of therapeutic exposure is to weaken conditioned fear responses associated with trauma cues and to modify overestimates of the dangerousness of the world and the threats to personal safety. Stress inoculation training (SIT; Veronen & Kilpatrick, 1983) and cognitive processing therapy (CPT; Calhoun & Resick, 1993) involve combinations of educational, exposure, relaxation, and cognitive interventions to help the patient manage anxiety and challenge maladaptive beliefs. The effectiveness of this approach is supported by numerous meta-analyses, including one by Watts et al. (2013) that found a large between-group effect size of 1.08. These data underscore the effectiveness of exposure beyond common factors of psychotherapy.

Social Anxiety

Psychological treatments for social anxiety typically involve cognitive restructuring, situational exposure, social skills training, or combinations of these approaches (e.g., Heimberg & Magee, 2014) and may be delivered in a group or individual format. A systematic review and meta-analysis of 101 studies examined the relative effectiveness of available treatments for social phobia (Mayo-Wilson et al., 2014). Multiple effective interventions with large ESs compared to wait-list involved exposure, including individual CBT (ES = 1.19), group CBT (ES = 0.92), and exposure with social skills (ES = 0.86). Moreover, individual CBT was more effective than psychodynamic therapy (ES = 0.56) and a combined grouping of interpersonal, mindfulness, and supportive therapy (ES = 0.82).

Generalized Anxiety Disorder

Exposure methods have enjoyed long-standing acceptance as effective treatments for anxiety disorders in which specific fear-provoking stimuli can be identified. However, the diffuse nature of anxiety-provoking stimuli in generalized anxiety disorder (GAD) makes the applicability of exposure less intuitive (Borkovec & Whisman, 1996). Consequently, psychological treatments for GAD have traditionally been characterized by a variety of techniques, including progressive muscle relaxation, self-monitoring and early cue detection, and cognitive restructuring but less frequently by exposure therapy (Siev & Chambless, 2007).

More recently, clinical researchers have begun to examine the effects of imaginal exposure to address the chronic worry in GAD. For example, Goldman et al. (2007) found that written exposure exercises to one's worst fears reduced GAD symptoms more than neutral writing assignments.

Childhood Anxiety Disorders

The research summarized thus far has been conducted primarily with adults. Indeed, the extant literature examining exposure-based treatments for children is smaller than that for adults. Treatment outcome studies of childhood anxiety typically combine patients with GAD, social phobia, and separation anxiety disorder. CBT interventions, such as the "Coping Cat" manualized treatment for childhood anxiety disorders (Kendall & Hedtke, 2006), are the most extensively studied interventions (Ale et al., 2015). These protocols typically begin with six to eight sessions devoted to psychoeducation and development of an anxiety management plan. The remaining six to eight sessions consist of exposure to anxiety-provoking situations and stimuli.

Support for the effectiveness of such programs for childhood anxiety (including OCD and PTSD) is supported by a meta-analysis including 48 studies that found an effect size of 0.77 (Reynolds et al., 2012). Another meta-analysis of CBT for

childhood anxiety disorders, including 26 studies with 1350 patients, found that 58.9% of patients treated with CBT no longer met criteria for an anxiety disorder at posttreatment, as compared to only 16% of children who received no treatment (James et al., 2015). Finally, a meta-analysis of 13 studies found that CBT was more effective than nonspecific treatments (Wang et al., 2017).

In addition to evidence regarding treatment of the three most common childhood anxiety disorders (i.e., GAD, social anxiety, and separation anxiety), a meta-analysis of treatment for pediatric OCD revealed that exposure-based CBT for pediatric OCD was more effective than psychotherapy placebo (Skarphedinsson et al., 2015). Moreover, a review of psychological treatments for PTSD in children and adolescents concluded that CBT had the strongest effects and led to improvements in symptoms up to 1 year following treatment (Gillies et al., 2012).

Impact on Quality of Life

Although symptom reduction is important, the ultimate goal of psychological treatment is to improve functioning and quality of life. Toward that end, Hofmann, Wu, and Boettcher (2014) conducted a meta-analysis of 59 trials, including 3326 adult patients, which measured the effect of CBT for anxiety disorders on quality of life. Across the literature, this treatment significantly improved quality of life to a moderate extent, with an ES of 0.56. Similarly, CBT for anxiety had a beneficial effect on secondary depression (e.g., Cuijpers et al., 2014; Ehring et al., 2014; Olatunji et al., 2013).

Implementing Exposure Therapy

In this section, we provide a brief overview of the general principles of exposure therapy delivery. Our emphasis is on how to implement exposure therapy in the treatment of fear and its disorders, recognizing that many of these principles but not all are relevant to the application of exposure therapy in other disorders (e.g., substance use disorders, disordered eating, depression). The approach we describe here follows what we have outlined in other works (Abramowitz et al., 2019; Smits et al., 2019). Finally, to aid the translation to clinical practice, we follow this section with a case example.

Goal Setting: Mechanisms and Intervention Targets

The basic theory underlying cognitive behavioral interventions is that there is dysfunctional thinking and maladaptive behavior common to psychiatric disturbances and realistic evaluation and modification of these thoughts and behaviors can lead

to desired symptom reduction. The following five psychological biases, among others, are thought to be the main types of dysfunctional thinking that maintain fear-based disorders and thus are the main targets in their treatment (Abramowitz et al., 2019):

1. *Likelihood bias* or the belief that a feared outcome is more likely to occur than in actuality (Abramowitz & Blakey, 2020).
2. *Cost bias* or the belief that the cost of a feared outcome, should it occur (e.g., the impact or experience of a feared outcome), is much higher than in actuality (Abramowitz & Blakey, 2020).
3. *False safety behaviors* or the belief that false safety behaviors are necessary to reduce anxiety or prevent catastrophe (Telch & Zazar, 2020).
4. *Intolerability bias* or the belief that anxiety is dangerous or intolerable, not just unpleasant (Olatunji & Wolitzky-Taylor, 2009).
5. *Function bias* or the belief that one is unable to function in daily life while experiencing anxiety (Clauss et al., 2020; Nordahl et al., 2019).

The aim of treatment for fear-based disorders is to target these dysfunctional beliefs and generate experiences that can yield the information necessary to update the maladaptive appraisals or reduce biases (Craske et al., 2014). Mapped onto the case formulation, exposure therapy is one of the core strategies therapists have available to facilitate the goal of violating (threat) expectancies (Abramowitz et al., 2019; Craske et al., 2014; Smits et al., 2019). Fundamentally, the process, or goal, of exposure therapy is to shift an individual's relationship with anxiety and its cues from adversarial to amenable, thereby achieving the desired outcome of reduction in anxiety.

Assessment

Assessment serves multiple functions in exposure therapy. It guides the development of treatment goals, the case formulation, and the selection of treatment targets. Assessment also enables the tracking of progress toward treatment goals and provides information that the patient and therapist can use to evaluate the success of exposure practice and to decide on how to best progress through treatment. In this section, we briefly discuss the various common assessment strategies and how these can be used to optimize the course of treatment. For ease, we have organized this discussion by assessment goal.

Intervention Selection

Exposure therapy can be a useful clinical strategy in the treatment of several psychological disorders and with patients who present with various comorbid (medical and psychological) conditions. Depending on the nature of the presenting problem(s),

effective implementation of exposure therapy may require passing an “exposure readiness” assessment. Take, for example, a patient with a history of cardiovascular disease, interoceptive exposure practice (e.g., inducing palpitations, chest pressure) can be appropriate and effective yet requires consultation with a treating physician to determine the safety of these procedures (see Chap. 9 for more details). Similarly, when including exposure therapy in the treatment of PTSD in patients who also present with borderline personality disorder, the timing of exposure therapy relative to other needed interventions (e.g., parallel, sequential, integrated) depends on patient factors such as suicide risk and the ability to refrain from engaging in self-injurious behaviors, as well as therapist or clinical team factors such as the capacity to manage the delivery of all indicated interventions (see Chap. 7 for more details). In sum, whether, how, or when to use exposure therapy requires a careful assessment of the potential success-interfering factors during the intake and case formulation phases of treatment.

Case Formulation

In the treatment of fear-based disorders, exposure therapy constitutes a clinical strategy that aims to facilitate safety learning (Craske et al., 2008). Crucial to determining the potential utility of exposure therapy for any patient therefore is an assessment of their (exaggerated) threat appraisals. A central part of case formulation with any anxiety- or fear-based problem is explaining the relation between cues and (false) alarms (Smits et al., 2019)—i.e., what internal dialogue does the cue activate, and how does the patient respond to this dialogue and the related emotions and/or physiological changes? Certainly, the diagnostic interview can provide insight into the nature of the patient’s core fears and coping strategies. Complementing the diagnostic interview with self-report measures and self-monitoring can further facilitate case formulation and the personalizing of the patient’s treatment plan (Smits et al., 2019). Consider, for example, the observation that the fear of panic attacks, common to all patients with panic disorder, can center on concerns about physical harm (e.g., stroke, heart attack, death), social harm (e.g., social rejection, embarrassment), and cognitive harm (e.g., going crazy, losing control). Administering a questionnaire like the Panic Appraisal Inventory (Telch et al., 1989) or daily monitoring of thoughts preceding, during, and following panic attacks can help identify the core fear themes for the patient. Given the reciprocal relation between appraisals and (false safety) behaviors, developing a list of strategies the patient uses to manage panic attacks can elucidate hypotheses about their concerns about the consequences of panic attacks (Blakey & Abramowitz, 2016). Indeed, the patient who has reduced their exercise intensity from running to light walking and eliminated caffeine intake may hold the false belief that panic attacks and related bodily sensations cause or increase heart problems. Repeated exposure to racing heart attending to the nonoccurrence of cardiac events can be an effective strategy for this patient along with instructions to return to a life that includes caffeine intake and intense exercise.

When applied to facilitate relating differently to appetitive cues (e.g., overeating, substance use disorders), effective exposure similarly requires a good understanding of the cue-thought-feeling-action chain. For example, substance use that is in part maintained by the belief that one cannot function when experiencing craving may guide the therapist to focus exposure practice on correcting that appraisal by asking the patient to engage in productive action while experiencing craving. When craving-related beliefs center on concerns of losing control or going crazy, effective exposure practice may not include a focus on productive action but instead attending to the patient's ability to regulate their engagement with craving-related thoughts and feelings (attentional control training) (see Chaps. 14 and 16 for more details).

In sum, although standardized or blanket exposure therapy prescriptions likely yield meaningful outcomes for many patients, individualizing the prescription to target patient-specific vulnerability factors can facilitate the type of therapeutic learning that produces durable therapeutic change.

Exposure Success

Ultimately, exposure practice can be deemed successful if it results in modifying the core maintaining factors (e.g., [threat] appraisals, [avoidance] behaviors) and achieving the patient's treatment goals (e.g., symptom reduction, improvement in functioning, increased well-being, etc.). There is some discussion in the literature about appropriate proximal indices of exposure practice success. Early work and theory (Foa & Kozak, 1986) marked fear activation, within-session, and between-session habituation as core indices for determining the success of exposure practice. Relying primarily on subjective units of distress (SUDS) assessment, Foa and Kozak posited that effective exposure required a sufficient level of SUDS, as well as decrease in SUDS both during the session and across sessions. Research testing these predictions has yielded mixed results (Craske et al., 2008), with some studies linking (some or all of) these parameters to symptom reduction or treatment response and others failing to observe the predicted relationships.

Partly driven by these inconsistent findings and the updated thinking about the mechanisms of exposure therapy (inhibitory learning model; Craske et al., 2008), some have argued to move away from using SUDS during exposure therapy and as markers of exposure therapy success. Others, however, have continued to argue for SUDS as a useful measure for determining exposure success but have stressed the importance of complimenting SUDS with other assessments that can index the targeted therapeutic learning (Smits et al., 2019). For example, among such complementary assessments in the treatment of fear-based disorders, measuring the shift from danger appraisals to safety appraisals is important (Smits et al., 2019). Staying with the earlier example of the patient who fears that panic will result in a heart attack, repeated measures of cardiac concerns could be used to index the degree of their safety learning resulting from interoceptive exposure practice. Certainly, reductions of cardiac fears during symptom induction exercises coupled with lowered SUDS would provide unequivocal evidence of safety learning. Exposure practice would still be deemed therapeutic, however, if the improvement in ratings was

limited to threat reappraisal (i.e., SUDS remain high), yet if the cue-activated distress did not subside over time, additional (exposure) intervention would be indicated.

Treatment Progress

Aside from routine symptom monitoring, which is tied to the patient's therapy goals, assessment of the core variables in the case formulation (e.g., appraisals and actions) will aid decisions about the treatment course. In-session assessment of the variables before, during, and after exposure exercises may be sufficient. We also recommend prescribing self-monitoring and administering validated self-report instruments tapping these constructs (see Smits et al., 2019 for a specific list of instruments).

Developing Effective Exposure Exercises

Structuring the Exposure: Asking the Patient to Be BRAVE

Each exposure exercise should be structured such that (1) the patient deliberately *brings on the anxiety* by fully engaging with the feared situation or stimuli (i.e., enter situations that sound the alarm falsely) and (2) the patient intentionally *responds differently* to the signal of anxiety (i.e., responds as though it's a false alarm rather than a true alarm) so as to test their threat appraisals fully (Deacon, Kemp, et al., 2013).

There are many ways for an individual to respond differently than they usually do including the simple, but not easy, act of going through with the exposure exercise rather than escaping or fleeing the situation. Responding differently might involve fading false safety behaviors, letting go of efforts to prevent feared outcomes from happening, and letting go of efforts to mitigate the costs of feared consequences (Blakey & Abramowitz, 2019). What it means to “respond differently” varies by person, but essentially what is being asked of the patient is for them to do the opposite of what anxiety *motivates* them to do, to do what someone might do if they *weren't* anxious in the same situation (Wolitzky & Telch, 2009).

In addition to deliberately bringing on the anxiety and intentionally responding differently, for safety learning that will endure, exposure exercises should be structured such that they can be (3) repeated—*a lot of times* and (4) in a *variety of contexts*. Being able to detect threats early and quickly increases our chance for survival; therefore, it could be considered human nature to rapidly learn and easily generalize cues for danger (Hamm & Weike, 2005; Mobbs et al., 2015). However, this means the reverse tends to be true as well: that humans learn cues for safety gradually and that learning is context-dependent such that when we learn a situation is safe, we tend not to generalize that knowledge of safety to other settings (Wong & Lovibond, 2020). To learn a situation—such as feeling anxious—is safe across most settings,

we must experience that to be true in a variety of contexts. Thus, for an individual to establish robust safety learning around their fear cues, they must face those fear cues a lot of times, in a variety of contexts (Bandarian-Balooch et al., 2015; Shiban et al., 2013). Success with exposure therapy starts with the patient learning conditional safety during a specific exposure exercise. As exposure therapy progresses, therapists need to be aware of conditional learning and vary the context in which safety is learned and work toward establishing near unconditional safety (Bouton, 2002; Smits et al., 2019).

To maximize learning, the outcomes of exposure exercises should be highlighted to the patient (Abramowitz et al., 2019; Craske et al., 2014; Pittig et al., 2016; Smits et al., 2019). It is useful to guide the patient to (5) *evaluate* the evidence they gather from each exposure exercise and whether it supports or refutes their threat appraisal. Evaluating feared outcomes and the impact of fading false safety behaviors facilitates internalization of the learning occurring during exposure exercises.

In sum, engaging in exposure exercises structured in this way is courageous and *brave* (Fig. 1.1). The very definition of bravery is a readiness or willingness to face and endure danger or pain. While all exposure exercises represent “acceptable” levels of risk and never put the patient in *objectively* dangerous situations, what we are asking them to do is face situations they (falsely) *believe* to be dangerous or threatening in some way.

Exposure Practice Modalities

There are three general types of exposure exercises at the exposure therapist’s disposal. The choice of which type of exposure, or their combination, depends upon the experience the therapist is trying to create, the specific threat appraisal the patient holds, and the therapist’s flexibility to leave the therapy office:

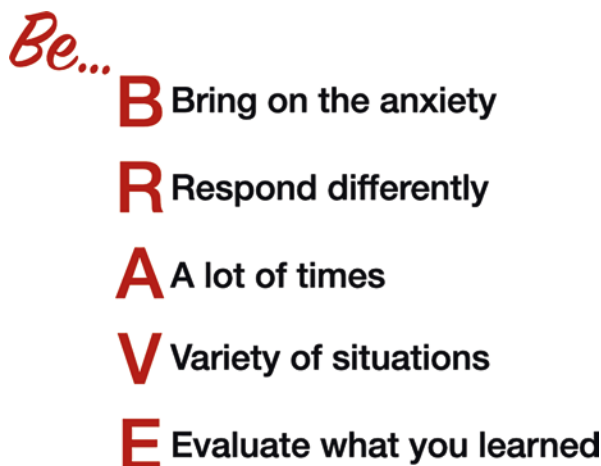


Fig. 1.1 BRAVE model of conducting exposure therapy

1. *Interoceptive*. Interoceptive exposure practice is strategically inducing physical symptoms associated with anxiety and is used when the stimuli that trigger anxiety are the bodily sensations associated with anxiety itself (Boettcher et al., 2016). Interoceptive exposure practice focuses on the patient bringing on the bodily sensations of anxiety they most fear and testing beliefs the individual holds about the sensations themselves. Examples of interoceptive exposure practice include voluntary hyperventilation or breathing through a straw to induce the sensation of breathlessness and air hunger or aerobic exercise to increase heart and breath rates.
2. *Situational*. Situational, or in vivo, exposure practice is used when the stimulus that triggers anxiety is a particular situation, people, places, or things. Situational exposure practice focuses on confronting the feared stimuli, regardless of whether or not specific sensations of anxiety occur, and testing beliefs the individual holds about the stimuli. Situational exposure practice can be planned engagement with a situation that creates anxiety such as going to a grocery store, asking for directions, standing in lines, or visiting the snake exhibit at the zoo. Situational exposure practice can also be simulations of real-life situations such as role-plays with the therapist, virtual reality, or using confederates to simulate an interview context or public speaking context.
3. *Imaginal*. Imaginal exposure practice is typically used when the stimuli that trigger anxiety is either a mental image, thought, memory, or something that is difficult or impossible to do exposure to in real life (e.g., flying). Imaginal exposure practice focuses on the patient bringing on the feared image, thought, or memory and can be used to test an individual's threat appraisals regarding thinking about these mental images, thoughts, or memories. This use of imaginal exposure practice, sometimes referred to as primary imaginal exposure, directly confronts the unwanted or fear-provoking thoughts, memories, or images by bringing them to mind.

Effective exposure therapy with many patients may require combining exposure modalities. For example, imaginal exposure practice can be used to augment a situational or interoceptive exposure practice or as a preliminary step towards a situational exposure practice. Situational or interoceptive exposure practice can be enhanced by having the individual simultaneously focus on the feared outcome (“everyone is thinking I’m an idiot”), wish the feared outcome to occur (“I hope I have a panic attack and get into a car accident”), or focus on the uncertainty associated with the risk of the feared outcome occurring. This secondary use of imaginal exposure practice can be key to providing the patient with the necessary experience to be convinced that their threat appraisals are biased. Of course, visualizing confronting a feared stimulus can be done as a preliminary step toward actual confrontation of a feared stimulus when absolutely necessary.

When planning the exposure exercises, it is important to think creatively and recognize that sometimes one can get to the same end by different means. While testing threat appraisals under the conditions the patient deems them most likely to occur is ideal, it can sometimes be excessively complex to orchestrate. It is helpful

to consider all the exposure tools available and to think broadly about the threat appraisals and the various ways they can be tested.

Exposure Lists

When creating an exposure therapy treatment plan, many find it useful to create a list of planned exposures that, if accomplished, will have provided the individual with experiences needed to shift their threat appraisals. To create this list, it can be helpful to brainstorm with the patient what situations or stimuli provoke their anxiety, what specific situations or stimuli the patient avoids or is only able to encounter while engaging in false safety behaviors, and what activities the patient wishes they could do where anxiety has become a barrier. Also be sure to get a sense of what variables make different situations more or less anxiety-provoking, their cost and likelihood biases in the various situations, as well as their worst-case scenarios and feared outcomes. Much of this information is often obtained during initial assessments and functional analyses and only needs to be revisited and elaborated upon while generating the exposure list. Please know, however, that therapists and patients will learn much more about a patient's specific fears and threat appraisals as they start to engage in the exposure exercises. The exposure list does not need to be exhaustive and can always be added to or adjusted. Thus, rather than a hierarchy, the exposure list can be thought of as a traveler's wish list—a list of destinations one plans to travel to someday. Therapist and patient don't need to go to the destinations in order (Jacoby et al., 2019). They might spend a long time in some places and less time in others. They may have ideas of where they will travel to next, but occasionally they need to change their plans and seize an opportunity to go somewhere else on the list. As they travel, they might even decide they don't need to travel to some destinations all together and other destinations may be better for the patient to travel to on their own, without the therapist there to guide them.

Facilitating Exposure Success

Despite understanding the rationale for exposure practice, many patients find it difficult to “relinquish” control and fully engage in the exercise both during and between sessions. Aside from selecting the appropriate targets and exercises, the therapist plays an important role in facilitating engagement (Abramowitz et al., 2019; Smits et al., 2019). Here, we list a few strategies to optimize the learning experience.

Prioritize Initial Success

Keeping in mind initial success can enhance motivation to continue, it is helpful to select an initial exposure exercise that can meet the following conditions:

1. Is not so difficult for them to do that they will be unwilling to engage fully, test their appraisals, or fade false safety behaviors.
2. Is an activity/situation that is relevant or inherently rewarding for the patient (i.e., getting to do an activity they have wanted to do for some time, an activity that moves them closer to their goals or values, etc.) so that they are motivated to engage in the exposure exercise and can see how continuing to do so will have direct positive impact on their life.
3. Something that can be done with the therapist during the therapy appointment so that the therapist can model the activity if necessary and can provide corrective feedback around the approach to the exposure exercise. This is important because the approach one takes in an exposure exercise is very different from how the patient is used to approaching the feared situation or stimuli, thus, having the therapist observe and provide that corrective feedback can greatly decrease the patient engaging in subtle avoidance strategies or false safety behaviors that would lead to a misattributing safety and maintenance of fear.
4. Something that can be easily repeated in session and on their own as homework so as to reinforce robust safety learning.

Be a Supportive Coach

During exposure exercises, therapists can play a critical role by engaging in the following practices:

- Provide the patient with praise for being brave and following through on the exercise.
- Encourage the patient to challenge themselves. Yet, do so in balance with being collaborative, transparent, and supporting patient autonomy.
- Model the beliefs of comfort with anxiety and fear cues consistent with the lesson of safety being taught. Therapists can do this in part by having a playfulness with anxiety and encouraging a “bring-it-on” attitude.
- Help them with the E—evaluate—of the BRAVE model by asking them to note their expectations before starting the exposure exercise and draw their attention to disconfirming evidence that arises during the exposure exercise. Postexposure processing can also be used to evaluate lessons learned and facilitate consolidation of new learning.
- Set up the exposure to maximize the discrepancy between their predicted outcome and the actual outcome, which will provide the most convincing learning experience. Encourage the patient to fade as many false safety behaviors as possible, and prevent subtle avoidance strategies so when the perceived threat doesn’t occur that safety cannot be misattributed to the use of a safety behavior or subtle avoidance technique.
- Be observant, and watch for (c)overt behaviors the patient may engage in that are aimed at reducing anxiety or preventing the feared outcome from occurring—and encourage them to fade these behaviors.

- Support curiosity and encourage experimentation during exposure exercises. Patients may say “I don’t know what would happen if X...” or “This is safe, but I think it is because I’m/you’re/their doing Y...” Use these statements as cues to experiment and find out what *would* happen if X. Or what *would* happen if they/you/others *aren’t* doing Y.

Progress by Maximizing Generalization

Most of us do not learn something fully the very first time it is taught to us. The learning that occurs during exposure therapy is no different. To support robust safety learning around fear cues, repetition (the A in the BRAVE model) is key. Continue with the same exposure exercise until the specific learning objectives for the exposure have been met (Deacon, Kemp, et al., 2013). The specific learning objectives for an exposure may be met in one or two iterations, or it may take many, many iterations. Once specific learning objectives for an exposure exercise have been met, it can be useful to start to progress by first varying the context of the exposure exercise slightly and addressing any “what ifs” the patient has until relative unconditional safety has been generalized with that fear cue. Progression through the exposure list does not need to be linear (Jacoby et al., 2019; Smits et al., 2019) and should continue until the patient has changed their relationship with anxiety itself.

Variations to consider during progression across exercises and sessions:

- *Internal Contexts*: This may include combining interoceptive exposure practice with situational exposure practice to combine fear cues such as feeling chest tightness and breathlessness while trying to give a speech for the patient with social fears. It may include engaging in exposure practice with varying physiological states such as feeling fatigued or stressed.
- *Physiological Focus*: In an effort to make an anxiety-provoking situation or an exposure exercise more tolerable or “safe,” some individuals may distract themselves from their physiological state, while others may monitor their physiological state closely. Thus, varying how much the individual focuses on the internal sensation of anxiety can be a useful variant during exposure exercises. For example, if they are avoidant, a therapist might encourage them to practice focusing fully on their symptoms or encourage them to explore switching their attention, checking in with the sensations, and then switching to an irrelevant task or topic.
- *Mental Focus*: Additional shifts in mental focus can also be a useful variation such as encouraging the individual to test what happens if they say their fear out loud or even wish their fear to occur.
- *External Contexts*: Varying the external environment in which the fear cues are encountered (e.g., in the therapy office, at their home, in public) or combining multiple feared stimuli should also be considered.

- *Pushing the Envelope*¹: Do not restrict exposures to what is thought of as “normal” behavior. We often need to push the envelope—or swing the pendulum past “everyday behavior”—to ensure robust safety learning. For example, when treating social anxiety disorder, some patients will have fears around appearing weird in public. As such, an exposure may involve purposefully appearing weird in public by walking down a busy sidewalk with one’s hands held above their head singing “happy birthday.” While this set of behaviors is—for most—not part of their “normal” behavior and there is no goal for it to become such, this type of exposure may be essential for some patients as it allows them to face their feared outcome of appearing weird head-on.

As the patient progresses through the exposure therapy treatment plan, the patient will become more knowledgeable and confident in employing the BRAVE method. This is a large step toward their shift in their relationship with anxiety. Support them taking a more active role in designing the exposures—embrace this as that means they are learning to become their own therapist.

Prescribe Homework that Can Cement Learning

Home practice is a powerful tool to aid in the consolidation of new safety learning occurring during exposure exercises (Huppert et al., 2006). Daily homework or “home practice” should always be assigned as this facilitates consolidation of learning while also varying the context of learning (e.g., in office vs. at home contexts). It can be useful to include the patient in defining the home practice by asking them “What can you do this week to practice what you learned from the exposure exercises today?”

Here, it is helpful to remember that in-session exercises usually merely reflect simulations. Therefore, many patients need to combine them with some kind of “real-life” situational exposure practice to solidify their learning and to ensure what they’ve learned in the office can in fact be generalized to their real-life experiences (Bouton et al., 2006). In addition to planning new experiences that build upon the in-session work, therapists should encourage patients to “lean in” to new experiences as they naturally occur rather than avoid or escape them, as this helps solidify the change in their relationship to anxiety that exposure therapy is cultivating. In many ways, anxiety has acted like a red traffic light—a signal to the person to stop and avoid the situation that lay ahead. Exposure therapy asks the individual to turn this light green, to see anxiety in these situations as a signal to approach and engage. For patients, this is a fundamental shift in their relationship with anxiety. Each time

¹ *Caveat: Although pushing the envelope in various ways such as targeting cost biases by bringing on the exact cost they fear occurring can have significant impact on fear reduction (Nelson et al., 2010), it is important to remember that exposure tasks should never put the patient in situations that are objectively dangerous. While exposure exercises do not need to be completely risk-free, they should only involve a degree of risk that can be considered by most not to have severe consequences.*

they turn the light green and the individual makes the choice to see situations that bring on anxiety as opportunities to test their threat appraisal rather than seeing them as situations to be avoided or managed, they are strengthening and generalizing the new learning of safety, which is important for lasting change.

An hour or more of daily exposure home practice is reasonable, so long as the patient is willing to engage. Because early on in treatment it can be challenging for patients to bring on anxiety and respond differently to it on their own, most therapists and patients find it useful to start home practice with repetition of exposures that were completed in session before moving to confrontation of a new feared situation or stimuli. Providing clear and detailed instructions for where, when, how, and how long, to engage in the home practice exposure exercise is a helpful strategy to support success and preemptively eliminate opportunities for avoidance. Taking time to review home practice experiences in session is a useful way to support consolidating learning, identify and provide corrective feedback where necessary, and compassionately address any barriers to completing the home practice that arise.

Case Illustration

In the following section, we provide a case example to illustrate how a therapist might apply the general principles of exposure therapy described earlier.

Background

Maeve is a 25-year-old, Latinx, single, female using she/her pronouns who dropped out of college several years ago and now works as a new-employee orientation facilitator for a large corporation. Maeve presents to the clinic seeking treatment for social anxiety disorder.

At intake, Maeve described experiencing feeling anxious in nearly all social situations, at work, with friends, even with therapists and other medical professionals. She described experiencing near relentless worry about social interactions at work and experiences several panic attacks per week—depending on how many new-employee orientations she facilitates that week. Maeve described feeling flustered, unable to focus, and as though her mind goes blank during the new-employee orientations. She reported ruminating about what went wrong afterward, dwelling on how inarticulate and unknowledgeable she thinks she appeared, often leaving work early to retreat to her car to cry. She reported that this often just makes her feel worse as she thinks about how “dumb” she must be for not being able to get a handle on the anxiety. When asked to describe other areas where anxiety interferes, Maeve described experiencing a similar intensity of anxiety when her friends ask her to do things with them. Maeve indicated that she hardly ever goes to these social events, stating “I know I won’t have a good time, I’ll be in my head and unable to engage in conversation” and “I’ll just make a fool of myself or bring everyone else down,

so why bother.” When asked about romantic relationships, Maeve stated “that isn’t something I’m interested in.”

Maeve’s reported coping strategies include seeking reassurance about her abilities and performance from her coworkers and her friends, avoiding speaking up in meetings or talking on the phone whenever possible, rereading her emails or text messages multiple times before sending to ensure she strikes a “friendly tone,” and rehearsing things to say during small talk with coworkers. Additionally, she indicated that she uses makeup and “loud outfits” in effort to detract others attention from her blushing. Maeve’s goals for therapy include a desire to eliminate panic attacks at work, to be able to ask for a promotion, and to engage more socially.

Assessment and Case Formulation

To form a detailed case formulation and create a tailored exposure therapy treatment plan that will acutely target Maeve’s specific feared outcomes, further assessment is needed. Specifically, it is important to further assess the content of Maeve’s threat appraisals of social situations and panic attacks. This additional information will enable the therapist to select and sequence the exposure exercises effectively.

Clarifying whether, and to what degree, Maeve is fearful of panic attacks, aside from the potential negative social consequences she fears they bring, is important for creating an efficient exposure treatment plan. If Maeve does fear panic itself, such that she fears a panic attack indicates something is wrong with her or she may die, then it is important for those biased threat appraisals to be targeted directly. Biased threat appraisals regarding panic attacks and exaggerated threat estimations in social situations can be addressed simultaneously during a well-designed exposure exercise. However, initially, it can be too challenging for some individuals to engage in addressing both effectively (i.e., it can be difficult for one to engage in evaluating a perceived social threat when one is preoccupied with evaluating the perceived threat of death). Therefore, it’s important to consider whether targeting fears associated with panic attacks is (1) necessary for Maeve and (2) if doing so on its own is a necessary precursor to targeting her broader social fears. If Maeve does not have significant fears associated with panic itself, then targeting the broader social concerns and social situations where panic occurs will likely result in a reduction in panic attacks, achieving Maeve’s goal without needing to target panic directly or separately. Patient-reported outcome measures can be a useful tool in gathering more information regarding these appraisals to provide diagnostic clarity. For example, the Anxiety Sensitivity Index 3 (Taylor et al., 2007) might be useful to assess the specific fears Maeve has regarding panic- and anxiety-related sensations.

Similarly, further assessing Maeve’s specific fears in various social situations she described is necessary in formulating an effective exposure treatment plan. For example, what exactly is Maeve worried will happen if she doesn’t strike a friendly tone when sending an email? Why is it important for Maeve to strike a friendly tone? Maeve may fear that if she doesn’t strike a friendly tone in her emails, her coworkers will reply rudely, causing Maeve to feel even more anxious, and she will

feel so uncomfortable that she won't be able to conduct her work. However, alternatively, Maeve may fear that if she doesn't strike a friendly tone in her emails, her coworkers will inform her boss of her rudeness, causing her to be called into her boss' office, which she fears because she worries that she won't be able to explain herself due to her anxiety and will get fired as a result. Understanding what worst-case scenario she imagines might happen is very important to designing an exposure exercise tailored to collect the most convincing evidence possible and disconfirm the individual's feared outcomes. Patient-reported outcome measures can be a useful tool to quickly elucidate domains of feared outcomes. For example, the Appraisal of Social Concerns (Telch et al., 2004) is a measure that captures how much an individual is concerned about 20 different potentially negative outcomes arising in social situations. Based on Maeve's response to the items on the ASC, the therapist might follow up on items she rated highly concerning (e.g., mind going blank, blushing) to learn more about her specific feared worst-case scenarios associated with that outcome.

Selection of Targets and Exercises

After gaining a stronger sense of Maeve's specific fears, the next step is to identify the general type of experiences that Maeve needs to be exposed to that will give her an opportunity to test, and eventually modify, the threat appraisals that maintain her anxiety in social situations (Box 1.1). Subsequently, Maeve and her therapist can

Box 1.1 Maeve's Threat Appraisals and Experiences Needed to Aid Their Modification

Current threat appraisal	General experience needed
Maeve thinks that it is very likely that others will judge her negatively (i.e., inarticulate, incompetent, unknowledgeable).	Maeve needs to engage socially in a variety of her feared contexts and observe whether others in fact judge her as appearing inarticulate, incompetent, and unknowledgeable.
Maeve thinks that if her feared outcome of being judged negatively by others were to occur, it would be "horrible," someone would make a mean comment, and she couldn't tolerate that discomfort.	Maeve needs to experience what it feels like and what actually happens when her fear of appearing inarticulate, incompetent, and unknowledgeable actually occurs.
Maeve thinks that her false safety behaviors (e.g., preparing talking points ahead of time) help prevent social mishaps.	Maeve needs to experience what happens when she does not use false safety behavior.
Maeve thinks that she is unable to function while experiencing high levels of anxiety.	Maeve needs to engage in tasks (e.g., conversations, work, brain teasers) while experiencing high levels of anxiety.

create a list of specific situations covering the various social contexts and types of social interactions that cue her fears and help her test her threat appraisals (Box 1.2).

When creating the exposure list, it is important to keep in mind that individuals who have had anxiety much of their life may have developed beliefs that certain activities are simply “not for them.” For example, Maeve experienced such high anxiety in social situations she grew to believe socializing was not enjoyable and simply not for her, and perhaps as a result, she developed the belief that romantic relationships were not available to her—and why she stated during her intake that

Box 1.2 Maeve’s Exposure Lists

Domain: Small Talk

- Pre-meeting small talk with coworkers
- Pre-meeting small talk with boss
- Walking past someone’s office/cubicle and striking up a conversation
- Talking with someone in the elevator from a different company
- Small talk with restaurant server or bartender
- Talking with grocery clerk while in the checkout line
- Asking a fellow customer at a store a question
- Meeting a friend of a friend
- Driving to a social event with an acquaintance
- Talking with a potential romantic partner

Domain: Presentation/Public Speaking

- Facilitating a new-employee orientation
- Presenting to coworkers at a meeting
- Presenting to boss or upper-level managers from other branches
- Asking a question at a meeting with numerous people
- Presenting a case for promotion to boss
- Telling a story to a group of friends

Domain: Social Conflict

- Returning an item to a store
- Returning a food/drink item or meal at a restaurant
- Asking for modifications of a food/drink item at a restaurant
- Expressing preference for a specific social activity among friends
- Choosing the restaurant, movie, bar, etc. for a social activity
- Expressing a conflicting opinion to friends
- Expressing a conflicting opinion to coworkers or boss
- Discussing politics

she isn't interested in romantic relationships. While some patients see anxiety as having been the cause for unpleasant social experiences and these negative beliefs, others may misinterpret the cause as a personal defect or preference. As such, when first developing the exposure list, Maeve may not bring up romantic relationships as something she avoids or as something that anxiety prevents her from engaging in because she doesn't identify it as such. Rather, she identifies the lack of engagement in romantic relationships as relating to a personal preference of hers, unrelated to the anxiety. When developing an exposure treatment plan, it is important to explore these beliefs with the patient and help them parse the impact of anxiety from personal preference.

Progression

Given that Maeve has expressed feeling anxious talking with medical professionals, engaging in small talk with her mental health provider, without preparing talking points, might be an initial exposure exercise as it is accessible and easily repeatable in session. Maeve previously indicated that she was most anxious walking in between the waiting room and the medical office or therapy room because she is unsure of what to say, the conversational roles are less well defined, and she worries she will ask something inappropriate or make a fool of herself. As such, an initial exposure exercise could be a 4-minute small talk exposure in session to test these feared outcomes.

If after several trials, when Maeve has learned that her perceived threat is not as likely to occur as she thought in this specific situation, she reports lingering "what ifs" such as the following: What if the therapist weren't so friendly and inquisitive? What if I asked something that the therapist thought was inappropriate to answer? What if instead of my therapist I was speaking to the person at the front desk? Thus, to progress, the therapist might suggest they address these "what ifs" by varying the original small talk context. The therapist and Maeve could agree to test what would happen if the therapist were less friendly and inquisitive such that during the small talk the therapist refrains from asking Maeve any questions and even feign being less friendly. Once Maeve learns that she can tolerate the anxiety the new exposure exercise creates and can even continue a conversation under such conditions, the therapist may suggest varying the context once again by next testing Maeve's fears around what would happen if she asked a question the therapist doesn't want to answer. The therapist and Maeve might agree upon a format for creating the feared "what if" situation by responding standoffish to any questions Maeve asks and indicating it would be inappropriate to answer. Again, after Maeve learns that even in that situation she can tolerate the anxiety it creates, the therapist would progress to the next "what if".

In this way, the therapist continues to progress through not only the various small talk domain exposure list items that continue to provoke anxiety but also the variations of each item that continue to provoke anxiety. This is repeated until Maeve has

established a sense of unconditional safety regarding her ability to experience anxiety in a small talk-related situation.

Variations Based on Presenting Problems

Thus far, this chapter has focused primarily on applications of exposure therapy to treat anxiety disorders, PTSD, and OCD. These represent the main disorders that exposure therapy was designed to treat and the main topics of research to date. Yet the patients who may benefit from exposure-based treatment extend far beyond the young and middle-age adults with primary anxiety disorders, PTSD, or OCD that comprise the focus of the vast majority of extant exposure research. Nonetheless, this focus provides an important foundation for considering how to adapt and tailor exposure therapy to treat distinct clinical populations that benefit from specific consideration and conceptualization in the context of exposure therapy. A growing body of empirical evidence points toward the efficacy of adapting exposure therapy, often in the context of cognitive behavioral therapy, to clinically unique populations with anxiety disorders (e.g., autism; see Chap. 6) and to individuals with other clinical problems that appear to benefit from exposure therapy (e.g., eating disorders, Butler & Heimberg, 2020). However, only limited efforts have been made to date to comprehensively capture this burgeoning work and to describe how to adapt exposure therapy to serve the myriad of clinically diverse patients who potentially stand to benefit from it. This book aims to address that vital gap.

In the chapters that follow, we tackle how to conceptualize and apply exposure therapy to treat common problems in clinically diverse populations that fall outside of classic anxiety disorders. Specifically, these chapters tackle how to adapt exposure therapy to four different sets of clinical populations: (1) anxiety disorder populations with mental health comorbidities (e.g., substance use disorders, psychosis), (2) anxiety disorder populations with physical health comorbidities (e.g., cardiovascular disease, asthma) or distinct physical states (e.g., pregnancy), (3) distinct developmental populations with anxiety disorders (e.g., children, older adults), and (4) clinical populations with problems outside of anxiety disorders that may benefit from exposure-based treatment (e.g., depression, eating disorders). For each, we consider how specific guidance on deviating from standard exposure protocols may be helpful and necessary.

The first set of chapters focuses on anxiety disorder populations with mental health comorbidities, including a chapter on adapting exposure therapy to patients with multiple comorbid anxiety disorders as well as chapters on co-occurring anxiety disorders and major depression, substance use disorder, autism spectrum disorder, borderline personality disorder, and psychotic spectrum disorders. The diversity of these clinical disorders defies attempts to generalize the ways in which exposure therapy should be adapted to them. However, each presents a specific mental health context that holds specific implications for exposure-based treatment on dimensions

ranging from the targets of exposure therapy to the framing and implementation of exposure to establishing a trusting and collaborative therapeutic relationship with the patient and, as appropriate, with parents or caregivers, depending on the disorder. Moreover, despite the high prevalence of these comorbid mental health conditions, many clinical trials on exposure-based therapy exclude individuals with these comorbidities; thus, less information is available to guide therapists who attempt to treat them. These chapters aim to address these important gaps.

The second set of chapters targets anxiety disorder populations with physical health comorbidities or distinct physical states. This includes chapters each on comorbid cardiovascular disease and asthma and on treating anxiety disorders during pregnancy. These physical conditions and states are common, and yet affected individuals are often excluded from clinical trials on exposure-based therapy (Arch et al., 2012). Special consideration with these populations is needed for several reasons, including that interoceptive exposure and exposure that causes high fear states can create high levels of cardiovascular and respiratory arousal that are associated with different risks and considerations among those with cardiovascular disease and asthma, for example. Thus, these chapters aim to address the gaps in knowledge in how to apply exposure-based therapy to these distinct healthcare populations.

The third set of chapters considers how to adapt exposure-based treatment to distinct developmental populations with anxiety disorders, including children/adolescents and older adults. Most exposure protocols appear to have been written implicitly for young to middle-age adult patients. However, evidence demonstrates numerous age- and development-related brain and cognition across the lifespan, which lead to learning and processing information somewhat differently on average depending on age and developmental stage (e.g., Opitz et al., 2012; Zimmermann & Iwanski, 2014) and to different effects of fear-based disorders on the brain (e.g., Siehl et al., 2018). These differences have developmental implications for how exposure therapy is most appropriately delivered by the therapist and perceived by the patient. Further, logically, the salience of stressors and challenges differs dramatically by developmental stage, from the prominence of school performance and social acceptance among youth to frequent age-related changes in physical and cognitive functioning, perceived loss/gain, and life roles, in older adulthood (Wrzus et al., 2013). Each of these has potential implications for how exposure therapy is framed and the exposure contexts that are relevant to the patient.

The final set of chapters marks what is perhaps the most novel topic covered in this book—how to use and adapt exposure therapy for clinical issues other than anxiety disorders. This section includes chapters on how to integrate exposure therapy into the treatment of substance use disorders, eating disorders, obesity/overeating, and depression. Growing research literatures (e.g., Butler & Heimberg, 2020; Hayes, 2015) suggest the promise of integrating exposure therapy to advance the treatment of each of these common clinical problems. The included chapters address how to adapt the strategies of exposure therapy to address the particular presentations and challenges posed by each of these disorders/conditions. They leverage the empirical evidence and clinical experience from exposure therapy for anxiety

disorders, which teach patients how to tolerate and function well within states of anxiety, fear, or disgust, to address these and other uncomfortable states that are common within these non-fear-based disorders.

Each chapter that follows is authored by experts in the subject area and includes a brief background on the unique clinical presentation of focus, a summary of the extant research examining the application of exposure therapy within that population, and a guide for how to conceptualize and apply exposure therapy to intervene on the relevant maintaining factors. Case vignettes are provided at the end of each chapter to further illuminate the application of exposure therapy within these unique populations.

References

- Abramowitz, J. S., & Blakey, S. M. (2020). Overestimation of threat. In J. S. Abramowitz & S. M. Blakey (Eds.), *Clinical handbook of fear and anxiety: Maintenance processes and treatment mechanisms* (pp. 7–25). American Psychological Association. <https://doi.org/10.1037/0000150-001>
- Abramowitz, J. S., Deacon, B. J., & Whiteside, S. P. H. (2019). *Exposure therapy for anxiety: Principles and practice* (2nd ed.). The Guilford Press.
- Ale, C. M., McCarthy, D. M., Rothschild, L. M., & Whiteside, S. P. H. (2015). Components of cognitive behavioral therapy related to outcome in childhood anxiety disorders. *Clinical Child and Family Psychology Review*, *18*(3), 240–251. <https://doi.org/10.1007/s10567-015-0184-8>
- Arch, J. J., Dimidjian, S., & Chessick, C. (2012). Are exposure-based cognitive behavioral therapies safe during pregnancy? *Archives of Women's Mental Health*, *15*(6), 445–457. <https://doi.org/10.1007/s00737-012-0308-9>
- Bandarian-Balooch, S., Neumann, D. L., & Boschen, M. J. (2015). Exposure treatment in multiple contexts attenuates return of fear via renewal in high spider fearful individuals. *Journal of Behavior Therapy and Experimental Psychiatry*, *47*, 138–144. <https://doi.org/10.1016/j.jbtep.2014.12.006>
- Barlow, D. H., & Craske, M. G. (2006). *Mastery of your anxiety and panic*. <https://global.oup.com/academic/product/mastery-of-your-anxiety-and-panic-9780195311402>
- Bjork, R. A. (1994). Memory and metamemory considerations in the training of human beings. In J. Metcalfe & A. Shimamura (Eds.), *Metacognition: Knowing about knowing* (pp. 185–205). MIT Press.
- Blakey, S. M., & Abramowitz, J. S. (2016). The effects of safety behaviors during exposure therapy for anxiety: Critical analysis from an inhibitory learning perspective. *Clinical Psychology Review*, *49*, 1–15. <https://doi.org/10.1016/j.cpr.2016.07.002>
- Blakey, S. M., & Abramowitz, J. S. (2019). Dropping safety aids and maximizing retrieval cues: Two keys to optimizing inhibitory learning during exposure therapy. *Cognitive and Behavioral Practice*, *26*(1), 166–175. <https://doi.org/10.1016/j.cbpra.2018.03.001>
- Boettcher, H., Brake, C. A., & Barlow, D. H. (2016). Origins and outlook of interoceptive exposure. *Journal of Behavior Therapy and Experimental Psychiatry*, *53*, 41–51. <https://doi.org/10.1016/j.jbtep.2015.10.009>
- Borkovec, T. D., & Whisman, M. A. (1996). Psychosocial treatment for generalized anxiety disorder. In M. R. Mavissakalian & R. F. Prien (Eds.), *Long-term treatments of anxiety disorders* (pp. 171–199). American Psychiatric Association.
- Bouton, M. E. (1993). Context, time, and memory retrieval in the interference paradigms of Pavlovian learning. *Psychological Bulletin*, *114*(1), 80–99. <https://doi.org/10.1037/0033-2909.114.1.80>

- Bouton, M. E. (2002). Context, ambiguity, and unlearning: Sources of relapse after behavioral extinction. *Biological Psychiatry*, *52*(10), 976–986. [https://doi.org/10.1016/S0006-3223\(02\)01546-9](https://doi.org/10.1016/S0006-3223(02)01546-9)
- Bouton, M. E., Woods, A. M., Moody, E. W., Sunsay, C., & García-Gutiérrez, A. (2006). Counteracting the context-dependence of extinction: Relapse and tests of some relapse prevention methods. In M. G. Craske, D. Hermans, & D. Vansteenwegen (Eds.), *Fear and learning: From basic processes to clinical implications* (pp. 175–196). American Psychological Association. <https://doi.org/10.1037/11474-009>
- Butler, R. M., & Heimberg, R. G. (2020). Exposure therapy for eating disorders: A systematic review. *Clinical Psychology Review*, *78*, 101851. <https://doi.org/10.1016/j.cpr.2020.101851>
- Calhoun, K. S., & Resick, P. A. (1993). Post-traumatic stress disorder. In D. H. Barlow (Ed.), *Clinical handbook of psychological disorders: A step-by-step treatment manual* (pp. 48–98). The Guilford Press.
- Clauss, K., Bardeen, J. R., Thomas, K., & Benfer, N. (2020). The interactive effect of emotional reactivity and maladaptive metacognitive beliefs on anxiety. *Cognition and Emotion*, *34*(2), 393–401. <https://doi.org/10.1080/02699931.2019.1625752>
- Cooper, K., Gregory, J. D., Walker, I., Lambe, S., & Salkovskis, P. M. (2017). Cognitive behaviour therapy for health anxiety: A systematic review and meta-analysis. *Behavioural and Cognitive Psychotherapy*, *45*(2), 110–123. <https://doi.org/10.1017/S1352465816000527>
- Craske, M. G., Kircanski, K., Zelikowsky, M., Mystkowski, J., Chowdhury, N., & Baker, A. (2008). Optimizing inhibitory learning during exposure therapy. *Behaviour Research and Therapy*, *46*(1), 5–27. <https://doi.org/10.1016/j.brat.2007.10.003>
- Craske, M. G., Treanor, M., Conway, C. C., Zbozinek, T., & Vervliet, B. (2014). Maximizing exposure therapy: An inhibitory learning approach. *Behaviour Research and Therapy*, *58*, 10–23. <https://doi.org/10.1016/j.brat.2014.04.006>
- Cuijpers, P., Sijbrandij, M., Koole, S., Huibers, M., Berking, M., & Andersson, G. (2014). Psychological treatment of generalized anxiety disorder: A meta-analysis. *Clinical Psychology Review*, *34*(2), 130–140. <https://doi.org/10.1016/j.cpr.2014.01.002>
- Deacon, B. J., Farrell, N. R., Kemp, J. J., Dixon, L. J., Sy, J. T., Zhang, A. R., & McGrath, P. B. (2013). Assessing therapist reservations about exposure therapy for anxiety disorders: The therapist beliefs about exposure scale. *Journal of Anxiety Disorders*, *27*(8), 772–780. <https://doi.org/10.1016/j.janxdis.2013.04.006>
- Deacon, B. J., Kemp, J. J., Dixon, L. J., Sy, J. T., Farrell, N. R., & Zhang, A. R. (2013). Maximizing the efficacy of interoceptive exposure by optimizing inhibitory learning: A randomized controlled trial. *Behaviour Research and Therapy*, *51*(9), 588–596. <https://doi.org/10.1016/j.brat.2013.06.006>
- Ehring, T., Welboren, R., Morina, N., Wicherts, J. M., Freitag, J., & Emmelkamp, P. M. G. (2014). Meta-analysis of psychological treatments for posttraumatic stress disorder in adult survivors of childhood abuse. *Clinical Psychology Review*, *34*(8), 645–657. <https://doi.org/10.1016/j.cpr.2014.10.004>
- Foa, E. B., & Kozak, M. J. (1986). Emotional processing of fear: Exposure to corrective information. *Psychological Bulletin*, *99*(1), 20–35. <https://doi.org/10.1037/0033-2909.99.1.20>
- Foa, E. B., Steketee, G., & Rothbaum, B. O. (1989). Behavioral/cognitive conceptualizations of post-traumatic stress disorder. *Behavior Therapy*, *20*(2), 155–176. [https://doi.org/10.1016/S0005-7894\(89\)80067-X](https://doi.org/10.1016/S0005-7894(89)80067-X)
- Gillies, D., Taylor, F., Gray, C., O'Brien, L., & D'Abrew, N. (2012). Psychological therapies for the treatment of post-traumatic stress disorder in children and adolescents. *Cochrane Database of Systematic Reviews*. <https://doi.org/10.1002/14651858.CD006726.pub2>
- Goldman, N., Dugas, M. J., Sexton, K. A., & Gervais, N. J. (2007). The impact of written exposure on worry: A preliminary investigation. *Behavior Modification*, *31*(4), 512–538. <https://doi.org/10.1177/0145445506298651>
- Hamm, A. O., & Weike, A. I. (2005). The neuropsychology of fear learning and fear regulation. *International Journal of Psychophysiology*, *57*(1), 5–14. <https://doi.org/10.1016/j.ijpsycho.2005.01.006>

- Hayes, A. M. (2015). Facilitating emotional processing in depression: The application of exposure principles. *Current Opinion in Psychology*, 4, 61–66. <https://doi.org/10.1016/j.copsyc.2015.03.032>
- Heimberg, R. G., & Magee, L. (2014). Social anxiety disorder. In D. H. Barlow (Ed.), *Clinical handbook of psychological disorders: A step-by-step treatment manual* (pp. 114–154). The Guilford Press.
- Hofmann, S. G., Wu, J. Q., & Boettcher, H. (2014). Effect of cognitive-behavioral therapy for anxiety disorders on quality of life: A meta-analysis. *Journal of Consulting and Clinical Psychology*, 82(3), 375–391. <https://doi.org/10.1037/a0035491>
- Hogan, R. A. (1968). The implosive technique. *Behaviour Research and Therapy*, 6(4), 423–431. [https://doi.org/10.1016/0005-7967\(68\)90022-3](https://doi.org/10.1016/0005-7967(68)90022-3)
- Huppert, J. D., Roth Ledley, D., & Foa, E. B. (2006). The use of homework in behavior therapy for anxiety disorders. *Journal of Psychotherapy Integration*, 16(2), 128–139. <https://doi.org/10.1037/1053-0479.16.2.128>
- Jacoby, R. J., & Abramowitz, J. S. (2016). Inhibitory learning approaches to exposure therapy: A critical review and translation to obsessive-compulsive disorder. *Clinical Psychology Review*, 49, 28–40. <https://doi.org/10.1016/j.cpr.2016.07.001>
- Jacoby, R. J., Abramowitz, J. S., Blakey, S. M., & Reuman, L. (2019). Is the hierarchy necessary? Gradual versus variable exposure intensity in the treatment of unacceptable obsessional thoughts. *Journal of Behavior Therapy and Experimental Psychiatry*, 64, 54–63. <https://doi.org/10.1016/j.jbtep.2019.02.008>
- James, A. C., James, G., Cowdrey, F. A., Soler, A., & Choke, A. (2015). Cognitive behavioural therapy for anxiety disorders in children and adolescents. *Cochrane Database of Systematic Reviews*. <https://doi.org/10.1002/14651858.CD004690.pub4>
- Kendall, P. C., & Hedtke, K. A. (2006). *Cognitive-behavioral therapy for anxious children: Therapist manual ; coping cat* (3rd ed.). Workbook Publ.
- Krasner, L. (1971). Behavior therapy. *Annual Review of Psychology*, 22(1), 483–532. <https://doi.org/10.1146/annurev.ps.22.020171.002411>
- Krasner, L., & Houts, A. C. (1984). A study of the “value” systems of behavioral scientists. *American Psychologist*, 39(8), 840–850. <https://doi.org/10.1037/0003-066X.39.8.840>
- Marks, I. M. (1973). Reduction of fear: Towards a unifying theory. *Canadian Psychiatric Association Journal*, 18(1), 9–12. <https://doi.org/10.1177/070674377301800103>
- Mayo-Wilson, E., Dias, S., Mavranzouli, I., Kew, K., Clark, D. M., Ades, A. E., & Pilling, S. (2014). Psychological and pharmacological interventions for social anxiety disorder in adults: A systematic review and network meta-analysis. *The Lancet Psychiatry*, 1(5), 368–376. [https://doi.org/10.1016/S2215-0366\(14\)70329-3](https://doi.org/10.1016/S2215-0366(14)70329-3)
- McGlynn, F. D., Smitherman, T. A., & Gothard, K. D. (2004). Comment on the status of systematic desensitization. *Behavior Modification*, 28(2), 194–205. <https://doi.org/10.1177/0145445503259414>
- Meyer, V. (1966). Modification of expectations in cases with obsessional rituals. *Behaviour Research and Therapy*, 4(4), 273–280. [https://doi.org/10.1016/0005-7967\(66\)90023-4](https://doi.org/10.1016/0005-7967(66)90023-4)
- Mobbs, D., Hagan, C. C., Dalgleish, T., Silston, B., & Prévost, C. (2015). The ecology of human fear: Survival optimization and the nervous system. *Frontiers in Neuroscience*, 9. <https://doi.org/10.3389/fnins.2015.00055>
- Nelson, E. A., Deacon, B. J., Lickel, J. J., & Sy, J. T. (2010). Targeting the probability versus cost of feared outcomes in public speaking anxiety. *Behaviour Research and Therapy*, 48(4), 282–289. <https://doi.org/10.1016/j.brat.2009.11.007>
- Nordahl, H., Hjemdal, O., Hagen, R., Nordahl, H. M., & Wells, A. (2019). What lies beneath trait-anxiety? Testing the self-regulatory executive function model of vulnerability. *Frontiers in Psychology*, 10, 122. <https://doi.org/10.3389/fpsyg.2019.00122>
- Olatunji, B. O., Davis, M. L., Powers, M. B., & Smits, J. A. J. (2013). Cognitive-behavioral therapy for obsessive-compulsive disorder: A meta-analysis of treatment outcome and moderators. *Journal of Psychiatric Research*, 47(1), 33–41. <https://doi.org/10.1016/j.jpsychires.2012.08.020>

- Olatunji, B. O., & Wolitzky-Taylor, K. B. (2009). Anxiety sensitivity and the anxiety disorders: A meta-analytic review and synthesis. *Psychological Bulletin*, *135*(6), 974–999. <https://doi.org/10.1037/a0017428>
- Opitz, P. C., Rauch, L. C., Terry, D. P., & Urry, H. L. (2012). Prefrontal mediation of age differences in cognitive reappraisal. *Neurobiology of Aging*, *33*(4), 645–655. <https://doi.org/10.1016/j.neurobiolaging.2010.06.004>
- Paul, G. (1966). *Insight vs. desensitization in psychotherapy: An experiment in anxiety reduction*. Stanford University Press.
- Pittig, A., van den Berg, L., & Vervliet, B. (2016). The key role of extinction learning in anxiety disorders: Behavioral strategies to enhance exposure-based treatments. *Current Opinion in Psychiatry*, *29*(1), 39–47. <https://doi.org/10.1097/YCO.0000000000000220>
- Pompili, A., Furukawa, T. A., Imai, H., Tajika, A., Efthimiou, O., & Salanti, G. (2016). Psychological therapies for panic disorder with or without agoraphobia in adults: A network meta-analysis. *Cochrane Database of Systematic Reviews*. <https://doi.org/10.1002/14651858.CD011004.pub2>
- Rachman, S., Hodgson, R., & Marks, I. M. (1971). The treatment of chronic obsessive-compulsive neurosis. *Behaviour Research and Therapy*, *9*(3), 237–247. [https://doi.org/10.1016/0005-7967\(71\)90009-X](https://doi.org/10.1016/0005-7967(71)90009-X)
- Rachman, S., Marks, I. M., & Hodgson, R. (1973). The treatment of obsessive-compulsive neurotics by modelling and flooding in vivo. *Behaviour Research and Therapy*, *11*(4), 463–471. [https://doi.org/10.1016/0005-7967\(73\)90105-8](https://doi.org/10.1016/0005-7967(73)90105-8)
- Reynolds, S., Wilson, C., Austin, J., & Hooper, L. (2012). Effects of psychotherapy for anxiety in children and adolescents: A meta-analytic review. *Clinical Psychology Review*, *32*(4), 251–262. <https://doi.org/10.1016/j.cpr.2012.01.005>
- Salter, A. (1949). *Conditioned reflex therapy*. Creative Age.
- Shiban, Y., Pauli, P., & Mühlberger, A. (2013). Effect of multiple context exposure on renewal in spider phobia. *Behaviour Research and Therapy*, *51*(2), 68–74. <https://doi.org/10.1016/j.brat.2012.10.007>
- Siehl, S., King, J. A., Burgess, N., Flor, H., & Nees, F. (2018). Structural white matter changes in adults and children with posttraumatic stress disorder: A systematic review and meta-analysis. *NeuroImage: Clinical*, *19*, 581–598. <https://doi.org/10.1016/j.nicl.2018.05.013>
- Siev, J., & Chambless, D. L. (2007). Specificity of treatment effects: Cognitive therapy and relaxation for generalized anxiety and panic disorders. *Journal of Consulting and Clinical Psychology*, *75*(4), 513–522. <https://doi.org/10.1037/0022-006X.75.4.513>
- Skarphedinsson, G., Compton, S., Thomsen, P. H., Weidle, B., Dahl, K., Nissen, J. B., Torp, N. C., Hybel, K., Melin, K. H., Valderhaug, R., Wentzel-Larsen, T., & Ivarsson, T. (2015). Tics moderate sertraline, but not cognitive-behavior therapy response in pediatric obsessive-compulsive disorder patients who do not respond to cognitive-behavior therapy. *Journal of Child and Adolescent Psychopharmacology*, *25*(5), 432–439. <https://doi.org/10.1089/cap.2014.0167>
- Smits, J. A. J., Powers, M. B., & Otto, M. W. (2019). *Personalized exposure therapy: A person-centered transdiagnostic approach*. Oxford University Press.
- Stampfl, T. G., & Levis, D. J. (1967). Essentials of implosive therapy: A learning-theory-based psychodynamic behavioral therapy. *Journal of Abnormal Psychology*, *72*(6), 496–503. <https://doi.org/10.1037/h0025238>
- Taylor, S., Zvolensky, M. J., Cox, B. J., Deacon, B. J., Heimberg, R. G., Ledley, D. R., Abramowitz, J. S., Holaway, R. M., Sandin, B., Stewart, S. H., Coles, M., Eng, W., Daly, E. S., Arrindell, W. A., Bouvard, M., & Cardenas, S. J. (2007). Robust dimensions of anxiety sensitivity: Development and initial validation of the Anxiety Sensitivity Index-3. *Psychological Assessment*, *19*(2), 176–188. <https://doi.org/zv>
- Telch, M. J., Brouillard, M., Telch, C. F., Agras, W. S., & Taylor, C. B. (1989). Role of cognitive appraisal in panic-related avoidance. *Behaviour Research and Therapy*, *27*(4), 373–383. [https://doi.org/10.1016/0005-7967\(89\)90007-7](https://doi.org/10.1016/0005-7967(89)90007-7)
- Telch, M. J., Lucas, R. A., Smits, J. A. J., Powers, M. B., Heimberg, R., & Hart, T. (2004). Appraisal of social concerns: A cognitive assessment instrument for social phobia. *Depression and Anxiety*, *19*(4), 217–224. <https://doi.org/10.1002/da.20004>

- Telch, M. J., & Zaizar, E. D. (2020). Safety behaviors. In J. S. Abramowitz & S. M. Blakey (Eds.), *Clinical handbook of fear and anxiety: Maintenance processes and treatment mechanisms* (pp. 27–44). American Psychological Association. <https://doi.org/10.1037/0000150-002>
- Twohig, M. P., Abramowitz, J. S., Bluett, E. J., Fabricant, L. E., Jacoby, R. J., Morrison, K. L., Reuman, L., & Smith, B. M. (2015). Exposure therapy for OCD from an acceptance and commitment therapy (ACT) framework. *Journal of Obsessive-Compulsive and Related Disorders*, 6, 167–173. <https://doi.org/10.1016/j.jocrd.2014.12.007>
- Veronen, L. J., & Kilpatrick, D. G. (1983). Stress management for rape victims. In D. Meichenbaum & M. E. Jaremko (Eds.), *Stress reduction and prevention* (pp. 341–374). Springer. <https://doi.org/10.1007/978-1-4899-0408-9>
- Wang, Z., Whiteside, S. P. H., Sim, L., Farah, W., Morrow, A. S., Alsawas, M., Barrionuevo, P., Tello, M., Asi, N., Beuschel, B., Daraz, L., Almasri, J., Zaiem, F., Larrea-Mantilla, L., Ponce, O. J., LeBlanc, A., Prokop, L. J., & Murad, M. H. (2017). Comparative effectiveness and safety of cognitive behavioral therapy and pharmacotherapy for childhood anxiety disorders: A systematic review and meta-analysis. *JAMA Pediatrics*, 171(11), 1049. <https://doi.org/10.1001/jamapediatrics.2017.3036>
- Watts, B. V., Schnurr, P. P., Mayo, L., Young-Xu, Y., Weeks, W. B., & Friedman, M. J. (2013). Meta-analysis of the efficacy of treatments for posttraumatic stress disorder. *The Journal of Clinical Psychiatry*, 74(06), e541–e550. <https://doi.org/10.4088/JCP.12r08225>
- Westen, D., & Morrison, K. (2001). A multidimensional meta-analysis of treatments for depression, panic, and generalized anxiety disorder: An empirical examination of the status of empirically supported therapies. *Journal of Consulting and Clinical Psychology*, 69(6), 875–899.
- Wolitzky, K. B., & Telch, M. J. (2009). Augmenting in vivo exposure with fear antagonistic actions: A preliminary test. *Behavior Therapy*, 40(1), 57–71. <https://doi.org/10.1016/j.beth.2007.12.006>
- Wolitzky-Taylor, K. B., Horowitz, J. D., Powers, M. B., & Telch, M. J. (2008). Psychological approaches in the treatment of specific phobias: A meta-analysis. *Clinical Psychology Review*, 28(6), 1021–1037. <https://doi.org/10.1016/j.cpr.2008.02.007>
- Wolpe, J. (1958). *Psychotherapy by reciprocal inhibition*. Stanford University Press.
- Wong, A. H. K., & Lovibond, P. F. (2020). Generalization of extinction of a generalization stimulus in fear learning. *Behaviour Research and Therapy*, 125, 103535. <https://doi.org/10.1016/j.brat.2019.103535>
- Wrzus, C., Hänel, M., Wagner, J., & Neyer, F. J. (2013). Social network changes and life events across the life span: A meta-analysis. *Psychological Bulletin*, 139(1), 53–80. <https://doi.org/10.1037/a0028601>
- Zimmermann, P., & Iwanski, A. (2014). Emotion regulation from early adolescence to emerging adulthood and middle adulthood: Age differences, gender differences, and emotion-specific developmental variations. *International Journal of Behavioral Development*, 38(2), 182–194. <https://doi.org/10.1177/0165025413515405>
- Zlomke, K., & Davis, T. E. (2008). One-session treatment of specific phobias: A detailed description and review of treatment efficacy. *Behavior Therapy*, 39(3), 207–223. <https://doi.org/10.1016/j.beth.2007.07.003>

Section I
Populations with Anxiety and Mental
Health Comorbidities

Chapter 2

Exposure for Multiple Anxiety Disorders



Kathleen E. Stewart and Martin M. Antony

Abstract This chapter discusses key transdiagnostic cognitive, behavioral, and physiological features of anxiety disorders and how these may be targeted using exposure therapy. Benefits of transdiagnostic and disorder-specific approaches to treating anxiety disorders are discussed, as well as considerations for when one may want to use each approach. Guidelines for how to deviate from typical disorder-specific approaches are provided, in the context of both individual and group treatments for anxiety disorders. A brief review of the literature is provided, as well as a case example to illustrate the application of transdiagnostic exposure therapy for comorbid anxiety disorders.

Keywords Worry · Anxiety · Exposure · Exposure and response prevention · Group therapy · Transdiagnostic

Introduction

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR, American Psychiatric Association, 2022) characterizes the anxiety disorders as sharing *excessive* fear and anxiety, both of which can occur when there is a perception of potential danger or threat. Fear is often conceptualized as an emotional response that occurs in reaction to perceived *imminent* threat (e.g., occurring in the here and now), whereas anxiety is an emotional reaction to *anticipated* threat. Anxiety disorders include emotional (e.g., fear/anxiety), cognitive (e.g., worry), and behavioral (e.g., avoidance) components. Although the anxiety disorders can be distinguished by the content of worry (e.g., worry about the consequences of panic attacks in panic disorder vs. worry about negative social judgment in social anxiety disorder), they are highly comorbid (Brown et al., 2001). Almost

K. E. Stewart · M. M. Antony (✉)

Department of Psychology, Toronto Metropolitan University, Toronto, ON, Canada

e-mail: kathleen.stewart@ryerson.ca; mantony@ryerson.ca

© The Author(s), under exclusive license to Springer Nature Switzerland AG 2022

J. A. J. Smits et al. (eds.), *Clinical Guide to Exposure Therapy*,
https://doi.org/10.1007/978-3-031-04927-9_2

half of individuals with one anxiety disorder have another concurrent anxiety disorder (Brown et al., 2001). Of course, the anxiety disorders all involve the experience of fear and anxiety, but they also share common cognitive, physiological, and behavioral features, which will be reviewed briefly below.

Comorbidity is the rule rather than the exception!

Cognitive Processes Individuals with anxiety disorders are often *intolerant of uncertainty* (e.g., Carleton et al., 2012). For example, individuals with social anxiety disorder may find it difficult to tolerate not knowing what others are thinking about them, whereas individuals with agoraphobia may find it difficult to tolerate not knowing whether they will be able to leave a situation easily should they experience embarrassing physical symptoms. *Anxiety sensitivity* may also be present across a variety of disorders (Boswell et al., 2013). Although fear of the physical sensations of anxiety is characteristic of panic disorder, individuals with social anxiety disorder, for example, may also fear repercussions of appearing anxious (e.g., being judged for stammering). Lower *distress tolerance*, or the ability to tolerate emotional distress, is also common across the anxiety disorders, although it may not be a unique contributor to pathology above intolerance of uncertainty or anxiety sensitivity (Michel et al., 2016). Relatedly, *experiential avoidance* (i.e., avoidance of thoughts, feelings, or sensations), which may be thought of as the opposite of nonjudgmental mindful awareness, is also considered to be a transdiagnostic process across anxiety disorders (e.g., Barlow et al., 2004; Hayes et al., 1996). *Negative beliefs about worry* (i.e., the belief that worry is uncontrollable or dangerous) are also implicated in generalized and social anxiety symptoms (Penney et al., 2020); for example, individuals with generalized anxiety disorder might believe that they cannot stop worrying and therefore start worrying about their worry, perpetuating further anxiety (Wells, 2009). Further, many patients may also hold *positive beliefs about the benefit of worry* (e.g., perceiving it to be an effective problem-solving strategy, believing it means they care about others, Wells, 2009), although these beliefs are also endorsed by people without anxiety pathology (e.g., Tallis et al., 1994).

Attentional bias to threat (e.g., difficulty disengaging from threatening information) has also been found across anxiety disorders (Cisler & Koster, 2010) as well as *negative interpretation biases* (i.e., the propensity to interpret ambiguity negatively or to “assume the worst” (Hirsch et al., 2016). For example, a patient with social anxiety disorder who is giving a speech may be hypervigilant to individuals in the audience that look bored or may be more inclined to interpret a difficult-to-read facial expression as negative or judgmental. Patients with anxiety disorders may also engage in a variety of “thinking traps,” such as black-and-white thinking, catastrophizing, mind reading (e.g., assuming one can know what someone else is thinking), or discounting the positive. For example, patients with a specific phobia related to driving may assume the worst will happen when they drive (e.g., they will

die in a gruesome accident), while an individual with agoraphobia may assume that if they cannot escape an elevator when experiencing panic sensations, they will lose control or die. In addition, *perfectionism* is a transdiagnostic process that may exacerbate anxiety (Egan et al., 2012), as individuals may experience anxiety when they fail to live up to relentless high standards in any domain. In summary, although the content of cognition may differ, anxiety disorders share many underlying cognitive processes.

Low tolerance of uncertainty and distress, anxiety sensitivity, experiential avoidance, dysfunctional beliefs about worry, and attentional and interpretation biases are common across anxiety disorders.

Physiological Components Fear and anxiety are associated with physiological changes (e.g., muscle tension, increased heart rate, increased blood pressure, increased breathing, sweating) designed to mobilize the body to deal with threat (e.g., American Psychiatric Association, 2022). These physical symptoms can be uncomfortable in and of themselves, and they may also be associated with negative cognitive and behavioral reactions. For example, in panic disorder, patients may interpret autonomic arousal as a sign of danger (e.g., increased heart rate as indicative of a heart attack) and make repeated visits to the emergency room. An individual with social anxiety disorder may believe that they might sweat profusely while socializing and thus avoid social situations. An individual with generalized anxiety disorder might worry about the long-term health consequences of experiencing chronic anxiety and engage in information seeking online about the health impact of anxiety.

Behavioral Components Behavioral models of anxiety disorders have longed suggested that avoidance is a key maintaining feature of anxiety disorders (e.g., Foa & Kozak, 1986; Mowrer, 1960; see Salters-Pedneault et al., (2004) for an extensive review). Avoidance of feared stimuli reduces anxiety in the short term and is thus reinforced via *negative reinforcement* (i.e., the removal of an aversive experience). However, anxiety is maintained in the long run because the individual does not learn corrective information, such as that the feared outcome is unlikely or not as bad as predicted (Salters-Pedneault et al., 2004). For example, if one never engages in public speaking because they fear a jeering crowd, they will not have the opportunity to learn that people generally do not jeer or boo during speeches.

Avoidance may be physical (e.g., specific places, people, or situations), cognitive (e.g., thinking about upsetting thoughts or images), or emotional (e.g., suppressing emotion). Individuals may engage in avoidance outright or escape (e.g., leaving a situation, such as getting off a train when experiencing symptoms of a panic attack). They also may engage in more covert forms of avoidance or protection, often called *safety behaviors* (see Thwaites and Freeston, 2005 for a review). Safety behaviors (e.g., carrying benzodiazepines while riding the subway, drinking alcohol in social

situations, checking whether one's children arrived safely at school) are used to reduce threat or to lower anxiety to a more manageable level. Safety behaviors can be difficult to differentiate from adaptive coping strategies or normative behaviors. For example, using alcohol recreationally in a social setting is not inherently problematic. However, a behavior may be considered clinically significant if it is occurring at a frequency or intensity that causes impairment (e.g., excessive inebriation, needing to drink in most social settings to feel comfortable) or the behavior prevents learning (e.g., that one doesn't *need* alcohol in order to not be perceived as boring).

Avoidance and safety behaviors are common across anxiety disorders.

Adapting Exposure Therapy for Multiple Anxiety Disorders

Exposure therapy, which involves confronting feared stimuli while refraining from engaging in safety behaviors, is one of the most effective strategies for the treatment of anxiety disorders (Ougrin, 2011). Exposure therapy may include direct confrontation of objects or situations (referred to as *in vivo* exposure, e.g., practicing giving presentations to overcome performance anxiety), experiencing feared sensations (referred to as *interoceptive* exposure, e.g., breathing through a small straw to induce feelings of breathlessness), or exposure to feared mental experiences, such as thoughts, memories, urges, or images (referred to as *imaginal* exposure, e.g., describing a feared image, either verbally or in writing). In the past, imaginal exposure was sometimes used as an alternative to *in vivo* exposure (e.g., exposure to dogs in imagination). However, given that *in vivo* exposure is generally superior to imaginal exposure for reducing fear of objects and situations (Emmelkamp & Wessels, 1975), imaginal exposure should generally be reserved for reducing fear of mental experiences. More recently, mediums such as virtual reality have been used to approximate feared situations (e.g., being on top of a tall building, flying in an airplane) if the person is unable or unwilling to engage in *in vivo* exposure or as a step on a fear hierarchy.

Although exposure may be used to treat a specific anxiety disorder, it can also be conducted transdiagnostically (e.g., Smits et al., 2019). The following sections will describe benefits and costs of both transdiagnostic and disorder-specific (i.e., treating one anxiety disorder) approaches, discuss concerns related to group treatment, and provide guidance around when and how to deviate from standard protocols.

Benefits of Transdiagnostic Approaches

One of the benefits of using a transdiagnostic approach to exposure for multiple anxiety disorders is that it may be more *efficient* and *cost-effective* to learn compared to treating anxiety disorders sequentially. For example, learning multiple

disorder-specific treatments may be less efficient with respect to time and supervision resources than learning transdiagnostic approaches (e.g., McHugh & Barlow, 2010; Steele et al., 2018). In addition, a transdiagnostic approach is highly *personalizable*, and patients may appreciate how transdiagnostic exposure treatment targets *all* their feared situations rather than just *some* (Barlow et al., 2018). Further, patients themselves do not typically think about their problems categorically or with diagnostic labels, and thus they may not understand why clinicians are asking them to focus on only one set of symptoms (Barlow et al., 2018). If you have experience working with patients with multiple comorbidities, you may have experienced a patient's frustration at being redirected to one type of anxiety concern in a more standardized treatment setting (e.g., hospital-based group treatment).

Another benefit of this approach is that it challenges you to think more about the underlying mechanisms and the functional similarities between symptoms rather than only superficial symptoms. For example, if you create an uncertainty hierarchy, you will be challenged to think about the variety of ways that intolerance of uncertainty may manifest in your patient's life, some of which the patient may not have recognized as problematic. For example, highly anxious patients may engage in controlling behavior in their interpersonal relationships in order to reduce uncertainty, which may not be captured in a diagnostic assessment of DSM-5-TR anxiety symptoms or in a disorder-specific exposure hierarchy. Yet, including these interpersonal exposures may lead to relationship improvements and may have broader implications for one's ability to cope with and tolerate uncertainty. On the other hand, patients often seek treatment due to the consequences of anxiety disorders and may want to focus on these types of concerns (e.g., how anxiety impacts their relationship). Taking a transdiagnostic approach to exposure may help both you and your patient brainstorm items for their exposure hierarchy that target a myriad of concerns, such as how perfectionism exacerbates anxiety at work as well as in relationships.

Adopting a transdiagnostic approach may also help you to think more about how different anxiety disorders may exacerbate each other. For example, a patient with comorbid panic disorder and social anxiety disorder may fear physical sensations of anxiety for two different reasons—both because they are afraid of having a heart attack and because they are afraid of being humiliated if they show signs of anxiety in public. It may be most efficient to create exposure hierarchies that “kill two birds with one stone,” such as having the person induce symptoms of panic in a public setting, thus challenging catastrophizing about having a heart attack as well as embarrassing themselves. Another example might be a patient with generalized anxiety disorder and social anxiety disorder with underlying perfectionistic beliefs, who may worry about both social and work-related consequences of “imperfect” performance. Exposures with this patient may involve making small mistakes at work that have the potential for both work and social judgment (e.g., purposely including a spelling mistake in a presentation given to colleagues). The patient may be able to challenge both a catastrophic belief that making a small mistake at work

could lead to significant work repercussions (e.g., being fired, being talked down to by boss) and social repercussions (e.g., people will laugh at me).

It may be most efficient to create exposure hierarchies that target multiple issues at once, thereby “killing two birds with one stone.”

Additionally, it is possible that patients might experience a greater sense of mastery sooner if they target symptoms in multiple areas. Patients who experience improvements in anxiety across multiple domains may recognize the widespread benefits of exposure and may be more inclined to continue with treatment. Patients may also learn that they can tolerate anxiety *broadly*, rather than just in one domain. As a result, they may be more likely to finish treatment believing they can continue to manage their anxiety as it arises, rather than believing they must seek treatment for their other anxiety disorders. However, it is important to note that disorder-specific treatments also have benefits for other emotional disorder symptoms (e.g., Borkovec et al., 1995; Brown et al., 1995; Craske et al., 2007) and that transdiagnostic approaches to treatment tend to be *as effective* as disorder-specific approaches at improving comorbid emotional symptoms at posttreatment (e.g., Steele et al., 2018; Titov et al., 2009, 2015). More research is needed on *rapid gains* in transdiagnostic vs. disorder-specific approaches.

Benefits of Disorder-Specific Approaches

Despite the numerous benefits of transdiagnostic anxiety exposure treatment, there are also benefits to disorder-specific approaches. First, although it was suggested earlier that patients may experience a greater sense of mastery sooner if they target multiple symptom domains, the opposite could also be true. Patients who initially target one focal area of anxiety may see more rapid gains and thus may be more motivated to continue exposure in other areas. For example, a patient who works solely on social anxiety disorder may see greater and more rapid improvement in public speaking than if they were making smaller gains across a variety of areas. In addition, more frequent exposure is likely to lead to greater fear reduction, and therefore, focusing on a smaller number of exposure targets may be associated with more rapid learning.

Also, using a disorder-specific approach provides an opportunity to target the most impairing symptom domain first, which may lead to more rapid relief, especially if one domain is more problematic than the others. For example, a patient with significant agoraphobia and social anxiety may not be able to complete exposures in social situations if they are unable to leave their home due to agoraphobia, and focusing on the agoraphobia first may be most helpful.

In addition, a disorder-specific exposure hierarchy may be simpler to develop, more streamlined, and easier for the patient to follow, compared to a more complex, transdiagnostic exposure hierarchy. If you are a more novice clinician, you might feel overwhelmed by a transdiagnostic approach, and patients may find that the hierarchy seems to be “all over the place.” Organizing a hierarchy, with multiple steps per item (e.g., riding a subway with a friend, riding a subway alone for one stop, riding a subway alone for three stops) may be complicated when including other types of exposure items.

Deciding Between Transdiagnostic and Disorder-Specific Exposures

You might decide to consider a transdiagnostic approach to exposure therapy when you have a clear conceptualization of the common mechanisms that are shared across the anxiety disorders. This may require you to go beyond standard diagnostic interviews to ask questions about known anxiety mechanisms; for example, you might want to ask about patients’ experiences tolerating uncertainty, their need to be in control, perfectionistic standards, or beliefs that emotions are dangerous, to name a few. If you have been working with patients for some time, then you might have an understanding of their patterns of thinking (e.g., black-and-white thinking, catastrophizing) that can be targeted in exposure. You might also suggest a transdiagnostic approach if a patient is specifically seeking treatment for multiple anxiety symptoms, as the patient may “buy in” more if multiple areas are targeted at once.

When considering a transdiagnostic approach, you should also consider whether to use a specific *manualized* transdiagnostic treatment or a case conceptualization approach. Manuals provide structure, which may be particularly useful for more novice therapists, as well as assurance that the entire package has been demonstrated to be effective. However, you may also prefer a more flexible case conceptualization approach. For example, the Unified Protocol for Transdiagnostic Treatment of Emotional Disorders (Barlow et al., 2018) recommends that all patients undergo interoceptive exposure; however, interoceptive exposure may be less relevant for patients with low levels of anxiety sensitivity. Many patients may have insurance that covers a limited number of treatment sessions, in which case you might want to prioritize the most relevant exposures rather than adhering rigidly to a manual.

On the other hand, you might decide to use a disorder-specific approach if you believe it will be more practical or simple (e.g., if a patient struggles to grasp how different concerns are related or struggles with building a hierarchy) or if patients prefer to work on just one problem. For example, some patients may prefer to focus on their most impairing problem (e.g., their panic disorder being more problematic than their specific phobia). Other patients may prefer to focus initially on less impairing problem to gain a sense of mastery before moving on to the most impairing problem. Also, for some presentations, it may be most beneficial to target one

disorder with exposure *in close succession* rather than spread out among other types of exposure items. For example, if a patient is primarily seeking treatment for specific phobia, you may want to focus on having the patient continuously work through the phobia hierarchy, rather than diluting the treatment with other exposures.

You can take comfort knowing that regardless of which approach you take, transdiagnostic and disorder-specific treatment approaches appear to be equally effective for comorbidity, and you can change tactics as needed. You might start out using a disorder-specific exposure approach, but as you learn more about the patient and the mechanisms at play, you might decide to broaden the exposure treatment. Or you might start out pursuing a transdiagnostic approach to exposure, but recognize the patient is not making noticeable gains in any area, and decide to focus on mastery within one area. Open dialogue with the patient and continued assessment and updating of your case formulation will help you to feel confident in your approach.

Developing Hierarchies for Multiple Anxiety Disorders

When creating an exposure hierarchy for multiple anxiety disorders, one option is to organize items by underlying processes rather than content area. For example, you might want to create an intolerance of uncertainty hierarchy, containing multiple exposures that relate to “sitting with uncertainty” (see Table 2.1 for an example of an uncertainty hierarchy). The same approach would work for other underlying processes, such as perfectionism (see Table 2.2 for an example of a perfectionism hierarchy).

Hierarchy items may be organized by underlying processes rather than content area.

Table 2.1 Sample exposure hierarchy targeting intolerance of uncertainty

Item	Distress ratings
Apply for a new job	95
Book a vacation to a place that you haven't been to before	90
Purchase an item online without reading more than three reviews	80
Book a reservation at a restaurant without reading the reviews	70
Ask a waiter to surprise you with your main course for dinner	70
Ask a friend to order dinner for you while out eating	60
Have a friend make surprise plans and not tell you what they are until 5 minutes before	60
Go for a walk in a new neighborhood without a map	50
Take a different route home from work or school	50
Leave the house without checking directions to a location that you have been to before	40
Ask a taxi driver to take you to their favorite place in the city	30

Table 2.2 Sample exposure hierarchy targeting perfectionism

Item	Distress ratings
Mispronounce a word in a presentation	90
Make a typo in an email sent to a boss	80
Make a typo in an email sent to a colleague	70
Make a typo in an email sent to a friend	60
Stop reading in the middle of a chapter	55
Do not write a “to do list” for tomorrow	50
Send an email without proofreading	50
Send a text message without proofreading	45
Leave part of the house messy	40
Leave a few dishes in the sink overnight	30

Alternatively, you could create separate hierarchies for each anxiety disorder that can be used in tandem. You and your patient may find one approach more appealing than another. For some, it may be easier to work on creating a separate social anxiety hierarchy before beginning to think of different items corresponding to different disorders. Novice clinicians may benefit from looking through different anxiety disorder manuals to gather ideas for different types of exposures that can be conducted related to each disorder. Some examples include *Mastery of Your Anxiety and Panic* (Craske & Barlow, 2006), *Managing Social Anxiety* (Hope et al., 2019), and *Mastering Your Fears and Phobias* (Craske et al., 2006). It also might be possible to combine multiple anxiety targets in one exposure. For example, a patient might embarrass themselves in public in order to bring on panic symptoms that relate to both the physical and social concerns related to having a panic attack in public. Similarly, interoceptive exposure can also be conducted in social settings in order to increase the possibility of the feared outcomes that are likely to be more manageable than expected.

Treating Multiple Anxiety Disorders in Group Settings

Treating patients in groups raises several unique considerations. One benefit to a transdiagnostic anxiety disorder group approach is that patients may more easily learn general principles of change (vs. disorder-specific principles) by interacting with others who have other anxiety-related problems. You can facilitate this process by highlighting the similar features across different anxiety-related disorders, despite the different content. For example, a patient may provide a specific example about how they were working on reducing checking on their child’s safety at night. Although many patients in the group may not relate to this specific concern, you could facilitate a group discussion about resisting safety behaviors more broadly and tolerating uncertainty. In fact, patients may benefit from witnessing how seemingly different symptoms (e.g., checking on a child at night and being afraid of

public speaking) may stem from similar processes (Barlow et al., 2018). In addition, you might be able to better ascertain whether patients grasp the key principles of the cognitive behavioral model by observing how they provide feedback and help to each other when planning exposures (Barlow et al., 2018). Lastly, the group setting may also provide patients with ideas for additional exposures to work on posttreatment if they have comorbidity or if they later develop different anxiety disorder symptoms.

On the other hand, there are many benefits to disorder-specific anxiety groups. First, the examples that patients raise during sessions will likely seem more relevant to other members of the group. Although a talented clinician can work to make sure examples are relevant to a wide variety of group members, patients may experience greater group cohesion if others experience the same concerns. Coordinating group exposure practices in session will also be much easier to plan, as patients will be able to engage in the same exposures (e.g., having patients sing a song together in a hospital waiting room to target performance anxiety) or at least variants of the same exposure (e.g., some patients sing a song in the waiting room, while others practice asking for directions). This may be much simpler than trying to have multiple different groups doing exposure at once and trying to review them all later in the session.

Choosing Between Disorder-Specific and Transdiagnostic Groups In some cases, the question of which format to choose may be mitigated by concerns about resources and feasibility. For example, some settings may only be able to offer one type of group or another, depending on the availability and training of clinicians. Similarly, the range of referrals may influence whether disorder-specific vs. transdiagnostic group treatments can be offered. If there are ample patients with the same disorder, a disorder-specific approach may be feasible and appropriate, whereas if patients have a wide array of anxiety concerns, transdiagnostic groups may be more feasible, versus waiting to have enough patients with the same problem to run a disorder-specific group. However, when there is flexibility to choose the treatment format, you may want to decide based on an assessment of the patient's preferences and symptom presentation whether a disorder-specific or transdiagnostic approach is more likely to be useful.

Practical Issues in Transdiagnostic Group Treatment When running transdiagnostic groups, it is helpful to think ahead about how group members might be paired up to work on in-session exposures (Barlow et al., 2018). For example, patients who want to work on social anxiety concerns during a particular session might be grouped together. In groups, it is imperative that you have a transdiagnostic case conceptualization for each patient in order to ensure that you do not become distracted by the differences in symptom presentation (Norton, 2012). Norton (2012) recommends that therapists de-emphasize differences and avoid using diagnostic labels in transdiagnostic group treatments. As in any group, it is advisable to also think ahead about who is suitable for group treatment based on personality characteristics, functioning, and related factors (Norton, 2012).

With respect to in-session exposures, patients may pair off in small groups, although it may be helpful to also have patients take part in at least one joint exposure. Barlow et al. (2018) recommend that all patients take part in interoceptive exposure, with the rationale being that even if a patient does not have panic disorder, it will help them learn to better tolerate negative emotions more broadly, as physical sensations of anxiety may still contribute to patients' aversion to negative emotion (even if they don't *fear* them per se). For example, Barlow et al. (2018) uses the example that many patients take physical symptoms of anxiety as signs of danger or threat (e.g., showing signs of anxiety in social anxiety disorder leading to judgment). Interoceptive exposure may help patients to recognize that these sensations are normative responses and are not dangerous and that they unlikely lead to catastrophic outcomes (Barlow et al., 2018).

All patients can take part in interoceptive exposure.

Review of Research

Although there is little to no research examining the use of transdiagnostic exposure-based strategies on their own, there are an increasing number of studies supporting the use of transdiagnostic cognitive behavioral therapy (CBT) for anxiety and related disorders that include exposure as a component. In general, transdiagnostic treatments appear to be effective for treating anxiety-related problems, though additional research is needed (Anderson et al., 2016; Newby et al., 2015; Pearl & Norton, 2017).

Transdiagnostic treatments have been found to be effective in both clinician-administered and self-guided formats, and a number of studies suggest that transdiagnostic treatments are as effective as disorder-specific treatments. For example, Steele et al. (2018) found that the Unified Protocol for Transdiagnostic Treatment of Emotional Disorders (Barlow et al., 2018) was as effective as disorder-specific treatment in reducing number of diagnoses at posttreatment and symptoms of generalized anxiety disorder, social anxiety disorder, and depression. Similarly, Norton and Barrera (2012) found that a transdiagnostic anxiety disorder treatment performed as well as a disorder-specific treatment. Internet-delivered transdiagnostic CBT has also been shown to be as effective as disorder-specific treatment for reduction in symptoms of generalized anxiety disorder, social anxiety disorder, panic disorder, and major depressive disorder, with moderate to large effect sizes (Dear et al., 2015; Fogliati et al., 2016; Titov et al., 2009, 2015).

Norton et al. (2013) found that a transdiagnostic CBT for anxiety disorder treatment improved anxiety disorder symptoms, such that two-thirds of treatment completers no longer met criteria for a severe comorbid diagnosis at posttreatment. Although the study did not compare transdiagnostic treatment to disorder-specific treatment, they noted that this proportion is higher than previous disorder-specific

studies. Berger et al. (2017) also found that the addition of Internet-delivered transdiagnostic CBT for anxiety disorders to usual care in primary care settings outperformed treatment as usual in primary care, suggesting these transdiagnostic treatments may be effective in broader treatment settings. In contrast, Craske et al. (2007) found that although both transdiagnostic and disorder-specific treatments for panic disorder improved panic disorder severity and comorbid diagnoses, disorder-specific treatment was associated with greater functioning at posttreatment and a greater proportion had no comorbidity at follow-up. Thus, there may be instances where disorder-specific protocols are more appropriate than transdiagnostic approaches.

In summary, there is evidence to support the use of transdiagnostic CBT protocols for comorbid anxiety disorders; however, these treatments typically perform as well as disorder-specific treatments at reducing comorbidity. As such, you might base your decision on aforementioned factors, knowing that either approach is likely to be effective, based on available evidence. A reminder is that the available evidence has focused on combining exposure with other strategies (e.g., cognitive strategies), and little is known about the relative effectiveness of transdiagnostic vs. disorder-specific exposure alone. Another limitation of the present literature is the use of pre-design, post-design, and follow-up design, which do not allow for a comparison of how underlying theoretical mechanisms (e.g., perfectionism, intolerance of uncertainty) change over the course of treatment and if they predict improvement in symptoms or whether the rate of improvement differs from one approach to another. In addition, it is unlikely that transdiagnostic approaches would be as effective or efficient as disorder-specific approaches for treating specific phobias, which can often be treated in a single session of exposure (Hood & Antony, 2012).

Case Example

Ravi, a 46-year-old man, was referred for treatment due to frequent and distressing panic attacks that led him to take a leave from work. He was diagnosed with panic disorder and agoraphobia, as well as comorbid social anxiety disorder. Ravi was interested in receiving treatment for panic disorder and agoraphobia, because they were the most distressing and impairing of the diagnoses. Ravi reported during the assessment that he was terrified of losing control over his body, fainting and hurting himself, and humiliating himself in front of his coworkers. He reported that the uncued panic attacks started a year ago and that after a few months of experiencing unexpected attacks he took a leave of absence from work. He also avoided other places that might trigger an attack, such as grocery stores. He also reported a long-standing fear of embarrassing himself in front of people he respected, such as friends and colleagues (e.g., saying the “wrong thing,” making a joke that isn’t perceived as funny). Although it was not discussed in the initial assessment, during treatment, it became apparent that Ravi had trouble expressing emotion and that he was concerned that people he admired would see him as weak or “unmasculine.”

His office job had a culture of masculinity where emotional expression was often mocked. It became clear that his need to be in control of his emotions extended beyond panic attacks to other emotions that could be perceived as vulnerable, and he also found it difficult to not be in control of plans and disliked spontaneity. Ravi preferred to be the one to make plans in his relationship and to organize every aspect of his day.

Ravi's therapist worked with Ravi to develop a case conceptualization identifying mechanisms hypothesized to maintain these different symptoms. Anxiety sensitivity was thought to be a predominant contributing factor, as well as distress intolerance, fear of emotion, intolerance of uncertainty, perfectionism, and fear of negative evaluation. Following psychoeducation, interoceptive exposure was started, given the strong evidence base for using interoceptive exposure to target panic disorder and elevated anxiety sensitivity. Once Ravi was better able to tolerate his physical arousal sensations, he and his therapist began to construct a hierarchy that involved going to places that he had been avoiding and ultimately practicing interoceptive exposure in those environments. Higher up the hierarchy were exposures that also included social components, such as conducting interoceptive exposure (e.g., rapid breathing) at a store. These exposures helped him to continue learning not only that physical sensations of anxiety aren't dangerous but also that he would not likely be humiliated in public as result of experiencing them. As his panic disorder and agoraphobia symptoms continued to decrease and Ravi began to plan his return to work, Ravi and his therapist decided to create a separate hierarchy that might target some of the more long-standing concerns. Items on Ravi's new hierarchy included drawing attention to himself in public (e.g., purposefully tripping in public, targeting fear of negative evaluation), having his children plan outings (targeting intolerance of uncertainty and his need to be in control), and opening up to a friend about his emotions (targeting catastrophic beliefs about expressing emotion).

Ravi made significant recovery during treatment. His scores on measures of relevant constructs, such as the Anxiety Sensitivity Index, Third Edition (Taylor et al., 2007), and the Intolerance of Uncertainty Scale (Buhr & Dugas, 2002) decreased over the course of treatment. His symptoms no longer met criteria for any diagnosis, although he continued to experience subclinical social anxiety symptoms. Ravi was able to return to work. He reported that not only did his anxiety symptoms improve but he was also having more fun and being more spontaneous.

During the treatment, there were several decision points regarding how to manage the anxiety comorbidity, and a number of factors influenced these decisions. The panic and agoraphobia symptoms were addressed first, before discussing other treatment targets, because Ravi sought treatment only for panic and agoraphobia and because his therapist did not want to overburden Ravi while introducing the CBT model. Ravi's therapist was also very experienced using a manualized treatment for panic disorder and agoraphobia and was most comfortable recommending this treatment to Ravi. When Ravi was ready to start exposure therapy, his therapist introduced interoceptive exposure first before introducing in vivo exposures. As Ravi became less afraid of the physical sensations in relatively "safe" environments

(e.g., the treatment room, his own house), he was able to work on entering situation that triggered anxiety, such as grocery stores and long drives. Third, as Ravi and his therapist had more sessions together and their rapport became stronger, his therapist shared her conceptualization that many of the patient's symptoms and concerns (e.g., panic attacks, not enjoying spontaneity) were stemming from the same underlying fear of emotion and need to be in control. In summary, Ravi's therapist used a flexible approach, starting with disorder-specific exposure and then broadening to include other exposure items that targeted underlying mechanisms.

Conclusion

In conclusion, both disorder-specific and transdiagnostic exposure treatments are likely to be effective for treating symptoms of anxiety. Both approaches have costs and benefits, and you will want to consider these when deciding on an approach. For example, you will want to consider the patient's motivation (e.g., do they want to work on multiple symptoms of anxiety, or would they prefer to focus on the most impairing domain?), type of comorbidity (e.g., are there similarities in symptoms, such as avoidance of large gatherings in panic and social anxiety?), underlying mechanisms (e.g., does the clinician have a clear conceptualization of how different anxiety symptoms are related?), and the clinician's comfort with each approach. Both approaches can be useful, and a clinician can always change course as needed (e.g., beginning with disorder-specific and moving to transdiagnostic).

References

- Anderson, P., Toner, P., & Bland, M. (2016). Effectiveness of transdiagnostic cognitive behaviour therapy for anxiety and depression in adults: A systematic review and meta-analysis. *Behavioural and Cognitive Psychotherapy, 44*, 673–690.
- American Psychiatric Association (2022). *Diagnostic and statistical manual of mental disorders* (5th ed., text rev.).
- Barlow, D. H., Allen, L. B., & Choate, M. L. (2004). Towards a unified treatment for emotional disorders. *Behavior Therapy, 35*, 205–230.
- Barlow, D. H., Farchione, T. J., Sauer-Zavala, S., Murray Latin, H., Ellard, K. K., Bullis, J. R., ... Cassiello-Robbins, C. (2018). *Unified protocol for transdiagnostic treatment of emotional disorders* (2nd ed.). Oxford University Press.
- Berger, T., Urech, A., Krieger, T., Stolz, T., Schulz, A., Vincent, A., ... Meyer, B. (2017). Effects of a transdiagnostic unguided internet intervention ('velibra') for anxiety disorders in primary care: Results of a randomized controlled trial. *Psychological Medicine, 47*, 67–80.
- Borkovec, T. D., Abel, J. L., & Newman, H. (1995). Effects of psychotherapy on comorbid conditions in generalized anxiety disorder. *Journal of Consulting and Clinical Psychology, 63*, 479–483.
- Boswell, J. F., Farchione, T. J., Sauer-Zavala, S., Murray, H. W., Fortune, M. R., & Barlow, D. H. (2013). Anxiety sensitivity and interoceptive exposure: A transdiagnostic construct and change strategy. *Behavior Therapy, 44*, 417–431.

- Brown, T. A., Antony, M. M., & Barlow, D. H. (1995). Diagnostic comorbidity in panic disorder: Effect on treatment outcome and course of comorbid diagnoses following treatment. *Journal of Consulting and Clinical Psychology, 63*, 408–418.
- Brown, T. A., Campbell, L. A., Lehman, C. L., Grisham, J. R., & Mancill, R. B. (2001). Current and lifetime comorbidity of the DSM-IV anxiety and mood disorders in a large clinical sample. *Journal of Abnormal Psychology, 110*, 585–599.
- Buhr, K., & Dugas, M. J. (2002). The intolerance of uncertainty scale: Psychometric properties of the English version. *Behaviour Research and Therapy, 40*, 931–945.
- Carleton, R. N., Mulvogue, M. K., Thibodeau, M. A., McCabe, R. E., Antony, M. M., & Asmundson, G. J. (2012). Increasingly certain about uncertainty: Intolerance of uncertainty across anxiety and depression. *Journal of Anxiety Disorders, 26*, 468–479.
- Cisler, J. M., & Koster, E. H. (2010). Mechanisms of attentional biases towards threat in anxiety disorders: An integrative review. *Clinical Psychology Review, 30*, 203–216.
- Craske, M. G., Antony, M. M., & Barlow, D. H. (2006). *Mastering your fears and phobias, therapist guide* (2nd ed.). Oxford University Press.
- Craske, M. G., & Barlow, D. H. (2006). *Mastery of your anxiety and panic, therapist guide* (4th ed.). Oxford University Press.
- Craske, M. G., Farchione, T. J., Allen, L. B., Barrios, V., Stoyanova, M., & Rose, R. (2007). Cognitive behavioral therapy for panic disorder and comorbidity: More of the same or less of more? *Behaviour Research and Therapy, 45*, 1095–1109.
- Dear, B. F., Staples, L. G., Terides, M. D., Karin, E., Zou, J., Johnston, L., ... Titov, N. (2015). Transdiagnostic versus disorder-specific and clinician-guided versus self-guided internet-delivered treatment for generalized anxiety disorder and comorbid disorders: A randomized controlled trial. *Journal of Anxiety Disorders, 36*, 63–77.
- Egan, S., Wade, T., & Shafran, R. (2012). The transdiagnostic process of perfectionism. *Revista de psicopatología y psicología clínica, 17*, 279–294.
- Emmelkamp, P. M., & Wessels, H. (1975). Flooding in imagination vs flooding in vivo: A comparison with agoraphobics. *Behaviour Research and Therapy, 13*, 7–15.
- Foa, E. B., & Kozak, M. J. (1986). Emotional processing of fear: Exposure to corrective information. *Psychological Bulletin, 99*, 20–35.
- Fogliati, V. J., Dear, B. F., Staples, L. G., Terides, M. D., Sheehan, J., Johnston, L., ... Titov, N. (2016). Disorder-specific versus transdiagnostic and clinician-guided versus self-guided internet-delivered treatment for panic disorder and comorbid disorders: A randomized controlled trial. *Journal of Anxiety Disorders, 39*, 88–102.
- Hayes, S. C., Wilson, K. G., Gifford, E. V., Follette, V. M., & Stosah, K. (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology, 64*, 1152–1168.
- Hirsch, C. R., Meeten, F., Krahe, C., & Reeder, C. (2016). Resolving ambiguity in emotional disorders: The nature and role of interpretation biases. *Annual Review of Clinical Psychology, 12*, 281–305.
- Hood, H. K., & Antony, M. M. (2012). Evidence-based assessment and treatment of specific phobias in adults. In T. E. Davis, T. H. Ollendick, & L. -G. Öst (Eds.), *Intensive one-session treatment of specific phobias* (pp. 19–42). Springer.
- Hope, D., Heimberg, R. G., & Turk, C. (2019). *Managing social anxiety: A cognitive-behavioral approach, therapist guide* (3rd ed.). Oxford University Press.
- McHugh, R. K., & Barlow, D. H. (2010). The dissemination and implementation of evidence based psychological treatments. A review of current efforts. *American Psychologist, 65*, 73–84.
- Michel, N. M., Rowa, K., Young, L., & McCabe, R. E. (2016). Emotional distress tolerance across anxiety disorders. *Journal of Anxiety Disorders, 40*, 94–103.
- Mowrer, O. (1960). Two-factor learning theory: Versions one and two. In O. H. Mowrer (Ed.), *Learning theory and behavior* (pp. 63–91). Wiley.

- Newby, J. M., McKinnon, A., Kuyken, W., Gilbody, S., & Dalgleish, T. (2015). Systematic review and meta-analysis of transdiagnostic psychological treatments for anxiety and depressive disorders in adulthood. *Clinical Psychology Review, 40*, 91–110.
- Norton, P. J. (2012). *Group cognitive-behavioral therapy of anxiety: A transdiagnostic treatment manual*. Guilford Press.
- Norton, P. J., & Barrera, T. L. (2012). Transdiagnostic versus diagnosis-specific CBT for anxiety disorders: A preliminary randomized controlled noninferiority trial. *Depression and Anxiety, 29*, 874–882.
- Norton, P. J., Barrera, T. L., Mathew, A. R., Chamberlain, L. D., Szafranski, D. D., Reddy, R., & Smith, A. H. (2013). Effect of transdiagnostic CBT for anxiety disorders on comorbid diagnoses. *Depression and Anxiety, 30*, 168–173.
- Ougrin, D. (2011). Efficacy of exposure versus cognitive therapy in anxiety disorders: Systematic review and meta-analysis. *BMC Psychiatry, 11*, 1–13.
- Pearl, S. B., & Norton, P. J. (2017). Transdiagnostic versus diagnosis specific cognitive behavioural therapies for anxiety: A meta-analysis. *Journal of Anxiety Disorders, 46*, 11–24.
- Penney, A. M., Rachor, G. S., & Deleurme, K. A. (2020). Differentiating the roles of intolerance of uncertainty and negative beliefs about worry across emotional disorders. *Journal of Experimental Psychopathology, 11*, 65–71.
- Salters-Pedneault, K., Tull, M. T., & Roemer, L. (2004). The role of avoidance of emotional material in the anxiety disorders. *Applied and Preventive Psychology, 11*, 95–114.
- Smits, J. A. J., Powers, M. B., & Otto, M. W. (2019). *Personalized exposure therapy: A person-centred transdiagnostic approach*. Oxford University Press.
- Steele, S. J., Farchione, T. J., Cassiello-Robbins, C., Ametaj, A., Sbi, S., Sauer-Zavala, S., & Barlow, D. H. (2018). Efficacy of the unified protocol for transdiagnostic treatment of comorbid psychopathology accompanying emotional disorders compared to treatments targeting single disorders. *Journal of Psychiatric Research, 104*, 211–216.
- Tallis, F., Davey, G. C. L., & Capuzzo, N. (1994). The phenomenology of non-pathological worry: A preliminary investigation. In G. C. L. Davey & F. Tallis (Eds.), *Worrying: Perspectives on theory, assessment and treatment* (pp. 61–89). Wiley.
- Taylor, S., Zvolensky, M. J., Cox, B. J., Deacon, B., Heimberg, R. G., Ledley, D. R., ... Cardenas, S. J. (2007). Robust dimensions of anxiety sensitivity: Development and initial validation of the anxiety sensitivity index-3. *Psychological Assessment, 19*, 176–188.
- Thwaites, R., & Freeston, M. H. (2005). Safety-seeking behaviours: Fact or function? How can we clinically differentiate between safety behaviours and adaptive coping strategies across anxiety disorders? *Behavioural and Cognitive Psychotherapy, 33*, 177–188. <https://doi.org/10.1017/S1352465804001985>
- Titov, N., Dear, B. F., Staples, L. G., Terides, M. D., Karin, E., Sheehan, J., ... McEvoy, P. M. (2015). Disorder-specific versus transdiagnostic and clinician-guided versus self-guided treatment for major depressive disorder and comorbid anxiety disorders: A randomized controlled trial. *Journal of Anxiety Disorders, 35*, 88–102.
- Titov, N., Gibson, M., Andrews, G., & McEvoy, P. (2009). Internet treatment for social phobia reduces comorbidity. *Australian and New Zealand Journal of Psychiatry, 43*, 754–759.
- Vinograd, M., & Craske, M. G. (2020). History and theoretical underpinnings of exposure therapy. In T. Peris, E. Storch, & J. McGuire (Eds.), *Exposure therapy for children with anxiety and OCD* (pp. 3–20). Academic Press.
- Wells, A. (2009). *Metacognitive therapy for anxiety and depression*. Guilford Press.

Chapter 3

Exposure in the Context of Health Anxiety: Considerations for Assessment, Case Conceptualization, and Intervention



Thomas A. Fergus, Steven Taylor, and Gordon J. G. Asmundson

Abstract Health anxiety is a term used to describe a multidimensional presentation of health preoccupation and distress. Major components of health anxiety include health-related worry, the presence and fear of bodily sensations and changes, overestimating the likelihood and cost of illness, and safety behaviors. Health anxiety within the current diagnostic classification system is a criterion for two psychological disorders: illness anxiety disorder and somatic symptom disorder. These two disorders differ in important ways, and the presence of a general medical condition does not necessarily preclude the diagnosis of either. As such, treatment providers need to be attentive to various potential components and presentations of health anxiety. This chapter presents a perspective that health anxiety is the result of non-adaptive attempts to cope with health-related uncertainty. Considerations of this perspective for assessment, case conceptualization, and intervention are discussed. Exposure-based techniques for targeting health-related worry, safety behaviors, and the fear of bodily sensations and changes are emphasized. This chapter concludes with a case example of severe health anxiety.

Keywords Exposure · Health anxiety · Health-related uncertainty · Illness anxiety disorder · Somatic symptom disorder

T. A. Fergus

Department of Psychology and Neuroscience, Baylor University, Waco, TX, USA
e-mail: thomas_fergus@baylor.edu

S. Taylor

Department of Psychiatry, University of British Columbia, Vancouver, BC, Canada
e-mail: steven.taylor@ubc.ca

G. J. G. Asmundson (✉)

Department of Psychology, University of Regina, Regina, SK, Canada
e-mail: gordon.asmundson@uregina.ca

Health anxiety refers to anxious apprehension surrounding one's health (Salkovskis & Warwick, 2001). Clinically severe health anxiety (i.e., health anxiety that is excessive given the person's health status and leads to preoccupation with one's health) is associated with substantive distress and impairment (Taylor & Asmundson, 2004). Long tied to the diagnosis known as hypochondriasis (Salkovskis & Warwick, 2001), hypochondriasis is no longer formally part of current diagnostic classification. Nonetheless, health anxiety is a prominent symptom of two disorders within the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5;* American Psychiatric Association, APA, 2013) known as illness anxiety disorder and somatic symptom disorder. Health anxiety is a necessary criterion for illness anxiety disorder, whereas it is one of the three symptoms fulfilling a necessary criterion for somatic symptom disorder. An important difference between these two disorders is that somatic symptom disorder, but not illness anxiety disorder, is marked by distressing bodily complaints. Moreover, the presence of a medical condition does *not* necessarily preclude diagnosis of illness anxiety disorder or somatic symptom disorder (APA, 2013). Although there is controversy surrounding the validity of these disorders (Rief & Martin, 2014), the primary distinction between those two disorders and associated considerations (e.g., medical status) is important for treatment purposes.

Cognitive behavioral therapy is an efficacious treatment for health anxiety (Olatunji et al., 2014). One limitation of the treatment literature for this problem, however, is that cognitive behavioral therapy is an umbrella term used to describe many related interventions, such as cognitive techniques, exposure techniques, and acceptance-based techniques. Moreover, many treatment programs include multiple interventions (Olatunji et al., 2014). Accordingly, it is not possible, at present, to specifically isolate the benefit of exposure techniques in the treatment of health anxiety or provide a gold standard approach to completing exposure for health anxiety. With that caveat in mind, the purpose of this chapter is to review critical considerations in the assessment, case conceptualization, and application of exposure techniques in the treatment of health anxiety. A particular focus throughout this chapter is how health anxiety can be viewed from the lens of nonadaptive attempts to cope with health-related uncertainty.

Adapting Exposure for Health Anxiety: Assessment

It is important to consider many potential components of health anxiety with patients, including affective, bodily, cognitive, and behavioral, before starting treatment (Taylor & Asmundson, 2004). In brief, the affective component reflects health-related worry, in which individuals repetitively consider *what ifs* surrounding their health. The bodily component reflects the presence and fear of bodily sensations or changes. The cognitive component reflects the tendency to think that health problems are especially likely to occur and are awful or costly (e.g., debilitating). The behavioral component reflects excessive reassurance seeking or avoidance. Because of its various components and differing presentations, a thorough assessment of health anxiety is essential before starting treatment with patients.

Measures

Semi-structured diagnostic interviews for anxiety and related disorders, such as the *Anxiety and Related Disorders Interview Schedule for DSM-5* (ADIS-5; Brown & Barlow, 2014), include modules for *DSM-5* disorders marked by severe health anxiety in the form of illness anxiety disorder and somatic symptom disorder. Self-report measures can be practical supplements to such interviews. Many self-report measures exist that assess health anxiety severity. The measures reviewed tend to intercorrelate strongly, suggesting the items of these measures assess similar content. Which self-report measure you use is likely to be determined more so by practical considerations (e.g., length) than clear advantages of a particular measure based upon empirical findings. We provide a brief overview of four commonly used self-report measures (the presentation order is based on the year of publication of the measure).

Whiteley Index The original Whiteley Index (WI; Pilowsky, 1967) contained 14 true-/false-rated items. Many revisions to the WI have been examined, including using only a subset of items and adopting an ordered-category rating of items (Asmundson et al., 2008; Welch et al., 2009). Among English-speaking respondents, a six-item version of the WI, known as the WI-6, rated using an ordered-category scale, has emerged as a preferred version (Asmundson et al., 2008; Welch et al., 2009). Although there are two subscales, the WI-6 may not provide much information beyond a total scale score (Fergus et al., 2018), and a preliminary cutoff score for the WI-6 total score of 18 has been supported (Fergus et al., 2019).

Illness Attitudes Scale The Illness Attitudes Scale (IAS; Kellner, 1986) contains 29 items rated using an ordered-category scale, with two items not used in the scoring of the measure. Although the IAS was designed to assess a diverse array of content (e.g., worry, bodily preoccupation, disease conviction), there are conflicting findings as to the optimal number of subscales (Ferguson & Daniel, 1995; Hadjistavropoulos et al., 1999; Stewart & Watt, 2000). Ultimately, a total score may be best (Stewart & Watt, 2000), and a preliminary cutoff score for the IAS total score of 45 has been supported (Hiller et al., 2002).

Short Health Anxiety Inventory The Short Health Anxiety Inventory (SHAI; Salkovskis et al., 2002) contains 18 items rated using an ordered-category scale. Some researchers contend that only the first 14 items of the measure directly pertain to health anxiety, leading to the potential use of a 14-item SHAI (Alberts et al., 2013). All 18 items, though, have been used most commonly. Inconsistent findings have been reported as to how to best sum the 18 items, with some studies reporting two potential subscales and others reporting three (Abramowitz et al., 2007a, b). Total SHAI scores have been commonly reported. A variety of SHAI 18-item total scale cutoff scores have been used in the literature, ranging from 15 to 38 (Alberts et al., 2013), with a cutoff score of 27 potentially most preferred at present (Abramowitz et al., 2007b).

Multidimensional Inventory of Hypochondriacal Traits The Multidimensional Inventory of Hypochondriacal Traits (MIHT; Longley et al., 2005) contains 31 items rated using an ordered-category scale. The MIHT was developed to assess health-related worry, hyper-focus on bodily processes, conviction that others do not take personal health concerns seriously, and reassurance seeking. Existing research has supported the MIHT as consisting of those four separate subscales, as well as the use of a total score (Bardeen & Fergus, 2020; Stewart et al., 2008; Witthöft et al., 2015). A cutoff score of the MIHT remains unexamined. The MIHT was developed from an interpersonal conceptualization (Olatunji, 2008). The impact of this conceptualization is most apparent in the cognitive subscale, which focuses on others' reactions to one's health concerns. This content contrasts with overestimating the likelihood and/or awfulness of current/future health problems, which is more commonly the content of focus in cognitive behavioral conceptualizations (Taylor & Asmundson, 2004).

Because of the limits of the various health anxiety measures, the reader may consider broadening the assessment to specifically assess health anxiety components. For example, health-related worry can be assessed using the Anxious Thoughts Inventory (Wells, 1994). The fear of arousal-related bodily sensations can be assessed using the Anxiety Sensitivity Index 3 (Taylor et al., 2007) or the Body Sensations Questionnaire (Chambless et al., 1984). The broad tendency to fear uncertainty can be assessed using the 12-item short form of the Intolerance of Uncertainty Scale (Carleton et al., 2007), whereas more specific health-related uncertainty can be assessed using the Disorder-Specific Intolerance of Uncertainty Scale (Thibodeau et al., 2015). The tendency to overestimate the likelihood and cost of health problems can be assessed using the Health Cognitions Questionnaire (Hadjistavropoulos et al., 2012). The tendency to engage in reassurance seeking can be assessed using the Reassurance Questionnaire (Speckens et al., 2000). Although these components can be assessed more informally through a functional assessment, such measures can be helpful for use (e.g., outcome monitoring purposes).

Functional Assessment

The above measures help identify health anxiety severity and the relevance of certain components. A functional assessment, however, helps individualize this knowledge to a patient's presenting concern (Abramowitz et al., 2019). It can be useful from the outset to broadly view health anxiety as being the result of nonadaptive attempts to cope with uncertainty surrounding the meaning or significance of bodily sensations and changes in the context of one's health. The individual seeks to gain potential certainty of one's health status via worry and nonadaptive behavioral strategies. These coping attempts ultimately backfire because absolute certainty (e.g., "My coughing and hacking are definitely not related to lung cancer") cannot be

achieved, at least more than temporarily, with the attempts ultimately leading to the experience of greater health preoccupation and distress.

The idea that health anxiety stems from nonadaptive coping seems important when considering that health anxiety *can* occur in the context of diagnosed medical conditions within the *DSM-5* (APA, 2013). In such cases, health anxiety is disproportionate to the seriousness of the medical condition (illness anxiety disorder), and/or there is persistently high health anxiety in the context of bodily complaints associated with the medical condition (somatic symptom disorder). Moreover, it is important to underscore that in neither case is a medical condition needed for diagnosis (APA, 2013). As such, it is essential to review the patient's medical history. Instead of coming from a perspective that a patient's health concerns are unfounded, it is more effective to come from the perspective that the manner in which a patient is currently coping with health concerns and associated uncertainty may be worsening distress.

Adapting Exposure for Health Anxiety: Case Conceptualization

Worry is foundational to the experience of health anxiety (Taylor & Asmundson, 2004), and other components of health anxiety can be viewed as eliciting or stemming from the worry process. Major conceptual models converge on worry being a nonadaptive self-regulatory process in which people attempt to mentally prepare and problem-solve surrounding potential threats (Behar et al., 2009). Worry often is used to cope with uncertainty (Robichaud & Buhr, 2018), with uncertainty ever present in relation to one's health (Taylor & Asmundson, 2004).

When assessing for worry, it is important to understand that worry is initiated by some sort of external or internal trigger (Robichaud & Buhr, 2018; Wells, 2009). In the context of health anxiety, external triggers most commonly are exposure to health-related information (e.g., media, receiving a medical diagnosis, hearing about a medical diagnosis among a family member or friend). Internal triggers most commonly are bodily sensations (e.g., dizziness, fatigue, pain, or heart palpitations) or changes (e.g., skin rash, subcutaneous lumps, lesions). Such triggers initiate a sequence of what-if thinking in which individuals repetitively focus on the trigger information and related possibilities. For example, consider an individual who hears about a family member being diagnosed with diabetes. That individual may start to consider "What if I get diagnosed with diabetes?". Along with such what-if thinking, the individual considers related possibilities (e.g., "My feet could get amputated"). This sequence of thinking continues (e.g., "What if my feet get amputated?" and then "I may not be able to walk anymore"). Consider an individual who notices a distressing bodily complaint (e.g., fatigue) and starts to consider "What if my fatigue is a sign of multiple sclerosis?". Along with this consideration, the individual starts to think about the costliness of such a possibility (e.g., "I may no longer

be able to work”), and this sequence of thinking continues (“What if I can no longer work?” and then “I will not be able to pay my bills”). Worry is associated with viewing threats as looming (Riskind, 1997), suggesting worry may contribute to individuals overestimating the likelihood of threat occurrence.

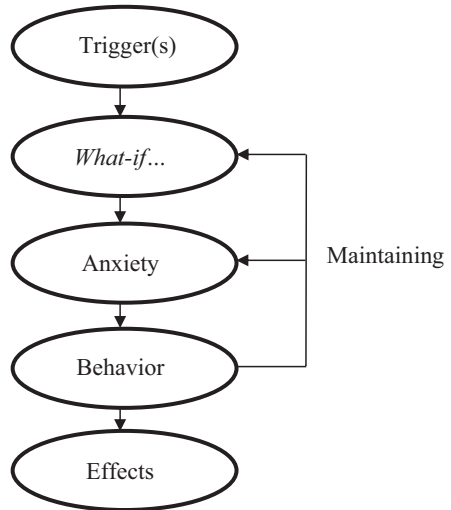
Prolonged worry episodes evoke substantive distress (Wells, 2009), and individuals are likely to engage in behaviors to reduce distress and/or gain certainty surrounding their health status (Taylor & Asmundson, 2004). Common behaviors include overutilizing medical services, using the Internet to search for information, checking one’s body for signs of health problems, monitoring one’s body for the worsening of problems, and/or asking family members or friends for assurance that nothing is wrong. Other individuals may seek to avoid medical information altogether. Such behaviors are problematic because they extend the amount of time patients spend considering their health status, thereby increasing health preoccupation. Moreover, the behaviors do not provide complete certainty as to one’s health status, and, thus, any benefit achieved from the behaviors tends to be short-lived. The behaviors also preclude the ability to get corrective experience surrounding health-related worries. In addition, outright avoidance of medical information has the potential to lead patients to avoid receiving routine, preventive care, or activities (e.g., exercise) contributing to physical deconditioning.

Patient Socialization

It is important to socialize the patient to the above conceptualization. To do so, it is useful to have the patient walk through a recent episode of health anxiety (Abramowitz et al., 2019). Wells (2009) provides questions to ask when inquiring about worry and associated behaviors. We adapt some of those questions when thinking about health anxiety and include a graphical representation of the core components in Fig. 3.1:

- (a) “I would like us to focus on your most recent experience with health-related worry.” “Can you describe the worry episode for me, particularly the *what-if* thinking you had in relation to your health?” [“What if...”]
- (b) “Can you think of anything that led you to consider that initial *what-if* thought, such as something you read or heard about concerning some sort of symptom?” “Okay, so you experienced [insert identified external or internal trigger] and then thought *what if* [insert initial *what-if* thought], correct?” [“Trigger”]
- (c) “Alright, did you start to worry about anything else after you thought *what if* [insert initial *what-if* thought]?” “Did you find yourself locked into that *what-if* thinking?” [“What if...”]
- (d) “When you had that sequence of *what-if* thoughts, how did you begin to feel emotionally? For example, did you feel more anxious after having those thoughts?” [“Anxiety”]

Fig. 3.1 Interrelations among components of health anxiety



- (e) “When you had those *what-if* thoughts about your health and felt more anxious, did you do anything to try and stop the thoughts or reduce your anxiety? For example, did you look up your health concerns on the Internet, look for reassurance from family or friends, call your doctor’s office, or check your body?” [“Behavior”]
- (f) “Did those behaviors to try to stop the thoughts or reduce your anxiety help? For example, did your worry or anxiety go down?” [“Maintaining”]
- (g) “How much time passed until you had your next series of *what-if* thoughts surrounding your health?” “Did the same general process repeat itself again?” [“Maintaining”].

It is important that the patient views the presenting concern as originating because of responses to the trigger (i.e., “what if...” and “behavior”) rather than the trigger or the presence of distress (i.e., “anxiety”); that is, they need to understand that the source of their health anxiety is their interpretation of bodily sensations or changes as being related to disease and their behavioral attempts to assuage their distress, as opposed to the bodily sensation of changes or the anxiety they instill. Although the trigger, particularly if internal, and distress may be reduced in frequency or intensity through treatment, the goal of treatment is *not* to eliminate the trigger or distress. Rather, the goal of treatment is to change how your patient responds to the trigger and distress (i.e., for them to become comfortable with uncomfortable but benign bodily sensations or changes). Such an idea parallels the underlying basis of exposure therapy that the goal is not to eliminate anxiety and, instead, is to focus on changing responses to anxiety to gain corrective experiences about fears surrounding anxiety (Abramowitz et al., 2019).

That socialization can be accomplished by focusing on being locked into what-if thinking worsening anxiety and the only short-term benefit of behavioral responses (i.e., your patient will invariably experience what-if thoughts again and the process

repeats itself). In both cases, the responses worsen the patient's distress and, ultimately, do not lead to a desired outcome (e.g., certainty surrounding health status). If the patient is not amenable to the above idea following a review of the idiographic model, there are questions that can be used to help the patient consider the importance of responses to the trigger in the maintenance of distress. We adapt some questions posed by Wells (2009) to the presentation of health anxiety. For example, "Has worrying about your [insert identified external or internal trigger] solved your problems yet?", and "It seems that you have been trying to think yourself better by worrying. Are you still concerned about your health?" In regard to the usefulness of behavioral responses, the following questions can be helpful: "How effective have [insert behavior(s)] been in getting rid of your health concerns?" "How long do you feel relief after engaging in [insert behavior(s)]?"

Patients may inquire about *why* they engage in those responses or experience the trigger, particularly if an internal trigger. It is near impossible to know exactly why an individual experiences the internal triggers because the origins likely involve genetic, neurobiological, and psychosocial factors that developed throughout the lifespan. Acknowledging those potential pathways can be useful. In terms of why patients respond to their health concerns the way they do, there are also likely a variety of factors. In relation to engaging in perseverative what-if thinking, causes include beliefs about the benefits of such thinking, beliefs that worry is uncontrollable, and difficulties tolerating uncertainty (Robichaud & Buhr, 2018; Wells, 2009). Reasons that patients engage in specific behaviors versus others are likely a less useful pathway to consider relative to the reason that patients continue to engage in the behaviors more generally. The behaviors are negatively reinforced, such that a temporary reduction in anxiety results in the behaviors becoming a strengthened response. Reasons that patients specifically focus on health concerns versus other stimuli are multiple, including family health history, personal health history, beliefs individuals hold about health, learning history with bodily sensations and changes, and information transmission (Taylor & Asmundson, 2004).

Motivation for psychological intervention can often be low among patients experiencing clinically severe health anxiety because of beliefs that the problem is fundamentally physical, or disease-based, in origins (Taylor & Asmundson, 2004). Key strategies when motivational issues arise include not invalidating the health concerns by dismissing patients' perceptions of authenticity or severity. Moreover, it is critical to orient patients back to the idiographic model, making it clear that the model makes no assumptions about the validity of the concerns per se. Rather, the focus of the model is how responding to the concerns in particular ways are making patients more preoccupied with their health and feeling worse. From this framework, treatment goals are to reduce health anxiety via modifying perseverative what-if thinking and behavioral responses.

Adapting Exposure for Health Anxiety: Treatment

As previously noted, at present, it is not possible, based upon extant findings, to isolate the specific benefit of exposure-based techniques versus other cognitive behavioral intervention strategies in the treatment of health anxiety. In this section, we outline important considerations in the use of exposure-based techniques for health-related worry and behavioral responses. We focus on those two components of health anxiety because, as discussed, they are believed to be critical in maintaining processes for health preoccupation and distress. We conclude this section by considering directly targeting the fear of bodily sensations and briefly describing when to complete cognitive interventions in the application of exposure techniques for health anxiety.

Worry

Existing data suggest worry is among the more difficult presentations of anxiety to treat (Newman et al., 2014). We consider two potentially important ways to mitigate health-related worry through exposure. The two covered strategies are variations of imaginal worry exposure (van der Heiden & ten Broeke, 2009) and exposures regarding the (un)controllability of worry (Wells, 2009).

The first step of a worry exposure (van der Heiden & ten Broeke, 2009) is identifying the worry to use for the exposure. This step can be accomplished by focusing on the process within the idiographic functional assessment presented earlier. The second step is to identify the most feared expectation associated with the identified worry. A series of “what-if” questions can be posed to the patient until the patient is unable to think of any additional outcome(s), with the final “what-if” consideration representing the most feared expectation. Consider the earlier provided example of an individual who hears about a family member being diagnosed with diabetes. That individual may start to consider “What if I get diagnosed with diabetes?”. The clinician would ask this patient to continue with that thinking, such as “My feet could get amputated.” The next question might be “What if your feet get amputated?”. The patient would continue with “I may not be able to walk anymore.” The clinician would then ask, “What if you cannot walk anymore?”. That process would continue until the patient cannot think of any additional steps in the sequence. The final step would be the most feared expectation to use in the subsequent exposure.

For the exposure and third step, the patient imagines the final step of the “what-if” sequence for at least 25 minutes. The patient is told not to seek distraction or to engage in any behavior in response to the image. The fourth step involves thinking about alternative explanations for the feared outcome, particularly getting at likelihood and cost reevaluation. The exercise is then given as homework for the patient to complete.

Whereas imaginal worry exposure likely works, in part, by reducing likelihood and cost estimates associated with feared expectations, other lines of research suggest that changing beliefs about the (un)controllability of worry is the most critical approach to intervention (Wells, 2009). Wells (2009) outlines behavioral experiments that can be completed to challenge uncontrollability beliefs, and we apply some of those experiments to health anxiety. Worry postponement is a critical behavioral experiment for patients to engage in to learn that their perseverative worry is more controllable than they believe. For worry postponement, the patient can be asked to postpone any worry following the initial what-if health-related thought (e.g., “What if I get diagnosed with diabetes?”) until a 10-minute period later in the day in which worry is allowed. Patients do *not* need to use that worry time in an obligatory manner; rather, the time exists should patients choose to worry later in the day.

Critical to worry postponement is ensuring that the patient knows the difference between thought suppression and what is being introduced. Thought suppression is deliberately *not* trying to think a given thought (e.g., “What if I get diagnosed with diabetes?”). What is being introduced is a technique in which patients choose not to further engage with that thought, even if the thought continues to stay in their mind. Patients, instead, can respond by acknowledging something like “I notice a worry thought. I will think about this thought later today instead of dwelling on it and worrying more now.” This process is repeated throughout the day as many times as patients notice an initial health-related worry thought. Worry postponement is often coupled with a technique referred to as detached mindfulness (Wells, 2009). With detached mindfulness, patients learn that initial what-if thoughts are just thoughts, and not indicative of an experience that necessitates a response. Space limits preclude a full consideration of this technique; however, Wells (2009) provides ways this technique can be introduced and applied. By allowing an initial health-related thought to exist without responding with prolonged worry, aspects of detached mindfulness are part of the postponement technique.

Safety Behaviors

A central goal in using exposure techniques for health anxiety is to change beliefs about the need to engage in safety behaviors. Through the development of the idiographic functional assessment, readers should be aware of the main safety behaviors in their patient’s presentation of health anxiety. Taylor and Asmundson (2004) outline important points if medical overutilization is a defining safety behavior. In such cases, elimination of the behavior is not desired (e.g., avoidance of medical utilization altogether). Instead, patients seek to follow medical advice (e.g., general practitioner) as to how frequently to seek medical services (e.g., annual physical examination instead of monthly checkup appointments initiated by the patient). For patients currently *avoiding* medical services, the aim is to initiate medical services with a general practitioner and follow the recommended medical service

engagement put forward by their doctor. Patients are typically reluctant to drop safety behaviors, and so, as discussed above, it is important for patients to be appropriately socialized to the idea that their behavioral responses are a central maintaining factor in their health preoccupation and distress.

Exposures are a major intervention strategy for helping to reduce the use of safety behaviors. As noted, this chapter takes the perspective that health anxiety is the result of nonadaptive attempts to cope with health-related uncertainty. A presentation in which there is avoidance of medical information altogether can be viewed in the context of difficulties coping with uncertainty. More precisely, potentially receiving a medical diagnosis through medical service engagement has considerable uncertainty (e.g., prognosis, treatment). The individual is preferring to avoid that uncertainty. The goals of exposure, in this context, are to experience health-related uncertainty without engaging in safety behaviors. The feared expectation of such an exposure can be couched in a patient's belief about an inability to tolerate uncertainty surrounding one's health status as it pertains to concerning bodily sensations and changes. Exposures are conducted in a way that patients learn that they can tolerate uncertainty (e.g., "Bodily "noise" is common and is not necessarily a sign of some underlying disease process"; Taylor & Asmundson, 2004) without engaging in safety behaviors rather than exposures being completed until their anxiety has sufficiently reduced (Abramowitz & Arch, 2014).

The goals of exposure therapy in this context can be viewed through the lens of patients learning that "I can live with everyday uncertainty about my health." Before completing a first exposure session, the clinician should develop an expectancy with the patient as to how she can manage with health-related uncertainty (e.g., 30 seconds) before engaging in safety behaviors. Exposures would then be set up to violate this expectation and completed until the maximum time expectancy has been surpassed. More precisely, the clinician can expose the patient to idiographic internal (e.g., bodily sensation) or external (e.g., health information) triggers. The patient can then allow herself to experience feelings of health anxiety until the expectancy violation has taken place (e.g., "I sat with my health anxiety for 30 seconds without checking the Internet"). Following the exposure, the patient can evaluate what was learned from the exercise regarding the ability to tolerate health-related uncertainty. Additional triggers may be used during therapy sessions, and the patient can apply this approach when encountering triggers outside of therapy sessions as well. The length of time the patient expects to be able to experience anxiety without safety behaviors would be expected to grow during treatment and should be adjusted accordingly to ensure maximum expectancy violation when completing exposures (e.g., moving from 30 seconds to 5 minutes to 30 minutes to 24 hours to banning behaviors during the course of treatment). Patients learning through exposures that they can handle health-related uncertainty without engaging in safety behaviors should facilitate them eventually dropping the use of those behaviors altogether.

Fear of Bodily Sensations and Changes

Interoceptive exposure, which is often used in the treatment of panic attacks, can be a useful adjunctive treatment strategy for certain presenting concerns of health anxiety, particularly those presentations marked by a fear of physical sensations and bodily changes (Taylor & Asmundson, 2004). The possibility that a patient's health anxiety may be linked to a fear of bodily sensations or changes highlights the importance of using supplemental self-report measures during the initial assessment (e.g., using the Anxiety Sensitivity Index 3, Taylor et al., 2007; Body Sensations Questionnaire, Chambless et al., 1984). Such measures can aid in determining whether interoceptive exposure may be indicated. Interoceptive exposures are medically contraindicated in some cases (Taylor & Asmundson, 2004), and because health anxiety can now occur within the context of diagnosed medical conditions (APA, 2013), that point merits underscoring. In such cases or if there are concerns, it is important to consult with a patient's general practitioner to get the medical go-ahead to proceed with interoceptive exercises. It is also important to be careful not to present interoceptive exposure in a manner that invalidates the patient's health concerns or actual medical condition(s). Rather, this technique is best presented as something that can help reduce the likelihood that one will respond to bodily sensations (internal triggers) with health-related worry and other nonadaptive coping. More precisely, through interoceptive exposure, one may be less likely to view bodily sensations and changes as threatening (e.g., the patient may learn to be comfortable with the experience of uncomfortable bodily sensations or changes). As a result, nonadaptive coping surrounding health-related uncertainty can be reduced or even eliminated.

Use of Cognitive Restructuring

We have described a number of maladaptive beliefs that might be part of the presentation of health anxiety, including those about the uncontrollability of health-related worry, the ability to tolerate health-related uncertainty, and the fear of bodily sensations and changes. If completing exposure therapy following an inhibitory learning approach, it is important to be attentive as to when any cognitive restructuring is taking place in the sequence of treatment sessions. To maximize expectancy violation, any cognitive restructuring should take place *after* an exposure has been completed rather than before or during (Craske et al., 2014).

Case Example

Jim is a 39-year-old male who has experienced intermitted episodes of intense health anxiety since his father died from a heart attack 7 years earlier. Jim's paternal grandfather died of a heart attack when he was a college student. This past year, his health anxiety escalated as he heard a news story about individuals experiencing cardiac events that could be related to COVID-19. For the past 9 months, Jim has been worrying about his health most of each day. Namely, he worries that his heart is weak because of underlying disease and that he will experience a heart attack at some point. He does not experience any other substantive worries. Jim is concerned that experiencing COVID-19 could further weaken his heart, although he is generally fearful of heart problems even if not tied to COVID-19.

Jim has experienced elevated blood pressure for the past 15 years, although his blood pressure is well-managed through a low dosage of medication. He is of a normal body mass index (BMI) and has no other outstanding health concerns. This calendar year, Jim has been to his doctor six times within a 9-month period and has expressed concern about his heart at each appointment. His doctor eventually sent him for an echocardiogram out of an abundance of caution. The results showed no concerns and his doctor said that he is in good overall health. This news was not reassuring to Jim. Jim still worries about the inconclusiveness of many medical tests. Although he does not know his family's full medical histories, he wonders whether the heart attacks experienced by family members could have been prevented in some capacity and if his doctor is missing something about his health. He has read that many COVID-19 cases present as asymptomatic, and he wonders if he has experienced COVID-19, thereby furthering straining his already weak heart.

Jim stopped seeing his doctor, except for routine appointments, because of the belief that his doctor does not take his health concern seriously. He spends much of his free time and portions of his day at work searching the Internet for information regarding potential signs of impending heart problems, including following COVID-19. Jim frequently asks his wife if she can listen to his heart to weigh in on whether his heart "sounds off" and has stopped running with his oldest child for leisure because of concerns that running may strain his already weak heart, especially if he has unknowingly contracted COVID-19. Jim reports difficulties concentrating during most conversations and at work, as his mind wanders back to his health. He often finds himself preoccupied with his health when doing things with his wife and children as well.

Socializing Jim to the conceptualization presented earlier involved drawing his attention to the "what-if" thinking patterns surrounding his heart and health more broadly. It was critical for Jim to see that thinking pattern worsens his anxiety. His behavioral responses, such as Internet searches, only provide short-term benefit to his anxiety and do not lead him to gain certainty surrounding his health status as what-if thoughts surrounding his heart and health continue. With that socialization in mind, the goal of exposure therapy with Jim was for him to experience health-related uncertainty without engaging in prolonged what-if thinking or safety

behaviors. Worry postponement was used with Jim in which he learned he had control over prolonging initial what-if thinking patterns surrounding his health (e.g., “My heart is not beating right today. What-if I have a heart attack?”). Jim learned to postpone any additional what-if thinking until a 10-minute period later in the day. Exposures were set up for Jim to increasingly refrain from checking the Internet for health information for longer durations of time, and he began running with his oldest child for longer durations of time as treatment progressed. Such exposures were in place for Jim to learn that he had greater ability to sit with health-related uncertainty (i.e., the meaning of bodily sensations or changes surrounding his heart). Changes in the duration of what-if thinking and safety behavior engagement led Jim to focus less time on his health and, ultimately, contributed to a reduction in his health anxiety. Jim also learned that he could be somewhat comfortable with the uncomfortable (and previously concerning) bodily sensations and changes that he experienced, including those that occurred spontaneously during the day and those that occurred as a result of running. In addition, with less health-related preoccupation, Jim reports greater concentration while at work and in spending time with his family.

Conclusions

This chapter considers complexities in the treatment of health anxiety, with a focus on the use of exposure therapy techniques. A thorough assessment and case conceptualization process is critical when treating health anxiety to ultimately help socialize your patients to the idea that their health anxiety stems from nonadaptive responses to health-related uncertainty. Worry and safety behaviors are two main types of responses covered in this chapter, as these responses help prevent patients from developing comfort with uncertainties surrounding their health. Exposure techniques targeting worry and safety behaviors help clients develop an increased capacity to live with everyday uncertainty about their health, thereby ultimately reducing health anxiety.

References

- Abramowitz, J. S., & Arch, J. J. (2014). Strategies for improving long-term outcomes in cognitive behavioral therapy for obsessive-compulsive disorder: Insights from learning theory. *Cognitive and Behavioral Practice, 21*, 20–31.
- Abramowitz, J. S., Deacon, B. J., & Valentiner, D. P. (2007a). The short health anxiety inventory: Psychometric properties and construct validity in a non-clinical sample. *Cognitive Therapy and Research, 31*, 871–883.
- Abramowitz, J. S., Olatunji, B. O., & Deacon, B. J. (2007b). Health anxiety, hypochondriasis, and the anxiety disorders. *Behavior Therapy, 38*, 86–94.

- Abramowitz, J. S., Deacon, B. J., & Whiteside, S. P. H. (2019). *Exposure therapy for anxiety: Principles and practice* (2nd ed.). Guilford.
- Alberts, N. M., Hadjistavropoulos, H. D., Jones, S. L., & Sharpe, D. (2013). The short health anxiety inventory: A systematic review and meta-analysis. *Journal of Anxiety Disorders, 27*, 68–78.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Author.
- Asmundson, G. J. G., Carleton, R. N., Bovell, C. V., & Taylor, S. (2008). Comparison of unitary and multidimensional models of the Whiteley index in a nonclinical sample: Implications for understanding and assessing health anxiety. *Journal of Cognitive Psychotherapy, 22*, 87–96.
- Bardeen, J. R., & Fergus, T. A. (2020). Multidimensional inventory of Hypochondriacal traits: An examination of a bifactor model and measurement invariance between those with and without a self-reported medical condition. *Assessment, 27*, 206–215.
- Behar, E., DiMarco, I. D., Hekler, E. B., Mohlman, J., & Staples, A. M. (2009). Current theoretical models of generalized anxiety disorder (GAD): Conceptual review and treatment implications. *Journal of Anxiety Disorders, 23*, 1011–1023.
- Brown, T. A., & Barlow, D. H. (2014). *Anxiety disorders interview schedule for DSM-5 (ADIS-5)*. New York, NY.
- Carleton, R. N., Norton, M. A., & Asmundson, G. J. G. (2007). Fearing the unknown: A short version of the intolerance of uncertainty scale. *Journal of Anxiety Disorders, 21*, 105–117.
- Chambless, D. L., Caputo, G. C., Bright, P., & Gallagher, R. (1984). Assessment of fear of fear in agoraphobics: The body sensations questionnaire and the agoraphobic cognitions questionnaire. *Journal of Consulting and Clinical Psychology, 52*, 1090–1097.
- Craske, M. G., Treanor, M., Conway, C. C., Zbozinek, T., & Vervilet, B. (2014). Maximizing exposure therapy: An inhibitory learning approach. *Behaviour Research and Therapy, 58*, 10–23.
- Fergus, T. A., Kelley, L. P., & Griggs, J. O. (2018). The Whiteley Index-6: An examination of measurement invariance among self-identifying black, Latino, and white respondents in primary care. *Assessment, 25*, 247–258.
- Fergus, T. A., Kelley, L. P., & Griggs, J. O. (2019). Examining the Whiteley Index-6 as a screener for DSM-5 presentations of severe health anxiety in primary care. *Journal of Psychosomatic Research, 127*, 109839.
- Ferguson, E., & Daniel, E. (1995). The illness attitudes scale (IAS): A psychometric evaluation on a nonclinical population. *Personality and Individual Differences, 18*, 463–469.
- Hadjistavropoulos, H. D., Frombach, I. K., & Asmundson, G. J. G. (1999). Exploratory and confirmatory factor analytic investigations of the illness attitudes scale in a nonclinical sample. *Behaviour Research and Therapy, 37*, 671–684.
- Hadjistavropoulos, H. D., Janzen, J. A., Keheler, M. D., Leclerc, J., Sharpe, D., & Bourgault-Fagnou, M. D. (2012). Core cognitions related to health anxiety in self-reported medical and non-medical samples. *Journal of Behavioral Medicine, 35*, 167–178.
- Hiller, W., Rief, W., & Fichter, M. M. (2002). Dimensional and categorical approaches to hypochondriasis. *Psychological Medicine, 32*, 707–718.
- Kellner, R. (1986). *Somatization and hypochondriasis*. Praeger Publishers.
- Longley, S. L., Watson, D., & Noyes, R., Jr. (2005). Assessment of the hypochondriasis domain: The multidimensional inventory of Hypochondriacal traits (MIHT). *Psychological Assessment, 17*, 3–14.
- Newman, M. G., Llera, S. J., Erickson, T. M., Przeworski, A., & Castonguay, L. G. (2014). Worry and generalized anxiety disorder: A review and theoretical synthesis of evidence on nature, etiology, mechanisms, and treatment. *Annual Review of Clinical Psychology, 9*, 275–297.
- Olatunji, B. O. (2008). New directions in research on health anxiety and hypochondriasis: Commentary on a timely special series. *Journal of Cognitive Psychotherapy, 22*, 183–190.
- Olatunji, B. O., Kauffman, B. Y., Meltzer, S., Davis, M. L., Smits, J. A. J., & Powers, M. B. (2014). Cognitive-behavioral therapy for hypochondriasis/health anxiety: A meta-analysis of treatment outcome and moderators. *Behaviour Research and Therapy, 58*, 65–74.
- Pilowsky, I. (1967). Dimensions of hypochondriasis. *British Journal of Psychiatry, 113*, 89–93.

- Rief, W., & Martin, A. (2014). How to use the new *DSM-5* somatic symptom disorder diagnosis in research and practice: A critical evaluation and a proposal for modifications. *Annual Review of Clinical Psychology, 10*, 339–367.
- Riskind, J. (1997). Looming vulnerability to threat: A cognitive paradigm for anxiety. *Behaviour Research and Therapy, 35*, 685–702.
- Robichaud, M., & Buhr, K. (2018). *The worry workbook: CBT skills to overcome worry & anxiety by facing the fear of uncertainty*. New Harbinger.
- Salkovskis, P. M., Rimes, K. A., Warwick, H. M., & Clark, D. M. (2002). The health anxiety inventory: Development and validation of scales for the measurement of health anxiety and hypochondriasis. *Psychological Medicine, 32*, 843–853.
- Salkovskis, P. M., & Warwick, H. M. (2001). Making sense of hypochondriasis: A cognitive model of health anxiety. In G. J. G. Asmundson, S. Taylor, & B. J. Cox (Eds.), *Health anxiety: Clinical and research perspectives on hypochondriasis and related conditions* (pp. 47–64). John Wiley & Sons.
- Speckens, A. E. M., Spinhoven, P., van Hamert, A. M., & Bolk, J. H. (2000). The reassurance questionnaire (RQ): Psychometric properties of a self-report questionnaire to assess reassurability. *Psychological Medicine, 30*, 841–847.
- Stewart, S. H., Sherry, S. B., Watt, M. C., Grant, V. V., & Hadjistavropoulos, H. D. (2008). Psychometric evaluation of the multidimensional inventory of Hypochondriacal traits: Factor structure and relationship to anxiety sensitivity. *Journal of Cognitive Psychotherapy, 22*, 97–114.
- Stewart, S. H., & Watt, M. C. (2000). Illness attitudes scale dimensions and their associations with anxiety-related constructs in a nonclinical sample. *Behaviour Research and Therapy, 38*, 83–99.
- Taylor, S., & Asmundson, G. J. G. (2004). *Treating health anxiety: A cognitive-behavioral approach*. Guilford.
- Taylor, S., Zvolensky, M. J., Cox, B. J., Deacon, B., Heimberg, R. G., Ledley, D. R., ... Cardenas, S. J. (2007). Robust dimensions of anxiety sensitivity: Development and initial validation of the anxiety sensitivity Index-3. *Psychological Assessment, 19*, 176–188.
- Thibodeau, M. A., Carleton, R. N., McEvoy, P. M., Zvolensky, M. J., Brandt, C. P., Boelen, P. A., Mahoney, A. E. J., Deacon, B. J., & Asmundson, G. J. G. (2015). Developing scales measuring disorder-specific intolerance of uncertainty (DSIU): A new perspective on transdiagnostic. *Journal of Anxiety Disorders, 31*, 49–57.
- van der Heiden, C., & ten Broeke, E. (2009). The when, why, and how of worry exposure. *Cognitive and Behavioral Practice, 16*, 386–393.
- Welch, P. G., Carleton, R. N., & Asmundson, G. J. G. (2009). Measuring health anxiety: Moving past the dichotomous response option of the original Whiteley index. *Journal of Anxiety Disorders, 23*, 1002–1007.
- Wells, A. (1994). A multi-dimensional measure of worry: Development and preliminary validation of the anxious thoughts inventory. *Anxiety, Stress & Coping, 6*, 289–299.
- Wells, A. (2009). *Metacognitive therapy for anxiety and depression*. Guilford.
- Withöft, M., Weck, F., & Gropalis, M. (2015). The multidimensional inventory of Hypochondriacal traits: Factor structure, specificity, reliability, and validity in patients with hypochondriasis. *Assessment, 22*, 361–373.

Chapter 4

Exposure Therapy when Patients Present with Comorbid Depression



Jonathan D. Huppert and Hila Sorka

Abstract Depression is one of the most common emotional disorders, and it is even more common when one is suffering from an anxiety disorder. The goal of this chapter is to discuss how depression impacts anxiety and its treatment, with a particular focus on treatment via exposure therapy. First, we discuss the prevalence of depression in anxiety and related disorders and how depression might impact the natural course of anxiety. Second, we briefly describe why depression may be more common in patients diagnosed with anxiety or a related disorder. Third, we present considerations that should be considered when conducting exposure with anxious patients who are also depressed. Finally, we discuss how depression can influence exposure treatment and how to adapt or manage in such situations. In summary, this chapter discusses many challenges that can occur when conducting exposure therapy with depressed, anxious individuals. We provide a number of cognitive and behavioral strategies to help manage these issues in order to instill hope in both the patient and the therapist alike, thereby facilitating improvement in both anxiety and depression via treatment.

Keywords Depression · Anxiety disorders · Exposure · Suicidality · Motivation · Engagement · Behavioral activation · Cognitive challenging · Case conceptualization · Empathy

J. D. Huppert (✉) · H. Sorka

Department of Psychology, The Hebrew University of Jerusalem, Jerusalem, Israel
e-mail: jonathan.huppert@mail.huji.ac.il; hila.sorka@mail.huji.ac.il

© The Author(s), under exclusive license to Springer Nature
Switzerland AG 2022

J. A. J. Smits et al. (eds.), *Clinical Guide to Exposure Therapy*,
https://doi.org/10.1007/978-3-031-04927-9_4

Prevalence of Depression in Anxiety Disorders

Both anxiety and depression are the most common mental disorders in the general population, and they have shared symptoms such as daily dysfunction, inattentiveness, difficulties with making decisions, sleep problems, etc. The 1-year prevalence of depression in the general population is estimated to be 12.9% (Lim et al., 2018). Within anxiety disorders, the numbers are significantly elevated and range from 14% to 40%, according to the National Comorbidity Survey (NCS) (Kessler, 2008) and the National Comorbidity Survey Replication (NCS-R) (Kessler et al., 2004) in the United States. The highest percent were reported in panic disorder (PD, 34–40%) and generalized anxiety disorder (GAD, 35–39%) and then in posttraumatic stress disorder (PTSD, 27–36%) and the lowest in specific phobia (SP, 14–26%) and social anxiety disorder (SAD, 20–24%). Moreover, depression is the most comorbid disorder in anxiety disorders, even more than other comorbid anxiety disorders.

These high rates of comorbid anxiety disorders with depression are explained by multiple factors (for a review, see Huppert, 2009). One explanation stems from the definition and the phenomenology of the two disorders according to the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association, 2013). The descriptions of both anxiety and depression present overlap in symptom criteria such as difficulty concentrating and troubles falling asleep, which increase their co-occurrence. One major factor likely leading to elevated rates of depression is the relatively chronic elevated levels of distress and impairment, leading to feelings of demoralization and helplessness/hopelessness. Additional explanations involve the experience of perceived lack of control, similar modes of information processing (e.g., attention to negative, negative interpretation of ambiguity), personality traits (such as neuroticism), interpersonal factors (e.g., parental criticism, isolation, or excessive dependency), genetic risk, shared neurochemistry, and/or activation of similar brain areas.

Negative life events and ongoing difficulties increase the risk for the transition from anxiety to comorbidity with depression. Individuals with anxiety disorders and comorbid depression have more chronic and severe anxiety symptoms and often report an earlier age of onset than those without depression. Furthermore, the impairment in the functioning of patients with comorbid depression is increased in comparison to comorbid anxiety disorders. This demonstrates the difficulties that patients with comorbid depression are faced with: they deal with their anxiety for a longer time and experience symptoms as more intense, and symptoms have a greater impact on their lives (Huppert, 2009).

Impact of Depression on the Treatment Outcomes of Anxiety Disorders

The presence of comorbid depression can have a negative impact on treatment outcome (Huppert, 2009). Concurrent depression has been shown to be related to less change in anxiety symptoms or to higher posttreatment levels of anxiety due to

higher pretreatment levels, and depression is also related to increases in dropout rates during treatment. Given the impact of depression on both the natural course of anxiety and its treatment, it is important to consider how and when to manage depression when conducting exposure therapy.

Impact of Depression on the Process of Treatment

When an anxious patient is also depressed, he/she feels less hopeful, perceives the future as bleaker, is less motivated, is likely to be less able to tolerate distress, feels less able to endure/persist, sees himself/herself as less able to cope, and views the world as more threatening. The “light at the end of the tunnel” feels so far, so weak, and so difficult to achieve that it feels impossible. Depression magnifies many extant issues: probabilities of negative outcomes are increased even more, negative events seem more catastrophic, interpretations of ambiguity are more negative, and avoidance is increased. The world, in many ways, becomes a gray fog, with difficulty seeing the positive: a sort of inverted rose-colored glasses. The fact that the patient feels this way is at the same time biased and accurate: It is biased in that all of these feelings are likely less reflective of reality than they seem, but it is accurate in terms of self-fulfilling prophecies. Depression is also characterized by increases in self-criticism. Small negative outcomes are magnified into failures and internalized via self-blame. Some of this is reflected in their attributional styles for negative outcomes that tend to be personal, pervasive, and permanent (see Seligman et al., 1979).

Depression also has interpersonal consequences such that depressed, anxious patients feel less trusting and more distant, make less effort in their social networks, and invest less energy in social relationships, sometimes leading to isolation (see Joiner & Coyne, 1999). The negative feedback loop of feeling down leading to pushing others away and being highly critical of them can manifest in the treatment itself with the therapist.

Thus, the therapeutic stance with a depressed, anxious patient is somewhat more complex than with a predominantly anxious patient. On the one hand, the therapist should not take personally the feeling that the patient is pessimistic, critical, and skeptical of treatment. They should externalize this negativity and see it as the depression “speaking” and coloring the patient’s view. On the other hand, the patient may truly feel a lack of motivation and hope, and therefore the therapist has a more active role in encouraging the patient to participate fully in the interventions and to help them process in a positive, helpful way. At times, it may be helpful for the therapist to provide more encouragement and reassurance than they might with a nondepressed patient, where encouraging independence can be a major emphasis. As the patient improves in their mood and anxiety, the therapist should then shift to more encouragement of independence.

Considerations when Conducting Exposure with Depressed Patients

Primacy

One of the most important questions that the clinician should try to determine when engaging in exposures with a depressed patient is how much the depression is secondary to the anxiety versus how much it is independent. That is, if the patient's mood is primarily due to the distress and impairment that they experience from their anxiety, it may not be necessary to directly address the depression. The fact that they are willing to engage in exposures and feel that they have a plan to alleviate their suffering may be enough to help elevate their mood. However, another group of patients may feel either that the depression preceded their anxiety or that the depression has "taken on a life of its own." In such cases, the depression likely needs to be addressed directly, through evidence-based techniques such as cognitive restructuring and behavioral activation. One method to try to determine which is the case is to ask what came first: the depression or the anxiety. If the patient reports that the anxiety preceded their depression, this is a sign for the former case. Alternatively (or additionally), one can ask a *magic wand question*: "If I had a magic wand and could wave away your anxiety, what would happen to your depression?" "And what if I could do the opposite and wave away the depression; what would happen to your anxiety?" This can be asked in a different way that is helpful for clarifying the primary (target) complaint: "If I could wave a magic wand and make either your anxiety or depression disappear, which would you choose and why?" Both of these options help clarify how important the patient sees treating their depression vs. their anxiety and can help clinicians to identify whether the anxiety or depression is primary.

One can ask a *magic wand question*: "If I had a magic wand and could wave away your anxiety, what would happen to your depression?" "And what if I could do the opposite and wave away the depression; what would happen to your anxiety?" This can be asked in a different way that is helpful for clarifying the primary (target) complaint: "If I could wave a magic wand and make either your anxiety or depression disappear, which would you choose and why?"

Severity

How severe does one's depression have to be in order to impact exposure therapy? This question is quite complicated, as there are many ways to examine it. Does the severity of depression predict worse outcomes? Does the severity of depression predict less change? Does a diagnosis of depression impact differently than

severity? The literature is mixed in terms of the answers to these questions. Clinically, what is important is if one sees that the patient is having trouble motivating themselves to do exposures, to engage fully, or to learn from them, then one should consider addressing the depression.

Clinically, what is important is if one sees that the patient is having trouble motivating themselves to do exposures, to engage fully, or to learn from them, then one should consider addressing the depression.

Emotional Responsivity

According to the cognitive model of depression (Beck, 1979, 2002), one negative experience can trigger negative emotions which can spiral into an intense emotional experience. On the other hand, data are suggestive that individuals with depression are more likely to experience more blunted affect in response to both positive and negative triggers (Bylsma et al., 2008). It appears that anxiety may reverse this experience, leading anxious, depressed individuals to experience their emotions more intensely (Kaviani et al., 2004). It is possible that both of these presentations occur in anxious, depressed individuals: at times, their negative mood interferes with fear activation. Some patients describe a feeling that they don't care if the threat occurs because they have given up. This would lead to blunted affective experience and difficulty activating the fear for exposure. On the other hand, other patients (or other times) describe hypersensitivity to negative experiences (cf. Bylsma et al., 2011). The latter would suggest a lower threshold for activating their fear, greater intensity of response when experiencing fear, and slower fear reduction when activated. Implications for exposure regarding these issues are discussed below.

Chronicity

The longer patients suffer from depression, the more it has an opportunity to impact on their lives. This creates a vicious cycle of demoralization. Thus, when someone has been experiencing chronic depression, many of the cognitive, behavioral, and emotional processes are more entrenched and less flexible. It may be important to try to directly address their depression. However, if exposure therapy is novel for the patients and provides them with hope that they will improve, this may be sufficient. On the other hand, we have recent findings that anxious individuals who do not respond to treatment may have a decrease in positive affect and an increase in negative affect. Given the potential for depression to impact the treatment process, it is important to keep track of this in order to try to prevent worsening. To do so, it is important to monitor the patient's depression as well as their anxiety on a

session-by-session or weekly basis. Data is accumulating that such monitoring helps improve treatment outcomes, particularly for stuck patients who are not responding.

Suicidality

Suicidal thoughts are one of the symptoms of depression, though individuals can also be suicidal without being depressed. Therefore, it is important to evaluate for suicide risk in all patients using an evidence-based risk assessment. The increased risk of thoughts and attempts for depressed individuals makes this a more pertinent issue. At times, some patients feel that doing exposure is the last chance they have in improving their anxiety. They may have tried alternative treatments that did not work, partially due to the attempt to avoid confronting their anxiety head-on. It is important for both the therapist and the patient to understand that treatment is not conducted under the threat of suicide if treatment fails. The statement “this is my last chance” is understandable on one hand but needs to be carefully considered on the other. Exposure cannot be guaranteed to succeed, and the therapist should not feel pressured to ensure it will succeed with the fear that failure will lead to suicide. If patients make such statements, the therapist should first work on addressing the suicidality prior to engaging in exposure therapy. However, this is a tricky issue, as some patients may feel that the best way to help them alleviate their suicidal desires is by treating their anxiety.

The statement “this is my last chance” is understandable on one hand but needs to be carefully considered on the other. Exposure cannot be guaranteed to succeed, and the therapist should not feel pressured to ensure it will succeed with the fear that failure will lead to suicide.

Conducting Exposures with Depressed Patients

Impact on Habituation/Extinction

There are some questions regarding the impact of depression on habituation/extinction. Does it take a depressed individual longer to have decreased responses to the same exposure than a nondepressed patient? Depression has been associated with cognitive impairment (e.g., flexibility, inhibition, learning) as well as attenuated physiological recovery during stressful situations. Therefore, high levels of depression can negatively impact exposure by impeding habituation during repeated administrations and interfering with adaptive learning. Extending the session time,

or alternatively adding exposure sessions, can sometimes compensate for the need of depressed patients for a longer exposure time to accomplish habituation.

Engagement

Although there are questions about the importance of within-session habituation/extinction in terms of the process of exposure therapy (see Chap. 1), there is still a consensus that optimal exposure therapy facilitates learning within the session. Therefore, if the patient is not motivated to engage fully, accepting their anxiety while trying to process their experience, this can interfere with achieving therapeutic gains. Whereas the issue of sticking through to the end of the exposure is a general issue, the likelihood of a depressed patient feeling that they cannot or do not want to continue through the exposure is higher. It is important to address the lack of motivation and hopelessness during the exposure. One good technique is to encourage the patient not to allow the depression to sabotage the treatment, to fight against the depression, which is anxiety's close friend and assistant. Externalizing and anthropomorphizing both the anxiety and the depression help convey the message that the patient is stronger than they think. It helps the patient distance from their depression and persist, even in the face of a flood of negative, pessimistic thoughts.

Externalizing and anthropomorphizing both the anxiety and the depression, helps convey the message that the patient is stronger than they think. It helps the patient distance from their depression and persist, even in the face of a flood of negative, pessimistic thoughts.

Impact on Processing

Depressed individuals have cognitive styles that are likely to negatively impact how they process exposures. These information processing biases are well known (see Nieto et al., 2020), but how they impact the processing of exposure has been less discussed. These cognitive biases include selective attention to the negative, discounting the positive, increased recollection of negative events, negative attributional styles, impaired inhibition of negative information, catastrophizing, negatively interpreting ambiguity, and more. Each of these biases can influence how the individual experiences exposure, mainly in ways that will prevent the patient from experiencing the full benefits of exposure and optimizing their learning. For example, if a patient only focuses on the fact that they felt bad and not that the negative predicted outcomes did not occur, they will not benefit as much from the exposure. If they also discount the in-session experience as being not representative of their

real-world experiences, thereby interfering with their willingness to conduct similar exposures for homework, this will also interfere with progress. They may have difficulty inhibiting previous memories of negative experiences, thereby not allowing the new experiences to have an impact. They may also say that the exposure was horrible even if at the time it was tolerable and fear reduction occurred. Given that there is typically room for interpretation during most experiences, the depressed patient is more likely to interpret their experiences negatively, and the therapist should be aware of this and consider how to address such biases (see below). In addition, the patient may even undergo a successful exposure, but they may be more likely to discount their success, attributing it to the therapist, chance, or the artificial environment.

Even if the patient acknowledges that the exposure was successful, it is common for depressed individuals to report that the intervention was not powerful enough and that they still are not feeling like they used to feel (before they were depressed). This common stance makes it important to address the expectations from the outset: that the process of recovering from depression is often gradual, with ups and downs, but with the overall direction of improvement. Setting the “goalpost” of only appreciating improvement when it is complete is a form of all or none thinking that perpetuates depression. The more the patient can value every step of improvement, the more they can move to a broaden-and-build model, improving mood, thoughts, and behaviors rather than a negative vicious cycle. This work often should be explicit with the patient, even anticipating such responses prior to beginning exposure in order to help the patient “catch” their depression speaking and discounting their successes. This can also help the patient respond with more positive, realistic thoughts such as “I didn’t expect the exposure to cure me, but I learned I can deal with this level of anxiety, that the bad things that I expected didn’t occur, and that my anxiety can decrease. I will do this treatment day by day, step-by-step.”

Setting the “goalpost” of only appreciating improvement when it is complete is a form of all or none thinking that perpetuates depression. The more the patient can value every step of improvement, the more they can move to a broaden-and-build model, improving mood, thoughts, and behaviors rather than a negative vicious cycle.

Another common depressogenic style is that of a pessimistic attributional style. In such cases, the patient believes that all negative outcomes are due to themselves, to set characteristics they have (traits), and to the global impact of such characteristics. Thus, if they choose to escape prior to the end of the exposure, depressed patients will say that they are failures, that they are always avoidant and cannot tolerate distress, and that treatment won’t work for them. We see the triad of negative attributional style at work here. We will address how to deal with each of these cognitive issues in the treatment section below.

Impact on Homework

Engagement in homework between sessions can be a challenging task for anxious patients in general and even more so for patients with comorbid depression. Homework can be intimidating because the patient is often asked to face their fears alone, in their day-to-day environment. In order to do so, the patient (1) has to hold on to hope that the therapy can succeed and (2) have a sense of capability of encountering and tolerating the task alone. Both of these are impaired in depressed patients. Therefore, their motivation is expected to be even lower. Whereas in the session the therapist can provide extrinsic motivation, between sessions (i.e., homework), the patient confronts the anxiety by themselves. It is important to discuss these challenges with the patient ahead of time. The therapist should explain that motivation is decreased due to hopelessness and that this is the voice of depression. Therefore, doing exposure homework is a way for the patient to fight both the depression and the anxiety together. In addition, the therapist should express hope and emphasize their belief in and experience with the success of exposure therapy. If the therapist is relatively inexperienced, one can discuss the collective experience of the supervisor and the community of exposure therapists using “we” instead of “I.”

Given the challenges of feeling overwhelmed and hopeless, it is usually best to not assign new exposures that are harder for the patient for homework, but rather to assign the same exposure that was done in session as homework. This is often done at the beginning of exposure therapy in general, but it may be necessary to continue in this fashion until the therapist sees that the patient’s depression has remitted sufficiently that they can manage novel homework tasks independently. Doing the same exposure for homework allows the patient to practice what was learned in session and generalize it to their natural environment. This can be particularly helpful when the patient feels that an in-session exposure is too forced or unrealistic. By inviting themselves to experience anxiety at home and in other familiar (possibly “safe”) places, the patient may feel that the exposure is more realistic and representative of their goals. Moreover, the therapist should emphasize that doing the same exposure at home can be more challenging due to the patient typically conducting the exposure in their own environment and without the support of the therapist. In cases where the patient does not have a pattern of excessive reassurance seeking and dependence, one can recruit a support person at home to help them with some exposures if doing them independently at first is too difficult for the patient. However, it is important to note that the goal is for the patient to eventually conduct the exposures independently and that the role of the support person is to help the patient motivate themselves despite their depression and to do the homework.

However, it is important to note that the goal is for the patient to eventually conduct the exposures independently and that the role of the support person is to help the patient motivate themselves despite their depression and to do the homework.

In the session after assigning homework, it is important to review what the patient accomplished and how they perceive what they did. This leads to a number of issues with depressed patients. First, they may be less likely to have completed the assignment and feel more like they and the treatment are failures. In such a case, the therapist should be supportive and try to find some positive advances that the patient made during the week. In all exposure therapy and even more so with depressed patients, it is important to constantly reinforce steps in the right direction that the patient takes. Such encouragement can be for any step they took to change things, no matter how little and regardless if it was written down or seen as part of their homework. After all, homework is mainly about applying the principles in their daily life and beyond. Praising, cheerleading, positively reinforcing, and encouraging depressed patients are essential. If you are concerned about overdoing it, note that as long as praise is authentic, specific, and accurate (not overly global and nonspecific), it is hard to give too much praise. In addition, even if the patient did some homework, they might report it not helping. Reminding patients of their previous successes by reviewing the hierarchy and rerating it can help at times in this situation. One can do this in a spreadsheet easily by hiding the previous ratings and reviewing the items and then revealing the differences between earlier ratings and current ones. Alternatively, the therapist can take responsibility for the lack of compliance, saying that he/she did not tailor the exposure homework sufficiently to the patient's needs and that he/she will try to work more collaboratively with the patient to develop future homework. Finally, the therapist can work with the patient to take practical steps like organizing and setting regular times during the week to do homework, so that it will become part of the routine. The therapist can also suggest the patient to keep a calendar to track and reinforce days that homework is completed. All of these can help the patient obtain a feeling of control and mastery regarding themselves, their anxiety, and their lives.

Praising, cheerleading, positively reinforcing, and encouraging depressed patients are essential. If you are concerned about overdoing it, note that as long as praise is authentic, specific, and accurate (not overly global and nonspecific), it is hard to give too much praise.

Suicidality During Exposure

Depression can increase due to a sense of failure during exposure. An experience of failure, especially after the invested efforts, can increase feelings of helplessness and hopelessness. In addition, due to high levels of self-criticism, they are likely to have a tendency for internal attributions and to associate failure solely with themselves. If the patient feels that there is no way out of their anxiety, they might feel trapped. Once they have committed themselves to exposure, if they feel it is not working, this can lead to all of these factors that can increase the risk of suicidality. Therefore, it is essential that they be aware of these factors and assess for suicidality. For some individuals who may have depression with borderline personality

features or other forms of personality disorders, doing exposure may also test their ability to tolerate distress and regulate their emotions. In such cases, dealing with personality issues along with exposure becomes essential (see Chap. 7).

Imaginal Versus In Vivo Exposure: Differences when Dealing with Depression

Much of the above equally applies to imaginal and in vivo exposures. However, there are a number of issues that are unique to imaginal exposure. Arguably, there are two forms of imaginal exposure: (1) to memories of past, traumatic experiences (e.g., Foa et al., 2007) and (2) to future, feared events that have never occurred and are typically highly unrealistic or even impossible (sometimes called flash-forward memories, e.g., going crazy from a panic attack). For past events, much of the literature suggests that imaginal exposure can be effective for depressed individuals with PTSD without major modifications. There is much less research on imaginal flooding to future events. Our clinical experience suggests that imagining catastrophic events can exacerbate low mood in depressed patients, particularly when the focus of the exposure is on loss such as death. Therefore, we recommend focusing imaginal exposures on feared events either that the patient is aware are exaggerated or that are more activating, at least toward the beginning of treatment. For example, a patient with OCD who is afraid of getting cancer and suffering through treatments could be exposed imaginally to getting the diagnosis and suffering through the treatment but not death itself. Or a patient who has social anxiety might imagine just saying “hi” to colleagues who immediately laugh at them, reject them, and fire them from their job – all because they said “hi.” Even so, symptoms should be carefully monitored to be able to detect exacerbation of depression. If worsening is detected, later in treatment, once the patient has begun to remit from depression, one could include depressogenic imagery (focused on loss, helplessness) to help build their ability to deal with such experiences (cf. Grosse Holtforth et al., 2019).

How to Improve/Address Depression

Motivation

As described throughout this chapter, doing exposure with depressed, anxious individuals requires patience and a positive stance toward the patient and against their depression (and anxiety). This stance takes the form of not giving in to pessimistic or negativistic statements about a task or the treatment in general. Some of this is done by externalizing the depression: “I hear your depression speaking loud and clear when you say that,” or “I wonder what you would say if you were able to take

off the dark lens of the depression that colors how you see things?”. Ultimately, while externalizing the depression, it is important to also ally with the patient by saying “I know it feels like you can’t do it, but I know you can. I am not willing to give up on you.” Such statements help differentiate the patient from their thoughts and mood while also building trust and the alliance to be able to do the hard work of exposure.

Ultimately, while externalizing the depression, it is important to also ally with the patient by saying “I know it feels like you can’t do it, but I know you can. I am not willing to give up on you.”

Motivational Interviewing

Depression can be conceptualized as a disorder of motivation. When a depressed patient has to consider doing an exposure, they may feel that they lack the motivation to engage or to conduct the exposure independently. In many anxious patients, the natural tendency to avoid is a common reaction that requires motivation and effort to overcome. In depressed patients, this becomes even more of a challenge. Their pessimistic approach to life including treatment makes it important for the therapist to be optimistic and reinforcing as possible, to try to counter the patient’s negativity. In anxiety without depression, one may work quickly on the patient acting independently and “owning the treatment,” whereas the therapist may have to be the positive, encouraging, motivating voice for much longer with depressed patients, to help them not to “give in to their depressive voice.” From an interpersonal perspective, the therapist may be able to use the relationship, expressing empathy toward the patient’s frustration, fear of failure, and hopelessness while not confirming or reinforcing these experiences. Such empathy and helping the patient feel that they are not coping alone, but rather that the therapist is there with them, can be a facilitating factor, helping both motivate exposure and alleviate some of the depressive weight.

In anxiety without depression, one may work quickly on the patient acting independently and “owning the treatment,” whereas the therapist may have to be the positive, encouraging, motivating voice for much longer with depressed patients, to help them not to “give in to their depressive voice.”

Psychoeducation

One way of helping provide psychoeducation about depression and anxiety to the patient is via the helplessness model of depression (see also Barlow et al., 1996). The helplessness model is of a dog being prevented from escaping an unpleasant

shock (Seligman, 1972). The animal first typically acts anxious, trying to escape, and then gives up and lies down, absorbing the shocks. Even when escape is then possible, the dog continues to be helpless, unless there is an intervention where the dog is dragged back and forth to “learn” that they can and should escape. This model explains both the anxiety and the depression that the patient feels: that they want to escape the threat but feel unable to do so to the point that they feel helpless. The role of treatment is to help the patient gain a sense of self-efficacy: that they can cope with their anxiety differently via exposure/approach instead of avoidance.

Behavioral Activation

Behavioral activation (BA) is one of the most effective interventions for depression (for a meta-analysis and review, see Cuijpers, Van Straten, and Warmerdam (2007) and Mazzucchelli, Kane, and Rees, 2009). Indeed, both behavioral activation and exposure are techniques that promote active coping instead of avoidance. Arguably, one major difference between them is that behavioral activation tends to be focused on positive emotions: seeking pleasure, mastery, or connection with others. Exposure, on the other hand, is often conceptualized as either promoting fear reduction or learning that negative outcomes are less likely/less catastrophic than thought by confronting fear. Despite this, both behavioral activation and exposure emphasize engagement/approach over avoidance. It can be important for the therapist to be aware that many activities that are part of behavioral activation may in fact also be an exposure for the patient. For example, for an individual who is socially anxious, doing any social activity (playing a group sport, going to a party, meeting up with friends, etc.) may be viewed as a positive activity by the therapist but as a threat for rejection and failure by the patient. Or if a patient has OCD contamination concerns, doing these same social activities may evoke feelings of contamination. If the patient is very depressed, it is often beneficial to start with pleasurable and mastery activities that are far from the patient’s fears. Doing things that the patient could enjoy such as listening to music, watching a series that they have wanted to, or paying a bill that they have been procrastinating about can all be useful. It can be helpful for the therapist to think of depression as also having a fear component: a fear of failure. If they try an activity and it does not improve their mood, the depressed patient often will see this as “proving” that nothing can help, thereby proving their worst fears.

On the other hand, there are patients who are very focused on getting over their anxiety despite their depression, and working on exposure, which can provide significant mastery in and of itself, is the best form of behavioral activation. Designing a small but meaningful exposure with the patient that they succeed at doing something that they are afraid of and seeing that they are willing to do it more (due to learning about the situation and avoidance) can instill hope regarding the treatment, the therapist, and, most importantly, in oneself (i.e., improving one’s self-efficacy). Therapist “cheerleading” to help the patient acknowledge their achievement, elaborating on it verbally, and “patting himself/herself on the back” is a great form of a

psychological antidepressant, addressing many of the depressive thoughts and beliefs described above.

Therapist “cheerleading” to help the patient acknowledge their achievement, elaborating on it verbally, and “patting himself/herself on the back” is a great form of a psychological antidepressant, addressing many of the depressive thoughts and beliefs described above.

Cognitive Work

Selective Attention to the Negative When the patient seems to be overly focused on the negative, it is important to discuss this common cognitive process with the patient. Indeed, discussing how naturally, one selectively attends to present negative experiences, creating a vicious cycle that maintains both depression and anxiety. In order to explain this vicious cycle to the patient, the therapist can present the following hypothetical situation: “How many times have you noticed a yellow car recently? Imagine that if you see a yellow car, it means that the therapy is more likely to fail. How do you think you would feel each time that you see a yellow car?” One might think that they are doomed, that hope would fade away, and that there is no point to continue with the therapy process. “This would probably cause a feeling of helplessness, which will decrease motivation and even might cause you to leave treatment. Others might start dreading that they will encounter a yellow car and may feel overall anxious and would try to avoid noticing that car. At the same time, awareness and alertness to a yellow car would increase.” This analog can help the patient to realize that selective focus gives significant meaning to negative thoughts, increases anxiety and helplessness, and can sabotage motivation and therapy success. All of this can occur even if the thing they are focused on does not reflect accurate associations.

An Increased Recollection of Negative Events For the depressed patient, it is easier to recall negative events than positive ones. This can be demonstrated by actively having the patient make a comparison between a recollection of negative and positive past experiences. The therapist can ask the patient to recall a pleasant event using this example: “How many times have you noticed a ladybug? Can you remember when it happened? How strong is this memory for you?” The same questions can be asked regarding a cockroach, to compare the two memories: “Which memory is more vivid and impacts how you feel more?” Recognizing that negative memories are encoded and amplified in our mind can lead to an understanding that the event may not have been as horrible or as intense as it is recalled now. In turn, this may help patients to engage with the exposure.

Impaired Inhibition of Negative Information Patients with depression find it difficult to inhibit negative information and thus are affected by it in an increased manner. Recent studies suggest that training in distraction from negative information after intentionally engaging with it improves the ability to inhibit such information. This can be encouraged to occur in treatment: the therapist asks the patient to attend to the negativity that characterizes depressed patients (e.g., thoughts that recovery is slower than expected, focus on signals that he/she experienced failure) and then to shift their attention, disconnect, and distract one's mind from the negative biases that arise. That can allow for a gradual change in the patient's ability to notice less of the negative signs and more of the positive signs and to embrace hope for recovery with the progress of the therapeutic process. This can be encouraged for homework as well: to purposely have the patient think negative thoughts and then disengage from them to "strengthen the muscle" of attentional disengagement.

Negatively Interpreting Ambiguity Anxious patients have a tendency to interpret ambiguous situations as threatening. That is, if a snake phobic sees an ambiguous object in the woods, they are more likely to think it is a snake than a stick. A socially anxious individual will be more likely to interpret ambiguous feedback as negative, critical, or rejecting (e.g., a yawn during a conversation is interpreted that the other person is bored and that the patient is boring rather than that the other person is tired). This tendency is magnified and generalized in anxious, depressed individuals. For them, pessimism affects the way they view most ambiguous situations (and even some positive events at times): most often, they will select a negative interpretation over a positive one. Thus, if something goes well in therapy, they will be likely to interpret it as lucky, temporary, and less likely to reflect a real change. An adaptive way to deal with this bias is through classic cognitive therapy or "thought challenging." The patient may be asked to think of alternative possible interpretations of the situation and to examine the likelihood of each interpretation. If the patient has difficulty thinking of additional interpretations, the therapist can suggest their own, and the patient will be invited to explore these suggestions. The patient also may be asked to think of a person who is close to him/her and try to look at the situation through the eyes of that person or to suggest what they would say to them or advise them if they were having the same thoughts. In some cases, adopting another person's perception might be utilized as an expanded resource and can evoke ideas that the patient was not able to conceive on their own.

Negative Attributional Styles Another common depressogenic style is that of a pessimistic attributional style. In such cases, the patient believes that all negative outcomes are due to oneself, to set characteristics they have (traits), and to the global impact of such characteristics. Cognitive work helping the patient shift or more external, specific, and temporary attributions for negative outcomes (and vice versa for positive outcomes) can be important. This can be done in terms of processing exposure outcomes (helping internalize positive outcomes as signs of potentially long-term, global change) as well as slips or negative occurrences in therapy

(failure to do an exposure or to stop using a safety behavior does not need to indicate that the patient or the treatment is a failure).

Comparing the Current Self to the Past Self As noted above, depressed patients tend to have an anchor by which they compare every experience: how they felt before they were depressed. Thus, even if an activity does help improve mood a bit, it gets discounted due to the fact that they still don't feel like they used to. One of the roles of the therapist is to help reframe this by helping the patient understand that reducing depression is a process and that the anchor should be how they feel now, and not how they want to feel. If there is a small improvement, this is progress to be acknowledged, savored, and built upon instead of discounted, devalued, or dismissed. It is important to attribute these small improvements to efforts made by the patient, especially those invested throughout the progress of treatment, thereby strengthening mastery and sense of control (see above statements on encouragement and "cheerleading").

Discounting the Positive Almost the polar opposite of selective attention to the negative is the passive missing out of the positive as well as the active discounting of the positive. In addition to the techniques described above, there are many techniques which are often related to positive psychology which can help lead to recognition, acceptance, and even extension of positive experiences (see Seligman, 2012). These include savoring, "the three blessings," expressing gratitude, imagining oneself in the future, and nurturing relationships. The main purpose of all of these techniques is to intensify and prolong positive emotions by reflecting on various aspects of past, present, or future pleasurable events. Some techniques require work to develop and use, but some can be easily assimilated into everyday life. For instance, practicing expressing gratitude simply requires awareness and can be applied simply by saying "thank you" to another or to oneself. However, structured methods can also be adopted with anxious and depressive patients. For example, the patient can be guided to specify three things that went well during the day and the reason they had turned that way at the end of each day (the "three blessings exercise"). Alternatively, the patient can be guided to imagine or journal their ideal self (i.e., the best version of the self as they would like to be in the future) and to feel the grace and hope that accompany this. Subsequently, the therapist can suggest the patient to imagine themselves in a future after succeeding with treatment, without suffering or impairment from anxiety or depression. Finally, paying attention to positive interpersonal relationships might also help with the extension of positive experiences. The patient can be encouraged to share, to write, or to imagine a close person who is appreciated or inspiring and to explain the benefits of having that person in their lives. This can be extended into a gratitude exercise by having the patient reach out, connect, and express gratitude toward the person.

Modifying Exposures

As described above, there are many ways of addressing depression while doing exposure via integration of cognitive and behavioral techniques for treating depression. In addition, the exposure itself might need to be modified to ensure the patient benefits maximally from it. For more depressed patients, this can mean dividing the main exposure into small steps: beginning with a feasible behavior and moving forward step-by-step. More encouragement and praise are often necessary. But it is important that the therapist is authentic in their praise because the patient is likely to discount it otherwise. It is easier to maintain a positive attitude when the therapist truly sees the progress, no matter how little. Encouraging the patient to praise/reward themselves can also be useful.

Patients with depression have a fear of failure, are less able to acknowledge the improvement, and are also pessimistic about the potential changes. A step-by-step program enables to produce a feeling of success, emphasizing the trend of improvement, thereby increasing motivation and competence. This is consistent with the use of a detailed hierarchy. Having the patient rerank the items that they have completed on the hierarchy without them seeing their previous ratings can help to show the patient progress that would otherwise not be noticed. However, some depressed patients may focus on the top of the hierarchy and feel that it is unreachable, thereby reducing motivation. In such cases, it is worth considering not immediately defining the top of the hierarchy.

Finally, as in much good exposure therapy, having the patient make clear predictions regarding the outcomes of the exposure prior to engaging in it (focused on likelihood of harmful outcomes) and then collecting clear evidence that is counter to the prediction are at the heart of the exposure experience. If the patient discounts the experience, working collaboratively to develop similar exposures that are more believable to the patient can be helpful. If the patient says that they don't know what will work, only what won't, then the therapist should try to make suggestions to the patient and see what the patient's predictions are in various scenarios. This process can feel tedious with the depressed patient, and it is important to try to have the patient engaged as much as possible, contributing actively to the discussion. If the patient keeps saying "I don't know," the therapist should consider "banning" the words "I don't know." If the patient says "I can't think of anything," the therapist should take a promoting, positive stance, as described above, such as "I think your depression is telling you that you can't. I wonder if you have ideas that you are censoring or vetoing because they feel like they are not good enough? What would you suggest to a friend who was experiencing this? Or to your grandchild?"

Conclusion/Summary

Treating a depressed, anxious individual with exposure therapy can be a challenge but can become a gratifying experience for both the therapist and the patient. We have reviewed how depression can interfere with exposures and suggested a number of different cognitive and behavioral strategies to use to address the depression, when necessary. It is important to note that many depressed patients are depressed due to the demoralization and impairment they experience from their anxiety. In such cases, the best antidepressant is treatment of their anxiety. Knowing that they are obtaining control and mastery over their anxiety, that there is hope to help them suffer less and function better, is often the best way to alleviate their depression. Thus, one should be aware of the various strategies to address depression discussed here, but it is often advisable to keep these strategies “on reserve” for whenever is necessary. Doing so can keep the therapist prepared and also help them enhance feelings of self-efficacy, providing some immunity from the contagion that is often associated with depression. The authors declare no conflict of interest and received no funding from an external source.

References

- American Psychiatric Association, DSM-5 Task Force. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5™* (5th ed.). American Psychiatric Publishing. <https://doi.org/10.1176/appi.books.9780890425596>
- Barlow, D. H., Chorpita, B. F., & Turovsky, J. (1996). Fear, panic, anxiety, and disorders of emotion. In D. A. Hope (Ed.), *Current theory and research in motivation, Vol. 43. Nebraska symposium on motivation, 1995: Perspectives on anxiety, panic, and fear* (pp. 251–328). University of Nebraska Press.
- Beck, A. T. (Ed.). (1979). *Cognitive therapy of depression*. Guilford press.
- Beck, A. T. (2002). Cognitive models of depression. In R. L. Leahy & E. T. Dowd (Eds.), *Clinical advances in cognitive psychotherapy: Theory and application* (pp. 29–61). Springer Publishing Co.
- Bylsma, L. M., Morris, B. H., & Rottenberg, J. (2008). A meta-analysis of emotional reactivity in major depressive disorder. *Clinical Psychology Review, 28*(4), 676–691. <https://doi.org/10.1016/j.cpr.2007.10.001>
- Bylsma, L. M., Taylor-Clift, A., & Rottenberg, J. (2011). Emotional reactivity to daily events in major and minor depression. *Journal of Abnormal Psychology, 120*(1), 155–167. <https://doi.org/10.1037/a0021662>
- Cuijpers, P., van Straten, A., & Warmerdam, L. (2007). Behavioral activation treatments of depression: A meta-analysis. *Clinical Psychology Review, 27*(3), 318–326. <https://doi.org/10.1016/j.cpr.2006.11.001>
- Foa, E., Hembree, E., & Rothbaum, B. O. (2007). *Prolonged exposure therapy for PTSD: Emotional processing of traumatic experiences therapist guide*. Oxford University. <https://www.oxford-clinicalpsych.com/view/10.1093/med:psych/9780195308501.001.0001/med-9780195308501>.
- Grosse Holtforth, M., Krieger, T., Zimmermann, J., Altenstein-Yamanaka, D., Dörig, N., Meisch, L., & Hayes, A. M. (2019). A randomized-controlled trial of cognitive-behavioral therapy for depression with integrated techniques from emotion-focused and exposure therapies. *Psychotherapy Research, 29*(1), 30–44. <https://doi.org/10.1080/10503307.2017.1397796>

- Huppert, J. D. (2009). Anxiety disorders and depression comorbidity. In M. M. Antony & M. B. Stein (Eds.), *Oxford library of psychology. Oxford handbook of anxiety and related disorders* (pp. 576–586). Oxford University Press.
- Joiner, T., & Coyne, J. C. (Eds.). (1999). *The interactional nature of depression: Advances in interpersonal approaches* (pp. 365–392). American Psychological Association, xiv, 423 pp.
- Kaviani, H., Gray, J. A., Checkley, S. A., Raven, P. W., Wilson, G. D., & Kumari, V. (2004). Affective modulation of the startle response in depression: Influence of the severity of depression, anhedonia, and anxiety. *Journal of Affective Disorders*, 83(1), 21–31. <https://doi.org/10.1016/j.jad.2004.04.007>
- Kessler, R. C. (2008). National Comorbidity Survey: Baseline (NCS-1), 1990–1992. *Inter-university Consortium for Political and Social Research [distributor]*. <https://doi.org/10.3886/ICPSR06693.v6>
- Kessler, R. C., Berglund, P., Chiu, W. T., Demler, O., Heeringa, S., Hiripi, E., Jin, R., Pennell, B.-E., Walters, E. E., Zaslavsky, A., & Zheng, H. (2004). The US National Comorbidity Survey Replication (NCS-R): Design and field procedures. *International Journal of Methods in Psychiatric Research*, 13(2), 69–92. <https://doi.org/10.1002/mp.167>
- Lim, G. Y., Tam, W. W., Lu, Y., Ho, C. S., Zhang, M. W., & Ho, R. C. (2018). Prevalence of depression in the community from 30 countries between 1994 and 2014. *Scientific Reports*, 8(1), 1–10. <https://doi.org/10.1038/s41598-018-21243-x>
- Mazzucchelli, T., Kane, R., & Rees, C. (2009). Behavioral activation treatments for depression in adults: A meta-analysis and review. *Clinical Psychology: Science and Practice*, 16(4), 383–411. <https://doi.org/10.1111/j.1468-2850.2009.01178.x>
- Nieto, I., Robles, E., & Vazquez, C. (2020). Self-reported cognitive biases in depression: A meta-analysis. *Clinical Psychology Review*, 82, Article 101934. <https://doi.org/10.1016/j.cpr.2020.101934>
- Seligman, M. E. (1972). Learned helplessness. *Annual Review of Medicine*, 23, 407–412. <https://doi.org/10.1146/annurev.me.23.020172.002203>
- Seligman, M. E. (2012). *Flourish: A visionary new understanding of happiness and Well-being*. Simon and Schuster.
- Seligman, M. E., Abramson, L. Y., Semmel, A., & von Baeyer, C. (1979). Depressive attributional style. *Journal of Abnormal Psychology*, 88(3), 242–247. <https://doi.org/10.1037/0021-843X.88.3.242>

Chapter 5

Exposure Therapy when Patients Present with Comorbid Substance Use Disorders



Logan R. Harvey, Tanya C. Saraiya, Katherine L. Mills, Delisa G. Brown, Amber M. Jarnecke, Sudie E. Back, and Lexine A. Stapinski

Abstract Substance use is a common comorbidity for people experiencing anxiety-related disorders. Although exposure therapy has proven effective in both of these conditions, clinicians often report hesitations about applying these interventions when patients have substance-related comorbidities. There is now increasing evidence for treatment programs integrating substance use treatment and exposure therapy in a variety of areas, demonstrating the efficacy of applying these interventions in this population. The following chapter will describe the background knowledge and adjustments to treatment required to implement exposure interventions in this population.

Keywords Exposure · Anxiety · Trauma · PTSD · Addiction · Substance use · Alcohol · Drugs

L. R. Harvey (✉) · K. L. Mills · L. A. Stapinski
The Matilda Centre for Mental Health and Substance Use, University of Sydney,
Sydney, NSW, Australia
e-mail: logan.harvey@sydney.edu.au; katherine.mills@sydney.edu.au; lexine.stapinski@sydney.edu.au

T. C. Saraiya · D. G. Brown · A. M. Jarnecke
Department of Psychiatry and Behavioral Sciences, Medical University of South Carolina
(MUSC), Charleston, SC, USA
e-mail: saraiya@musc.edu; browdg@musc.edu; jarnecka@musc.edu

S. E. Back
Medical University of South Carolina (MUSC), Charleston, SC, USA

Ralph H. Johnson VA Medical Center, Charleston, SC, USA
e-mail: backs@musc.edu

© The Author(s), under exclusive license to Springer Nature
Switzerland AG 2022

J. A. J. Smits et al. (eds.), *Clinical Guide to Exposure Therapy*,
https://doi.org/10.1007/978-3-031-04927-9_5

Introduction

Substance use disorders (SUD), which include alcohol use disorders (AUD) and other drug use disorders (DUD), remain a major health problem worldwide (Office on Drugs and Crime, 2018; Ritchie, 2018; World Health Organization, 2018). Examination of this data reveals substantial variability in prevalence rates by age, gender, and racial/ethnic group. For instance, globally, younger people (aged <34 years) use more alcohol and drugs (UNODC, 2018), and men consume more alcohol and have higher rates of AUD than women (World Health Organization, 2018). Despite this, women with DUD tend to be more vulnerable to adverse outcomes including comorbid psychiatric conditions and severe health problems, experience interpersonal violence and legal problems, and have an accelerated course of disease progression (Degenhardt et al., 2019; Embersin-Kyprianou et al., 2020; NIDA, 2020a, b; Tirado-Muñoz et al., 2018; UNODC, 2018; Walmsley, 2017). Marginalized populations, including racial/ethnic minority and indigenous populations, experience significantly greater negative consequences of substance use and greater burden of disease and are less likely to receive optimal care (AIHW, 2016; Collins, 2016; Oluwoye et al., 2020; UNODC, 2020). Substance use disorders are also often comorbid with multiple psychiatric conditions (Conway et al., 2006; Wolitzky-Taylor et al., 2011). Substance use disorder populations demonstrate high rates of anxiety-related disorders (ARD), including up to 41% for obsessive-compulsive disorder (OCD), up to 65% for post-traumatic stress disorder (PTSD), and up to 75% for generalized anxiety disorder (GAD) or panic disorder (PD; Kingston et al., 2017).

Although integrated treatment of comorbid mental health issues and SUD is now increasingly recommended (e.g., Marel et al., 2016), there has traditionally been a separation of substance use and mental health treatment activities, with many clinicians reporting concerns about or even refusing to treat co-occurring conditions while substance use remains active (Becker et al., 2004; Gielen et al., 2014). As such, in clinical practice, abstinence has often been a prerequisite for the treatment of anxiety-related conditions. Indeed, substance use is a commonly cited contraindication for exposure interventions (van Minnen et al., 2012), largely as a result of concerns that substance-using patients may deteriorate during exposure (e.g., increase substance use) or that exposure interventions may be ineffective for these patients (Abramowitz et al., 2019; Becker et al., 2004; McHugh, 2015). Concerns regarding effectiveness typically relate to the potential impacts of substance use on learning, memory encoding, and extinction (in particular fear extinction) and the impact of anxiolytic substances on fear activation. There is evidence that some substances interfere with learning and memory, in particular fear extinction learning, a process implicated in both anxiety and substance use disorders (Peters et al., 2009; Ruglass et al., 2014; Wixted, 2004). It is further possible that information encoded under the influence of substances is not readily retrieved in a sober state – a concept known as state-dependent learning. Previous research has demonstrated state-dependent learning effects in trials of exposure interventions for SAD (Morissette

et al., 2008). The anxiolytic effects of many substances are considered particularly problematic to exposure interventions; however, there is inconsistent evidence regarding the impact of anxiolytic medications on exposure interventions (Rosen et al., 2013; Spiegel & Bruce, 1997; van Minnen et al., 2002; Watanabe et al., 2007). Nonetheless, it is possible that substance use may impact the efficacy of exposure interventions, although importantly there have been no empirical investigations of the magnitude of this impact. Furthermore, the frequency, quantity, and type of substance being used are likely to further moderate treatment efficacy. For example, exposure interventions may be largely unaffected for a patient on a stable dose of methadone, while a patient acutely intoxicated with alcohol might experience difficulties or reduced therapeutic gain. Of interest, there is also emerging evidence of the potential positive impact of some psychoactive substances, such as psychedelic substances, including emerging data suggesting that cannabinoids may be beneficial augmentation agents for exposure therapy (Kayser et al., 2020).

Although the issues discussed are important considerations in providing exposure interventions in this area, treatment can be further informed by trials investigating integrated treatments for comorbid ARD and SUD. In general, these trials have demonstrated the efficacy and safety of using exposure-based treatment programs. There is developing evidence for these treatments in OCD, PD, and SAD (Fals-Stewart & Schafer, 1992; Kushner et al., 2009; Stapinski et al., 2020) and additional studies investigating mixed ARD-SUD samples (Kushner et al., 2013; Morley et al., 2016). These studies have demonstrated positive outcomes for integrated treatment approaches incorporating exposure interventions, although one study of concurrent SAD and AUD treatment (delivered by different clinicians) demonstrated worse alcohol use outcomes compared to treatment focused on AUD only (Randall et al., 2001). There is significant evidence for the treatment of comorbid PTSD and SUD with integrated exposure-based treatments, demonstrating significant reductions in PTSD symptoms and concomitant reductions in substance craving and substance use (Hien et al., 2010; Mills et al., 2012; Mills et al., 2016; Roberts et al., 2015; Tripp et al., 2020; van Dam et al., 2012). Importantly, there is evidence that craving and distress following in-session imaginal exposure are not associated with the following week's PTSD symptom severity nor level of substance use, again suggesting that exposure therapy does not exacerbate substance use issues (Jarnecke et al., 2019).

Given this emerging evidence, it is clear that the implementation of exposure interventions in this population is possible. Furthermore, the traditional approach of sequential treatment is not necessary, and instead a flexible approach is required in adapting treatment to address both ARD and SUD in an integrated manner. Although abstinence may be optimal for obtaining positive outcomes, and this should be highlighted to the patient, it is not necessary. It is still possible to implement these interventions in the context of continued substance use, and indeed this may assist a person to work toward substance use goals. Deciding how to implement these interventions with each patient requires careful assessment, monitoring of substance use, and review of substance use treatment goals.

Incorporating Substance Use into Treatment

Assessing Substance Use Prior to Beginning Exposure

Assessment of substance use and the presence of SUD should form part of the initial case formulation process and be reviewed continuously over the course of treatment to monitor progress. Understanding the relationship between anxiety and substance use and how these symptoms change over time may provide important insights and assist in treatment planning.

A combination of informal and standardized assessment techniques may be used to gain an understanding of current and previous substance use, including the range of substances used (both licit and illicit); the quantity, frequency, and duration of use; problems related to substance use (e.g., health impacts, interpersonal relationships); circumstances of use; substance-related risk behaviors (e.g., drink driving); and previous treatment/attempts to change (and why these were successful or unsuccessful). Clinicians should also gain an understanding of the development of the patient's substance use over time, including periods of abstinence, and how these were supported (Marel et al., 2016). Specific attention should be paid to assessment of suicidal and homicidal ideation, and these safety issues should be addressed prior to commencing exposure intervention. Some practitioners have concerns regarding the reliability and validity of self-reported substance use. Social desirability and recall biases may lead a person to consciously or unconsciously provide inconsistent or inaccurate reports of their substance use; however, the predominance of research shows that self-reported substance use tends to be accurate and reliable provided that there are no adverse consequences to reporting that use (Barrett et al., 2019).

Considering the Function of Substance Use in Relation to Anxiety

Models of comorbidity suggest an interrelationship between anxiety and SUDs, whereby the symptoms of each disorder are maintained or exacerbated by mutually reinforcing connections (Smith & Randall, 2012; Stapinski et al., 2015; Stewart et al., 2016). As such, substance use may be among the repertoire of safety strategies employed in an attempt to dampen anxiety or avoid feared outcomes.

There is a growing body of evidence examining the impact of safety behaviors on the success of exposure therapy. It is believed that safety behaviors interfere with the disconfirmation of unrealistic threat expectancies. On the other hand, safety behaviors can also prevent disconfirmation of threat beliefs by making negative outcomes *more* likely. For example, consuming alcohol in social settings may result in disinhibited behavior and negative reactions from others. Despite evidence showing that safety behaviors reduce the effectiveness of exposure therapy, other studies

External Triggers	Internal Triggers	Substance Use	Short-term effects	Longer-term effects
Attending a party with people I don't know	<p>Physical: Panic - sensation in my chest</p> <p>Cognitions: A drink will calm me down I'm better at socialising after a few drinks</p>	Have 6 beers	<ul style="list-style-type: none"> • Panic feeling subsides, feel more relaxed • Feel more comfortable to talk 	<ul style="list-style-type: none"> • Later in the night I am drunk and slur my words • Next day: feel guilty, embarrassed, hungover, anxiety
I have to leave the house for an appointment	<p>Physical: Feeling on edge, tense and hypervigilant</p> <p>Cognitions: I'm too tense, I have to use or I'll have a panic attack when I go out</p>	Use heroin	<ul style="list-style-type: none"> • Feel numb • Not focused on my surroundings • I don't feel as tense and on edge 	<ul style="list-style-type: none"> • I forget my appointment and I run late • I have to reschedule and go out the next day • I lose confidence in leaving the house

Fig. 5.1 Example functional analysis of substance use and anxiety

have concluded that safety behaviors do not necessarily interfere with therapeutic gains of exposure, depending on the situation and the specific behavior (Blakey & Abramowitz, 2016; Meulders et al., 2016). Recent studies suggest that safety behaviors intended to reduce anxiety (termed “restorative” behaviors) may be less disruptive than behaviors intended to prevent anxiety (termed “preventative” behaviors; Goetz et al., 2016). It is important that substance use be conceptualized and discussed as a safety behavior when necessary and psychoeducation provided regarding the potential impact on treatment effectiveness.

While substance use serves a “self-medication” function for some patients, it is important to note that this may not always be the case (Hartwell et al., 2012). For example, some patients may use substances primarily for sensation-seeking or to enhance positive emotions or experiences. For patients with more severe SUD, substances are often used to avoid physiological withdrawal symptoms, while other patients may have an intermittent, recreational pattern of substance use that is not functionally related to their anxiety. Clinicians should explore the possible function of substance use carefully, as this information guides shared decision-making around substance use during treatment (Fig. 5.1).

Decision-Making Around Substance Use

Following assessment, the clinician and patient must collaboratively decide the goals for substance use during treatment. Reduction or cessation of substance use may trigger withdrawal symptoms and may also exacerbate anxiety symptoms; however, this is not always the case. Clinicians must carefully consider the implications of changes to substance use when assisting the patient with this decision, provide psychoeducation on the possible impacts of changes to substance use, and normalize an initial increase in symptoms that would be managed collaboratively.

Some patients will be working toward gradually reducing substance use, and this can be accomplished simultaneously with preparation for exposure interventions. Other patients may opt to rapidly cease substance use, which may lead to withdrawal symptoms. For patients with mild to moderate SUD, withdrawal symptoms

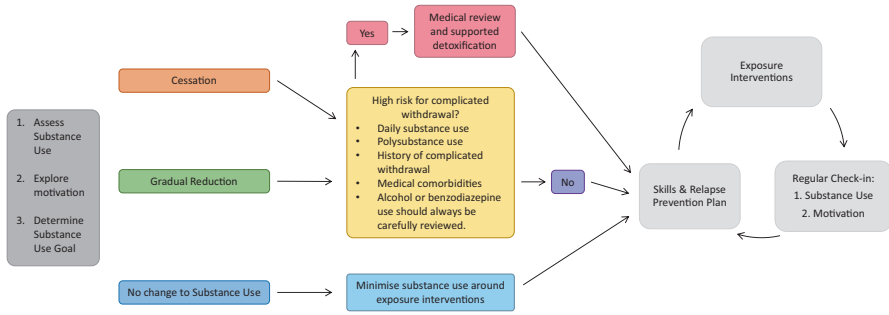


Fig. 5.2 *Decision process for substance use during treatment*

can often be managed in primary care as an outpatient, but patients should still be assessed medically prior to suddenly ceasing substances. Stimulants and cannabis are likely to have relatively minor withdrawal profiles, but not in all patients (Bahji et al., 2020; McGregor et al., 2005). Opioids will have somewhat more severe physical symptoms, but will not always require medically supported withdrawal, while sudden alcohol or benzodiazepine withdrawal can have life-threatening consequences and should be undertaken under close medical supervision (Fluyau et al., 2018; Jesse et al., 2017; Pergolizzi et al., 2020). Patients with comorbid medical conditions, patients who use multiple substances, and patients with a history of severe withdrawal symptoms are more likely to experience subsequent medical complications of withdrawal and should always be reviewed medically prior to abrupt changes in substance use. Prior to beginning exposure intervention, the clinician should carefully assess any withdrawal symptoms. If there are severe withdrawal symptoms, exposure interventions should be postponed until withdrawal symptoms have resolved. Similarly, if a patient demonstrates ongoing symptoms of gross intoxication (e.g., impaired speech, attention), exposure interventions should not commence until initial interventions have been successful in managing substance use. Figure 5.2 outlines the decision process regarding substance use during treatment.

Managing Cravings, Urges, and Relapse

Cravings are a common and normal component of SUD, which may have physiological, cognitive, and behavioral components (Skinner & Aubin, 2010). The presence of cravings is expected and should be normalized from the outset of treatment.

Regardless of the direction chosen to manage substance use during treatment, all patients should be provided with psychoeducation on cravings, urges to use, and relapse, along with basic skills they can employ both during and after treatment. The level of focus on these skills will depend on the level of craving and the severity of SUD; however, at a minimum, patients should be provided with basic skills to

manage the behavioral and cognitive symptoms of craving. Behavioral strategies may include controlled breathing, relaxation techniques, visual imagery, or physical activity-based strategies. Cognitive strategies to challenge or defuse from thoughts about using are also helpful. Consideration should be given to high-risk situations for cravings and relapse, which, importantly, may include the experience of anxiety symptoms (Monti et al., 2002; Witkiewitz & Marlatt, 2007). Between sessions, patients should be encouraged to engage in enjoyment or achievement activities that do not involve substance use. Provision of this information in a user-friendly written plan that patients can carry with them as a reminder outside of sessions is useful, and this plan may be adapted as needed as treatment progresses.

Implementing Exposure Interventions

Helping the Patient Prepare for Exposure Sessions

To prepare a patient for exposure therapy, the clinician should begin by providing a clear rationale for exposure therapy and psychoeducation about the interaction between their co-occurring conditions. In general, presenting the rationale and psychoeducational components of exposure therapy for patients with SUD is no different than for those without SUD; however, it is helpful to also provide education about substance use as a method of avoidance or safety behavior. Explore with the patient how their substance use is associated with their anxiety-related symptoms and triggers. For example, clinicians can ask, “*What happens with your substance use when your anxiety gets worse?*” At this point, it is important to explain the impact that intoxication or withdrawal can have on exposure exercises. Patients who use substances during exposure exercises may attribute any success associated with staying in the feared situation (e.g., experiencing a positive social interaction) to the substance rather than their own ability to tolerate the distress, reinforcing perceptions that they can only manage these situations through substance use. Clinicians can explain to patients that substance use before, during, and immediately following exposure exercises may interfere with the learning that would otherwise take place during the exercise.

Clinicians should do their best to anticipate and tune in to indicators that the patient may be hesitant or fearful of engaging in exposure exercises. This fear may present overtly (e.g., a patient does not show up to sessions) or more subtly (e.g., when a patient changes the topic frequently within session). As mentioned earlier, substance use may also be a mechanism of avoidance. Patients may engage in avoidance by increasing the use of their substances, arriving intoxicated, using before completing exposure exercises, or indicating that their substance use prevented them from completing homework. When confronted with these issues, the clinician can engage in empathic, open-ended dialogue to encourage discussion about the fears and expectations the patient may be experiencing. Indeed, discussion of these

concerns is an essential part of exposure therapy because it provides the patient the opportunity to cognitively restructure their fearful thoughts. Such work helps the patient handle moments of anxiety and fear in the future when the clinician is not present. Example statements and questions the clinician may ask are as follows: “*You said your substance use has increased over the past week. Is it possible you are feeling nervous to begin the exposure exercises?*”

The available evidence suggests it is rare for patients to arrive intoxicated. Back et al. (2019) reported that this happened less than 3% of the time in patients undergoing integrated exposure-based treatment for PTSD and SUD. Depending on the level of intoxication, the patient may be allowed to wait until they are no longer intoxicated to commence the session, or the clinician may reschedule the session and help them find a safe way home. It is helpful to normalize anxiety to begin exposure sessions, highlighting that exposure exercises are naturally anxiety-provoking for many patients and that treatment will be most effective when the patient is not intoxicated. The clinician could say, for example, “*It’s very common to feel nervous about beginning exposure exercises—a lot of patients do. I am wondering how we can help you feel more comfortable about beginning these exercises without substances? In time, the exercises will become easier and easier for you.*” It may be helpful to refer to the research findings demonstrating the effectiveness of exposure-based interventions. For example, research has shown that among people with PTSD and SUD, treatments involving exposure therapy appear to be more effective than non-exposure-based treatment (Roberts et al., 2015). Notably, research has shown that in these populations, people who undergo exposure-based treatment for PTSD and SUD experience *less* symptom exacerbation compared to people who receive treatment of substance use alone (Lancaster et al., 2020).

Session Construction

As previously mentioned, treatment should be constructed to address both ARD and SUD simultaneously, and as such, it is important to allow sufficient time in each session to address both issues. Ideally, a 90-minute session will be required, allowing time for review of substance use and craving along with homework tasks, followed by exposure interventions and time for reviewing and processing information from the session and checking in on craving and distress before ending the session.

A unique aspect of exposure therapy among patients with current SUD is planning exposure interventions for the patient to approach feared stimuli without using substances. The clinician must tailor exposure interventions to help the patient approach feared situations but also reduce the risk of relapse or increased substance use. Henslee and Coffey (2010) give the example that a bar may be an objectively safe exposure for most SAD patients, but for a patient with an AUD, it may be a high-risk situation. Accordingly, the patient and clinician work together to initially identify in vivo exposure exercises that activate the target fears but are lower risk in terms of substance use. Alternative in vivo exposures could be that the patient goes

to a store (rather than a bar) or goes to a bar with a friend, partner, or sponsor who will provide support and encouragement in refraining from substance use. The clinician must carefully scaffold the goals related to anxiety and substance use until the patient has greater management of cravings and triggers for use. Although targets for exposure sessions can include substance use triggers, it is sufficient to focus on ARD-related exposure targets to reduce anxiety in SUD populations and still achieve reduced craving and substance use. As such, clinicians should not feel obligated to spend time targeting both conditions with exposure – rather it is typically sufficient for treatment to progress to ARD-related exposure interventions after implementing some SUD-related coping skills and planning.

Targeting Cognitions About the Relationship Between Anxiety and Substance Use

To maximize cognitive change, it is recommended that exposure tasks are devised with a clear purpose and identification of the assumptions or beliefs that will be tested (Rouf et al., 2004). Where possible, this would include targeting beliefs that maintain the interrelationship between anxiety and substance use. There is evidence that people who experience anxiety are more likely to hold positive expectancies about the effects of substances and that these mediate the association between anxiety and substance use (Blumenthal et al., 2015; Buckner et al., 2007). Therefore, using exposure therapy to test the beliefs that maintain this relationship can provide a circuit breaker to disrupt these mutually reinforcing connections. Table 5.1 provides examples of substance-related cognitions in the context of common anxiety presentations, along with suggested exposure tasks.

Post-exposure Plans

A common concern among clinicians implementing exposure therapy with SUD populations is that it will lead to increased substance use following the exposure (Back et al., 2009). Research shows craving does not get very high during imaginal exposure interventions and tends to decrease over additional treatment sessions (Jarnecke et al., 2019). Patients may nonetheless express concerns related to increased cravings or the potential for increased substance use following exposure sessions. Thus, clinicians should work with all patients to create a “post-exposure” plan. First, ensuring adequate time (e.g., 10–15 minutes) to process imaginal exposures or in vivo exposures is essential. In addition to processing, which allows the patient to increase their tolerance of emotional distress and modify unhelpful beliefs and obtain corrective information (Cox et al., 2020), craving may also reduce during this processing component. Second, the patient can be encouraged to implement

Table 5.1 Testing the validity of cognitions underlying the connection between anxiety and substance use

Presentation	Example cognitions	Alternative perspective	Example exposure task
Panic disorder	Benzos keep my panic symptoms under control I need to take some benzos before flying, or I'll have a panic attack and faint	I do not need to control these feelings. Feeling dizzy and light-headed is a normal part of the "fight or flight" reflex when someone is anxious	Take a short flight without benzodiazepines. Allow the symptoms to pass rather than trying to control them
Social anxiety disorder	Alcohol makes me more interesting I won't have anything to say if I am not drinking and people will find me boring	Often, I drink too much and become repetitive rather than interesting I can be interesting when I am not drinking; I'm just a little out of practice	Meet up with a friend, and implement strategies to avoid drinking alcohol. Reflect on objective and observable indicators of success: Was the conversation maintained? Did the friend smile and/or appear interested?
Sleep anxiety	Cannabis helps me to sleep. I won't be able to sleep unless I have a joint	Maybe a joint helps me to get to sleep, but it makes my sleep quality worse	Taper cannabis use, and objectively monitor sleep duration, quality, and alertness the next day
PTSD	I can't tolerate the memories without using	The memories are difficult, but I can cope with them	Abstain from opiates, and implement an alternate coping strategy following prolonged exposure session
GAD	Alcohol helps me forget my worries I need a drink in the evening to help me unwind from the stresses of my day	Drinking relaxes me initially, but I'll end up feeling guilty, stressed, and irritable tomorrow	Avoid or limit alcohol use; implement alternate relaxation methods instead. Monitor stress levels and mood the following day, reflect, and compare to evenings when consumed alcohol

coping strategies (e.g., breathing exercises) to manage any post-exposure distress or craving outside of session, or the clinician can offer to engage in skills with the patient prior to a session of exposure concluding. In addition, clinicians should assist the patient in planning their post-exposure activities, such as pleasant activities or contacting a support person. It is important here to refer back to a written plan and to specifically problem solve managing triggers and high-risk situations. Finally, clinicians may consider setting up a time to call the patient following exposure sessions to check in, assess how the patient has been doing, and remind them of their plans and coping skills.

Common Pitfalls

Stigma and Marginalization

The chronic, relapsing nature of SUD can be intimidating for clinicians, and this can often be amplified by the impact of stigma. People who use substances experience high levels of stigma and prejudice, and clinicians may unknowingly hold false or exaggerated beliefs about substance use (van Boekel et al., 2013; Yang et al., 2017). If a clinician perceives a patient as *not ready to change*, they should carefully consider whether this reflects the patient's actual position or instead reflects mismatched pacing, treatment targets, or goals of therapy.

Another common issue in this population is overlooking the unique social, cultural, gender, racial, and spiritual identities of patients. During assessment, clinicians should ensure they recognize that there may be contextual factors perpetuating substance use or interfering with progress. Substance use issues are more prevalent and more difficult to overcome in marginalized populations, and too often social and cultural barriers can further impede the ability of patients to engage in treatment (Goodman et al., 2017; Martin et al., 2020; Pinedo, 2019). Not all patients have the same opportunities to be treatment-ready, to engage in treatment consistently, or to maintain abstinence (Adams & White, 2007; Lavalley et al., 2020). As such, interventions should be delivered flexibly and treatment adapted to each patient. Each patient's story should be incorporated into the formulation and assessment to identify how treatment may be adapted (either through adjunctive treatment activities or through adjusting treatment goals and targets). A practical approach is to provide the most robust treatment possible in a flexible manner, with due consideration of the patient's input in decision-making. For some patients, the treatment may not align with manualized protocols; however, each positive treatment interaction and each change in symptoms can provide confidence, hope, and a stepping stone to future treatment.

Issues in Managing Substance Use During Treatment

For clinicians not specifically trained in substance use treatment, the impact of substances on treatment can be overwhelming. Issues can include not adequately assessing substance use, not monitoring substance use regularly during treatment, and gradual increases in substance use during treatment.

Patients who do not feel sufficiently safe in the therapeutic relationship may minimize the extent of substance use due to shame or fear of being excluded from treatment. It is also common for clinicians to misjudge the quantity or frequency of substance use and to omit assessment of licit substances. As treatment progresses, it is easy to lose track of substance use. Patients will not always spontaneously report changes in substance use. Part of normalizing lapse involves the regular checking in

around substance use, including monitoring for withdrawal symptoms. Too often clinicians will dispense praise and encouragement when a patient reports abstinence or reductions in substance use without assessing withdrawal symptoms, including increased anxiety. This can lead to a premature termination of treatment or the undisclosed gradual re-introduction of substances to manage withdrawal symptoms.

Brief lapses or a full relapse are a common and normal part of recovery. It is important that lapse and relapse are approached constructively and that a lapse does not result in a sudden termination of treatment. The circumstances surrounding each lapse or relapse should be reviewed, skills and relapse prevention plans updated, and a sense of optimism maintained. It is important to discuss with the patient that continued focus on exposure interventions is needed to ensure progress, even if recent lapses have occurred.

Managing Motivation Issues

In cases where there are persistent barriers to beginning exposure therapy or adjusting substance use, integrating interventions targeting motivation may help. Motivational enhancement therapy (MET; Miller et al., 1999) has multiple advantages for patients with SUD. The clinician conveys empathy and openness to discussing the patient's ambivalence, reflects the patient's internal conflict, elicits and reflects the patient's current motivations for treatment, and helps the patient remember and re-express their values and goals. Through rolling with the patient's resistance and accepting ambivalence, the clinician maintains a therapeutic alliance, demonstrates acceptance, and elicits the patient's own language and phrasing for describing their experiences. This style of clinician-patient interaction has been found to be more effective in eliciting behavioral change than directive or confrontational approaches (White & Miller, 2007).

Summary of Recommendations

As previously mentioned, there is a surprising dearth of studies that specifically examine the impact of using substances during exposure sessions. There is evidence from clinical trials that exposure-based treatments can be effective for comorbid anxiety and SUDs, and do not result in posttreatment increases in substance use (Kushner et al., 2013; Mills et al., 2012; Stapinski et al., 2015). However, we note that these studies did not examine whether patients used substances during the course of treatment. On the basis of the available evidence and theoretical considerations reviewed above, we recommended the following to optimize exposure therapy in this context:

1. Integrated, simultaneous treatment of ARD and SUD is the recommended approach.
2. Given the importance of exposure therapy in achieving therapeutic change for individuals with ARD and evidence that exposure-based treatments do not increase substance use, clinicians and patients should consider implementing exposure interventions, even in cases where there is a fear that exposure may trigger substance use. A graduated approach and careful planning are important for exposure situations that may be high risk or triggers for use.
3. Screen for and explicitly discuss concerns that exposure may trigger craving and substance use. For some anxiety presentations, exposure goals may be strongly linked to triggers for substance use.
4. Explore the consequences of increases in substance use on treatment, and assist patients to plan strategies to minimize or avoid substance use. Exposure hierarchies may include situations in which substance use is normative. In these cases, alternate targets may be required initially, or creative strategies to mitigate the risk may be necessary.
5. Provide psychoeducation about the use of substances as a safety behavior.
6. Abstinence will likely provide the best results; however, substance use should not preclude patients from undertaking exposure interventions. For example, consider the case of a patient who only felt able to attend therapy sessions after consuming two beers. Should they be discouraged from attending due to the potentially interfering effects of alcohol on treatment? Or is it better for them to attend and gain what they can from the sessions? Our view is the latter.
7. Generate a clear plan for patients to follow between sessions – incorporating supports, coping skills, and activity scheduling.
8. Be mindful of the role of stigma and marginalization in impeding treatment gains, and implement protocols in a collaborative and flexible manner with each individual patient.

Common Clinical Presentations

“Jason”¹ – Case Vignette with Treatment Synopsis: SAD and AUD

Presenting Characteristics: Jason was a 27-year-old single man of Eastern European background with stable employment living in Sydney, Australia. Jason met diagnostic criteria for SAD and used alcohol to feel more at ease socially and avoided attending social events sober. He would typically drink a beer before leaving home to “take the edge off.” Jason also met diagnostic criteria for AUD. Scores on screening measures indicated mild dependence, and Jason acknowledged several

¹Clinical case details have been de-identified and amalgamated to ensure patients’ anonymity.

negative consequences from his drinking. Although Jason was motivated to work on his social anxiety, he was ambivalent about abstaining from alcohol indefinitely and was only receptive to a 1-month trial period of abstinence.

Treatment Overview Treatment followed an evidence-based integrated treatment protocol for co-occurring SAD and AUD (Stapinski et al., 2015; Stapinski et al., 2020). This approach is guided by an integrated problem formulation that explicitly conceptualizes the links between social anxiety and alcohol use. The two disorders are addressed simultaneously, with each session integrating CBT skills within an overarching motivational interviewing framework. Jason completed a total of 10 sessions of 90-minute duration.

Sessions 1–4 Initial sessions focused on developing a shared problem formulation, exploring reasons change, and understanding the relationship between social anxiety and alcohol use. Early discussions also explored high-risk situations for alcohol use. Collaborative planning for high-risk situations was conducted weekly, and Jason identified that the most effective coping strategies for him were physical exercise and engaging in daytime social interactions. Using a range of coping strategies, Jason reduced his drinking to twice per month. Cognitive therapy was introduced in Session 4; initially, this focused on Jason's concerns that he appears awkward and has nothing of interest to contribute to conversation.

Sessions 5–8 These sessions focused on skill consolidation and formal introduction of exposure interventions. Exposure hierarchies were developed to reduce avoidance in two key areas: unstructured social gatherings and interacting with women. Exposures were designed to explicitly test the cognitions underlying anxiety in each situation. Psychoeducation was offered about safety behaviors, and alcohol was conceptualized as one of these. Having achieved initial alcohol reduction, Jason was receptive to exposures aimed at increasing his confidence to socialize without alcohol. The function of alcohol in social situations was explored, and Jason identified an underlying expectation that alcohol improves his ability to converse with others. Jason scrutinized this belief and noted it did not align with his past experiences of memory gaps after a night of drinking and worries that he may have said or done something embarrassing.

When conducting exposure practice, Jason was encouraged to notice any evidence contrary to his belief that he would not have anything interesting to say while sober. Jason found this challenging at first, as he was inclined to interpret any pauses in conversation to mean the conversation was uninteresting. Jason was supported to reframe these negative biases, and he sought feedback from trusted friends which provided evidence that some pauses in conversation are normal and not indicative of a dull conversation.

Sessions 9–10 Final sessions focused on continuing change, long-term goal-setting, and relapse prevention. Jason reflected on his achievements over the course of treatment, most notably interacting more with women and attending events

without drinking to excess. Jason reported feeling more comfortable and experiencing fewer negative self-evaluations. By the end of treatment, measures of social anxiety had reduced from the clinical to subclinical or normal. Jason had reduced his drinking to a total of 2–4 standard drinks on 3 occasions in the past month.

Challenges Jason experienced a lapse to daily drinking and subsequently avoided treatment due to shame. Once re-engaged, Jason was able to learn from this experience, and ultimately the lapse increased his self-efficacy given he demonstrated the capacity to regain control over his drinking. Despite significantly reducing his alcohol consumption, Jason continued to drink at binge-drinking levels (>5 standard drinks), which was normative behavior among his peers. This reflects that while information was provided about safe alcohol consumption guidelines, the treatment approach was grounded in a motivational, harm minimization framework, and thus goals were ultimately determined by the patient. Jason was encouraged to foster friendships and interactions that did not revolve around alcohol. However, forming new friendships is a significant challenge for patients with social anxiety, and Jason achieved some success in shifting toward less alcohol-focused interactions.

“Abila”² – Case Vignette with Treatment Synopsis: PTSD and Cannabis Use Disorder

Presenting Characteristics Abila was a 35-year-old woman whose family immigrated from a Middle Eastern country to a Western country early in her childhood. Abila experienced physical and verbal abuse in her childhood, primarily at the hands of her mother. This included severe physical punishment for “making a mess” or inadequately completing household chores. Abila had PTSD, but also a mix of other anxiety symptoms. Her PTSD symptoms included flashbacks, hypervigilance, and avoidance. She additionally experienced many symptoms of OCD, with a strong focus on cleanliness. She began smoking cannabis in her early adolescence and additionally misused opioid-based medications intermittently. Abila met criteria for PTSD and SUD. She presented seeking treatment for her substance use, to which she attributed most of her symptoms and issues.

Treatment Overview Abila’s treatment involved assessment and personalized feedback, psychoeducation, and CBT for her anxiety and trauma symptoms. This included both in vivo and imaginal exposure interventions. She additionally engaged in MET and relapse prevention skills training.

Early Treatment Abila’s initial phase of treatment was protracted. She struggled to attend sessions without being heavily under the influence of substances and had

²Clinical case details have been de-identified and amalgamated to ensure patients’ anonymity.

several aborted attempts at her initial appointment. The initial focus of treatment was conducting a comprehensive assessment of her symptoms gradually and providing psychoeducation regarding the relationship between her substance use and her broader symptoms. She was gradually oriented to the rationale and process for treatment. Abila frequently lapsed and missed appointments early in treatment, with each of these issues being reviewed and problem solved with an optimistic, curious approach. Abila responded very well to this initial psychoeducation, which gave her a sense of understanding and control over her difficulties. Abila initially identified wanting to be abstinent from opioid medications but felt unable to commit to abstinence from cannabis. As such, an initial goal of medical review for her opioid use, along with gradual reduction of her cannabis, was agreed upon. A relapse prevention plan was developed. Abila identified an initial treatment target of reducing her anxiety about cleaning her home. It was agreed that trauma-focused intervention would then be considered.

Exposure Interventions Two key examples of exposure interventions for Abila were in addressing her cleanliness concerns at home and her flashbacks from her PTSD.

Initially, Abila was given psychoeducation regarding exposure interventions, and a hierarchy was developed to address her cleaning related anxiety in her kitchen. This ranged from “Not putting my mug back after using it” which was rated as a 2/10 in difficulty up to “Mopping within 5 minutes, with only a mop and water” which was rated as a 10/10 (Abila was initially undertaking a multistep process for mopping each day). Abila was initially guided through some examples of imaginal exposure to related triggers in session, which helped design at-home tasks and orient her to the process of exposure. She was then given specific in vivo tasks after each session, and a close friend was co-opted to act as a support between sessions. Each intervention was repeated during the week. During the most intense exposure interventions, Abila was seen twice weekly, and each session included a check-in regarding her cannabis use and level of craving. She was able mostly to abstain from using cannabis before her sessions or immediately before or after her exposure activities. She had several lapses but continued to demonstrate reductions in her anxiety-related behaviors and symptoms.

Once adequate progress was made on these symptoms, Abila was ready to move on to exposure interventions directly targeting her trauma symptoms. Skills and strategies were reviewed and consolidated into a revised plan. Abila began using a free smart phone application to practice skills and found this very helpful. Abila was supported to identify her worst event and was guided through 90-minute, bi-weekly sessions of imaginal exposure. Each session commenced with a check-in, review of skills use, and discussion of cravings and substance use. She was then guided through standard imaginal exposure for PTSD. Each session concluded with review and reflection, planning for the week and homework allocation.

Treatment Finalization Abila did not experience any significant relapse during her exposure treatment. Her substance use continued at reduced levels; however, she

was diligent in structuring this use around her sessions and homework tasks. With her anxiety greatly reduced and her trauma symptoms remitting, she felt confident to aim for abstinence. She was supported to incorporate the learning she had developed in treatment into her future goals and new relationships.

Challenges Abila initially presented with severe symptoms, which had precluded her from accessing other services when she previously sought treatment. Her initial treatment was slow and gradual, and far exceeded the typical number of sessions in many manualized treatments. While the general treatment process was the same, her treatment required tailoring to meet her presentation each session and to titrate treatment intensity. Treatment pacing and intensity were therefore adapted to meet her position each session. Initially, Abila struggled to even consider some exposure tasks, so imaginal exposure and opportunistic, brief exposure tasks within sessions were important in gradually building her capacity for these interventions.

References

- Abramowitz, J. S., Deacon, B. J., & Whiteside, S. P. H. (2019). *Exposure therapy for anxiety: Principles and practice* (2nd ed.). The Guildford Press.
- Adams, J., & White, M. (2007). Are the stages of change socioeconomically distributed? A scoping review. *American Journal of Health Promotion, 21*(4), 237–247. <https://doi.org/10.4278/0890-1171-21.4.237>
- Australian Institute for Health and Welfare. (2016). *Australian burden of disease study: Impact and causes of illness and death in aboriginal and Torres Strait islander people 2011*. AIHW.
- Back, S. E., Killeen, T., Badour, C. L., Flanagan, J. C., Allan, N. P., Ana, E. S., ... Brady, K. T. (2019). Concurrent treatment of substance use disorders and PTSD using prolonged exposure: A randomized clinical trial in military veterans. *Addictive Behaviors, 90*, 369–377. <https://doi.org/10.1016/j.addbeh.2018.11.032>
- Back, S. E., Waldrop, A. E., & Brady, K. T. (2009). Treatment challenges associated with comorbid substance use and posttraumatic stress disorder: Clinicians' perspectives. *American Journal on Addictions, 18*(1), 15–20.
- Bahji, A., Stephenson, C., Tyo, R., Hawken, E. R., & Seitz, D. P. (2020). Prevalence of cannabis withdrawal symptoms among people with regular or dependent use of cannabinoids: A systematic review and meta-analysis. *JAMA Network Open, 3*(4), e202370. <https://doi.org/10.1001/jamanetworkopen.2020.2370>
- Barrett, E. L., Deady, M., Kihias, I., & Mills, K. L. (2019). Assessment of substance use disorders in individuals with PTSD. In A. A. Vujanovic & S. E. Back (Eds.), *Posttraumatic stress and substance use disorders*. Routledge.
- Becker, C. B., Zayfert, C., & Anderson, E. (2004). A survey of psychologists' attitudes towards and utilization of exposure therapy for PTSD. *Behavior Research and Therapy, 42*(3), 277–292. [https://doi.org/10.1016/s0005-7967\(03\)00138-4](https://doi.org/10.1016/s0005-7967(03)00138-4)
- Blakey, S. M., & Abramowitz, J. S. (2016). The effects of safety behaviors during exposure therapy for anxiety: Critical analysis from an inhibitory learning perspective. *Clinical Psychology Review, 49*, 1–15. <https://doi.org/10.1016/j.cpr.2016.07.002>
- Blumenthal, H., Leen-Feldner, E. W., Knapp, A. A., Badour, C. L., & Boals, A. (2015). Traumatic event exposure and alcohol use expectancies among adolescents. *Journal of Child & Adolescent Substance Abuse, 24*(6), 337–343. <https://doi.org/10.1080/1067828X.2013.839407>

- Buckner, J. D., Bonn-Miller, M. O., Zvolensky, M. J., & Schmidt, N. B. (2007). Marijuana use motives and social anxiety among marijuana-using young adults. *Addictive Behaviors*, *32*(10), 2238–2252. <https://doi.org/10.1016/j.addbeh.2007.04.004>
- Collins, S. E. (2016). Associations between socioeconomic factors and alcohol outcomes. *Alcohol Research: Current Reviews*, *38*(1), 83–94.
- Conway, K. P., Compton, W., Stinson, F. S., & Grant, B. F. (2006). Lifetime comorbidity of DSM-IV mood and anxiety disorders and specific drug use disorders: Results from the National Epidemiologic Survey on alcohol and related conditions. *Journal of Clinical Psychiatry*, *67*(2), 247–257.
- Cox, K. S., Wangelin, B. C., Keller, S. M., Lozano, B. E., Murphy, M. M., Maher, E. K., ... Tuerk, P. W. (2020). Emotional processing of imaginal exposures predicts symptom improvement: Therapist ratings can assess trajectory in prolonged exposure for posttraumatic stress disorder. *Journal of Traumatic Stress*, *33*(3), 338–344. <https://doi.org/10.1002/jts.22493>
- Degenhardt, L., Bharat, C., Glantz, M. D., Sampson, N. A., Scott, K., Lim, C. C., ... Bromet, E. J. (2019). The epidemiology of drug use disorders cross-nationally: Findings from the WHO's world mental health surveys. *International Journal of Drug Policy*, *71*, 103–112.
- Embersin-Kyprianou, C., Yermachenko, A., Massari, V., El-Khoury-Lesueur, F., & Melchior, M. (2020). Unintended pregnancies, sexual violence and contraception among women consuming cannabis or other illegal psychoactive substances in Île-de-France: Data from the 2016 health barometer. *Revue d'Épidémiologie et de Santé Publique*, *68*(1), 9–15.
- Fals-Stewart, W., & Schafer, J. (1992). The treatment of substance abusers diagnosed with obsessive compulsive disorder: An outcome study. *Journal of Substance Abuse Treatment*, *9*, 365–370.
- Fluyau, D., Revadigar, N., & Manobianco, B. E. (2018). Challenges of the pharmacological management of benzodiazepine withdrawal, dependence, and discontinuation. *Therapeutic Advances in Psychopharmacology*, *8*(5), 147–168. <https://doi.org/10.1177/2045125317753340>
- Gielen, N., Krumeich, A., Havermans, R. C., Smeets, F., & Jansen, A. (2014). Why clinicians do not implement integrated treatment for comorbid substance use disorder and posttraumatic stress disorder: A qualitative study. *European Journal of Psychotraumatology*, *5*(1), 22821.
- Goetz, A. R., Davine, T. P., Siwiec, S. G., & Lee, H.-J. (2016). The functional value of preventive and restorative safety behaviors: A systematic review of the literature. *Clinical Psychology Review*, *44*, 112–124. <https://doi.org/10.1016/j.cpr.2015.12.005>
- Goodman, A., Fleming, K., Markwick, N., Morrison, T., Lagimodiere, L., & Kerr, T. (2017). “They treated me like crap and I know it was because I was native”: The healthcare experiences of aboriginal peoples living in Vancouver’s inner city. *Social Science & Medicine*, *178*, 87–94. <https://doi.org/10.1016/j.socscimed.2017.01.053>
- Hartwell, K. J., Back, S. E., McRae-Clark, A. L., Shaftman, S. R., & Brady, K. T. (2012). Motives for using: A comparison of prescription opioid, marijuana and cocaine dependent individuals. *Addictive Behaviors*, *37*(4), 373–378. <https://doi.org/10.1016/j.addbeh.2011.11.014>
- Henslee, A. M., & Coffey, S. F. (2010). Exposure therapy for posttraumatic stress disorder in a residential substance use treatment facility. *Professional Psychology: Research and Practice*, *41*(1), 34–40. <https://doi.org/10.1037/a0018235>
- Hien, D. A., Jiang, H., Campbell, A. N., Hu, M. C., Miele, G. M., Cohen, L. R., ... Nunes, E. V. (2010). Do treatment improvements in PTSD severity affect substance use outcomes? A secondary analysis from a randomized clinical trial in NIDA’s clinical trials network. *American Journal of Psychiatry*, *167*(1), 95–101. <https://doi.org/10.1176/appi.ajp.2009.09091261>
- Jarnecke, A. M., Allan, N. P., Badour, C. L., Flanagan, J. C., Killeen, T. K., & Back, S. E. (2019). Substance use disorders and PTSD: Examining substance use, PTSD symptoms, and drop-out following imaginal exposure. *Addictive Behaviors*, *90*, 35–39. <https://doi.org/10.1016/j.addbeh.2018.10.020>
- Jesse, S., Brathen, G., Ferrara, M., Keindl, M., Ben-Menachem, E., Tanasescu, R., ... Ludolph, A. C. (2017). Alcohol withdrawal syndrome: Mechanisms, manifestations, and management. *Acta Neurologica Scandinavica*, *135*(1), 4–16. <https://doi.org/10.1111/ane.12671>
- Kayser, R. R., Raskin, M., Snorrason, I., Hezel, D. M., Haney, M., & Simpson, H. B. (2020). Cannabinoid augmentation of exposure-based psychotherapy for obsessive-compulsive dis-

- order. *Journal of Clinical Psychopharmacology*, 40(2), 207–210. <https://doi.org/10.1097/jcp.0000000000001179>
- Kingston, R. E. F., Marel, C., & Mills, K. L. (2017). A systematic review of the prevalence of comorbid mental health disorders in people presenting for substance use treatment in Australia. *Drug and Alcohol Review*, 36, 527–539. <https://doi.org/10.1111/dar.12448>
- Kushner, M. G., Maurer, E. W., Thuras, P., Donahue, C., Frye, B., Menary, K. R., ... Van Demark, J. (2013). Hybrid cognitive behavioral therapy versus relaxation training for co-occurring anxiety and alcohol disorder: A randomized clinical trial. *Journal of Consulting and Clinical Psychology*, 81(3), 429–442.
- Kushner, M. G., Sletten, S., Donahue, C., Thuras, P., Maurer, E., Schneider, A., Frye, B., & Van Demark, J. (2009). Cognitive-behavioral therapy for panic disorder in patients being treated for alcohol dependence: Moderating effects of alcohol outcome expectancies. *Addictive Behaviors*, 34(6–7), 554–560. <https://doi.org/10.1016/j.addbeh.2009.03.011>
- Lancaster, C. L., Gros, D. F., Mullarkey, M. C., Badour, C. L., Killeen, T. K., Brady, K. T., & Back, S. E. (2020). Does trauma-focused exposure therapy exacerbate symptoms among patients with comorbid PTSD and substance use disorders? *Behavioral and Cognitive Psychotherapy*, 48(1), 38–53. <https://doi.org/10.1017/s1352465819000304>
- Lavalley, J., Kastor, S., Tourangeau, M., Goodman, A., & Kerr, T. (2020). You just have to have other models, our DNA is different: The experiences of indigenous people who use illicit drugs and/or alcohol accessing substance use treatment. *Harm Reduction Journal*, 17(1), 19. <https://doi.org/10.1186/s12954-020-00366-3>
- Marel, C., Mills, K., Kingston, R., Gournay, K., Deady, M., Kay-Lambkin, F., Baker, A., & Teesson, M. (2016). *Guidelines on the management of co-occurring alcohol and other drug and mental health conditions in alcohol and other drug treatment settings* (2nd ed.). Centre of Research Excellence in Mental Health and Substance Use, National Drug and Alcohol Research Centre, University of New South Wales.
- Martin, C. E., Scialli, A., & Terplan, M. (2020). Unmet substance use disorder treatment need among reproductive age women. *Drug and Alcohol Dependence*, 206, 107679. <https://doi.org/10.1016/j.drugalcdep.2019.107679>
- McGregor, C., Srisurapanont, M., Jittiwitikarn, J., Laobhripatr, S., Wongtan, T., & White, J. M. (2005). The nature, time course and severity of methamphetamine withdrawal. *Addiction*, 100(9), 1320–1329. <https://doi.org/10.1111/j.1360-0443.2005.01160.x>
- McHugh, R. K. (2015). Treatment of co-occurring anxiety disorders and substance use disorders. *Harvard Review of Psychiatry*, 23(2), 99–111. <https://doi.org/10.1097/HRP.000000000000058>
- Meulders, A., Van Daele, T., Volders, S., & Vlaeyen, J. W. (2016). The use of safety-seeking behavior in exposure-based treatments for fear and anxiety: Benefit or burden? A meta-analytic review. *Clinical Psychology Review*, 45, 144–156. <https://doi.org/10.1016/j.cpr.2016.02.002>
- Miller, W. R., Zweben, A., DiClemente, C. C., & Rychtarik, R. G. (1999). *Motivational enhancement therapy manual: A clinical research guide for therapists treating individuals with alcohol abuse and dependence*. National Institute on Alcohol Abuse and Alcoholism.
- Mills, K. L., Barrett, E. L., Merz, S., Rosenfeld, J., Ewer, P. L., Sannibale, C., ... Teesson, M. (2016). Integrated exposure-based therapy for co-occurring post traumatic stress disorder (PTSD) and substance dependence: Predictors of change in PTSD symptom severity. *Journal of Clinical Medicine*, 5(11). <https://doi.org/10.3390/jcm5110101>
- Mills, K. L., Teesson, M., Back, S. E., Brady, K. T., Baker, A. L., Hopwood, S., ... Ewer, P. L. (2012). Integrated exposure-based therapy for co-occurring posttraumatic stress disorder and substance dependence: A randomized controlled trial. *JAMA*, 308(7), 690–699. <https://doi.org/10.1001/jama.2012.9071>
- Monti, P. M., Kadden, R. M., Rohsenow, D. J., Cooney, N. L., & Abrams, D. B. (2002). *Treating alcohol dependence: A coping skills training guide* (2nd ed.). Guilford Press.
- Morissette, S. B., Spiegel, D. A., & Barlow, D. H. (2008). Combining exposure and pharmacotherapy in the treatment of social anxiety disorder: A preliminary study of state dependent learning. *Journal of Psychopathology and Behavioral Assessment*, 30(3), 211–219. <https://doi.org/10.1007/s10862-007-9061-1>

- Morley, K. C., Baillie, A., Leung, S., Sannibale, C., Teesson, M., & Haber, P. S. (2016). Is specialized integrated treatment for comorbid anxiety, depression and alcohol dependence better than treatment as usual in a public hospital setting? *Alcohol and Alcoholism*, *51*, 402–409.
- NIDA. (2020a, May 28). *Part 1: The connection between substance use disorders and mental illness*. Retrieved from <https://www.drugabuse.gov/publications/research-reports/common-comorbidities-substance-use-disorders/part-1-connection-between-substance-use-disorders-mental-illness>
- NIDA. (2020b, May 28). *Sex and gender differences in substance use disorder treatment*. Retrieved from <https://www.drugabuse.gov/publications/research-reports/substance-use-in-women/sex-gender-differences-in-substance-use-disorder-treatment>.
- Oluwoye, O., Kriegel, L. S., Alcover, K. C., Hirchak, K., & Amiri, S. (2020). Racial and ethnic differences in alcohol-, opioid-, and co-use-related deaths in Washington state from 2011 to 2017. *Addictive Behaviors Reports*, *12*, 100–316. <https://doi.org/10.1016/j.abrep.2020.100316>
- Pergolizzi, J. V., Jr., Raffa, R. B., & Rosenblatt, M. H. (2020). Opioid withdrawal symptoms, a consequence of chronic opioid use and opioid use disorder: Current understanding and approaches to management. *Journal of Clinical Pharmacy and Therapeutics*. <https://doi.org/10.1111/jcpt.13114>
- Peters, J., Kalivas, P. W., & Quirk, G. J. (2009). Extinction circuits for fear and addiction overlap in prefrontal cortex. *Learning & Memory*, *16*(5), 279–288. <https://doi.org/10.1101/lm.1041309>
- Pinedo, M. (2019). A current re-examination of racial/ethnic disparities in the use of substance abuse treatment: Do disparities persist? *Drug & Alcohol Dependence*, *202*, 162–167. <https://doi.org/10.1016/j.drugalcdep.2019.05.017>
- Randall, C. L., Thomas, S., & Thevos, A. K. (2001). Concurrent alcoholism and social anxiety disorder: A first step toward developing effective treatments. *Alcoholism, Clinical and Experimental Research*, *25*(2), 210–220.
- Ritchie, H. (2018). *Alcohol consumption*. Retrieved from: <https://ourworldindata.org/alcohol-consumption>.
- Roberts, N. P., Roberts, P. A., Jones, N., & Bisson, J. I. (2015). Psychological interventions for post-traumatic stress disorder and comorbid substance use disorder: A systematic review and meta-analysis. *Clinical Psychology Review*, *38*, 25–38. <https://doi.org/10.1016/j.cpr.2015.02.007>
- Rosen, C. S., Greenbaum, M. A., Schnurr, P. P., Holmes, T. H., Brennan, P. L., & Friedman, M. J. (2013). Do benzodiazepines reduce the effectiveness of exposure therapy for post-traumatic stress disorder? *Journal of Clinical Psychiatry*, *74*(12), 1241–1248. <https://doi.org/10.4088/JCP.13m08592>
- Rouf, K., Fennell, M., Westbrook, D., Cooper, M., & Bennett-Levy, J. (2004). Devising effective behavioural experiments. In J. Bennett-Levy, G. Butler, M. Fennell, A. Hackman, M. Mueller, & D. Westbrook (Eds.), *Cognitive behaviour therapy: Science and practice series. Oxford guide to behavioural experiments in cognitive therapy* (pp. 21–58). Oxford University Press. <https://doi.org/10.1093/med:psych/9780198529163.003.0002>
- Ruglass, L. M., Lopez-Castro, T., Cheref, S., Papini, S., & Hien, D. A. (2014). At the crossroads: The intersection of substance use disorders, anxiety disorders, and posttraumatic stress disorder. *Current Psychiatry Reports*, *16*(11), 505. <https://doi.org/10.1007/s11920-014-0505-5>
- Skinner, M. D., & Aubin, H. J. (2010). Craving's place in addiction theory: Contributions of the major models. *Neuroscience and Biobehavioral Reviews*, *34*(4), 606–623. <https://doi.org/10.1016/j.neubiorev.2009.11.024>
- Smith, J. P., & Randall, C. L. (2012). Anxiety and alcohol use disorders: Comorbidity and treatment considerations. *Alcohol Research: Current Reviews*, *34*(4), 414–431.
- Spiegel, D. A., & Bruce, T. J. (1997). Benzodiazepines and exposure-based cognitive behavior therapies for panic disorder: Conclusions from combined treatment trials. *American Journal of Psychiatry*, *154*(6), 773–781. <https://doi.org/10.1176/ajp.154.6.773>
- Stapinski, L. A., Rapee, R. M., Sannibale, C., Teesson, M., Haber, P. S., & Baillie, A. J. (2015). The clinical and theoretical basis for integrated cognitive behavioral treatment of comorbid social anxiety and alcohol use disorders. *Cognitive and Behavioral Practice*, *22*(4), 504–521.

- Stapinski, L. A., Sannibale, C., Subotic, M., Rapee, R. M., Teesson, M., Haber, P. S., & Baillie, A. J. (2020). Randomised controlled trial of integrated cognitive behavioural treatment and motivational enhancement for comorbid social anxiety and alcohol use disorders. *Australian and New Zealand Journal of Psychiatry*, *48*(7), 4209–4253. <https://doi.org/10.1177/0004867420952539>
- Stewart, S. H., Grant, V. V., Mackie, C. J., & Conrod, P. J. (2016). Comorbidity of anxiety and depression with substance use disorders. In K. J. Sher (Ed.), *The Oxford handbook of substance use and substance use disorders* (Vol. 2, pp. 149–186). Oxford University Press.
- Tirado-Muñoz, J., Gilchrist, G., Fischer, G., Taylor, A., Moskalewicz, J., Giammarchi, C., ... Di Furia, L. (2018). Psychiatric comorbidity and intimate partner violence among women who inject drugs in Europe: A cross-sectional study. *Archives of Women's Mental Health*, *21*(3), 259–269.
- Tripp, J. C., Worley, M. J., Straus, E., Angkaw, A. C., Trim, R. S., & Norman, S. B. (2020). Bidirectional relationship of posttraumatic stress disorder (PTSD) symptom severity and alcohol use over the course of integrated treatment. *Psychology of Addictive Behaviors*, *34*(4), 506–511. <https://doi.org/10.1037/adb0000564>
- United Nations Office on Drugs and Crime. (2018). *World drug report 2018*. United Nations.
- United Nations Office on Drugs and Crime (2020). *World Drug Report 2020*. Vienna: United Nations.
- van Boekel, L. C., Brouwers, E. P., van Weeghel, J., & Garretsen, H. F. (2013). Stigma among health professionals towards patients with substance use disorders and its consequences for healthcare delivery: Systematic review. *Drug & Alcohol Dependence*, *131*(1–2), 23–35. <https://doi.org/10.1016/j.drugalcdep.2013.02.018>
- van Dam, D., Vedel, E., Ehring, T., & Emmelkamp, P. M. G. (2012). Psychological treatments for concurrent posttraumatic stress disorder and substance use disorder: A systematic review. *Clinical Psychology Review*, *32*, 202–214. <https://doi.org/10.1016/j.cpr.2012.01.004>
- van Minnen, A., Arntz, A., & Keijsers, G. P. J. (2002). Prolonged exposure in patients with chronic PTSD: Predictors of treatment outcome and dropout. *Behavior Research and Therapy*, *40*(4), 439–457. [https://doi.org/10.1016/S0005-7967\(01\)00024-9](https://doi.org/10.1016/S0005-7967(01)00024-9)
- van Minnen, A., Harned, M. S., Zoellner, L., & Mills, K. (2012). Examining potential contraindications for prolonged exposure therapy for PTSD. *European Journal of Psychotraumatology*, *3*. <https://doi.org/10.3402/ejpt.v3i0.18805>
- Walmsley, R. (2017). *World female imprisonment list* (4th ed.) Retrieved from: https://www.prisonstudies.org/sites/default/files/resources/downloads/world_female_prison_4th_edn_v4_web.pdf
- Watanabe, N., Churchill, R., & Furukawa, T. A. (2007). Combination of psychotherapy and benzodiazepines versus either therapy alone for panic disorder: A systematic review. *BMC Psychiatry*, *7*, 18. <https://doi.org/10.1186/1471-244X-7-18>
- White, W., & Miller, W. (2007). The use of confrontation in addiction treatment: History, science and time for change. *Counselor*, *8*(4), 12–30.
- Witkiewitz, K. A., & Marlatt, G. A. (Eds.). (2007). *Therapist's guide to evidence-based relapse prevention*. Elsevier Academic Press.
- Wixted, J. T. (2004). The psychology and neuroscience of forgetting. *Annual Review of Psychology*, *55*, 235–269. <https://doi.org/10.1146/annurev.psych.55.090902.141555>
- Wolitzky-Taylor, K., Operskalski, J. T., Ries, R., Craske, M. G., & Roy-Byrne, P. (2011). Understanding and treating comorbid anxiety disorders in substance users: Review and future directions. *Journal of Addiction Medicine*, *5*(4), 233–247.
- World Health Organization. (2018). *Global status report on alcohol and health 2018*. World Health Organisation.
- Yang, L. H., Wong, L. Y., Grivel, M. M., & Hasin, D. S. (2017). Stigma and substance use disorders: An international phenomenon. *Current Opinion in Psychiatry*, *30*(5), 378–388. <https://doi.org/10.1097/YCO.0000000000000351>

Chapter 6

Exposure Therapy for Anxiety and Obsessive-Compulsive Disorders Among Individuals with Autism Spectrum Disorder



Lindsey N. Landry, Rebecca J. Clayton, Morgan M. Mcneel, Andrew Guzick, Leandra N. Berry, Sophie C. Schneider, and Eric A. Storch

Abstract Individuals with autism spectrum disorder (ASD) frequently present with comorbid anxiety and obsessive-compulsive disorders (OCD), which leads to elevated levels of impairment and unique treatment challenges. There is strong evidence that exposure therapy, with some modifications, is an effective treatment for individuals with ASD and comorbid anxiety and OCD. Core symptoms associated with ASD (i.e., social skills deficits, rigidity and resistance to change, and sensory sensitivities) present unique treatment challenges that make individualized and modified exposure therapies an ideal treatment approach for these individuals. Recommended modifications when treating patients with ASD and comorbid anxiety or OCD include involving parents and other caregivers in sessions, using contingency reward systems, and utilizing teaching strategies such as prompting, modeling, and visual aids. Treatment planning recommendations and case examples are provided.

Keywords Exposure therapy · Anxiety · Autism spectrum disorder · Cognitive behavioral therapy · Obsessive-compulsive disorder

L. N. Landry · R. J. Clayton · M. M. Mcneel · A. Guzick · S. C. Schneider · E. A. Storch (✉)
Department of Psychiatry and Behavioral Sciences, Baylor College of Medicine,
Houston, TX, USA
e-mail: lindsey.landry@bcm.edu; Morgan.McNeel@bcm.edu; guzick@bcm.edu; Sophie.Schneider@bcm.edu; Eric.Storch@bcm.edu

L. N. Berry
Department of Pediatrics, Baylor College of Medicine/Texas Children's Hospital,
Houston, TX, USA
e-mail: lnberry@texaschildrens.org

Introduction to Autism Spectrum Disorder and Anxiety

Autism spectrum disorder (ASD) is a neurodevelopmental disorder defined by (a) weaknesses in social communication and social interactions across settings and (b) restrictive, repetitive patterns of behavior, interests, or activities. Individuals with ASD experience difficulties with social-emotional reciprocity, nonverbal communication, and establishing and understanding relationships. Additionally, stereotyped or repetitive movements or speech, inflexibility in routines, preoccupation with certain objects or perseverative interests, ritualized verbal or nonverbal behavior, and sensitivity or reactivity to sensory input are common symptoms of ASD. In order to meet criteria for ASD, individuals must display symptoms in the early developmental period that cause clinically significant impairment in functioning (*American Psychiatric Association, 2013*).

Approximately 1.85% of children in the United States are diagnosed with ASD; males are four times more likely to be diagnosed than females (Maenner et al., 2020). Individuals with ASD experience high rates of anxiety and obsessive-compulsive disorders (OCD), with approximately 40% of children and 42% of adults with ASD also diagnosed with at least one anxiety disorder (Hollocks et al., 2019; Van Steensel et al., 2011). Given that OCD was previously considered an anxiety disorder and anxiety and OCD have shared symptoms and significant commonalities in treatment, exposure treatment for comorbid anxiety discussed in this chapter also includes OCD. Common comorbid anxiety disorders include generalized anxiety disorder (15–35% in children and 26% in adults), social anxiety (17–30% in children and 20% in adults), specific phobia (30–44% in children and 31% in adults), separation anxiety disorder (9–38% in children and 21% in adults), panic disorder (2% in children and 18% in adults), and OCD (17–30% in children and 22% in adults) (Van Steensel et al., 2011; White et al., 2009).

Individuals with ASD and comorbid anxiety experience elevated levels of impairment compared to individuals without comorbid anxiety (Ung et al., 2013; White et al., 2009). Anxiety often exacerbates ASD symptoms – for example, it can increase social avoidance, behavior problems, and speech and language difficulties (Wood & Gadow, 2010). Moreover, children with ASD and anxiety engage in more self-injurious behaviors, experience more emotion regulation difficulties, have more disturbances in family functioning, and demonstrate more disruptive and noncompliant behavior at school (Cervantes et al., 2013; Gotham et al., 2015; Kerns et al., 2015; Montes & Halterman, 2006). Adults with ASD and anxiety report experiencing decreased social and life satisfaction (Gotham et al., 2015). While treatments targeting anxiety in individuals with ASD continue to be investigated (Vasa et al., 2016), there is evidence that exposure-based cognitive behavioral therapy (CBT) meets criteria for a probably efficacious treatment for individuals with ASD and comorbid anxiety (Hunsche & Kerns, 2019). Notably, this status may require upgrading following publication of Wood et al. (2020). However, research studies typically only include high-functioning individuals with ASD, so it is unclear to what extent research in this area applies to those at lower levels of functioning.

Important Considerations

Individuals with ASD and comorbid anxiety face unique treatment challenges due to core symptoms associated with ASD. For example, they exhibit social skills deficits (e.g., difficulties with social reciprocity), which may affect the time and effort required for rapport building during treatment (Kerns et al., 2016) and require modifications for the treatment of social anxiety disorder. Also, symptoms of rigidity, resistance to change, and generally more limited verbal skills may limit their ability to challenge anxious thoughts and develop coping thoughts through cognitive restructuring – a common component of anxiety treatment in typically developing individuals. Because of these challenges, placing more emphasis on behavioral components, such as exposure, may be more effective for addressing symptoms of anxiety among individuals with ASD (Ryan et al., 2017). Additionally, sensory symptoms present in ASD can inflate anxiety levels, so changes to the environment may be warranted such as using soft lighting and minimizing noise (Ryan et al., 2017). For example, an individual with ASD who has noise sensitivities and social anxiety may feel especially anxious in a loud, social environment, such as a party with loud music. Lastly, some ASD symptoms may overlap with anxiety symptoms, which may complicate assessment/differential diagnosis, as well as treatment targets and goals (Nadeau et al., 2011). For example, repetitive behaviors (e.g., counting, repeating, checking, etc.) are core ASD symptoms but are also present in OCD and anxiety disorders. In order to effectively inform treatment goals, you should determine whether overlapping symptoms are explained by ASD or are a function of a comorbid anxiety disorder through clinical interviewing and/or functional behavioral assessment (FBA), which may better elucidate why an individual engages in these behaviors (Vasa et al., 2016). For example, an individual who counts cars while driving may do so due to an interest in cars (i.e., restricted interests in ASD) or because he or she wants to check that they will not crash into them (i.e., a harm-preventing compulsion in OCD).

Deviation from Typical Exposure Therapy Protocol

When treating anxiety in individuals with ASD, you should consider modifying typical exposure protocols in order to meet each individual's needs. Modifications that have shown to improve efficacy of treatment of anxiety in individuals with ASD include involving parents and other caregivers in sessions, creating contingency reward systems, and using communication and teaching strategies that are helpful for people with ASD (Wood et al., 2020).

Caregiver Involvement

It is highly beneficial to involve family members or other supportive individuals (e.g., significant others) in the treatment of anxiety for individuals with ASD. The level of support needed from the family member can inform how much they are involved in the treatment. Because they likely play a large role in the patient's daily life, family members play an integral part of the patient's reduction in anxious behaviors by learning how to respond to the patient's anxiety (i.e., reduce family accommodation), providing additional information and support during sessions, and leading or encouraging exposures at home.

Parenting practices that contribute to the maintenance of the patient's anxiety cannot be overlooked (Ginsburg et al., 2004). Involving parents and other supportive individuals in treatment allows you to obtain more information on the functional relationship of the patient's anxious behaviors and how the loved one's behaviors are reinforcing, maintaining, or accommodating for the anxious behaviors. It is common for family members to provide reassurance and accommodations in order to help with anxiety reduction, which unintentionally allows for the persistence of anxious behaviors (Abramowitz et al., 2019). Family members may accommodate anxiety-related behaviors by allowing escape from anxious situations, facilitating avoidance behaviors, engaging in rituals, and/or assuming responsibilities, which decrease the likelihood of patient remission by the end of treatment (e.g., Salloum et al., 2018; Storch et al., 2008). Indeed, these phenomena are common among families of children with ASD and anxiety (Feldman et al., 2019; Frank et al., 2020; Storch et al., 2015a, b), just as they are a nearly universal phenomena for those without ASD (Storch et al., 2008).

Given the likelihood of loved ones inadvertently reinforcing or accommodating anxious behaviors, they should receive psychoeducation on behavior management principles relevant to anxiety and consultation regarding changing current reinforcement and accommodation practices. Psychoeducation and consultation should include describing common reinforcement and accommodation patterns, explaining their role in anxiety reinforcement, and helping family members identify any current practices that may be maintaining the patient's anxious behaviors. It is helpful to normalize the accommodation of anxious behaviors in order not to place blame on family members and to avoid rupturing your therapeutic relationship with the family members. For example, a family member who constantly reassures an individual with ASD and comorbid anxiety may realize how this attention increases the extent of anxious behaviors, and therefore, you can help the family member create a plan to reduce the frequency of reassurance of anxious behaviors while maintaining a supportive relationship. Involving family members in in-session exposure can be helpful to this end. You should provide ongoing consultation to help caregivers problem solve how to change current practices and the environment at home that may be reinforcing the patient's anxiety. Given that changes in routine or the environment may be overwhelming for individuals with ASD, consultation with the family should include planning how to implement the necessary changes in order to

ease potential dysregulation for the individual (i.e., providing visual schedules, setting timers, giving warnings and prompts).

Another reason to implement family-based exposure approaches is to reduce the treatment responsibility placed solely on the patient by encouraging additional family or caregiver support. During your sessions, you may choose to include family members for all or part of the session, depending on the developmental level and preferences of the patient. Patients at lower levels of functioning would benefit greatly from having a caregiver present for the duration of the session, while it may be more appropriate for parents, family, or other caregivers to only be present for part of the session with higher functioning or adult patients. Additionally, it is important to consider the communication abilities of your patient when determining how much to involve the family in treatment. Communication abilities, whether written or verbal, are particularly important when identifying top anxiety problems, generating the exposure hierarchy, and monitoring distress during exposures. Given the communication difficulties associated with ASD, some patients with ASD may have difficulty communicating what situations are anxiety-inducing and/or their distress during exposure tasks. Caregivers can provide you with additional insight on the targets of treatment, assist in developing an exposure hierarchy with appropriate progression for the patient, and develop an effective communication plan during exposures.

Finally, family members can assist patients in identifying reasonable at-home exposure tasks, provide the structure needed at home to complete these assignments, and serve as a coach for exposures in order to increase generalizability of skills. As you begin completing in-session exposures, parents or other caregivers involved can learn the steps to complete exposures at home such as when to end an exposure and when to attempt the next step of the hierarchy. Additionally, you can co-create, along with the patient and caregiver, a specific plan for when and where the at-home exposure will take place and potential rewards that can be provided for exposure participation (as described more in the Contingent Reinforcement section). Incorporating exposures in the patient's daily routine helps enhance and generalize the coping skills learned in therapy sessions beyond the therapy session where behavioral improvements are needed, at school and at home (Wood et al., 2009).

Overall, family members, partners, and caregivers of individuals with ASD play a large role in their daily routines and activities, and patients whose family members are involved in treatment have a greater reduction in anxiety symptoms compared to patients who do not have such support (Salloum et al., 2018; Storch et al., 2020). However, you must consider the patient's level of functioning, age, and wishes when determining how much caregiver involvement in treatment may be beneficial for treatment success. You must balance the potential benefits of including another individual in treatment while respecting the patient's autonomy and considering if there is any risk of negative impacts on treatment progress, such as if the additional person would not be a positive influence in therapy. Even adults with ASD may have difficulty completing aspects of the treatment alone, and they may prefer the support provided by a parent, spouse, roommate, or other caregivers. Finally, having

parents or caregivers involved in sessions allows you to provide consultation on contingent reinforcement for the patient's attempts to complete the steps of the fear hierarchy, which is another important modification when working with individuals with ASD.

Contingent Reinforcement

When working with patients with ASD and anxiety, it is important to consider treatment practices – such as contingent reinforcement – that increase their motivation to attempt anxiety-provoking exposure tasks (Abramowitz, 2013). Contingent reinforcement involves providing positive reinforcement (e.g., rewards) for attempting exposure tasks in order to increase the likelihood that individuals will attempt exposures in the future (Pittig et al., 2018). Rewarding patients based on their efforts to face their fears and demonstrate brave behavior motivates them to continue to face their fears (Pittig & Dehler, 2019). For example, consider an 8-year-old boy with ASD who is scared of dogs. If he demonstrates brave behavior by entering the same room as a dog, his caregivers could reward him with praise or a sticker to be “cashed” in for a later consumable reward. The reward would increase his motivation to demonstrate brave behaviors and increase the likelihood he would approach dogs in the future.

There are a few points to consider when using contingent reinforcement in exposure therapy. First, there are different types of rewards: tangible (physical/material rewards) and intangible (nonmaterial). Tangible rewards include money, toys, food, stickers, etc. Intangible rewards include affection (e.g., hugs, high fives, smiles, etc.), praise and attention (e.g., clearly and specifically acknowledging the individual's attempt to demonstrate brave behavior), and time (e.g., extra time doing a preferred activity, later bedtime, etc.; Kazdin, 2013). Clinicians should work with patients to choose rewards based on their preferences (Lee et al., 2010). If patients are not interested in the reward or the reward is not meaningful to them, the reward will not motivate them to demonstrate brave behaviors in the future. This is especially important for individuals with ASD who often demonstrate restricted interests (Danial & Wood, 2013). Therefore, systematic preference assessments, which assist in the identification of preferred items and rewards, might be beneficial to use (Hagopian et al., 2004). Systematic preference assessments can be conducted by (a) interviewing caregivers and/or patients about their preferences, (b) observing the preferences of the patient in a free-choice context (e.g., allowing the patient to identify preferences from a list of rewards), or (c) utilizing structured assessments (Karsten et al., 2011). Furthermore, therapists can strategically use the patient's special interests in the context of therapy in order to build rapport and increase engagement and participation. One way to strategically include special interests into the exposure therapy session is to use special interest conversations or activities as a reward for completing exposure tasks.

When using contingent reinforcement, it is also important to deliver rewards immediately or as soon as possible after the attempt of a hierarchy step (Piazza et al., 2011). This strengthens the association between the reward and the brave behavior and increases the individual's trust that they will receive a reward when attempting hierarchy steps in the future. Rewards should also be varied to maintain their value and effectiveness (Wine & Wilder, 2009). If patients receive the same reward every time they attempt brave behaviors, the reward might lose its importance and effectiveness. Lastly, access to the rewards should be exclusively dependent on patients attempting the exposures (Piazza et al., 2011). Patients are more likely to engage in brave behaviors if the rewards are solely contingent on them attempting brave behavior. Consider, for example, an adolescent who identifies playing video games as a reward. If she has unlimited access to video games regardless of attempting exposure steps, she will not be motivated by video games to complete the steps of her hierarchy. Overall, you should provide psychoeducation on the importance of contingent reinforcement, model consistency in implementing this system during in-session exposures, and consult with patients and caregivers in order to identify a reinforcement plan specifically for completing each exposure task.

Teaching Strategies

Given the known social communication and behavioral challenges in individuals with ASD, additional components may be required to facilitate engagement, and subsequently progress, with exposure-based interventions. While not always included as primary components of exposure treatment protocols, various teaching strategies are often employed when implementing these approaches with this population.

Individuals with ASD may particularly benefit from strategies such as prompting, modeling, and/or the use of visual tools to help them learn how to execute an exposure correctly and understand the reinforcement contingencies in place while being careful not to force compliance. For certain individuals, it may be helpful for you to begin teaching the process of exposures through a simulation using a neutral stimulus, rather than a feared one. This increases the likelihood of successful completion of the exposure and associated reinforcement contingencies, which then incentivizes repeated practice once feared stimuli are introduced. These learning trials may need to be repeated prior to initiating graduated exposure, especially for individuals who have difficulty understanding more complex verbal instructions. However, they may not be necessary for individuals who are able to understand a verbal explanation of the procedures.

Regardless of developmental and verbal level, using different variations of teaching strategies, such as prompting or modeling, can be helpful in minimizing frustration when an individual is learning a new skill. Modeling involves showing the individual what you want them to do, with the intent of them learning the skill by

observing and then imitating you. While a useful technique, this approach is not always sufficient for individuals with ASD, as they may not be inclined to observe you (i.e., the model). Further, even if the individual does observe you, they may not connect that they should be imitating you. Video modeling may also be used as a possible alternative or supplement to using a live model.

If modeling does not work, you may need to supplement with additional types of prompts that further facilitate skill development. These may include verbal and/or visual prompts. When working with individuals who are able to understand verbal prompts, you may find it helpful to verbally prompt them to initiate the exposure, instruct them through the process (e.g., hint at how to approach the stimulus, etc.), and/or cue them to make a request (e.g., if they need to pause at the current hierarchy step; Runyan et al., 1985). For individuals who have difficulty understanding more complex verbal prompts, you may be able to use visual prompts (e.g., gestures, pictorial prompts) for the same purposes.

You should consider what you are teaching and how much of that skill the individual can already do when deciding on which prompts to use. Aim to use only the prompting that is necessary, and remember you can always add prompts as needed. Prompting should provide just enough support for the individual to be successful, but not so much that they are not learning. When teaching a skill, such as how to engage in exposure activities, several different prompts may be needed, but these prompts should be lessened over time as the individual masters the process.

In addition to using the aforementioned strategies for teaching individuals with ASD how to engage in exposures, these strategies may also be helpful for addressing deficits in social and adaptive skills, which may otherwise compound anxiety symptoms and render them less treatable (Wood et al., 2009). Although the focus of exposure-based approaches is to reduce symptoms of anxiety and teaching the individual that feared outcomes are unlikely to happen (and that they can effectively cope when they do), integrating interventions or components that address the deficits in social and adaptive skills may help individuals with ASD benefit more from traditional exposure techniques. It is important to ensure that the individual is able to successfully execute the various skills embedded in their exposures, so if skill deficits are present, you can use teaching strategies to address them. In fact, some interventions have been modified to integrate specific components for fostering independence and teaching age-appropriate social skills and integrate these skills with exposure (e.g., teaching and practicing social skills in anxiety-provoking social situations), such as the Behavioral Interventions for Anxiety in Children with Autism manual (Wood et al., 2015).

Research Findings

Given the symptom overlap between ASD and other diagnoses such as anxiety and OCD, individuals with ASD are well suited for interventions that are transdiagnostic in nature and use well-established approaches, such as exposure. However,

research on exposure-based interventions exclusively (i.e., not included within a CBT manual) for individuals with ASD and comorbid anxiety is limited as most studies investigate multicomponent protocols, which include exposure therapy as well as other therapeutic components (Slaughter et al., 2020). Even so, exposure is a large component of CBT, and research on CBT for ASD and comorbid anxiety provides support for adapting treatment when working with this population. Overall, exposure-based CBT protocols in children and adolescents with ASD and comorbid anxiety have demonstrated strong efficacy relative to waitlist (Reaven et al., 2012; Wood et al., 2009, 2015), usual care (Storch et al., 2013, 2015b; Wood et al., 2020), and standard care (i.e., not personalized for those with ASD) CBT (Wood et al., 2020).

Research-supported adaptations to exposure-based CBT protocols for children with ASD include several of the augmentations discussed in this chapter, including increased parental involvement, tailored communication strategies, incorporation of special interests into sessions, and extending the length of sessions (Hunsche & Kerns, 2019). In a recent study by Wood et al. (2020), CBT adapted for patients with ASD significantly outperformed both usual care and standard CBT, which further substantiates the importance of adapting treatment when patients present with ASD and comorbid anxiety. The adapted CBT program (BIACA) included increased parental involvement, extended session times (90 minutes), addressing disruptive behavior, incorporation of special interests, social skills lessons, and a contingent reward system. Notably, the adapted CBT program also included more exposure sessions.

In addition to addressing anxiety, CBT for individuals with ASD may simultaneously decrease other impairments, including those related to core symptoms of ASD (e.g., Drahota et al., 2011; Wood et al., 2020). Anxiety and specific fears often facilitate avoidance of everyday situations and minimize participation opportunities – inhibiting the acquisition of educational, social, or other daily life skills (de Bruin et al., 2007; Leyfer et al., 2006). Thus, it is not surprising that interventions targeting anxiety symptoms improve outcomes in these other areas and may decrease problematic behaviors. Specifically, treatment protocols that address social and adaptive deficits, in addition to anxiety, have led to significant reductions in both anxiety symptoms as well as improvements in daily living skills and ASD symptoms (see Hunsche & Kerns, 2019 for a review). Exposure-based components are also often integrated into treatments for other disorders commonly seen in ASD, such as hoarding (Storch et al., 2016) and pediatric feeding disorders (Matson & Fodstad, 2009).

Research on treatments for adults with anxiety and ASD has less of an evidence base than for youth with ASD and anxiety, but developmentally appropriate modifications to exposure protocols should be considered for adults as well. It is plausible that adults with ASD and anxiety may also see more improvement when a support person has direct involvement in the sessions. For example, 47% of adult participants with ASD and comorbid anxiety had parent or spouse involvement in sessions in an exposure-based CBT program (Russell et al., 2013). Common modifications to CBT for adults with ASD include emphasizing the behavioral components (i.e.,

exposure), completing a functional behavioral assessment, and increasing parental involvement (Nakagawa et al., 2018). In addition, systematic reviews conclude that behavioral components such as contingent reinforcement are supported in treatment of both children and adults with ASD (Roth et al., 2014; Smith & Iadarola, 2015). Overall, it is important to determine how to incorporate these evidence-based modifications to exposure therapy during treatment planning for your patients who present with ASD.

Treatment Planning

Anxious behaviors will vary greatly across individuals presenting with ASD and comorbid anxiety, and therefore treatment programs will also vary. You should consider the impact on functioning as well as the function of various symptoms or behaviors when determining if they are appropriate for addressing with an exposure-based intervention. At times, it may be more appropriate to consider environmental adaptations that reduce stress rather than asking individuals with ASD to increase their tolerance of an overstimulating situation. For example, those who tend to be hypersensitive to sensory input may benefit from a reduction of background noise either by controlling the environment or by wearing headphones. However, if sensitivities have resulted in associated fears of objects that make loud noises, for example, it may be appropriate to use these approaches in conjunction.

The general treatment components remain the same as with all exposure therapies: psychoeducation, hierarchy development, exposure and response prevention, homework tasks, and relapse prevention. However, when working with patients with ASD, the breakdown of time within each session may be different, such as spending more time on building rapport, consultation with the family, and developing rewards. At the beginning of treatment, you should develop an exposure treatment plan that includes appropriate modifications for each individual and remain flexible to make modifications to your approach as needed throughout.

As discussed previously, it may be helpful to have visual depictions of the session structure and hierarchy steps, use more prompting and modeling, and create contingent reinforcement systems including positive reinforcement and praise. In creating a treatment plan, you should consider how to provide these modifications and behavioral supports for various ages and developmental levels. For example, visual depictions are helpful for all ages, but they should be simplified for younger children. Modeling may be sufficient for adult patients, while direct prompting is likely needed for children. In considering contingent reinforcement systems, you should prepare ideas for systems that are appropriate for various age levels. For example, younger children may be motivated by sticker charts and praise, while adolescents may respond better to other reinforcers, such as extra screen time or points toward a larger, tangible reinforcer. You can also coach adults on how to reward themselves for attempting hierarchy steps (i.e., positive self-talk, money jar for a desired item).

In addition to considering these modifications, treatment planning with the patient should involve deciding if and how to incorporate family or other caregivers in treatment, as the type of involvement will vary depending on each individual's needs. For children, determining how to include caregivers in treatment should be a priority. When working with adult patients with ASD and anxiety, you should ask about and discuss how to incorporate the supports that will assist them in meeting their treatment goals. If the patient would benefit from the support of a family member or other close persons, you and the patient can jointly create a plan for how and when to include their support person in treatment. For example, the most appropriate plan for an adult with ASD might be having the support person in the session with them for the last 10 minutes in order to review what homework tasks should be completed before the next session. Alternatively, the patient might feel comfortable having a family member with them for the entirety of the session.

There are instances where incorporating family members or other caregivers is not possible or is not appropriate (i.e., if the adult patient does not consent to this, a family member is not available or interested in attending, high levels of expressed emotion, etc.). In these situations, you should incorporate other behavioral supports to facilitate accountability in the treatment. For example, behavioral supports may include helping the patient identify a time each day that they will practice the exposure homework, requesting the patient set timers for reminders, identifying social support, and identifying potential rewards for attempting exposures. It is likely that these patients may need additional exposure sessions with therapist's guidance before they feel comfortable completing exposures on their own. Overall, exposure therapies are idiosyncratic by nature, and the same is true when patients present with ASD; modifications to the treatment plan should reflect the level of support needed for each individual to successfully reduce anxiety.

Case Examples

In this section, two case examples will be provided to illustrate ways exposure therapy can be adapted for children and adults with ASD and anxiety.

Case Example 1: Child

Anthony was a 10-year-old boy who met criteria for ASD and social anxiety. One of Anthony's primary fears was engaging in social situations with same-age peers. He feared the scrutiny of other children and doubted they wanted to be friends with him. He frequently sat alone at lunch and avoided joining games and activities with peers at recess. Also, he displayed some weaknesses in social skills, such as initiating and maintaining conversations with peers. In collaboration with his parents and therapist, Anthony identified that his goal for therapy would be to increase his peer interactions during lunch and recess at school.

The main approach to therapy was exposure-based intervention with specific adaptations to meet Anthony's individual needs. With input from his parents,

Anthony and his therapist created a list of social situations (e.g., saying “hi” to a peer, asking a peer a question, etc.) that made Anthony feel anxious, and they assigned a worry rating to each of the situations (with 1 being a little worried and 10 being very worried). It was decided that Anthony was going to attempt each situation starting with the least anxiety-provoking situation and working his way up to the most anxiety-provoking situation.

In addition, there were a few adaptations the therapist made to treatment to meet Anthony’s individual needs. For example, during therapy sessions, it was important to include social skills training in order for Anthony to be equipped with the skills necessary to attempt the exposures. The therapist taught Anthony age-appropriate greetings and topics of conversation to use in interactions with peers, and they practiced these skills in session with personnel around the clinic before initiating peer interactions at school. Additionally, they created a contingency reward system in which Anthony received a specific reward from his parents for each attempt of brave behavior. Because of his specific interest in cars, the therapist created a sticker chart where Anthony could add one car sticker each time that he attempted a brave behavior, and once he received ten stickers, his parents would let him pick out a new toy car. With these modifications, Anthony was able to attempt each situation gradually and ultimately increase his social interactions during lunchtime and recess at school.

Case Example 2: Adult

Jolene was a 34-year-old female diagnosed with ASD and OCD. Jolene’s primary obsessive thoughts included believing there were grammatical errors in the daily reports she completed at work. She spent over 2 hours checking the two-page report every day for fear that she would be fired if an error was missed. Additionally, she frequently spent excessive amounts of time checking other various work products, which led her to miss deadlines on numerous occasions. Jolene reported feelings of discomfort when meeting with her boss because she is unsure what to say to them. Jolene struggled with her own emotion expression, felt uncomfortable interacting with her boss, and, thus, has not been able to express why some of her work products have been late. In collaboration with her therapist, Jolene identified that her goal for therapy would be to reduce her daily report checking time to 5 minutes per day.

The main approach to therapy was exposure with several adaptations to meet Jolene’s individual needs related to her ASD. Jolene and her therapist created a list of work-related tasks that made her anxious (e.g., reciting that her boss will fire her, writing a one-page document without using the delete key, purposely including grammatical errors in a final work product, talking to her boss about work quality). A hierarchy was created based on Jolene’s worry ratings of each task, and exposures were completed in session beginning with the least anxiety-provoking situation. The hierarchy also included reducing the amount of time spent on compulsions (i.e., checking the work products). Additionally, the therapist spent some time training Jolene in how to have difficult conversations with her boss, specifically focusing on work quality. Jolene practiced initiating this conversation with her therapist as well as engaging in a reciprocal conversation regarding work products. Her homework included completing exposure tasks in between sessions both at work and at home.

In consultation with her therapist, Jolene decided that it would be helpful for her to include her husband in treatment as an accountability partner for meeting her goals. Jolene felt comfortable with including her husband in the last 10 minutes of each therapy session in order to include him on the homework plan. Her husband supported Jolene in completing her weekly exposure homework tasks by giving her daily reminders to complete the identified task and supporting her in refraining from compulsions at home. In addition, the therapist gave Jolene a visual timer to keep at her desk at work so that Jolene could have a visual representation of how much time to spend proofreading her work products each day. The amount of time allowed for proofreading products was decreased each week between therapy sessions. Including her husband in treatment and using a visual timer gave her the additional support that she needed in order to attempt her exposure tasks and ultimately reach her goal.

Conclusion

Overall, there is substantial research evidence supporting the use of exposure-based cognitive behavioral therapy for anxiety in individuals with ASD. In fact, emphasis on behavioral components of treatment (i.e., exposure) for treating comorbid ASD and anxiety may be the most effective approach. In working with this population, you should always consider making the necessary modifications needed to support any ASD-related needs (e.g., reward systems). However, there is not a one-size-fits-all approach for making these changes, and modifications to exposure therapy should be a continuous, dynamic process with a focus on how to meet each individual's needs. Funding This work was supported in part by grants awarded to the second to S.C.S. and E.A.S. by the Texas Higher Education Coordinating Board.

References

- Abramowitz, J. S. (2013). The practice of exposure therapy: Relevance of cognitive-behavioral theory and extinction theory. *Behavior Therapy, 44*(4), 548–558. <https://doi.org/10.1016/j.beth.2013.03.003>
- Abramowitz, J. S., Deacon, B. J., & Whiteside, S. P. H. (2019). Involving significant others in treatment. In *Exposure therapy for anxiety: Principles and practice* (2nd ed., pp. 337–352). The Guilford Press.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.).
- Cervantes, P., Matson, J. L., Tureck, K., & Adams, H. L. (2013). The relationship of comorbid anxiety symptom severity and challenging behaviors in infants and toddlers with autism spectrum disorder. *Research in Autism Spectrum Disorders, 7*(12), 1528–1534. <https://doi.org/10.1016/j.rasd.2013.09.005>
- Daniel, T. J., & Wood, J. J. (2013). Cognitive behavioral therapy for children with autism: Review and considerations for future research. *Journal of Developmental & Behavioral Pediatrics, 34*(9), 702–715. <https://doi.org/10.1097/DBP.0b013e31829f676c>

- de Bruin, E. I., Ferdinand, R. F., Meester, S., de Nijs, P. F., & Verheij, F. (2007). High rates of psychiatric co-morbidity in PDD-NOS. *Journal of Autism and Developmental Disorders*, *37*(5), 877–886.
- Drahota, A., Wood, J. J., Sze, K. M., & Van Dyke, M. (2011). Effects of cognitive behavioral therapy on daily living skills in children with high-functioning autism and concurrent anxiety disorders. *Journal of Autism and Developmental Disorders*, *41*(3), 257–265.
- Feldman, I., Koller, J., Lebowitz, E. R., Shulman, C., Ben Itzhak, E., & Zachor, D. A. (2019). Family accommodation in autism Spectrum disorder. *Journal of Autism and Developmental Disorders*, *49*(9), 3602–3610. <https://doi.org/10.1007/s10803-019-04078-x>
- Frank, H. E., Kagan, E. R., Storch, E. A., Wood, J. J., Kerns, C. M., Lewin, A. B., Small, B. J., & Kendall, P. C. (2020). Accommodation of anxiety in youth with autism Spectrum disorder: Results from the TAASD study. *Journal of Clinical Child & Adolescent Psychology*, 1–11. <https://doi.org/10.1080/15374416.2020.1759075>
- Ginsburg, G. S., Siqueland, L., Masia-Warner, C., & Hedtke, K. A. (2004). Anxiety disorders in children: Family matters. *Cognitive and Behavioral Practice*, *11*(1), 28–43. [https://doi.org/10.1016/S1077-7229\(04\)80005-1](https://doi.org/10.1016/S1077-7229(04)80005-1)
- Gotham, K., Brunwasser, S. M., & Lord, C. (2015). Depressive and anxiety symptom trajectories from school age through young adulthood in samples with autism Spectrum disorder and developmental delay. *Journal of the American Academy of Child & Adolescent Psychiatry*, *54*(5), 369–376.e363. <https://doi.org/10.1016/j.jaac.2015.02.005>
- Hagopian, L. P., Long, E. S., & Rush, K. S. (2004). Preference assessment procedures for individuals with developmental disabilities. *Behavior Modification*, *28*(5), 668–677. <https://doi.org/10.1177/0145445503259836>
- Hollocks, M. J., Lerh, J. W., Magiati, I., Meiser-Stedman, R., & Brugha, T. S. (2019). Anxiety and depression in adults with autism spectrum disorder: A systematic review and meta-analysis. *Psychological Medicine*, *49*(4), 559–572. <https://doi.org/10.1017/S0033291718002283>
- Hunsche, M. C., & Kerns, C. M. (2019). Update on the effectiveness of psychotherapy for anxiety disorders in children and adolescents with ASD. *Bulletin of the Menninger Clinic*, *83*(3), 326–352. <https://doi.org/10.1521/bumc.2019.83.3.326>
- Karsten, A. M., Carr, J. E., & Lepper, T. L. (2011). Description of a practitioner model for identifying preferred stimuli with individuals with autism Spectrum disorders. *Behavior Modification*, *35*(4), 347–369. <https://doi.org/10.1177/0145445511405184>
- Kazdin, A. E. (2013). *Behavior modification in applied settings*. Waveland Press.
- Kerns, C. M., Kendall, P. C., Zickgraf, H., Franklin, M. E., Miller, J., & Herrington, J. (2015). Not to be overshadowed or overlooked: Functional impairments associated with comorbid anxiety disorders in youth with ASD. *Behavior Therapy*, *46*(1), 29–39. <https://doi.org/10.1016/j.beth.2014.03.005>
- Kerns, C. M., Roux, A. M., Connell, J. E., & Shattuck, P. T. (2016). Adapting cognitive behavioral techniques to address anxiety and depression in cognitively able emerging adults on the autism Spectrum. *Cognitive and Behavioral Practice*, *23*(3), 329. <https://doi.org/10.1016/j.cbpra.2016.06.002>
- Lee, M. S. H., Yu, C. T., Martin, T. L., & Martin, G. L. (2010). On the relation between reinforcer efficacy and preference. *Journal of Applied Behavior Analysis*, *43*(1), 95–100. <https://doi.org/10.1901/jaba.2010.43-95>
- Leyfer, O. T., Folstein, S. E., Bacalman, S., Davis, N. O., Dinh, E., Morgan, J., Tager-Flusberg, H., & Lainhart, J. E. (2006). Comorbid psychiatric disorders in children with autism: Interview development and rates of disorders. *Journal of Autism and Developmental Disorders*, *36*(7), 849–861.
- Maenner, M. J., Shaw, K. A., Baio, J., Washington, A., Patrick, M., Dirienzo, M., Christensen, D. L., Wiggins, L. D., Pettygrove, S., Andrews, J. G., Lopez, M., Hudson, A., Baroud, T., Schwenk, Y., White, T., Rosenberg, C. R., Lee, L.-C., Harrington, R. A., Huston, M., ... Dietz, P. M. (2020). Prevalence of autism Spectrum disorder among children aged 8 years – Autism and developmental disabilities monitoring network, 11 sites, United States, 2016. *MMWR. Surveillance Summaries*, *69*(4), 1–12. <https://doi.org/10.15585/mmwr.ss6904a1>

- Matson, J. L., & Fodstad, J. C. (2009). The treatment of food selectivity and other feeding problems in children with autism spectrum disorders. *Research in Autism Spectrum Disorders*, 3(2), 455–461. <https://doi.org/10.1016/j.rasd.2008.09.005>
- Montes, S. G., & Halterman, S. J. (2006). Characteristics of school-age children with autism. *Journal of Developmental & Behavioral Pediatrics*, 27(5), 379–385. <https://doi.org/10.1097/00004703-200610000-00002>
- Nadeau, J., Sulkowski, M. L., Ung, D., Wood, J. J., Lewin, A. B., Murphy, T. K., May, J. E., & Storch, E. A. (2011). Treatment of comorbid anxiety and autism spectrum disorders. *Neuropsychiatry*, 1(6), 567–578. <https://doi.org/10.2217/npv.11.62>
- Nakagawa, A., Olsson, N. C., Hiraoka, Y., Nishinaka, H., Miyazaki, T., Kato, N., Nakatani, E., Tomita, M., Yoshioka, K., Murakami, S., & Aoki, S. (2018). Long-term outcome of CBT in adults with OCD and comorbid ASD: A naturalistic follow-up study. *Current psychology (New Brunswick N.J.)*, 38(6), 1763–1771. <https://doi.org/10.1007/s12144-018-9952-1>
- Piazza, C. C., Roane, H. S., & Karsten, A. (2011). Identifying and enhancing the effectiveness of positive reinforcement. In W. W. Fisher, C. C. Piazza, & H. S. Roane (Eds.), *Handbook of applied behavior analysis* (pp. 151–164). The Guilford Press.
- Pittig, A., & Dehler, J. (2019). Same fear responses, less avoidance: Rewards competing with aversive outcomes do not buffer fear acquisition, but attenuate avoidance to accelerate subsequent fear extinction. *Behaviour Research and Therapy*, 112, 1–11. <https://doi.org/10.1016/j.brat.2018.11.003>
- Pittig, A., Hengen, K., Bublatzky, F., & Alpers, G. (2018). Social and monetary incentives counteract fear-driven avoidance: Evidence from approach-avoidance decisions. *Journal of Behavior Therapy and Experimental Psychiatry*, 60, 69.
- Reaven, J., Blakeley-Smith, A., Culhane-Shelburne, K., & Hepburn, S. (2012). Group cognitive behavior therapy for children with high-functioning autism spectrum disorders and anxiety: A randomized trial. *Journal of Child Psychology and Psychiatry*, 53(4), 410–419. <https://doi.org/10.1111/j.1469-7610.2011.02486.x>
- Roth, M. E., Gillis, J. M., & Reed, F. D. D. (2014). A meta-analysis of behavioral interventions for adolescents and adults with autism spectrum disorders. (original paper). *Journal of Behavioral Education*, 23(2), 258. <https://doi.org/10.1007/s10864-013-9189-x>
- Runyan, M. C., Stevens, D. H., & Reeves, R. (1985). Reduction of avoidance behavior of institutionalized mentally retarded adults through contact desensitization. *American Journal of Mental Deficiency*, 90(2).
- Russell, A. J., Jassi, A., Fullana, M. A., Mack, H., Johnston, K., Heyman, I., Murphy, D. G., & Mataix-Cols, D. (2013). Cognitive behavior therapy for comorbid obsessive-compulsive disorder in high-functioning autism spectrum disorders: A randomized controlled trial. *Depression and Anxiety*, 30(8), 697–708. <https://doi.org/10.1002/da.22053>
- Ryan, P. M., Kaskas, M. M., & Davis, T. E. (2017). Chapter 6 – *Cognitive-behavioral principles and their applications within autism spectrum disorder*. Elsevier Inc. <https://doi.org/10.1016/B978-0-12-805122-1.00006-5>.
- Salloum, A., Andel, R., Lewin, A. B., Johnco, C., McBride, N. M., & Storch, E. A. (2018). Family accommodation as a predictor of cognitive-behavioral treatment outcome for childhood anxiety. *Families in Society: The Journal of Contemporary Social Services*, 99(1), 45–55. <https://doi.org/10.1177/1044389418756326>
- Slaughter, A. M., McNeel, M. M., Storch, E. A., & Mire, S. S. (2020). Where should we go from here? Identified gaps in the literature in psychosocial interventions for youth with autism spectrum disorder and comorbid anxiety. *Children's Health Care*, 49, 1–37.
- Smith, T., & Iadarola, S. (2015). Evidence base update for autism Spectrum disorder. *Journal of Clinical Child & Adolescent Psychology*, 44(6), 897–922. <https://doi.org/10.1080/15374416.2015.1077448>
- Storch, E. A., Zavrou, S., Collier, A. B., Ung, D., Arnold, E. B., Mutch, P. J., Lewin, A. B., & Murphy, T. K. (2015a). Preliminary study of family accommodation in youth with autism spectrum disorders and anxiety: Incidence, clinical correlates, and behavioral treatment response. *Journal of Anxiety Disorders*, 34, 94–99. <https://doi.org/10.1016/j.janxdis.2015.06.007>

- Storch, E., Nadeau, J., Johnco, C., Timpano, K., McBride, N., Jane Mutch, P., Lewin, A., & Murphy, T. (2016). Hoarding in youth with autism Spectrum disorders and anxiety: Incidence, clinical correlates, and behavioral treatment response. *Journal of Autism and Developmental Disorders*, 46(5), 1602–1612. <https://doi.org/10.1007/s10803-015-2687-z>
- Storch, E. A., Arnold, E. B., Lewin, A. B., Nadeau, J. M., Jones, A. M., De Nadai, A. S., Jane Mutch, P., Selles, R. R., Ung, D., & Murphy, T. K. (2013). The effect of cognitive-behavioral therapy Versus treatment as usual for anxiety in children with autism Spectrum disorders: A randomized, controlled trial. *Journal of the American Academy of Child & Adolescent Psychiatry*, 52(2), 132–142.e132. <https://doi.org/10.1016/j.jaac.2012.11.007>
- Storch, E. A., Lewin, A. B., Collier, A. B., Arnold, E., De Nadai, A. S., Dane, B. F., Nadeau, J. M., Mutch, P. J., & Murphy, T. K. (2015b). A randomized controlled trial of cognitive-behavioral therapy versus treatment as usual for adolescents with autism spectrum disorders and comorbid anxiety. *Depression & Anxiety (1091–4269)*, 32(3), 174–181. <https://doi.org/10.1002/da.22332>
- Storch, E. A., Merlo, L. J., Larson, M. J., Marien, W. E., Geffken, G. R., Jacob, M. L., Goodman, W. K., & Murphy, T. K. (2008). Clinical features associated with treatment-resistant pediatric obsessive-compulsive disorder. *Comprehensive Psychiatry*, 49(1), 35–42. <https://doi.org/10.1016/j.comppsy.2007.06.009>
- Storch, E. A., Schneider, S. C., De Nadai, A. S., Selles, R. R., McBride, N. M., Grebe, S. C., Bergez, K. C., Ramirez, A., Viana, A. G., & Lewin, A. B. (2020). A pilot study of family-based exposure-focused treatment for youth with autism Spectrum disorder and anxiety. *Child Psychiatry and Human Development*, 51(2), 209. <https://doi.org/10.1007/s10578-019-00923-3>
- Ung, D., Wood, J. J., Ehrenreich-May, J., Arnold, E. B., Fujii, C., Renno, P., Murphy, T. K., Lewin, A. B., Mutch, P. J., & Storch, E. A. (2013). Clinical characteristics of high-functioning youth with autism spectrum disorder and anxiety. *Neuropsychiatry*, 3(2), 147. <https://doi.org/10.2217/npj.13.9>
- Van Steensel, F. J. A., Bögels, S. M., & Perrin, S. (2011). Anxiety disorders in children and adolescents with autistic Spectrum disorders: A meta-analysis. *Clinical Child and Family Psychology Review*, 14(3), 302–317. <https://doi.org/10.1007/s10567-011-0097-0>
- Vasa, R. A., Mazurek, M. O., Mahajan, R., Bennett, A. E., Bernal, M. P., Nozzolillo, A. A., Arnold, L. E., & Cury, D. L. (2016). *Assessment and Treatment of Anxiety in Youth with Autism Spectrum Disorders*, 137(Supplement), S115–S123. <https://doi.org/10.1542/peds.2015-2851J>
- White, S. W., Oswald, D., Ollendick, T., & Scahill, L. (2009). Anxiety in children and adolescents with autism spectrum disorders. *Clinical Psychology Review*, 29(3), 216–229. <https://doi.org/10.1016/j.cpr.2009.01.003>
- Wine, B., & Wilder, D. A. (2009). The effects of varied versus constant high-, medium-, and low-preference stimuli on performance. *Journal of Applied Behavior Analysis*, 42(2), 321–326. <https://doi.org/10.1901/jaba.2009.42-321>
- Wood, J. J., Drahota, A., Sze, K., Har, K., Chiu, A., & Langer, D. A. (2009). Cognitive behavioral therapy for anxiety in children with autism spectrum disorders: A randomized, controlled trial. *Journal of Child Psychology and Psychiatry*, 50(3), 224–234. <https://doi.org/10.1111/j.1469-7610.2008.01948.x>
- Wood, J. J., Ehrenreich-May, J., Alessandri, M., Fujii, C., Renno, P., Laugeson, E., Piacentini, J. C., De Nadai, A. S., Arnold, E., Lewin, A. B., Murphy, T. K., & Storch, E. A. (2015). Cognitive behavioral therapy for early adolescents with autism Spectrum disorders and clinical anxiety: A randomized, controlled trial. *Behavior Therapy*, 46(1), 7–19. <https://doi.org/10.1016/j.beth.2014.01.002>
- Wood, J. J., & Gadow, K. D. (2010). Exploring the Nature and Function of Anxiety in Youth with Autism Spectrum Disorders. 17, 281–292. <https://doi.org/10.1111/j.1468-2850.2010.01220.x>
- Wood, J. J., Kendall, P. C., Wood, K. S., Kerns, C. M., Seltzer, M., Small, B. J., Lewin, A. B., & Storch, E. A. (2020). Cognitive behavioral treatments for anxiety in children with autism spectrum disorder. *JAMA Psychiatry*, 77(5), 474. <https://doi.org/10.1001/jamapsychiatry.2019.4160>

Chapter 7

Exposure Therapy When Patients Present with Comorbid Borderline Personality Disorder



Melanie S. Harned, Natalia M. Garcia, and Trevor N. Coyle

Abstract Although people with borderline personality disorder (BPD) often have anxiety- and trauma-related difficulties that would benefit from exposure therapy, the behavioral and emotional dysregulation associated with a diagnosis of BPD can complicate the delivery of standard exposure protocols. In addition, people with BPD often have multiple comorbid disorders, therapy-interfering behaviors, and serious functional impairment, all of which can make it challenging to implement exposure. Depending on the nature and severity of the problems exhibited by a person with BPD, adaptations to the delivery of exposure protocols may be needed to maximize their safety and effectiveness. In this chapter, we provide guidance on how to deliver exposure therapy in the context of BPD, specifically emphasizing how to determine a BPD individual's readiness to engage in exposure therapy; structure treatment to include exposure therapy (e.g., using standalone, phase-based, or integrated approaches to treatment); address problems related to emotional over-engagement and under-engagement during exposure; and target non-fear emotions (e.g., shame and guilt) using principles of exposure. Additionally, supporting research will be presented, and a case example of a person with BPD who was treated using an adapted exposure protocol for PTSD will be used to illustrate the application of these principles in clinical practice.

Keywords Borderline Personality Disorder · Exposure therapy

M. S. Harned (✉) · N. M. Garcia · T. N. Coyle
VA Puget Sound Health Care System, Seattle, WA, USA
e-mail: melanie.harned@va.gov; natalia.garciagonzalez@va.gov; trevor.coyle@va.gov

Exposure Therapy When Patients Present with Borderline Personality Disorder

Borderline personality disorder (BPD) is characterized by affective instability, impulsive and self-damaging behaviors, chaotic relationships, an unstable sense of identity, and extremes in thinking. At its core, BPD has been conceptualized as a disorder of pervasive emotion dysregulation, which reflects an inability to influence the experience or expression of emotions in desired ways across a wide range of emotions and situational contexts (Neacsu et al., 2014). In the presence of frequent and intense aversive emotions, individuals with BPD tend to rely on maladaptive strategies that function to escape emotions in the short term but have long-term negative consequences. These often include repeated suicide attempts and non-suicidal self-injury (NSSI) as well as other types of dysregulated behaviors (e.g., substance use, binge eating, impulsive sex). In addition, individuals with BPD frequently utilize other more common avoidant coping strategies such as leaving or refusing to enter situations that prompt emotions, suppressing upsetting thoughts, and inhibiting emotional experiencing. This combination of extreme emotions and an inability to effectively regulate them causes many people with BPD to become emotion-phobic; namely, they are terrified to experience their emotions, believe that doing so is dangerous, and consider emotional avoidance to be a necessary strategy for survival.

Given that emotional avoidance is a core maintaining factor for problematic anxiety, it is perhaps not surprising that a vast majority of individuals with BPD (74–88%) meet criteria for at least one lifetime anxiety or trauma-related disorder (Zanarini et al., 1998; Grant et al., 2008). Conversely, anxiety disorders and PTSD increase the risk of suicide attempts (e.g., Nepon et al., 2010) and may interfere with achieving remission from BPD (e.g., Zanarini et al., 2004). Therefore, exposure therapy is often both a much-needed and a challenging intervention to implement with individuals with BPD. In this chapter, we will discuss strategies for adapting exposure protocols for individuals with BPD, review research supporting these recommendations, and describe a case example of a patient with BPD who was successfully treated using an adapted exposure protocol for PTSD.

Adapting Exposure for People with Borderline Personality Disorder

Although some individuals with BPD may benefit from strategic adaptations to standard exposure protocols, adaptations are certainly not always needed or advised. When using exposure protocols with people with BPD, the goal is to find an effective balance between making adaptations that improve the acceptability, effectiveness, and safety of these interventions while also being careful not to unnecessarily

withhold, alter, or dilute their active ingredients. To that end, there are several issues that should be considered when deciding if and how to adapt standard exposure protocols for people with BPD.

Determining Readiness

The first decision that needs to be made is whether a given patient with BPD is a suitable candidate for exposure therapy. It is important to emphasize that there is no reason to exclude people with BPD from exposure therapy on the basis of this diagnosis: people with BPD can and do benefit from exposure (e.g., Slotema et al., 2020). However, some individuals with BPD may have co-occurring problems that will make exposure therapy potentially unsafe and/or ineffective. Many individuals with BPD experience periods of acute suicidality (e.g., suicidal ideation with intent and a plan) and/or engage in repeated suicide attempts and NSSI. If these types of serious self-injurious thoughts and behaviors are present, they should be stabilized prior to undertaking an exposure protocol. In addition, individuals with BPD often have other severe problems that may require priority treatment over the disorder that would be targeted via exposure therapy. These may include severe comorbid disorders, such as substance dependence or bipolar disorders, as well as significant current life stressors, such as abusive relationships and severe housing or financial insecurity. If these types of serious disorders and psychosocial problems are present, they may undermine treatment if they are not stabilized prior to initiating exposure therapy.

Another issue to consider is whether the patient is likely to be able to complete exposure therapy effectively; that is, in a manner that will result in clinically significant improvement in the targeted disorder. Individuals with BPD often engage in therapy-interfering behaviors that are likely to make any treatment, including exposure, less effective such as attending inconsistently, refusing to engage in treatment tasks, and not completing homework. In addition, individuals with BPD may have other complex problems that are likely to interfere with the mechanisms of action of exposure therapy. For example, if patients lack the skills to experience intense emotions without escaping, they may be unable to complete exposure tasks in a manner likely to result in extinction over time. Similarly, if patients have problems that interfere with attending to and retaining information, such as state dissociation or acute intoxication, their ability to learn during exposure practice may be limited. When patients with BPD exhibit behaviors that are likely to interfere with the core mechanisms of exposure therapy, it is recommended that these problems be addressed first to maximize the effectiveness of subsequent exposure therapy.

Taken together, we recommend using the following criteria to determine whether individuals with BPD are appropriate for an exposure-based treatment: (1) not at

acute risk of suicide, (2) no recent (past 2 months) suicide attempts or NSSI, (3) able to manage urges to engage in self-injurious behaviors when cued, (4) no serious therapy-interfering behaviors, (5) the disorder to be targeted via exposure is the highest-priority problem, and (6) able and willing to experience intense emotions without escaping.

Structuring Treatment

Depending on the complexity and severity of the problems exhibited by a person with BPD, you will need to decide whether to provide, augment, or delay exposure as a treatment option (see Fig. 7.1). If a person with BPD presents to treatment meeting the above readiness criteria, then you may immediately provide an exposure protocol using its standard structure, which is typically as a unimodal, stand-alone treatment. However, if a person with BPD has other severe problems that require treatment prior to and/or during exposure therapy, then alternate treatment structures that involve augmenting and/or delaying exposure therapy will need to be considered.

One structural approach to consider is parallel treatments in which the patient receives multiple treatments simultaneously that target different problems with different providers. A parallel treatment approach is often a good option for patients with BPD who have serious co-occurring problems that require ongoing treatment but do not preclude the use of exposure therapy, such as well-managed psychotic or bipolar disorders. For example, a patient with BPD and schizoaffective disorder may continue to receive standard treatments for psychotic disorders (e.g., group therapy, vocational rehabilitation, pharmacotherapy) while also receiving exposure therapy for OCD. This parallel treatment approach has the benefit of ensuring that significant co-occurring problems remain well-managed during exposure therapy while also providing the patient with additional support beyond what an exposure protocol alone can offer.

If patients with BPD exhibit contraindications for exposure therapy, such as acute suicidality, self-injurious behaviors, or uncontrolled substance use, you will need to delay exposure therapy until these behaviors are sufficiently stabilized. In such cases, you will need to decide whether to utilize a sequential, phase-based, or integrated approach to treatment. A sequential treatment approach involves first receiving a treatment targeting the problem(s) that contraindicate exposure with one provider before being referred to a different provider to receive exposure therapy. This approach is recommended for providers who do not have expertise in relevant stabilizing treatments and/or work in settings where such treatments are not provided. Alternatively, a phase-based approach to treatment enables the same provider to deliver both treatments, beginning with an initial preparatory phase of treatment to enhance the patient's readiness for exposure before advancing to a second phase of treatment in which an exposure protocol is delivered. A benefit of a phase-based

Decision tree for determining which treatment approach to offer a person with BPD

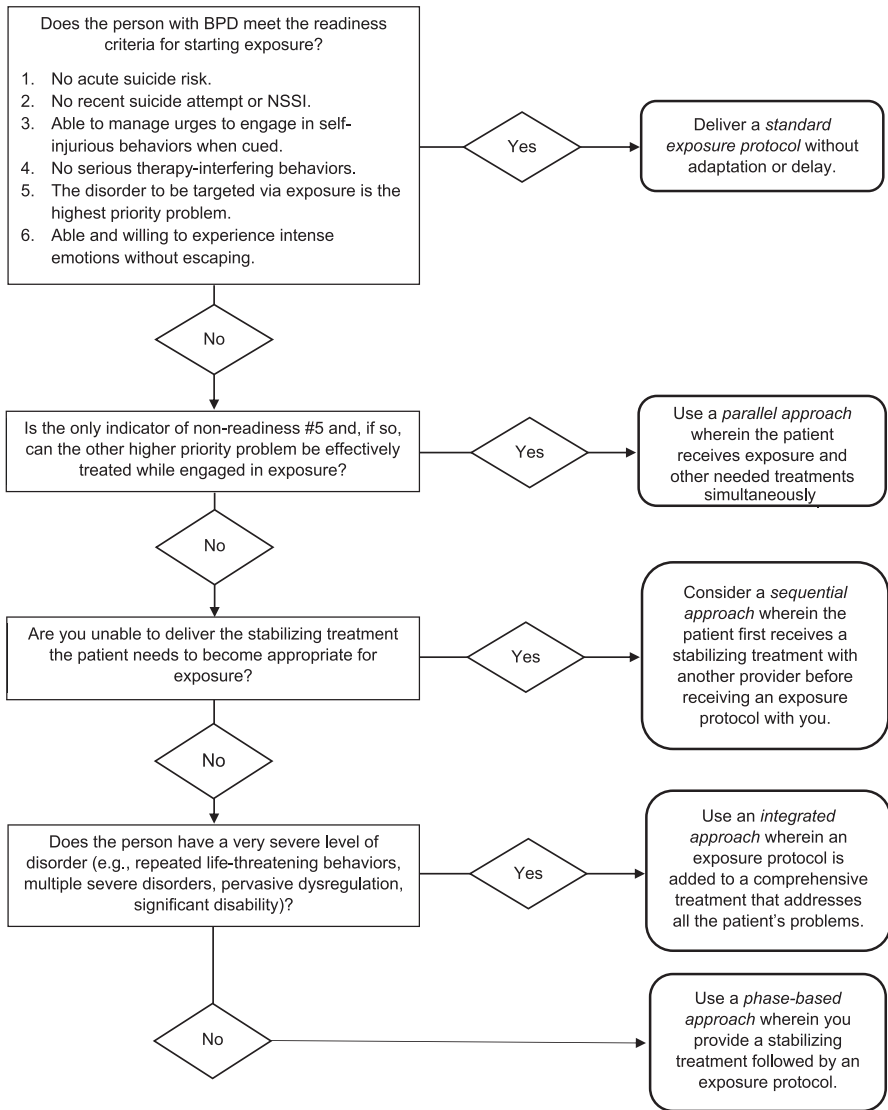


Fig. 7.1 Decision tree for determining which treatment approach to offer a person with BPD

approach is that it allows for continuity of care with the same treatment provider, rather than a discontinuous sequential care model.

Finally, an integrated approach to treatment involves treating multiple comorbid disorders and problems at the same time in the context of one comprehensive treatment. Integrated treatment is typically recommended for BPD patients with the highest level of disorder, which is characterized by recurrent life-threatening

behaviors, multiple severe problems and disorders that are pervasive across many life domains, and a high degree of disability. For these types of high-risk and multi-problem patients with BPD, integrated treatment enables providers to flexibly address the person's full range of problems using multiple interventions that are often implemented across multiple modes of treatment (e.g., individual and group therapy). In this approach, an exposure protocol can be integrated into treatment at whatever point the patient is deemed ready. A benefit of an integrated treatment approach is that it allows for direct and concurrent treatment of exposure-relevant targets (e.g., PTSD), as well as their relationship to BPD symptoms (e.g., emotion dysregulation, suicidal behavior) and other co-occurring problems (e.g., binge eating disorder, interpersonal problems), rather than treating them as separate or unrelated. In addition, if problems emerge during the delivery of an exposure protocol that make it unsafe or ineffective to continue (e.g., a suicide attempt or an increase in therapy-interfering behaviors), then the protocol can be paused temporarily to address the problem using another relevant intervention and then resumed as soon as it is appropriate to do so. In this way, integrated treatment allows providers to flexibly move in and out of delivering an exposure protocol depending on the patient's current state of readiness without having to stop treatment altogether.

Optimizing Emotional Engagement

Although serious complicating factors should be addressed prior to starting an exposure protocol, people with BPD are likely to encounter some difficulties during exposure therapy as well. One particularly common problem is related to achieving optimal levels of emotional engagement, which is an important foundation for effective exposure practice. Given that individuals with BPD tend to both experience intense emotions and consequently avoid emotional experiencing, it is not surprising that they are at risk for emotional over-engagement, under-engagement, or a combination of the two during exposure. Over-engagement is characterized by excessive distress that interferes with processing and learning new information. Patients with BPD who experience over-engagement often present with dissociation, flashbacks, "spacing out," or becoming emotionally overwhelmed in a way that disrupts learning during exposure tasks. In contrast, under-engagement is characterized by an inability to achieve high levels of emotional activation during exposure tasks which can prevent patients from learning what they need to learn (e.g., that their emotions are not dangerous, do not last forever, and can be tolerated). Patients with BPD who experience under-engagement may present with flat affect and emotional detachment when discussing or approaching distressing stimuli.

If problems with emotional engagement occur, you will need to teach patients how to upregulate and downregulate emotional intensity during exposure when needed. Over-engagement during exposure is often addressed using general arousal reduction strategies, such as paced breathing and progressive muscle relaxation.

Patients can also be coached to use exercise (e.g., jumping jacks) and changes in temperature (e.g., holding an ice pack to one's face) to downregulate their sympathetic nervous system during exposure. For example, many patients with BPD are prone to dissociation during exposure, which can be addressed by teaching them skills to increase their awareness of dissociation (e.g., via mindfulness) and to respond by doing something that will ground them instead (e.g., eating a sour candy or inhaling smelling salts).

For patients with BPD who tend to under-engage with emotions, it is important to ensure that they are willing to have emotions and are not intentionally blocking emotional experiencing. If patients are suppressing emotions on purpose, you can teach them to use skills during exposure practice that are focused on allowing emotions to be experienced, such as mindfulness-based strategies (e.g., observing body sensations and emotions without blocking or pushing them away) and acceptance-based strategies (e.g., helping patients to accept painful events, emotions, and realities that they may be rejecting, including practicing willingness to experience emotions). In addition, many patients with BPD have learned to suppress emotions due to a history of invalidation in which they were rejected or even punished for showing emotion. Thus, it is often helpful to validate patients' fears of becoming emotional in your presence and to explicitly communicate acceptance of their emotional responses. Moreover, exposure therapy can be framed as an opportunity to undo prior unhelpful learning about the likely interpersonal consequences of emotional experiencing and expression.

Targeting Non-fear Emotions

Although exposure therapy has traditionally been used to treat maladaptive fear, many people with BPD suffer from other intense and persistent emotions that could benefit from exposure. Among individuals with BPD, emotions such as shame, guilt, and self-disgust are highly prevalent, prompt dysregulated behaviors, and contribute to poorer quality of life. When non-fear emotions are being driven by inaccurate beliefs and expectancies, exposure therapy can help to reduce their intensity by facilitating new learning. For example, guilt may be driven by misinterpretations of one's behavior as wrong or inappropriate, shame is often related to problematic beliefs about the self as being bad and likely to be rejected by others, and self-disgust can be caused by faulty beliefs about oneself as being contaminated or physically repulsive. Similar to the fear maintenance process, these emotions are associated with intense urges that, when acted upon, are likely to perpetuate the emotion in the long run by preventing new learning. For example, guilt prompts urges to apologize, self-punish, and stop engaging in the behavior that elicits guilt, all of which are likely to reinforce beliefs that one has done something wrong. Similarly, shame is associated with urges to hide, and concealing the things about which one feels ashamed makes it impossible to disprove expectancies of rejection

by others. Self-disgust leads to urges to distance oneself from others and avoid looking at one's body, which limits the ability to learn that you are not repulsive. Therefore, exposure therapy is recommended as an intervention for addressing the full range of intense emotions experienced by individuals with BPD when those emotions are impairing and being driven by erroneous beliefs.

This has been operationalized as the skill of “opposite action” in dialectical behavior therapy (DBT), which involves acting opposite to emotion-driven urges by engaging in behaviors that are inconsistent with the experienced emotion (Linehan, 2015). For example, when a patient is feeling guilty about a behavior that does not violate their values, then exposure would involve unapologetically repeating the behavior rather than stopping it or making repairs. When a patient is feeling ashamed of something for which the risk of rejection is low, exposure would involve revealing rather than hiding the shame-inducing information. When a patient has high self-disgust due to faulty beliefs that they are repulsive, exposure could involve being physically near rather than staying away from people. For each of these emotions, exposure practice can be done informally by using the skill of opposite action when an ineffective emotion-driven urge arises as well as formally by completing planned and structured exposure tasks designed to elicit and then act counter to the emotion (see Table 7.1 for examples).

Table 7.1 Examples of exposure exercises for unjustified guilt, shame, and self-disgust

Emotion	Related beliefs	Action urges	Exposure exercises
Guilt	“My behavior is unacceptable” “I did something wrong” “It’s all my fault”	Avoid engaging in the guilt-inducing behavior Apologize excessively Self-punishment	Repeat the guilt-inducing behavior without apologizing (e.g., ask for a favor, disagree with others, say “no” to requests) Tell people about the guilt-inducing behavior while looking innocent and proud Do something nice for oneself
Shame	“I am a bad person” “I am worthless” “Others would reject me if they really knew me”	Avoid others to avoid rejection Avoid eye contact Cover one’s face, curl up, shrink Speak in low volume or with halted speech Withhold personal information	Be around others Make eye contact Sit up straight, hold head high, reveal the face Speak loudly, read aloud, record oneself Disclose personal information and shame-inducing details when rejection is unlikely
Self-disgust	“I am dirty” “I am contaminated” “I am disgusting”	Avoid looking at oneself in the mirror Shower excessively Stay away from people to avoid contaminating them	Look at oneself in the mirror Limit washing Move close to others and initiate physical contact

Review of Research Findings

Determining Readiness

While there is no universally accepted definition of readiness for exposure therapy, the eligibility criteria used in randomized controlled trials (RCTs) provide insight into the types of problems that are likely to make a person a poor candidate for these treatments. In particular, patients who are acutely suicidal, engaging in NSSI, dependent on alcohol or drugs, meet criteria for psychotic or bipolar disorders, or have another disorder that is the primary (most severe) diagnosis are routinely excluded from RCTs of exposure therapy for anxiety- and trauma-related disorders (e.g., Hoertel et al., 2013; Ronconi et al., 2014). For individuals with BPD who exhibit these types of exclusionary problems and therefore require preparatory treatment, the six readiness criteria recommended above have been used in research on the integrated dialectical behavior therapy (DBT) and DBT Prolonged Exposure (DBT PE) treatment to determine when suicidal and self-injuring individuals with BPD are ready to advance to exposure therapy for PTSD. Studies of DBT + DBT PE suggest that these readiness criteria are effective in defining the point at which patients who previously exhibited contraindications for exposure are likely to be able to complete an exposure treatment safely and effectively. In particular, after achieving this level of readiness, a minority of patients (20–25%) relapse into self-injurious behaviors during exposure therapy, and a majority (70–83%) experience a reliable improvement in PTSD (Harned et al., 2012; Harned et al., 2014; Harned et al., 2021).

Structuring Treatment

To date, studies evaluating different approaches to structuring exposure treatments for individuals with BPD are limited to clinical trials of treatments for PTSD. To our knowledge, studies of exposure treatments for other diagnoses in the context of BPD have not been conducted. The available research suggests that standalone exposure protocols, such as prolonged exposure for PTSD (PE; Foa et al., 2019), are likely to be comparably effective for individuals with and without BPD or BPD characteristics who meet the standard eligibility criteria for these treatments (Clarke et al., 2008; Feeny et al., 2002); however, patients with BPD may be less likely to achieve good end-state functioning (Feeny et al., 2002). One study has examined a parallel treatment approach in which PE was delivered along with EMDR, psychoeducation groups, and physical activity in an intensive 8-day residential treatment program for people with PTSD without a recent suicide attempt, of whom 49% screened positive for BPD (De Jongh et al., 2020). This treatment resulted in significant improvements in BPD and PTSD severity and was safe to deliver; however, individuals with more BPD symptoms exhibited less improvement in PTSD.

Several studies have evaluated a phase-based treatment called DBT for PTSD (DBT-PTSD) in which an adapted version of DBT is delivered before and after exposure therapy for PTSD for women with PTSD related to childhood abuse who do not have a recent life-threatening suicide attempt, substance dependence, or severe mental illness (Bohus et al., 2013; Bohus et al., 2020; Steil et al., 2011). One study analyzed results for the BPD subgroup (45% of the sample) and found that BPD was not related to outcomes and patients with BPD showed large improvements in PTSD; however, a majority of those with BPD did not remit from PTSD, and the treatment was not superior to a non-active control in improving BPD, dissociation, or global severity (Bohus et al., 2013). Finally, an integrated treatment consisting of standard DBT with the DBT PE protocol for PTSD has been evaluated in studies with suicidal and self-injuring individuals with BPD and PTSD (Harned et al., 2012; Harned et al., 2014), veterans with PTSD and BPD traits (Meyers et al., 2017), and individuals with PTSD (54% with BPD) receiving DBT in public mental health settings (Harned et al., 2021). Across these studies, treatment resulted in reliable improvement in PTSD for a majority of patients as well as significant reductions in comorbid problems such as suicide attempts, NSSI, suicidal ideation, dissociation, and functional impairment. Additionally, results from the two controlled studies indicate that integrating the DBT PE protocol into DBT results in greater improvements in PTSD and other outcomes than DBT alone (Harned et al., 2014; Harned et al., 2021).

Optimizing Emotional Engagement

Although emotion dysregulation is a core feature of BPD, this vulnerability to intense and unstable emotions does not appear to substantially impact treatment outcomes during exposure therapy, at least in interventions that incorporate skills to optimize emotional engagement. Specifically, studies have shown that individuals with BPD do not exhibit excessive levels of emotional activation on average or fail to habituate during exposure therapy in DBT + DBT PE (Harned et al., 2015) or DBT-PTSD (Görg et al., 2017), both of which utilize skills-assisted exposure. Furthermore, these studies suggest that it is not the level of emotional activation during exposure that predicts improvement in PTSD (Harned et al., 2015), but rather the degree to which emotions decrease in intensity over the course of treatment (Görg et al., 2017; Harned et al., 2015). In addition, a study of DBT-PTSD in which about half of the sample had BPD found that higher levels of state dissociation during therapy sessions predicted less improvement in PTSD (Kleindienst et al., 2016). Taken together, these findings suggest that patients with BPD who sometimes struggle to achieve effective levels of emotional engagement can benefit from exposure therapy, perhaps particularly when it is paired with emotion regulation skills. However, persistent difficulties with state dissociation are likely to reduce the effectiveness of exposure in this population.

Non-fear Emotions

Several studies using single-case experimental designs have evaluated the exposure-based strategy of acting opposite to emotional action urges as a method of reducing the intensity of non-fear emotions among individuals with BPD. These studies have found that opposite action is likely to have immediate effects in reducing sadness, guilt, and shame (Rizvi & Linehan, 2005; Sauer-Zavala et al., 2019), as well as longer-term effects in reducing general negative affect among individuals with BPD (Sauer-Zavala et al., 2020). In addition, two studies have examined the impact of imaginal exposure for PTSD on changes in fear and non-fear emotions among individuals with BPD. Both studies found significant decreases in the intensity of in-session fear, shame, guilt, disgust, and global distress over the course of treatment, whereas sadness and anger were less likely to change (Harned et al., 2015; Görg et al., 2017). These findings indicate that among individuals with BPD, exposure therapy is likely to be effective in reducing emotions cued by unrealistic beliefs (e.g., fear, guilt, shame, and self-disgust about past trauma) but is unlikely to change emotions that reflect realistic beliefs (e.g., sadness and anger about past trauma).

Case Example

To illustrate the above clinical recommendations, we will describe a case example of a patient with BPD who received the integrated DBT and DBT PE protocol treatment. The DBT PE protocol is an adaptation of PE for PTSD that was developed for suicidal and self-injuring individuals with BPD, PTSD, and other complex comorbidities. This integrated treatment includes three stages beginning with standard DBT to increase behavioral control and effective coping skills, advancing to the DBT PE protocol once sufficient readiness is achieved, and ending with DBT targeting residual psychosocial problems.

“Andrew” (pseudonym) was a 45-year-old, Caucasian, heterosexual, cisgender male Veteran who was diagnosed with BPD, PTSD, major depressive disorder, social anxiety disorder, alcohol use disorder, and cannabis use disorder and was at high risk for suicide. He had an extensive trauma history, including childhood abuse, pervasive bullying in adolescence, and combat trauma. Andrew was referred to a comprehensive DBT program in a VA medical center after two back-to-back suicide attempts via cutting his wrists that were prompted by intense guilt related to the combat trauma he had experienced and resulted in psychiatric hospitalizations.

Stage 1: DBT to Achieve Readiness

Although it was clear at intake that Andrew would benefit from exposure therapy for PTSD, it was also clear that he was not yet ready to engage in such treatment due to safety concerns. In addition to his two recent suicide attempts, Andrew was engaging in regular NSSI via cutting his upper arms and torso and continued to exhibit indicators of acute suicide risk (e.g., daily high urges to kill himself and a wavering commitment to stay alive). Andrew also exhibited a variety of behaviors that would be likely to make exposure therapy less effective, including regularly missing sessions, attending sessions under the influence of cannabis, experiencing high levels of state dissociation in session, and not completing therapy homework. Consequently, treatment began with DBT focused on increasing Andrew's readiness for exposure therapy for PTSD by increasing his motivation and ability to stop suicidal and self-injurious behaviors, decreasing alcohol and cannabis use, increasing behavioral skills, and gradually practicing exposure to emotions without escaping via dissociation. To achieve these goals, Andrew received weekly DBT individual therapy and attended a weekly DBT skills group in which he learned mindfulness, emotion regulation, distress tolerance, and interpersonal effectiveness skills. This group also functioned as an informal exposure practice, given he also suffered from severe social anxiety. Skills were further strengthened by offering phone coaching to help Andrew apply skills in his life outside of therapy and follow through on commitments he had made during sessions (e.g., to dispose of lethal means or complete a homework task).

Andrew increasingly made progress with stabilization over the first 6 months of DBT with occasional setbacks, including several instances of NSSI and an additional suicide attempt via cutting his wrists in the fourth month of treatment. These moments were framed as an opportunity to practice how to effectively recover from setbacks by dialectically accepting "slips" and problem solving how to avoid "slides." The therapist also targeted attendance and homework completion with contingency management (e.g., Andrew had to call his therapist directly if canceling a session), behavioral analysis, problem solving and troubleshooting, and reinforcing behaviors indicative of incremental increases in treatment engagement. Finally, the therapist also practiced gradually exposing Andrew to emotionally evocative content and taught and coached him to manage dissociation. Andrew was deemed ready for exposure therapy after 6 months of DBT when he had been abstinent from suicidal and self-injurious behaviors for 2 months, had demonstrated his ability to engage effectively in therapy, and was generally willing and able to experience and tolerate emotions without escaping.

Stage 2: DBT PE for PTSD

Andrew then advanced to the second stage of treatment in which DBT PE was added to DBT to enable concurrent targeting of PTSD and Andrew's other co-occurring problems. DBT PE was delivered in a second weekly individual therapy session, while Andrew continued to receive the standard modes of DBT (i.e., individual therapy, group skills training, phone coaching). The therapist helped Andrew select two trauma memories to target in DBT PE: a military trauma memory and a childhood abuse memory. Although both of these memories were highly distressing and functionally impairing, it was collaboratively decided to begin with the military trauma memory because it was most clearly driving Andrew's high suicide urges and because he was initially unwilling to target his childhood abuse memory due to intense shame. Andrew and his therapist worked to develop an in vivo exposure hierarchy that would address his excessive fears (e.g., of being harmed) as well as other intense, unjustified trauma-related emotions, such as guilt (e.g., about taking up resources), shame (e.g., about disclosing personal information), and self-disgust (e.g., about his body).

Despite working to prepare Andrew to willingly experience emotions and control dissociation during exposure, during his first imaginal exposure session, Andrew initially experienced intense distress while narrating the trauma memory, which led him to dissociate throughout the remainder of the exposure. After this session, he drank six large beers for the first time in 3 months and experienced high suicide urges but did not engage in self-injurious behavior. The therapist chose not to pause DBT PE, given that the alcohol relapse was not acutely life-threatening and could be targeted concurrently with DBT. In the subsequent DBT session, Andrew recommitted to his sobriety, disposed of all remaining alcohol, and modified his post-exposure skills plan in anticipation of future exposure-related distress. Andrew also taped visual reminders of his commitments and pros/cons of drinking to his bedroom wall and inside his car to mitigate against future relapses.

For the next few sessions of imaginal exposure practice, Andrew continued to have difficulty achieving effective levels of emotional engagement. He exhibited high levels of avoidance and dissociation, as evidenced by taking long pauses, using nearly inaudible volume and vague descriptions, and his own descriptions of derealization ("this feels like a dream"). The therapist coached Andrew to use the skills he learned in DBT to downregulate his arousal and reduce dissociation during exposure. For example, Andrew regularly engaged in exposure practice while holding an ice pack, and if dissociation became intense, he would use skills such as doing push-ups on the floor of the therapy office, doing several rounds of paced breathing, and mindfully observing his surroundings using his five senses. The therapist was also more active than might be expected during imaginal exposure, whether prompting and coaching Andrew to use DBT skills or offering reassurance and praise for incrementally approaching emotions and blocking avoidance. Eventually, Andrew became more skilled at regulating his dissociation and was able to consistently experience high-intensity emotions without escaping. For example, in order to

target shame related to his childhood abuse, as treatment progressed to this second memory, Andrew was instructed to tell the most shame-inducing part of his trauma narrative while acting opposite to his urges to hide by instead making eye contact with the therapist. At first, the therapist allowed for controlled escape (using a visual signal to allow Andrew to take occasional breaks from sustained eye contact), but eventually Andrew was able to recount his entire narrative without breaking eye contact, and his shame ratings significantly dropped thereafter.

While Andrew and his therapist completed imaginal exposure in their sessions, he also was assigned in vivo exposure to practice on his own between sessions. Key themes from Andrew's in vivo exposure hierarchy related to excessive fear of being harmed and accidentally harming others in self-defense (e.g., going on walks outside of his home, interacting with strangers, sleeping without locking the bedroom door), reading and watching trauma-related content (e.g., war movies and books, pamphlets about childhood abuse), and handling trauma-related stimuli (e.g., weapons and other tools). Andrew also completed in vivo exposure tasks to address his unjustified guilt about his military trauma and generalized feelings of guilt for taking up space and resources in the therapy office and in the world at large. For example, he regularly did not follow up with medical appointments for his physical problems and had not worked to correct errors that were limiting his VA benefits and eligibility for services. Thus, in vivo exposures targeting guilt involved unapologetically taking up space, attending sessions, asking for extra time/phone coaching, requesting appointments with other providers, and advocating for his earned benefits. Andrew also suffered from pervasive shame that caused him to avert eye contact, speak at an almost indiscernible volume, and avoid family members and friends in an effort to not be seen. Similarly, in vivo exposures targeting shame involved making eye contact and raising his voice volume while speaking to others, recording voice memos of himself reading aloud, disclosing trauma-related events to trusted family and friends, and disclosing his PTSD diagnosis in DBT skills group. Self-disgust was targeted with self-compassion meditations and having him make eye contact with himself while listening to imaginal exposure recordings.

By the end of DBT PE, Andrew was able to successfully complete exposure tasks and regulate dissociation without assistance from the therapist. His PTSD had also significantly improved, and he no longer blamed himself for his traumas or wanted to die. Andrew also succeeded in maintaining his abstinence from self-injurious behaviors and substance use, sought out treatment for his long-neglected medical problems, felt closer to his friends and family members, regularly engaged in activities outside his house, and found meaning in supporting campaigns protecting children from abuse.

Stage 3: DBT for Improving Quality of Life

This final stage of treatment lasted 4 weeks and consisted of helping Andrew continue building a life he felt was worth living. Andrew identified goals of decreasing loneliness and obtaining a job. In addition to utilizing problem-solving strategies, exposure principles were used to help Andrew approach anxiety-provoking situations such as calling friends, spending time with extended family, and applying for jobs. By the end of treatment, Andrew had booked a trip to visit an old military friend, was regularly attending weekly family dinners, and was employed for the first time since returning from his military deployment. This final stage of treatment involved reinforcing the importance of living an “exposure lifestyle” and choosing to engage in opportunities to practice informal exposure as they arise.

Summary

Not all individuals with BPD require adaptations to exposure-based protocols. However, depending on the nature and severity of co-occurring problems, some individuals with BPD may benefit from strategic adaptations that can improve the safety and effectiveness of exposure. Although clinical judgment is essential for determining the necessity and form of adaptations to treatment, it is also important to consider whether available empirical data support such adaptations. Research supports making adaptations in specific ways for individuals with BPD, and the case provides an example of how to make targeted and strategic adaptations to enable high-risk and complex patients with BPD to engage in and benefit from exposure therapy. Adaptations include strategies for determining readiness to begin exposure therapy and, when needed, augmenting or delaying exposure protocols to address co-occurring problems that may require priority and/or concurrent treatment. Therapists may also consider the potential need for incorporating skills into exposure to optimize emotional engagement as well as using exposure to target non-fear emotions that may be causing significant impairment. In sum, individuals with BPD are often greatly in need of exposure therapy to address problems that are contributing to their high levels of emotional and behavioral dysregulation, and the adaptations described in this chapter offer a path forward to make this powerful intervention available to even the most complex and high-risk patients with BPD.

References

- Bohus, M., Dyer, A. S., Priebe, K., Krüger, A., Kleindienst, N., Schmahl, C., Niedtfeld, I., & Steil, R. (2013). Dialectical behaviour therapy for post-traumatic stress disorder after childhood sexual abuse in patients with and without borderline personality disorder: A randomised controlled trial. *Psychotherapy and Psychosomatics*, 82, 221–233. <https://doi.org/10.1159/000348451>

- Bohus, M., Kleindienst, N., Hahn, C., Muller-Engelmann, M., Ludascher, P., Steil, R., et al. (2020). Dialectical behavior therapy for posttraumatic stress disorder (DBT-PTSD) compared with Cognitive Processing Therapy (CPT) in complex presentations of PTSD in women survivors of childhood abuse: A randomized clinical trial. *JAMA Psychiatry*, *77*, 1235–1245. <https://doi.org/10.1001/jamapsychiatry.2020.2148>
- Clarke, S. B., Rizvi, S. L., & Resick, P. A. (2008). Borderline personality characteristics and treatment outcome in cognitive-behavioral treatments for PTSD in female rape victims. *Behavior Therapy*, *39*, 72–78. <https://doi.org/10.1016/j.beth.2007.05.002>
- De Jongh, A., Groenland, G., Sanches, S., Bongaerts, H., Van Vooren, E., & Minnen, A. (2020). The impact of brief intensive trauma-focused treatment for PTSD on symptoms of borderline personality disorder. *European Journal of Psychotraumatology*, *11*, 1. <https://doi.org/10.1080/20008198.2020.1721142>
- Feeny, N. C., Zoellner, L. A., & Foa, E. B. (2002). Treatment outcome for chronic PTSD among female assault victims with borderline personality characteristics: A preliminary examination. *Journal of Personality Disorders*, *16*, 30–40. <https://doi.org/10.1521/pedi.16.1.30.22555>
- Foa, E. B., Hembree, E. A., Rothbaum, B. O., & Rauch, S. A. M. (2019). *Prolonged exposure therapy for PTSD: Emotional processing of traumatic experiences (2nd edition)*. Oxford University Press. <https://doi.org/10.1093/med-psych/9780190926939.001.0001>
- Görg, N., Priebe, K., Böhnke, J. R., Steil, R., Dyer, A. S., & Kleindienst, N. (2017). Trauma-related emotions and radical acceptance in dialectical behavior therapy for posttraumatic stress disorder after childhood sexual abuse. *Borderline Personality Disorder and Emotion Dysregulation*, *4*, 1–12. <https://doi.org/10.1186/s40479-017-0065-5>
- Grant, B. F., Chou, S. P., Goldstein, R. B., Huang, B., Stinson, F. S., Saha, T. D., Smith, S. M., Dawson, D. A., Pulay, A. J., Pickering, R. P., & Ruan, W. J. (2008). Prevalence, correlates, disability, and comorbidity of DSM-IV borderline personality disorder: Results from the Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of Clinical Psychiatry*, *69*, 533–545. <https://doi.org/10.4088/jcp.v69n0404>
- Harned, M., Korslund, K., Foa, E., & Linehan, M. (2012). Treating PTSD in suicidal and self-injuring women with borderline personality disorder: Development and preliminary evaluation of a Dialectical Behavior Therapy Prolonged Exposure Protocol. *Behaviour Research and Therapy*, *50*(6), 381–386. <https://doi.org/10.1016/j.brat.2012.02.011>
- Harned, M., Schmidt, S., Korslund, K., & Gallop, R. (2021). Does adding the Dialectical Behavior Therapy Prolonged Exposure (DBT PE) Protocol for PTSD to DBT improve outcomes in public mental health settings? A pilot nonrandomized effectiveness trial with benchmarking. *Behavior Therapy*, *52*, 639–655. <https://doi.org/10.1016/j.beth.2020.08.003>
- Harned, M. S., Korslund, K. E., & Linehan, M. M. (2014). A pilot randomized controlled trial of dialectical behavior therapy with and without the dialectical behavior therapy prolonged exposure protocol for suicidal and self-injuring women with borderline personality disorder and PTSD. *Behaviour Research and Therapy*, *55*, 7–17. <https://doi.org/10.1016/j.brat.2014.01.008>
- Harned, M. S., Ruork, A. K., Liu, J., & Tkachuck, M. A. (2015). Emotional activation and habituation during imaginal exposure for PTSD among women with borderline personality disorder. *Journal of Traumatic Stress*, *28*, 253–257. <https://doi.org/10.1002/jts.22013>
- Hoertel, N., Le Strat, Y., De Maricourt, P., Limosin, F., & Dubertret, C. (2013). Are subjects in treatment trials of panic disorder representative of patients in routine clinical practice? Results from a national sample. *Journal of Affective Disorders*, *146*, 383–389. <https://doi.org/10.1016/j.jad.2012.09.023>
- Kleindienst, N., Priebe, K., Görg, N., Dyer, A., Steil, R., Lyssenko, L., ... Bohus, M. (2016). State dissociation moderates response to dialectical behavior therapy for posttraumatic stress disorder in women with and without borderline personality disorder. *European Journal of Psychotraumatology*, *7*, 30375. <https://doi.org/10.3402/ejpt.v7.30375>
- Linehan, M. M. (2015). *DBT@ Skills training manual* (2nd ed.). Guilford Press.
- Meyers, L., Voller, E., McCallum, E., Thuras, P., Shallcross, S., Velasquez, T., et al. (2017). Treating veterans with PTSD and borderline personality symptoms in a 12-week intensive

- outpatient setting: Findings from a pilot program. *Journal of Traumatic Stress*, *30*, 178–181. <https://doi.org/10.1002/jts.22174>
- Neacsiu, A. D., Bohus, M., & Linehan, M. M. (2014). Dialectical behavior therapy: An intervention for emotion dysregulation. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 491–507). Guilford Press.
- Nepon, J., Belik, S. L., Bolton, J., & Sareen, J. (2010). The relationship between anxiety disorders and suicide attempts: Findings from the National Epidemiologic Survey on Alcohol and Related Conditions. *Depression and Anxiety*, *27*, 791–798. <https://doi.org/10.1002/da.20674>
- Rizvi, S. L., & Linehan, M. M. (2005). The treatment of maladaptive shame in borderline personality disorder: A pilot study of “opposite action”. *Cognitive and Behavioral Practice*, *12*, 437–447. [https://doi.org/10.1016/S110.1016/S1077-7229\(05\)80071-9](https://doi.org/10.1016/S110.1016/S1077-7229(05)80071-9)
- Ronconi, J. M., Shiner, B., & Watts, B. V. (2014). Inclusion and exclusion criteria in randomized controlled trials of psychotherapy for PTSD. *Journal of Psychiatric Practice*, *20*, 25–37. <https://doi.org/10.1097/01.pra.0000442936.23457.5b>
- Sauer-Zavala, S., Cassiello-Robbins, C., Woods, B. K., Curreri, A., Tirpak, J. W., & Rassaby, M. (2020). Countering emotional behaviors in the treatment of borderline personality disorder. *Personality Disorders: Theory, Research, and Treatment*, *11*, 328–338. <https://doi.org/10.1037/per0000379>
- Sauer-Zavala, S., Wilner, J. G., Cassiello-Robbins, C., Saraff, P., & Pagan, D. (2019). Isolating the effect of opposite action in borderline personality disorder: A laboratory-based alternating treatment design. *Behaviour Research and Therapy*, *117*, 79–86. <https://doi.org/10.1016/j.brat.2018.10.006>
- Slotema, C. W., Wilhelmus, B., Arends, L. R., & Franken, I. H. A. (2020). Psychotherapy for post-traumatic stress disorder in patients with borderline personality disorder: A systematic review and meta-analysis of its efficacy and safety. *European Journal of Psychotraumatology*, *11*, 1796188. <https://doi.org/10.1080/20008198.2020.1796188>
- Steil, R., Dyer, A., Priebe, K., Kleindienst, N., & Bohus, M. (2011). Dialectical behavior therapy for posttraumatic stress disorder related to childhood sexual abuse: A pilot study of an intensive residential treatment program. *Journal of Traumatic Stress*, *24*, 102–106. <https://doi.org/10.1002/jts.20617>
- Zanarini, M. C., Frankenburg, F. R., Dubo, E. D., Sickel, A. E., Trikha, A., Levin, A., & Reynolds, V. (1998). Axis I comorbidity of borderline personality disorder. *American Journal of Psychiatry*, *155*, 1733–1739. <https://doi.org/10.1176/ajp.155.12.1733>
- Zanarini, M. C., Frankenburg, F. R., Hennen, J., Reich, D. B., & Silk, K. R. (2004). Axis I comorbidity in patients with borderline personality disorder: 6-year follow-up and prediction of time to remission. *American Journal of Psychiatry*, *161*, 2108–2114. <https://doi.org/10.1176/appi.ajp.161.11.2108>

Chapter 8

Exposure Therapy When Patients Present with PTSD and a Comorbid Psychotic Disorder



Wilson J. Brown and Anouk L. Grubaugh

Abstract Despite experiencing high rates of traumatic stress exposure and PTSD, individuals with a psychotic disorder often do not receive evidence-based treatments (EBTs) for PTSD. Yet, EBTs for PTSD are effective in this patient population and produce outcomes comparable to those observed in the broader PTSD treatment evaluation literature. This chapter provides clinical guidelines for the use of exposure therapy among individuals with a comorbid psychotic disorder. Our discussion begins with a brief overview of the PTSD treatment outcome literature for individuals with a psychotic disorder, followed by common misconceptions and barriers to care that have hampered the wide-scale application of exposure therapy for this patient population. Then, strategies for the evidence-based assessment of PTSD and other relevant functional outcomes in patients are outlined. Finally, we present a detailed analysis of the optimal administration of exposure therapy for patients with a psychotic disorder. The principal recommendation for clinicians is to avoid significant deviations from the standard exposure therapy protocol while monitoring medication compliance and stability of psychotic symptoms and ensuring adequate emotional engagement during exposure exercises. Specific strategies along this theme are detailed.

Keywords Posttraumatic stress disorder · Exposure therapy · Psychosis · Psychotic disorder · Prolonged exposure

W. J. Brown (✉)

School of Humanities and Social Sciences, Pennsylvania State University, The Behrend College, Erie, PA, USA

e-mail: wilsonbrown@psu.edu

A. L. Grubaugh

Ralph H. Johnson Veterans Affairs Medical Center, Charleston, SC, USA

Department of Psychiatry and Behavioral Sciences, Medical University of South Carolina, Charleston, SC, USA

e-mail: grubaugh@musc.edu

© The Author(s), under exclusive license to Springer Nature Switzerland AG 2022

J. A. J. Smits et al. (eds.), *Clinical Guide to Exposure Therapy*,
https://doi.org/10.1007/978-3-031-04927-9_8

Introduction

Individuals with severe forms of mental illness, such as those with a psychotic disorder, are rarely offered evidence-based treatments (EBTs) for posttraumatic stress disorder (PTSD). This is unfortunate because rates of both trauma exposure and PTSD are notably higher among individuals with psychotic disorders relative to the general population. For example, the median prevalence rate for violent victimization among individuals with a psychotic disorder is 20%, a rate four to six times higher than the rate in the general community (de Vries et al., 2019). This rate is even more pronounced among homeless individuals with psychotic illness, particularly women and those abusing drugs or alcohol (de Vries et al., 2019). Additionally, two recent reviews on PTSD prevalence among individuals with a schizophrenia spectrum disorder reported rates of current PTSD as high as 55 and 57%, respectively (Dallel et al., 2018; Seow et al., 2016). This contrasts significantly with the past year prevalence of 3.5% observed in the general population (Kessler et al., 2005). Aside from being highly prevalent, the co-occurrence of PTSD and psychosis is linked with significantly worse outcomes across a range of clinical, functional, and quality-of-life indices relative to the presence of either disorder alone, and PTSD has been found to exacerbate the primary symptoms of psychosis and other indicators of functional recovery in this population (Dallel et al., 2018; Grubaugh et al., 2011; Newman et al., 2010; Seow et al., 2016).

Despite the high prevalence of trauma exposure and PTSD among individuals with a psychotic disorder, posttraumatic sequelae remain underrecognized and undertreated in public sector settings for numerous reasons (Calhoun et al., 2007; Lommen & Restifo, 2009; Zammit et al., 2018). First, PTSD is often not the presenting concern for this patient group, and patients are unlikely to disclose past experiences of trauma or trauma-related symptoms without prompting. Related to this, PTSD may not seem particularly relevant for treatment planning as the treatment of psychosis is often prioritized over other “secondary” or “less severe” disorders. As such, trauma concerns may be overlooked as an unintended consequence of standard treatment practices (Cusack et al., 2004; Harris & Fallot, 2001). Clinicians may also be reluctant to treat patients with a psychotic disorder due to broad misassumptions about illness course and prognosis, as well as misassumptions about the general utility of psychotherapy in this patient group relative to medication management. For example, clinical psychologists tend to perceive patients with psychotic disorders as less relatable and more dissimilar to themselves and other clinical populations (i.e., those with moderate depression and other anxiety disorders). In fact, clinical psychologists perceive patients with psychotic disorders to be among the least desirable populations to work with, second only to patients with borderline features (Servais & Saunders, 2007), and some providers may question whether individuals with psychotic disorders can fully engage in a collaborative therapy relationship and achieve meaningful levels of recovery, functionality, or social integration (see Wahl and Aroesty-Cohen (2010) for a review). These misassumptions run counter to extant treatment efficacy data which demonstrates that this patient

group can successfully engage in psychotherapy and is capable of meaningful symptom improvement and recovery when compliant with treatment (McDonagh et al., 2017). Fortunately, increased personal contact with this patient group, as well as with other more severe clinical populations, weakens these frustrations, pessimistic attitudes, and misconceptions (Eack & Newhill, 2008).

Long-standing and broad misconceptions about individuals with psychotic disorders are intertwined with additional misconceptions about the specific application of EBTs for PTSD in this clinical population. These include concerns that addressing trauma may be insensitive or too intense for this patient group; beliefs that inquiring about or attempting to address trauma may exacerbate patients' primary symptoms and/or result in decompensation, suicidality, or psychiatric hospitalization; and concerns that discussion of trauma and trauma-related issues may be too disruptive to the therapeutic milieu of inpatient or day hospitalization programs (Deacon et al., 2013; Frueh et al., 2006; Pittig et al., 2019). Fortunately, contemporary research disconfirms many of these misconceptions and supports the application of trauma-focused assessment and intervention for this patient group.

Assessment of Trauma Exposure and PTSD Among Individuals with a Psychotic Disorder

Some clinicians may be concerned about the ability of patients with a psychotic disorder to accurately report traumatic memories and associated symptoms. Admittedly, instruments for assessing traumatic event exposure and PTSD symptoms were not initially normed on patients with psychotic disorders. However, commonly used trauma exposure and PTSD measures have been found to be both reliable and valid in this patient group, including the reliable test-retest of physical and sexual assault exposure and PTSD, validity of reports of physical and sexual assault against a structured interview, the internal consistency of PTSD, and adequate convergent validity between self-report and interview measures of PTSD (see Grubaugh et al. (2011) for review). Additionally, treatment studies report strong inter-rater agreement for PTSD diagnoses among participants with psychotic disorders (Frueh et al., 2009; Grubaugh et al., 2016; van den Berg et al., 2016).

A number of trauma exposure and PTSD assessment instruments have been used in patients with a psychotic disorder. The most widely cited traumatic event exposure measures with this patient population include the Life Events Checklist (Gray et al., 2004) and the Traumatic History Questionnaire (THQ; Hooper et al., 2011). With regard to PTSD severity, commonly used self-report measures include the PTSD Checklist (PCL; Blanchard et al., 1996), the Posttraumatic Diagnostic Scale (PDS; Foa et al., 1997), and the PTSD Symptom Scale (PSS-R; Foa et al., 1993), while the most commonly used interview measure is the Clinician-Administered PTSD Scale (CAPS; Blake et al., 1995). There are little data on the use of brief PTSD screeners in individuals with a psychotic disorder. However, given that self-report and clinician-administered measures of PTSD have been found to be reliable

among individuals with a psychotic disorder, there is no compelling reason to believe that the brief screeners normed and used in the broader population will not perform adequately for this patient group. Consistent with this, de Bont et al. (2015) tested the psychometric qualities of a brief PTSD screener, the Trauma Screening Questionnaire (TSQ; Brewin et al., 2002), among individuals with a psychotic disorder. Comparable to other patient groups, a cutoff score of 6 was found to be optimal with regard to sensitivity and specificity. Thus, with consideration of this body of literature, clinicians can safely opt to use validated brief screeners for PTSD in their practice settings and with patients with psychotic disorders to more economically identify patients that may be in need of PTSD specialty care.

Although traditional PTSD assessment measures can be reliably used for patients with a psychotic disorder, there are some issues to consider when conducting a PTSD evaluation. First, clinicians may be skeptical about the accuracy of reports of trauma when delusions are present. Fortunately, these concerns are largely unfounded. First, as noted previously, extant data supports both the validity and the reliability of reports of trauma in this population (Grubaugh et al., 2011). Within a clinical context, instances of patients conflating their traumatic experiences with manufactured delusions are rare and typically easy to identify by the presence of illogical or implausible details. Under the circumstances that a reported traumatic event is not plausible, understandable, and within the scope of normal life experiences, assessment should be discontinued. However, with rare exception, the majority of individuals with a psychotic disorder present with plausible and commonly experienced traumatic events. If anything, this patient group may need additional prompting regarding details of their traumatic experience or associated symptoms. Second, as an initial strategy for both self-report and clinician-administered instruments for PTSD, clinicians should consistently anchor their assessment questions (i.e., frequency/severity of symptoms) to the experience of trauma. This is not unique to this clinical population, as there is a tendency for patients to express their experience of general distress in response to circumscribed questions about trauma-specific experiences, particularly on self-report instruments. Frequent reanchoring using a prompt, such as “With regard to the traumatic event you experienced, how often have you been bothered by...,” will help patients concisely report their trauma-related symptoms independent of other distress and increase assessment accuracy. Last, the use of direct anchoring assists patients in distinguishing between trauma-related symptoms that overlap with symptoms of some psychotic disorders, like schizophrenia. Specifically, these include the DSM-5 PTSD criterion D symptoms of negative affect, decreased interest in activities, feeling isolated, and difficulty experiencing positive affect and the criterion E symptoms related to concentration difficulties and hypervigilance (APA, 2013). To illustrate, consider the following prompts to differentiate between concentration difficulties related to PTSD and those related to a psychotic disorder:

- “When did your concentration difficulties start?”
- “How long after the assault did you start to have concentration problems?”

- “When did you first start to experience symptoms related to schizophrenia? Was this before or after you were assaulted?”
- If unclear, “How much of your concentration difficulties do you think are due to your trauma? How much do you think are due to your other symptoms related to schizophrenia?”

Conversely, with DSM-5 PTSD symptoms of negative alterations in cognitions and mood (criterion D; APA, 2013), it will likely prove useful to focus more on the patient’s direct responses to the question (i.e., content), rather than observed behavioral deficits (i.e., negative symptoms of a psychotic disorder), such as flat affect or poverty of speech. Determination of the temporal onset of criterion D and E symptoms in relationship to the traumatic event can also provide valuable information for differential diagnosis. These strategies can simplify the process of confirming a diagnosis of PTSD in the presence of a psychotic spectrum disorder, which in turn will facilitate determinations regarding the need for PTSD specialty care. That said, even patients with subthreshold levels of PTSD should be considered for treatment if they are experiencing meaningful functional impairment as a result of their symptoms (criterion G for PTSD).

Other assessment measures to consider at intake or when tracking patient progress include measures of psychosis severity such as the Brief Psychiatric Rating Scale (BPRS; Lukoff et al., 1986), the Scale for the Assessment of Positive Symptoms (SAPS; Andresen, 1984), the Scale for the Assessment of Negative Symptoms (Andresen, 1985), and the Positive and Negative Symptom Scale (PANSS; Kay et al., 1987). The use of these or comparable measures at intake is highly recommended, given that patient suitability for trauma-intensive treatment depends on the severity and stabilization of psychotic disorder symptoms. However, these measures are not recommended for weekly symptom monitoring, as each can take 45 minutes to administer. As such, extensive assessments of psychosis severity may not be a practical tool for typical community-based settings. Alternatively, clinicians may opt to monitor changes via direct observation and targeted inquiry.

Other critical indicators of PTSD treatment suitability for patients with a psychotic disorder include time since the patient’s most recent psychiatric hospitalization or period of active suicidality. If the patient has experienced either of these recently (i.e., within the last 2 months, inclusion criteria referenced in Grubaugh et al., 2016), exposure therapy may be contraindicated until stabilization occurs and is maintained. Additionally, temporary or permanent discontinuation of treatment should be considered if the patient experiences psychiatric hospitalization, acute exacerbation of psychosis or mania, or active suicidality during the course of PTSD treatment. Relatedly, a necessary precondition for the successful application of exposure therapy in individuals with a psychotic disorder is patient adherence to medication for symptom stabilization. Thus, the integration of exposure therapy within a multidisciplinary treatment approach that also includes psychiatric symptom management is preferred. Intensive trauma treatment of any kind is not appropriate when a patient is actively psychotic, acutely suicidal, or concurrently abusing alcohol or substances. However, exposure therapy can be very effective for patients

when these potential contraindications are simultaneously managed (see van Minnen et al. (2012) for a review). In fact, trials reviewed in the most recent meta-analysis of PTSD treatment for individuals with severe mental illness (SMI; Grubaugh et al., 2021) consistently noted that enrolled participants were concurrently involved in standard psychiatric care for their SMI diagnosis while engaged in PTSD treatment. Thus, PTSD treatment engagement should be contingent upon patients adhering to their medication regimens as prescribed. Other patient readiness factors are discussed below under “Recommendations for the Application of Exposure Therapy in Patients with a Psychotic Disorder.”

Impact of PTSD Treatment on the Symptoms of PTSD

To date, 14 open and randomized controlled trials of EBTs for PTSD have been conducted with individuals with comorbid severe and persistent mental illnesses. Two of these studies focused exclusively on individuals with a psychotic spectrum disorder (Frueh et al., 2009; Steel et al., 2017), and four consisted primarily, but not exclusively, of individuals with a psychotic spectrum disorder (e.g., 90% or higher; de Bont et al., 2013; de Bont et al., 2016; van den Berg & van der Gaag, 2012; van den Berg et al., 2016). The remaining studies included individuals with a case mix of other psychiatric diagnoses, most notably psychotic spectrum disorders, bipolar disorder, and severe and persistent major depressive disorder (Grubaugh et al., 2016; Lu et al., 2009; Mueser et al., 2007, 2008, 2015; Nishith et al., 2015; Rosenberg et al., 2004; Wolff et al., 2012). Of the six outcome studies that consisted primarily of individuals with a psychotic spectrum disorder, five focused on PTSD as the primary outcome and one (de Bont et al., 2016) focused on indices of psychosis, depression, and social functioning as the primary outcomes. Of all 14 trials, 5 investigated EBTs that included an exposure component [e.g., prolonged exposure (PE), eye movement desensitization and reprocessing (EMDR)], and 9 investigated a cognitive behavioral therapy (CBT) variant (e.g., cognitive restructuring, brief treatment program, seeking safety). While each study reported reductions in PTSD symptoms among intervention groups, exposure-based therapies were responsible for clinically significant reductions across both clinician-administered and self-report measures. In fact, meta-analysis of these findings indicated PTSD treatments were generally responsible for PTSD symptom reductions of one *SD* from pretreatment to posttreatment, and prolonged exposure for PTSD contributed to statistically greater reductions in PTSD outcomes than CBT without exposure (Grubaugh et al., 2021). These findings on the benefit of exposure therapy are consistent with findings from a prior meta-analysis of trauma-focused treatments for individuals with SMI that examined PTSD symptoms as a secondary outcome (Brand et al., 2018).

Interestingly, observed treatment effects for PTSD outcomes across these trials are consistent with conservative estimates of effects reported in the broader PTSD treatment outcome literature (Bradley et al., 2005; Powers et al., 2010; Watts et al., 2013; Lee et al., 2016). The same is true for attrition rates observed in these studies.

More specifically, treatment dropout exceeded at least 20% in the intervention groups in 10 of the 14 trials examined with a range of 4% in one study to 41% in two studies (Grubaugh et al., 2021). Broader population clinical trials indicate an average dropout rate of 18% with significant heterogeneity across studies and interventions (Imel et al., 2013). Although attrition rates do not appear to be meaningfully different between individuals with or without a psychotic disorder, maximizing treatment adherence for patients with a psychotic disorder is important, and exploring predictors of treatment response and strategies for increasing treatment compliance should be a targeted focus of future clinical trials.

Indicators of Tolerance and Satisfaction with PTSD Treatment

Results from recent feasibility and efficacy trials indicate that PE and EMDR are safe and generally well-tolerated by individuals with a psychotic spectrum disorder (de Bont et al., 2013; Grubaugh et al., 2017), which corroborates previous findings that this population views participation in PTSD assessment, treatment, and research favorably (Grubaugh et al., 2012). Across both trials, no adverse events were experienced by participants. Pretreatment expectations and posttreatment reactions also suggest that exposure-based PTSD treatments are both subjectively desired and accepted by individuals with psychotic disorders. For example, participants in the Grubaugh et al. (2017) trial perceived PE to be feasible, logical, and not overly distressing. Thematic analysis of qualitative interviews at posttreatment indicated that individuals with a psychotic spectrum disorder perceived PE similarly in a similar manner as other patient groups. That is, individuals with a psychotic spectrum disorder tend to have concerns at the onset of treatment about their ability to manage distress in exposure to trauma-related stimuli, but this distress typically abates as treatment progresses. Additionally, most non-completers dropped out of treatment *prior to initiation of imaginal exposure* (prior to session 3), suggesting that these participants may not have experienced relief quickly enough versus an intolerance of exposure (Grubaugh et al., 2017). Conversely, some patients may have dropped out of treatment in anticipation and avoidance of exposure treatment but were reluctant to express their concerns along this theme. Despite this, most participants completed treatment and experienced clinically significant reductions in PTSD symptoms in both feasibility trials further highlighting the potential benefit of exposure-based treatment in this patient group.

Impact of PTSD Treatment on Psychosis Severity and Other Functional Indicators

Prior research indicates that traumatic stress and the presence of PTSD symptoms can exacerbate the symptoms of SMI and compound functional difficulties (Grubaugh et al., 2011; Lu et al., 2011; Newman et al., 2010; Seow et al., 2016).

Based on the dynamic relationship between PTSD symptoms and psychotic symptoms, it follows that PTSD treatment, via direct reduction of trauma-related symptoms, may indirectly reduce psychotic symptoms and enhance functioning in this population. Two meta-analyses confirm this view. The first (Brand et al., 2018) examined the direct effects of trauma-focused treatment on psychotic symptoms across 12 studies. Specifically, trauma-focused treatments resulted in small, significant reductions in positive symptoms and delusions at posttreatment. The effects for hallucinations and negative symptoms from pretreatment to posttreatment were small but insignificant. The second (Grubaugh et al., 2021) focused on PTSD symptoms as the primary outcome of interest, but SMI outcomes were examined in secondary analyses. The 14 trials included in this meta-analysis yielded 8 psychotic symptom outcomes and 6 general psychopathology outcomes. The observed effects of trauma-focused treatment on both psychotic symptoms and general psychopathology at posttreatment were significant and small to medium and medium in size, respectively. These findings converge with the previous meta-analysis and suggest that trauma-focused treatments may mitigate psychotic symptoms and general psychopathology symptoms to some degree. However, more work is required to determine if these gains are maintained.

Recommendations for the Application of Exposure Therapy in Patients with a Psychotic Disorder

According to the extant literature, the most significant challenge to the successful application of exposure therapy in patients with psychotic disorders is clinician reluctance (Deacon et al., 2013; Frueh et al., 2006; Pittig et al., 2019). Yet, feasibility and efficacy data suggest that clinicians treating individuals with SMI should proceed in conducting exposure-based therapy for PTSD with full confidence. Exposure therapy does not exacerbate psychotic symptoms, result in decompensation, or increase suicidality (van Minnen et al., 2012), nor is it considered insensitive or too intense by patients (Grubaugh et al., 2017). In fact, exposure therapy represents the most effective approach for PTSD in this population to date (Brand et al., 2018; Grubaugh et al., 2021). Yet, the application of exposure therapy for individuals with a psychotic disorder is not a one-size-fits-all procedure. Notwithstanding clinician readiness, several additional factors require consideration for the successful application of exposure therapy in this population (Table 8.1).

Pretreatment Recommendations In addition to ensuring the stability of the patient as discussed previously with regard to medication adherence, suicidality, and psychiatric hospitalization, patient readiness can be meaningfully enhanced if the clinician assumes an active role in the efficient coordination of his or her patient's care. These efforts may include, but are certainly not limited to (1) a collaborative information-sharing agreement supported with necessary patient-authorized releases of information established at the beginning of treatment, (2) regular consul-

Table 8.1 PTSD assessment and treatment recommendations for patients with a psychotic disorder

Assessment

- Standard assessment measures for traumatic event exposure and PTSD can be reliably used for individuals with a psychotic disorder
 - Brief screening instruments for PTSD can be a useful tool for identifying probable PTSD among individuals with a psychotic disorder
 - Additional probing with regard to the temporal sequence of symptoms and patients' attributions of specific symptoms to PTSD vs. psychotic disorder can facilitate a more accurate assessment of PTSD-related impairment
 - Assessment of psychosis severity and emotion regulation capabilities at intake may be helpful in assessing readiness for treatment and treatment planning
 - Consider functional impact of traumatic stress in individuals with a psychotic disorder, including those who do not meet full diagnostic criteria for PTSD, when determining treatment planning priorities
-

Therapy

- Challenge misconceptions that exposure therapy exacerbates psychotic symptoms, is insensitive, or is too intense
 - If clinically indicated with regard to patient readiness and symptom profile, proceed with the application of exposure therapy with confidence
 - Adopt a person-centered approach; present the rationale for exposure therapy in collaborative discussion
 - Monitor severity of psychotic symptoms, suicidality, and other high-risk behaviors at each session
 - Monitor medication adherence consistently; consult regularly with prescribing psychiatrist
 - Conceptualize the patient's treatment as multidisciplinary; be proactive in consultation with other providers of treatment and support services
 - Avoid significant deviations from the standard, recommended course for exposure therapies; intermittent, infrequent, or nonsequential sessions may impede habituation
 - Consider temporary or permanent discontinuation of treatment if contraindications to exposure therapy arise
 - Anticipate resistance to the treatment modality and a need for additional efforts to build rapport
 - Enhance emotional engagement within imaginal exposure when negative symptoms, depressive symptoms, and the sedation effects of medications are present
 - Schedule in vivo exposure activities with the patient's safety, functional status, resources, social supports, and living conditions in mind
 - Avoid becoming overly distracted by patient issues that are not directly related to trauma-intensive work and can be better addressed by other team members (i.e., issues related to housing instability or medication management)
-

tation with the patient's other providers (i.e., psychiatrist, physician, social worker), (3) participation in multidisciplinary treatment meetings particularly in integrated care settings, and (4) anticipation of referrals for the management of the patient's psychotic symptoms or functional needs. A multidisciplinary treatment approach is the rule, rather than the exception, for individuals with a psychotic disorder, and the early organization of these external processes can facilitate assessment of readiness for treatment, accurate case conceptualization, establishment of a cohesive safety and treatment plan, and meaningful patient engagement with each treatment arm.

Patient readiness is a multifaceted construct, comprised of both clinician and patient perceptions. From the clinician standpoint, patient readiness for exposure therapy is determined by psychiatric stability, motivation for change, and the capacity to manage emotions that arise from processing trauma (Cook et al., 2017). From the patient standpoint, readiness is more idiosyncratic. Similar to the broader population, individuals with psychotic disorders have some concerns at pretreatment about their ability to manage emotions that arise during exposure to trauma-related stimuli (Grubaugh et al., 2017a, b). Without consideration of the patient's subjective assessment of their readiness, exposure therapy may be applied prematurely or ineffectively. Overreliance on evidence of psychiatric stability, objective indicators of motivation for change (e.g., the patient was self-referred for trauma-focused therapy), and overestimation of the patient's ability to regulate emotions may contribute to dropout from exposure therapy. Indeed, dropout from exposure therapy for PTSD typically occurs early in treatment, within the first two sessions (Najavits, 2015), with a similar trend observed in the most recent open trial of PE for individuals with SMI (Grubaugh et al., 2016). Thus, in determining patient readiness, clinicians should heed patient reports of unease and unpreparedness and incorporate these potential reservations into a collaboratively developed treatment plan that addresses these concerns.

Treatment Recommendations At present, there is no evidence to suggest that the content or overall structure of PE should be modified for individuals with a psychotic disorder (i.e., that all of the active components of PE should not be delivered or that the delivery timing of the intervention components should be altered; van Minnen et al., 2012). Clinicians should be aware that the standard recommendation for PE dosing is one or two sessions per week (Foa et al., 2007). Likewise, this level of involvement must be maintained for 6–10 weeks, which increases the burden of care for patients who are likely engaged in other treatments or support services. While there is no evidence that supports or refutes alternative regimens, beginning exposure therapy gradually, at a lower frequency, or scheduling sessions intermittently is not recommended. Theoretically speaking, such a regimen may not facilitate extinction of arousal to traumatic memories or trauma-related stimuli, as the exposure exercises may not be concentrated enough to do so (van Minnen et al., 2012). Similarly, clinicians should solely focus on providing trauma-focused treatment, rather than alternating exposure sessions with other symptom management sessions or support services. If clinicians anticipate that their patient is not ready to engage in exposure therapy because of concurrent symptoms, the prudent decision would be to postpone treatment until these symptoms are mitigated.

Independent of the specific clinical population, initial engagement in exposure therapy is dependent upon the rapport between the clinician and patient, the provision of a strong rationale for exposure therapy, and the patient “buy-in” to this rationale. In PE, treatment rationale is typically presented in the first session and followed with a discussion of common reactions to trauma and the introduction to in vivo exposure in session 2 (Foa et al., 2007). These early stages of exposure therapy may require additional consideration for individuals with a psychotic

disorder, who are notoriously difficult to engage in treatment (see Dixon et al. (2016) for a review). While “selling” the rationale for exposure therapy to patients is cited as the foundation for treatment success (Hembree et al., 2003), a directive or instructional approach that is perceived as coercive may be met with resistance. Thus, a person-centered approach (Dixon et al., 2016) is recommended, wherein the rationale for PE is presented within a collaborative discussion with the patient and the treatment is individualized to meet their needs and concerns. This requires the flexible application of manualized exposure therapies, which, contrary to misassumptions about manualized protocols, is a recommended practice (Hembree et al., 2003). Examples of specific modifications to enhance treatment engagement and confidence in the rationale among individuals with a psychotic disorder may include allocating additional time in session to discussion of the rationale, using between-session communications to enhance rapport development, and providing PE in a more concentrated, intensive format to ensure sufficient treatment gains over time (van Minnen et al., 2012). Although these strategies can serve to improve treatment adherence and/or response among individuals with a psychotic disorder, recommendations for this clinical population are not necessarily unique relative to others. Again, a flexible application of manualized exposure therapies based on the patient’s individual symptom presentation and progress should be used rather than the uniform application of strategies in the absence of data to suggest otherwise.

Treatment engagement may also be influenced by symptoms related to psychosis and associated characteristics in this population. Negative symptoms (i.e., alogia, avolition, a sociality, anhedonia, and blunted affect), symptoms of severe and persistent depression, and even the sedation effects of antipsychotic medications can interfere with interest and motivation for participation in treatment. Consistent with recommendations in the PE manual (Foa et al., 2007), clinicians should consider individualized modifications to the protocol to address symptoms that interfere with treatment (van Minnen et al., 2012). At present, meta-analytic evidence (Brand et al., 2018; Grubaugh et al., 2021) suggests that exposure therapy can proceed and yield effective outcomes in the presence of mild-to-moderate negative symptoms, depression symptoms, and medication side effects. These results are consistent with research that exposure therapy tends to be just as effective for trauma survivors with dissociative features and depression (Hagenaars et al., 2010). Alternatively, little research has examined the interaction between sedation side effects and exposure therapy, and what research is available is inconsistent (Rosen et al., 2013; Rothbaum et al., 2014). Intuitively, if negative symptoms, depression symptoms, or medication side effects are disabling and likely to interfere with active treatment components, temporary or permanent treatment discontinuation may be required.

Beyond treatment engagement, according to one prominent theory of exposure, emotional processing theory (Foa & Kozak, 1986; Foa et al., 2007), the success of exposure exercises depends on initial emotional engagement with the trauma-related stimuli or memory and eventual habituation. Clinicians should be prepared for some patients with psychosis to experience pronounced difficulties with emotional engagement, particularly during imaginal exposure. While the PE manual (Foa et al., 2007) presents multiple strategies to enhance emotional engagement with the trauma memory, clinicians may assist patients with a psychotic disorder in

modulating their distress (van Minnen et al., 2012). Specifically, clinicians may solicit more reflection of affect or disclosure of more details if the patient seems disconnected from the memory or request that the patient open their eyes and implement grounding techniques if he or she is overly engaged (Jaycox et al., 2002). Emotional awareness and insight can be further facilitated in this population with explicit focus on construction of the patient's Subjective Units of Distress Scale (SUDS). Assisting the patient in establishing clear anchors of the scale (i.e., no distress versus severe distress) will facilitate appropriate titration of imaginal and in vivo exercises. Often, clinicians find it helpful to establish anchors by connecting the qualitative descriptions of each to distinct, past emotional experiences the patient perceives as equivalent in emotional intensity. Emotional engagement with in vivo exposure exercises can be facilitated by the collaborative selection of salient anxiety-provoking and avoided places, situations, and other trauma-related stimuli. In selection of exposure activities, clinicians should avoid unsafe or unduly distressing stimuli or activities that may compound the functional difficulties of their patients (i.e., activities that are cost-inefficient, disrupt other social service supports or session attendance, etc.). In extreme cases, clinicians may need to supplement exposure therapy with emotion identification and regulation skills training prior to the initiation of exposure activities, which underscores the utility of assessing emotion regulation capabilities at intake.

Concluding Remarks

Despite experiencing high rates of trauma and PTSD, individuals with a psychotic disorder often do not receive evidence-based practices for PTSD. However, clinician concerns about the application of trauma-intensive treatments in this population are unsubstantiated, as patients with a psychotic disorder can reliably discuss their traumatic experiences and symptoms in detail and engage in interventions such as exposure therapy without undue distress. Additionally, EBTs for PTSD are effective in this patient population and produce outcomes comparable to those observed in the broader PTSD treatment literature. Furthermore, rather than exacerbating psychotic symptoms, trauma-focused treatments may alleviate these symptoms to some degree. Finally, few modifications to standard practice guidelines are needed for assessing and treating patients with a psychotic disorder. Altogether, the extant literature overwhelmingly supports the assessment and treatment of trauma and PTSD in patients with psychotic disorders. As more clinicians embrace evidence-based practices for trauma and PTSD in this population, misassumptions about fragility or symptom intractability will dissipate and facilitate broader-scale implementation and dissemination. These efforts are worthwhile to ensure that individuals with a psychotic disorder are afforded the same opportunities for recovery as individuals with PTSD in the broader community.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Author.
- Andresen, N. C. (1984). *The scale for the assessment of positive symptoms*. University of Iowa Press.
- Andresen, N. C. (1985). *The scale for the assessment of negative symptoms*. University of Iowa Press.
- Blake, D. D., Weathers, F. W., Nagy, L. N., Kaloupek, D. G., Gusman, F. D., Charney, D. S., ... Keane, T. M. (1995). The development of a clinician administered PTSD scale. *Journal of Traumatic Stress, 8*(1), 75–90.
- Blanchard, E. B., Jones-Alexander, J., Buckley, T. C., & Forneris, C. A. (1996). Psychometric properties of the PTSD Checklist (PCL). *BRAT, 34*, 669–673.
- Bradley, R., Greene, J., Russ, E., Dutra, L., & Westen, D. (2005). A multidimensional meta-analysis of psychotherapy for PTSD. *American Journal of Psychiatry, 162*(2), 214–227.
- Brand, R. M., McEnery, C., Rossell, S., Bendall, S., & Thomas, N. (2018). Do trauma-focussed psychological interventions have an effect on psychotic symptoms? A systematic review and meta-analysis. *Schizophrenia Research, 195*, 13–22.
- Brewin, C. R., Rose, S., Andrews, B., Green, J., Tata, P., McEvedy, C., ... Foa, E. B. (2002). Brief screening instrument for PTSD. *The British Journal of Psychiatry, 181*, 158–162.
- Calhoun, P. S., Stechuchak, K. M., Strauss, J., Bosworth, H. B., Marx, C. E., & Butterfield, M. I. (2007). Interpersonal trauma, war zone exposure, and PTSD among veterans with schizophrenia. *Schizophrenia Research, 91*(1–3), 210–216.
- Cook, J. M., Simiola, V., Hamblen, J. L., Bernardy, N., & Schnurr, P. P. (2017). The influence of patient readiness on implementation of evidence-based PTSD treatments in Veterans Affairs residential programs. *Psychological Trauma: Theory, Research, Practice, and Policy, 9*(S1), 51.
- Cusack, K. J., Frueh, B. C., & Brady, K. T. (2004). Trauma history screening in a community mental health center. *Psychiatric Services, 55*(2), 157–162.
- Dallel, S., Cancel, A., & Fakra, E. (2018). Prevalence of posttraumatic stress disorder in schizophrenia spectrum disorders: A systematic review. *Neuropsychiatry, 8*(3), 1027–1037.
- de Bont, P. A., van den Berg, D. P., van der Vleugel, B. M., de Roos, C., de Jongh, A., van der Gaag, M., ... van Minnen, A. (2015). Predictive validity of the Trauma Screening Questionnaire in detecting PTSD in patients with psychotic disorders. *British Journal of Psychiatry, 206*(5), 408–416.
- de Bont, P. A., van Minnen, A., & de Jongh, A. (2013). Treating PTSD in patients with psychosis: A within-group controlled feasibility study examining the efficacy and safety of evidence-based PE and EMDR protocols. *Behavior Therapy, 44*(4), 717–730.
- de Bont, P. A. J. M., Van Den Berg, D. P. G., Van Der Vleugel, B. M., de Roos, C. J. A. M., De Jongh, A., Van Der Gaag, M., ... Van Minnen, A. M. (2016). Prolonged exposure and EMDR for PTSD v. a PTSD waiting-list condition: Effects on symptoms of psychosis, depression and social functioning in patients with chronic psychotic disorders. *Psychological Medicine, 46*(11), 2411–2421.
- de Vries, B., van Busschbach, J. T., van der Stouwe, E., Aleman, A., van Dijk, J., Lysaker, P. H., ... Pijnenborg, G. H. M. (2019). Prevalence rate and risk factors of victimization in adult patients with a psychotic disorder: A systematic review and meta-analysis. *Schizophrenia Bulletin, 45*(1), 114–126.
- Deacon, B. J., Farrell, N. R., Kemp, J. J., Dixon, L. J., Sy, J. T., Zhang, A. R., ... McGrath, P. B. (2013). Assessing therapist reservations about exposure therapy for anxiety disorders: The Therapist Beliefs about Exposure Scale. *JAD, 27*(8), 772–780.
- Dixon, L. B., Holoshitz, Y., & Nossel, I. (2016). Treatment engagement of individuals experiencing mental illness: Review and update. *World Psychiatry, 15*(1), 13–20.

- Eack, S. M., & Newhill, C. E. (2008). An investigation of the relations between student knowledge, personal contact, and attitudes toward individuals with schizophrenia. *Journal of Social Work Education, 44*(3), 77–96.
- Foa, E., Cashman, L., Jaycox, L., & Perry, K. (1997). The validation of a self-report measure of posttraumatic stress disorder: The Posttraumatic Diagnostic Scale. *Psychological Assessment, 9*, 445–451.
- Foa, E. B., Hembree, E. A., & Rothbaum, B. O. (2007). *Prolonged exposure therapy for PTSD: Emotional processing of traumatic experiences therapist guide*. Oxford University Press.
- Foa, E. B., & Kozak, M. J. (1986). Emotional processing of fear: Exposure to corrective information. *Psychological Bulletin, 99*(1), 20.
- Foa, E. B., Riggs, D. S., Dancu, C. V., & Rothbaum, B. R. (1993). Reliability and validity of a brief instrument for assessing post-traumatic stress disorder. *Journal of Traumatic Stress, 6*, 459–473.
- Frueh, B. C., Cusack, K. J., Grubaugh, A. L., Sauvageot, J. A., & Wells, C. (2006). Clinicians' perspectives on cognitive-behavioral treatment for PTSD among persons with severe mental illness. *Psychiatric Services, 57*(7), 1027–1031.
- Frueh, B. C., Grubaugh, A. L., Cusack, K. J., Kimble, M. O., Elhai, J. D., & Knapp, R. G. (2009). Exposure-based cognitive-behavioral treatment of PTSD in adults with schizophrenia or schizoaffective disorder: A pilot study. *JAD, 23*(5), 665–675.
- Gray, M., Litz, B., Hsu, J., & Lombardo, T. (2004). Psychometric properties of the Life Events Checklist. *Assessment, 11*, 330–341.
- Grubaugh, A. L., Brown, W. J., Wotalik, J. A., Myers, U. S., Myers, U. S., & Eack, S. M. (2021). Meta-analysis of the treatment of PTSD in adults with comorbid severe mental illness. *Journal of Clinical Psychiatry, 82*(3), 20r13584.
- Grubaugh, A. L., Clapp, J. D., Frueh, B. C., Tuerk, P. W., Knapp, R. G., & Egede, L. E. (2016). Open trial of exposure therapy for PTSD among patients with severe and persistent mental illness. *BRAT, 78*, 1–12.
- Grubaugh, A. L., Tuerk, P. W., Egede, L. E., & Frueh, B. C. (2012). Perceptions of PTSD research participation among patients with severe mental illness. *Psychiatry Research, 200*(2–3), 1071–1073.
- Grubaugh, A. L., Davidson, T. M., & Brown, W. (2017a). Trajectory of PTSD symptom change in the course of exposure therapy among veterans with severe mental illness. *Psychiatric Services, 68*(8), 859.
- Grubaugh, A. L., Veronee, K., Ellis, C., Brown, W., & Knapp, R. G. (2017b). Feasibility and efficacy of prolonged exposure for PTSD among individuals with a psychotic spectrum disorder. *Frontiers in Psychology, 8*, 977.
- Grubaugh, A. L., Zinzow, H. M., Paul, L., Egede, L. E., & Frueh, B. C. (2011). Trauma exposure and posttraumatic stress disorder in adults with severe mental illness: A critical review. *Clinical Psychology Review, 31*(6), 883–899.
- Hagenaars, M. A., van Minnen, A., & Hoogduin, K. A. (2010). The impact of dissociation and depression on the efficacy of prolonged exposure treatment for PTSD. *BRAT, 48*(1), 19–27.
- Harris, M. E., & Fallot, R. D. (2001). *Using trauma theory to design service systems*. Jossey-Bass.
- Hembree, E. A., Rauch, S. A., & Foa, E. B. (2003). Beyond the manual: The insider's guide to prolonged exposure therapy for PTSD. *Cognitive and Behavioral Practice, 10*(1), 22–30.
- Hooper, L., Stockton, P., Krupnick, J., & Green, B. (2011). Development, use, and psychometric properties of the Trauma History Questionnaire. *Journal of Loss and Trauma, 16*, 258–283.
- Imel, Z. E., Laska, K., Jakupcak, M., & Simpson, T. L. (2013). Meta-analysis of dropout in treatments for posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology, 81*(3), 394–404.
- Jaycox, L. H., Zoellner, L., & Foa, E. B. (2002). Cognitive-behavior therapy for PTSD in rape survivors. *Journal of Clinical Psychology, 58*(8), 891–906.
- Kay, S. R., Fiszbein, A., & Opler, L. A. (1987). The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophrenia Bulletin, 13*(2), 261–276.

- Kessler, R. C., Chiu, W. T., Demler, O., Merikangas, K. R., & Walters, E. E. (2005). Prevalence, severity, and comorbidity of 12-month *DSM-IV* disorders in the National Comorbidity Survey Replication. *Archives of General Psychiatry*, *62*(6), 617–627.
- Lee, D. J., Schnitzlein, C. W., Wolf, J. P., Vythilingam, M., Rasmusson, A. M., & Hoge, C. W. (2016). Psychotherapy versus pharmacotherapy for posttraumatic stress disorder: Systemic review and meta-analyses to determine first-line treatments. *Depression and Anxiety*, *33*(9), 792–806.
- Lommen, M. J., & Restifo, K. (2009). Trauma and PTSD in patients with schizophrenia or schizoaffective disorder. *Community Mental Health Journal*, *45*(6), 485–496.
- Lu, W., Fite, R., Kim, E., Hyer, L., Yanos, P. T., Mueser, K. T., ... Rosenberg, S. D. (2009). Cognitive-behavioral treatment of PTSD in severe mental illness: Pilot study replication in an ethnically diverse population. *American Journal of Psychiatric Rehabilitation*, *12*, 73–91.
- Lu, W., Mueser, K. T., Shami, A., Siglag, M., Petrides, G., Schoepp, E., ... Saltz, J. (2011). Post-traumatic reactions to psychosis in people with multiple psychotic episodes. *Schizophrenia Research*, *127*(1–3), 66–75.
- Lukoff, D., Nuechterlein, K. H., & Ventura, J. (1986). Manual for the expanded brief psychiatric rating scale. *Schizophrenia Bulletin*, *12*, 594–602.
- McDonagh, M. S., Dana, T., Selph, S., Devine, E. B., Cantor A., Bougatsos, C,... & Haupt, D. W. (2017). Treatments for schizophrenia in adults: A systematic review [Internet]. Rockville (MD): Agency for Healthcare Research and Quality (US); October (Comparative Effectiveness Reviews, No. 198.) Conclusions. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK487634/>
- Mueser, K. T., Bolton, E., Carty, P. C., Bradley, M. J., Ahlgren, K. F., Distaso, D. R., ... Lidell, C. (2007). The trauma recovery group: A cognitive-behavioral program for posttraumatic stress disorder in persons with severe mental illness. *Community Mental Health Journal*, *43*, 281–304.
- Mueser, K. T., Gottlieb, J. D., Xie, H., Lu, W., Yanos, P. T., Rosenberg, S. D., ... McHugo, G. L. (2015). Evaluation of cognitive restructuring for post-traumatic stress disorder in people with severe mental illness. *British Journal of Psychiatry*, *206*(6), 501–508.
- Mueser, K. T., Rosenberg, S. D., Xie, H., Jankowski, M. K., Bolton, E. E., Lu, W., ... Wolfe, R. (2008). A randomized controlled trial of cognitive-behavioral treatment for posttraumatic stress disorder in severe mental illness. *JCCP*, *76*(2), 259–271.
- Najavits, L. M. (2015). The problem of dropout from “gold standard” PTSD therapies. *F1000prime Reports*, *7*. <https://doi.org/10.12703/P7-43>
- Newman, J. M., Turnbull, A., Berman, B. A., Rodrigues, S., & Serper, M. R. (2010). Impact of traumatic and violent victimization experiences in individuals with schizophrenia and schizoaffective disorder. *JNMD*, *198*(10), 708–714.
- Nishith, P., Mueser, K. T., & Morse, G. A. (2015). A brief intervention for posttraumatic stress disorder in persons with a serious mental illness. *Psychiatric Rehabilitation Journal*, *38*(4), 314–319.
- Pittig, A., Kotter, R., & Hoyer, J. (2019). The struggle of behavioral therapists with exposure: Self-reported practicability, negative beliefs, and therapist distress about exposure-based interventions. *Behavior Therapy*, *50*(2), 353–366.
- Powers, M. B., Halpern, J. M., Ferenschak, M. P., Gillihan, S. J., & Foa, E. B. (2010). A meta-analytic review of prolonged exposure for posttraumatic stress disorder. *Clinical Psychology Review*, *30*(6), 635–641.
- Rosen, C. S., Greenbaum, M. A., Schnurr, P. P., Holmes, T. H., Brennan, P. L., & Friedman, M. J. (2013). Do benzodiazepines reduce the effectiveness of exposure therapy for PTSD? *The Journal of Clinical Psychiatry*, *74*(12), 1241–1248.
- Rosenberg, S. D., Mueser, K. T., Jankowski, M. K., Salyers, M. P., & Acker, K. (2004). Cognitive-behavioral treatment of PTSD in severe mental illness: Results of a pilot study. *American Journal of Psychiatric Rehabilitation*, *7*(2), 171–186.
- Rothbaum, B. O., Price, M., Jovanovic, T., Norrholm, S. D., Gerardi, M., Dunlop, B., ... Ressler, K. J. (2014). A randomized, double-blind evaluation of D-cycloserine or alprazolam combined

- with virtual reality exposure therapy for posttraumatic stress disorder in Iraq and Afghanistan War veterans. *AJP*, 171(6), 640–648.
- Seow, L. S. E., Ong, C., Mahesh, M. V., Sagayadevan, V., Shafie, S., Chong, S. A., ... Subramaniam, M. (2016). A systematic review on comorbid post-traumatic stress disorder in schizophrenia. *Schizophrenia Research*, 176(2–3), 441–451.
- Servais, L. M., & Saunders, S. M. (2007). Clinical psychologists' perceptions of persons with mental illness. *Professional Psychology: Research and Practice*, 38(2), 214–219.
- Steel, C., Hardy, A., Smith, B., Wykes, T., Rose, S., Enright, S., ... Mueser, K. M. (2017). Cognitive-behaviour therapy for post-traumatic stress in schizophrenia: A randomized controlled trial. *Psychological Medicine*, 47(1), 43–51.
- van den Berg, D. P., de Bont, P. A., van der Vleugel, B. M., de Roos, C., de Jongh, A., Van Minnen, A., & van der Gaag, M. (2016). Prolonged exposure vs eye movement desensitization and reprocessing vs waiting list for posttraumatic stress disorder in patients with a psychotic disorder: A randomized clinical trial. *JAMA Psychiatry*, 72(3), 259–267.
- van den Berg, D. P., & van der Gaag, M. (2012). Treating trauma in psychosis with EMDR: A pilot study. *Journal of Behavior Therapy and Experimental Psychiatry*, 43(1), 664–671.
- van Minnen, A., Harned, M. S., Zoellner, L., & Mills, K. (2012). Examining potential contraindications for prolonged exposure therapy for PTSD. *European Journal of Psychotraumatology*, 3(1), 18805.
- Wahl, O., & Aroesty-Cohen, E. (2010). Attitudes of mental health professionals about mental illness: A review of the recent literature. *Journal of Community Psychology*, 38(1), 49–62.
- Watts, B. V., Schnurr, P. P., Mayo, L., Young-Xu, Y., Weeks, W. B., & Friedman, M. J. (2013). Meta-analysis of the efficacy of treatments for posttraumatic stress disorder. *Journal of Clinical Psychiatry*, 74(6), e541–e550.
- Wolff, N., Frueh, B. C., Shi, J., & Schumann, B. E. (2012). Effectiveness of cognitive-behavioral trauma treatment for incarcerated women with mental illnesses and substance abuse disorders. *JAD*, 6(7), 703–710.
- Zammit, S., Lewis, C., Dawson, S., Colley, H., McCann, H., Piekarski, A., ... Bisson, J. (2018). Undetected post-traumatic stress disorder in secondary-care mentalhealth services: Systematic review. *The British Journal of Psychiatry: The Journal of Mental Science*, 212(1), 11–18.

Section II
Populations with Anxiety and Physical
Health Comorbidities

Chapter 9

Treating Anxiety Disorders in Patients with Cardiovascular Disease: How to Formulate Exposure Therapy When Anxiety Mimics the Heart



Phillip J. Tully, Susanne S. Pedersen, Susanne M. Cosh,
and Guillaume Foldes-Busque

Abstract Patients with cardiovascular disease (CVD) routinely experience panic-like symptoms of shortness of breath, chest pain, and palpitations but also face high medical risk when ignoring chest pain symptoms and delaying seeking medical attention. When devising exposure therapy for anxiety in a patient with known heart disease, cognitive restructuring associated with exposure therapy requires adaption to incorporate this element of risk. Moreover, certain interoceptive symptom induction experiments may be harmful and lead to cardiopathogenesis. This chapter will therefore outline approaches to exposure therapy for anxiety when CVD is a known and medically verified comorbidity. Specifically, this chapter overviews literature pertinent to understanding common symptoms of CVDs and those overlapping with anxiety disorders. Different exposure-based therapy models are described along with required adaptations to safely and successfully undertake exposure therapy in patients with CVD.

Keywords Anxiety disorder · Panic disorder · Cardiovascular disease · Coronary heart disease · Symptom induction

P. J. Tully (✉)

School of Medicine, The University of Adelaide, Adelaide, SA, Australia

e-mail: ptully2@une.edu.au

S. S. Pedersen

Department of Psychology, Southern Denmark University, Odense, Denmark

e-mail: sspedersen@health.sdu.dk

S. M. Cosh

School of Psychology, The University of New England, Armidale, NSW, Australia

e-mail: scosh@une.edu.au

G. Foldes-Busque

School of Psychology, University of Laval, Québec, QC, Canada

e-mail: guillaume.foldes-busque@psy.ulaval.ca

© The Author(s), under exclusive license to Springer Nature
Switzerland AG 2022

J. A. J. Smits et al. (eds.), *Clinical Guide to Exposure Therapy*,
https://doi.org/10.1007/978-3-031-04927-9_9

Exposure therapy forms a core component of anxiety disorder treatment and has been a mainstay for panic disorder interventions for more than 30 years (Abramowitz, 2013). Specifically, cognitive-behavioral models of anxiety disorders hold that situational exposures to events or places, cognitions, and exposure to physiological symptoms through in vivo symptom induction experiments lead to habituation. Recent empirical work into mechanisms and optimization strategies propose several fruitful avenues for enhancing exposure therapies for anxiety disorders (Craske, 2015; McGuire et al., 2014). Lesser researched is the cognitive-behavioral approach to, and mechanisms underlying, exposure therapy when somatic symptoms substantially overlap with a medical illness (Hesser et al., 2018; Shemesh et al., 2011; Tully et al., 2017). A classic example in many clinical textbooks describes a panic attack being mistaken for a heart attack, resulting in emergency department presentations and negative cardiology investigations. Yet, patients with coronary heart disease or heart failure routinely experience the panic-like symptoms of shortness of breath, chest pain, and palpitations as part of compromised cardiorespiratory system responses. This overlap poses unique challenges for cognitive-behavioral therapists when devising exposure therapy for anxiety and panic-like attacks in a patient with known heart disease. Challenges include navigating the high risk associated with ignoring chest pain symptoms and delaying seeking medical attention, that the cognitive restructuring associated with exposure therapy requires adaption to incorporate the element of medical risk and that certain interoceptive symptom induction experiments may be harmful and lead to cardiopathogenesis (Tully et al., 2017). This chapter will therefore outline approaches to exposure therapy for anxiety when cardiovascular disease (CVD) is present as a known and verified comorbidity. Specifically, this chapter overviews literature pertinent to understanding common symptoms of CVDs and those overlapping with anxiety disorders. Different exposure-based therapy models are described along with required adaptations to safely and successfully undertake exposure therapy.

Types of Cardiovascular Diseases

Cardiovascular diseases are the leading cause of mortality, morbidity, and disability globally (GBD 2017 Causes of Death Collaborators, 2018; GBD 2017 DALYs and HALE Collaborators, 2018; GBD 2017 Risk Factor Collaborators, 2018). In the broadest sense, CVDs encompass conditions affecting the heart and vascular system (Verma et al., 2020). Coronary heart disease is characterized by stenosis or occlusion of the coronary arteries that supply blood to the myocardium of the heart itself. Coronary heart disease symptoms include angina pectoris (i.e., chest pain) and dyspnea (i.e., shortness of breath). The rapid onset of these symptoms during a myocardial infarction (i.e., “heart attack”) necessitates hospitalization for urgent treatment with coronary revascularization procedures – either percutaneous coronary intervention (“stent”) or coronary artery bypass graft surgery (“bypass surgery”).

Arrhythmias affecting the electrical conduction of the heart are another common CVD and manifest as changes to the rate and rhythm of the heart. The most common arrhythmia is atrial fibrillation which affects an estimated 30 million people worldwide (Rogers et al., 2018). Standard treatments include medication for rate and rhythm control, as well as ablation procedures. Valvular disorders affect the valve opening and closing mechanisms of the four chambers of the heart. One of these conditions, mitral valve prolapse, is explicitly mentioned in the Diagnostic and Statistical Manual of Mental Disorders-5 as potentially producing symptoms similar to panic disorder (American Psychiatric Association, 2013). Heart failure, the end stage of all heart diseases, is characterized by structural changes to the heart and the heart's pumping action and may be onset by excessive alcohol or illicit drug use and other vascular conditions such as hypertension, arrhythmia, and coronary heart disease. Takotsubo cardiomyopathy, colloquially known as "broken heart syndrome," is a subtype of heart failure that is commonly precipitated by an emotional, physical, or environmental stressor (e.g., earthquake) (Kastaun et al., 2016). More than one CVD may occur in an individual due to common risk factors and different CVDs posing a risk for each other. Other noncardiac contributions to cardiac symptoms such as chest pain may include esophageal, gastrointestinal, pulmonary, and musculoskeletal disorders.

Causes of Anxiety in CVD Populations

Treatments for CVDs typically necessitate lifelong pharmacological management and one or more of the abovementioned corrective procedures which may be elective, urgent, or an emergency. In the pre-procedural phase of nonurgent procedures, CVD patients' emotional state is typically preceded by heightened anxiety, worry, and uncertainty about the procedure itself (Hernandez-Palazon et al., 2018; Tully et al., 2013). By contrast, the postoperative phase of convalescence is dominated by somatic symptoms, pain, limited physical mobility, as well as vigilance and anxiety concerning CVD symptoms (Farris et al., 2019; Murphy et al., 2014; Simony et al., 2015) as well as avoidance (Hohls et al., 2020). The CVD population with implanted cardioverter defibrillator devices or who have experienced sudden cardiac arrest are particularly susceptible to enduring anxiety due to worries about device failure, posttraumatic stress disorder symptoms due to appropriate or inappropriate device "shocks," hypervigilance and preoccupation with cardiac symptoms, and avoidance (Berg et al., 2020; Habibovic et al., 2017; Rosman et al., 2015). Along these lines, a patient with a history of CVD is likely to have experienced events that are both life-threatening and traumatic. The sudden onset of CVD symptoms, emergent nature of hospitalization, invasive procedures, and major cardiac events can lead to adjustment disorder and symptoms consistent with posttraumatic stress disorder (PTSD; Tully & Cosh, 2019; Wilder Schaaf et al., 2013). Fear of dying is especially linked with PTSD, anxiety, and depression in the longer term (Whitehead et al., 2005).

Prevalence of Anxiety in CVD Populations

Anxiety disorder prevalence estimates in CVD populations are typically higher than the population without known CVD for PTSD (12.0% vs. 8.0%), generalized anxiety disorder (8% vs. 6.2%), panic disorder (6.8% vs. 5.2%), and agoraphobia (3.6% vs. 2.6%) (Edmondson et al., 2012; Kessler et al., 2012; Tully et al., 2014). Curiously, rates for some anxiety disorders may be lower in CVD populations, including obsessive compulsive disorder (1.8% vs. 2.7%), social phobia (4.6% vs. 13.0%), and specific phobia (4.3% vs. 13.8%) (Kessler et al., 2012; Tully et al., 2014); however, evidence is generally sparse.

Conceptualizing Anxiety in CVDs

Anxiety disorder prevalence estimates in CVD populations should be interpreted in the context of past and prevailing psychiatric taxonomic guidelines. Panic disorder cannot be diagnosed when symptoms are direct physiological effects of a medical condition such as cardiopulmonary disorders (Criterion C; American Psychiatric Association, 2013). Likewise, similar diagnostic exclusion rules apply to social phobia (Criterion H; American Psychiatric Association, 2013), generalized anxiety disorder (Criterion E; American Psychiatric Association, 2013), PTSD (Criterion H; American Psychiatric Association, 2013), and acute stress disorder (Criterion E; American Psychiatric Association, 2013), though a cardiac-specific PTSD subtype has been proposed (Vilchinsky et al., 2017). By contrast, the panic attack specifier states that a panic attack can occur in the context of cardiopulmonary disorders (American Psychiatric Association, 2013), while agoraphobia may be experienced in the context of medical disease when fear, anxiety, or avoidance is excessive (Criterion H; American Psychiatric Association, 2013), and that obsessive-compulsive and related disorders due to another medical condition are diagnosed when the disturbance is the direct pathophysiological consequence of another medical condition (Criterion B; American Psychiatric Association, 2013). Anxiety disorder due to medical illness is reserved for cases where panic attacks or anxiety predominates the clinical picture (Criterion A), and there is evidence that the disturbance is the direct pathophysiological consequence of another medical condition (Criterion B; American Psychiatric Association, 2013).

Implicit in the DSM's diagnostic rules is that it is possible to distinguish between anxiety and medical illness symptoms and determine their underlying cause. Unfortunately, in CVD populations with anxiety, such distinction between symptoms is improbable: impossible according to Dornelas (2008). Table 9.1 illustrates some common anxiety symptoms, their common CVD counterparts, and possible side effects from routine CVD drugs. Inspecting the panic symptoms in the first column of Table 9.1, it is evident that distinction between panic attack and myocardial infarction becomes an unlikely task for patients and therapists – known as the

Table 9.1 Overview of common anxiety disorder symptoms and their counterparts in CVDs or potential drug side effects

<i>Panic attack^a</i>	<i>CVD equivalent symptoms</i>	<i>CVD drug side effects^a</i>
Palpitations, pounding heart, or accelerated heart rate during a panic attack	Palpitations, cardiac arrhythmia, or flutter (e.g., ventricular tachycardia, atrial fibrillation)	Palpitations from nitrates
Sweating	Cold sweats	Fever with AA Tremor and ataxia with AA
Trembling or shaking	Muscular weakness	Weakness from thiazides, AA
Sensations of shortness of breath or smothering	Dyspnea, breathlessness on exertion, wheezing in CHD and HF	Bronchospasm from BB Dyspnea with BB, AA
Feelings of choking	Jaw and neck pain, pressure, heaviness, tightness	Cough with ACEI
Chest pain or discomfort	Angina, chest pain	Rebound angina with nitrates Chest pain from AA
Nausea or abdominal distress	Nausea, diffuse thoracic and abdominal pain, nausea side effect from medications	GI side effects from statins, fibrates, BB Nausea from ACEI, CCB, BB, AA
Feeling dizzy, unsteady, light-headed, or faint	Dizziness, light-headedness in HF, side effect from statins	Dizziness from statins, aldosterone antagonists, loop diuretics, thiazides, ACEI, sartans, CCB Hypotension from aldosterone antagonists, loop diuretics, nitrates, thiazides, ACEI, CCB, BB Fainting with loop diuretics, nitrates
Chills or heat sensations	Cold sweats	Flushing from nitrates, CCB, AA Cold extremities from BB
Paresthesias (numbness or tingling sensations)	Numbness and tingling due to peripheral ischemia and arterial disease, neurological damage in comorbidities such as DM	Paresthesias with AA Vasodilation from CCB Worsening of Raynaud's phenomenon with BB Peripheral neuropathy with AA
Derealization (feelings of unreality) or depersonalization (being detached from oneself)	Secondary consequence from hypoxia or postural hypotension	Abnormal vision with BB Blurred vision with AA
Fear of losing control or "going crazy"	Reduced capacity to self-manage symptoms in HF	–

(continued)

Table 9.1 (continued)

<i>Panic attack^a</i>	<i>CVD equivalent symptoms</i>	<i>CVD drug side effects^a</i>
Fear of dying	Facing mortality, reduced lifespan, fear of recurrent cardiac arrest, fear of dying intraoperatively during CABG or PCI	–
<i>Generalized anxiety disorder^b</i>	<i>CVD equivalent symptoms</i>	<i>CVD drug side effects^a</i>
Restlessness or feeling keyed up or on edge	–	Muscle cramps with thiazides
Being easily fatigued	Tiredness, easily fatigued in HF	Fatigue with ACEI, BB
<i>GAD and PTSD^b</i>	<i>CVD equivalent symptoms</i>	<i>CVD drug side effects^a</i>
Difficulty concentrating or mind going blank	Cognitive impairments in HF and post-CABG or open-heart surgery	Headache with aldosterone antagonists, nitrates, ACEI, sartans, CCB, AA, drowsiness with AA
Sleep disturbance (difficulty falling or staying asleep, or restless, unsatisfying sleep)	Sleep difficulties, e.g., orthopnea (i.e., shortness of breath when lying prone) in HF, increased sleep needs due to fatigability	Insomnia from statins Nightmares with statins, AA Polyuria with thiazides

AA anti-arrhythmics, ACEI angiotensin-converting enzyme inhibitors, BB beta-blockers, CABG coronary artery bypass graft, CCB calcium channel blockers, CHD coronary heart disease, CVD cardiovascular disease, DM diabetes mellitus, GAD generalized anxiety disorder, HF heart failure, PCI percutaneous coronary intervention, PTSD posttraumatic stress disorder

^aDrugs side effects – Australian Medicines Handbook (2021)

^bDisorder criteria – American Psychiatric Association (2013)

chest pain dilemma. This caveat is strongly emphasized here to avoid therapists minimizing the seriousness of a potential myocardial infarction that would otherwise be rare in a typical anxiety clinic and non-CVD population. Further, there are potential malpractice risks for therapists and cardiologists as a consequence of dismissing acute coronary syndromes (Mangalmurti et al., 2014; Pope et al., 2000; Wu et al., 2017). We therefore strongly recommend creating chest pain action plans as detailed elsewhere (Tully et al., 2017). Now, we describe conceptual models as they relate to CVD populations using panic attack/disorder as the main exemplar while referring to other disorders where relevant. Throughout the chapter, a case example is described to provide additional context for exposure therapy in CVD patients with additional background provided in Table 9.2.

Background to Case Example

Case description: A male patient, 45 years of age, has a medical history of acute myocardial infarction in the past 9 months, necessitating percutaneous coronary revascularization with drug-eluting stent. Imaging shows the coronary revascularization procedure was successful, and the medical notes describe an uneventful

Table 9.2 A case example for a patient with anxiety and cardiovascular disease

	<i>Overview of case</i>	<i>Therapist notes</i>
<i>Background</i>	Male, 45 years of age, with a history of acute MI (9 months) and PCI for coronary artery 75% stenosis. The patient has 3-month history ED visits for chest and arm pain (bilateral), breathlessness, and dizziness. ECG and biomarkers are negative for myocardial infarction. After several ED presentations, the patient is referred from the treating cardiologist with concerns about the patient’s coping since the MI	Follow-up cardiac imaging and stress testing after the myocardial infarction suggest the PCI was successful in optimizing blood flow. The repeat presentations to ED with negative results and bilateral arm pain (e.g., in left and right forearms) raise the possibility that anxiety dominates the clinical picture. Could write to cardiologist to confirm there is no unstable angina for this patient and ask about Prinzmetal angina if unsure
<i>Comorbidities</i>	<i>Physical:</i> Hypertension, dyslipidemia <i>Mental:</i> No current or past disorders	No serious medical comorbidities present other than coronary artery disease. Hypertension and dyslipidemia pose a risk for recurrent MI Agoraphobic tendency can lead to social withdrawal and to be countered with explicit exposure tasks centering on leaving the home. Subthreshold worry and low mood symptoms noted to be monitored. Ruminative processes may feed into panic cycle
<i>Medications</i>	Beta-blocker, statin, antihypertensive, nitrates	Possible side effects from medications noted. The use of nitrates to be monitored as can become safety behavior and used excessively as well as inappropriately
<i>Symptoms</i>	<i>Physical:</i> Chest pain, racing heart, breathlessness, dizziness also reported <i>Cognitive:</i> Inability to cope, fear of dying	Exposure to focus on racing heart and breathlessness of graded intensities as they are the most easily induced symptoms, other exposures to focus on chest pain. Upon evaluation, dizziness seems better described as derealization during panic and is nonetheless not rated as bothersome by the patient
<i>Safety behaviors</i>	Looking up heart attack symptoms on the internet combined with checking pulse on smart watch	Reassurance-seeking and monitoring of bodily symptoms (hypervigilance) provide temporary relief but may trigger panic cycle
<i>Avoidances</i>	Did not attend cardiac rehabilitation and is avoidant of prescribed exercise (walking) from cardiologist	Exercise avoidance generalizes to any mild exertion that could lead to cardiorespiratory symptoms. Increases the likelihood of recurrent MI and can be explored with Socratic questioning

(continued)

Table 9.2 (continued)

	<i>Overview of case</i>	<i>Therapist notes</i>
Groundwork before exposure therapy	Establish chest pain action plan, work through panic cycle (Fig. 9.1), socialize to model, explore chest pain matrix	Outside of session letter, contact with referring cardiologist and general physician and nature of exposure tasks described

ECG electrocardiogram, *ED* emergency department, *MI* myocardial infarction, *PCI* percutaneous coronary intervention

period immediately after the procedure. The patient has presented several times to emergency departments in the past 3 months, experiencing chest and arm pain, breathlessness, and dizziness, and thorough examinations with ECG and blood biomarkers are negative for myocardial infarction. After several emergency department presentations, the patient is referred from the treating cardiologist with concerns about the patient's coping since their myocardial infarction.

Main Concern The patient reports feeling highly stressed and worried that they might have another heart attack. They report feeling "unable to cope" if they have another heart attack and are worried that they might die.

Predisposing Factors Family history of coronary heart disease and stroke, helplessness core belief "I cannot cope." Social isolation is also present with this patient not in a relationship.

Precipitating Factors Being on own, looking up heart attack symptoms on the Internet.

Maintaining Factors Hypervigilant monitoring of bodily symptoms, checking pulse on smart watch, avoiding exercise or any other exertion. The patient has agoraphobic tendencies and is largely housebound in the past 3 months.

A Model of Cardiac Anxiety for CVD Patients

Cognitive models of panic disorder posit that this disorder manifests as an acquired fear of bodily symptoms (Barlow et al., 1996; Salkovskis et al., 1991; Wells, 1997). Such models provide an excellent foundation for conceptualizing anxiety related to cardiorespiratory symptoms. We expanded upon Wells' (1997) model when devising Panic Attack Treatment in Comorbid Heart Diseases (PATCHD; Tully et al., 2017) as illustrated in Fig. 9.1. Uncued panic attacks are maintained by selective attention and hypervigilance toward cardiac symptoms, contributing to.

(a) a lower threshold for perceiving sensations, (b) an increase in arousal and the subjective intensity of the events, (c) an increase in the likelihood of activating the

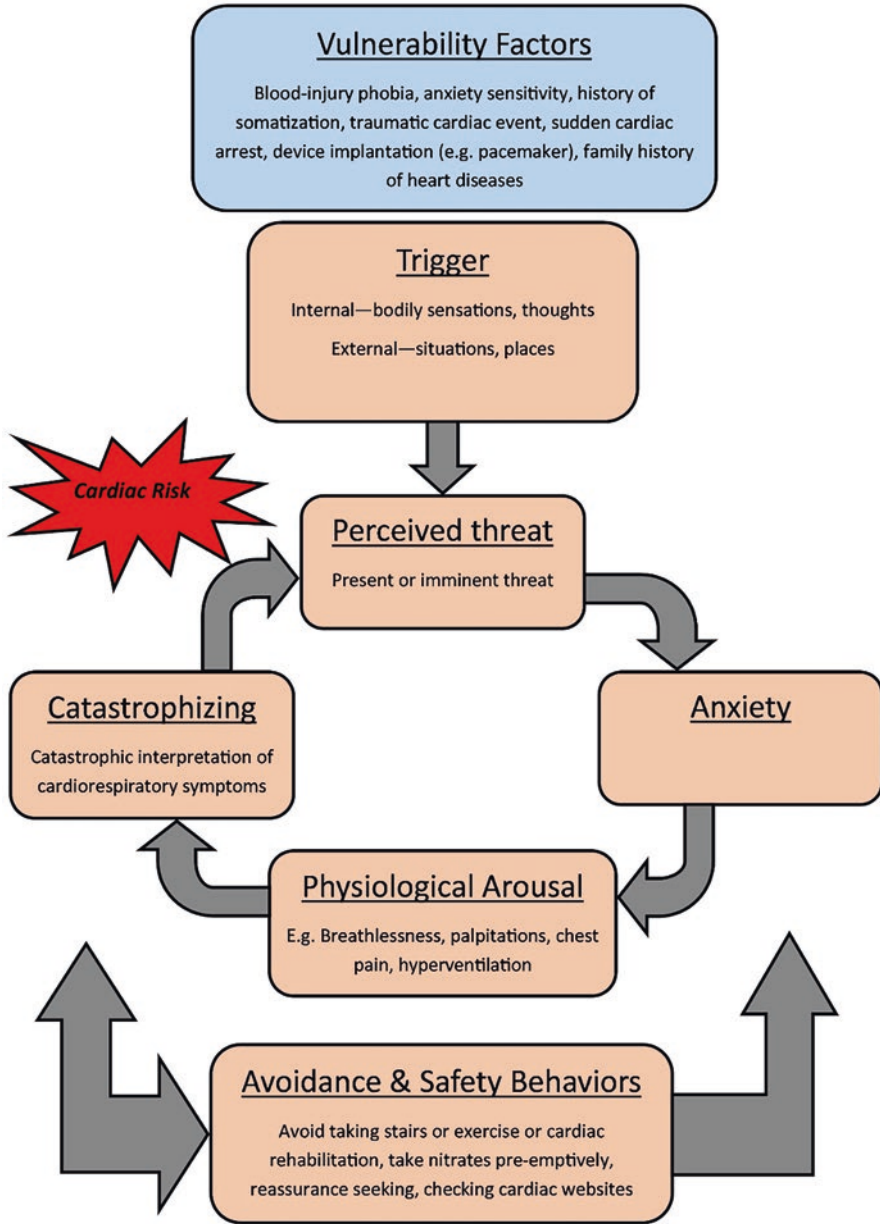


Fig. 9.1 A model of cardiac fear for patients with verified cardiovascular diseases
Caption: This figure depicts a fear cycle for cardiac patients experiencing cardiorespiratory symptoms in the context of verified cardiovascular disease and genuine myocardial infarction risk

panic cycle, and (d) an increase in sensitivity to internal and external stimuli (Tully et al., 2017). The cognitive-behavioral consequences are:

Catastrophizing – Common symptoms of chest pain, palpitations, or dyspnea may be interpreted as a sign of impending myocardial infarction, tachycardia, acute aortic dissection, aneurysm, or cardiac arrest.

Anticipatory anxiety and use of safety behaviors – A patient may not leave the house without accompaniment. Patients may take anti-angina nitrate spray or medications preemptively, which has led to acute circulatory collapse necessitating cardiopulmonary resuscitation in our patients.

Generalization and avoidance of anxiety-provoking situations – Overt and covert avoidance of climbing stairs, exercise, cardiac rehabilitation, and medical appointments, the latter being especially common in PTSD. This may perpetuate anxiety by reducing exposure to cardiorespiratory symptoms, restricting opportunities for disconfirmation, and generalizing anxieties to other situations.

In the case example, catastrophic cognitions mainly center on “I am having a heart attack,” and the patient has some lingering anxieties about a stroke, given their family history. The patient uses monitoring to check pulse rate and is avoidant of exertion and prescribed exercise, highlighting several processes that perpetuate panic-like anxiety.

Necessary Steps to Socialize to the Cardiac Anxiety Model

We extended upon prior cognitive models by incorporating the element of risk into the *chest pain dilemma* (Tully et al., 2017). Between 17% and 27% of patients will reexperience a major adverse cardiac event within 5 years after coronary artery bypass graft surgery or coronary stent (Deb et al., 2013). Some myocardial ischemic events are silent with minimal or no symptoms (Furuäng et al., 2011). For the patient, the inability to distinguish between panic-like anxiety and a myocardial infarction is hardly reassuring. For the therapist, cognitive restructuring cannot rely on countering catastrophic misinterpretation of symptoms, but rather must Socratically explore the meaning and consequences of catastrophic cognitions, such as with downward arrow technique. During these sessions, we also present the Chest Pain Dilemma Matrix as depicted in Table 9.3 (Tully et al., 2017). The Chest Pain Dilemma Matrix provides an opportunity to explore frequent emergency department presentations with patients, Socratically questioning the meaning of outcomes “false positives” and “true positives.”

In the case example, it is apparent after Socratic questioning that the meaning and consequences of catastrophic cognitions center on an inability to cope “I cannot go through another heart attack again.” Also, some of the feared consequences relate to death anxiety, e.g., “I am afraid that I might die too soon before my time is up. I am only 45!” In relation to the case conceptualization, it is likely that these cognitions led to reassurance-seeking and frequent presentations to hospital emergency departments. The chest pain matrix is explored and an example dialogue is provided.

Table 9.3 The chest pain dilemma matrix

	“The doctor or cardiologist said...”	
“I thought...”	Dr. said “Yes, it <i>was</i> a heart attack”	Dr. said “No, it was <i>not</i> a heart attack”
Thought – Yes, it <i>was</i> a heart attack!	True positive	False positive
Thought – No, it was <i>not</i> a heart attack	False negative	True negative

Reprinted with permission from (Tully et al., 2017)

Therapist asks “Which section of the table best represents your last visit to the hospital emergency department?”

Therapist “Which section of the table best represents your last visit to the hospital emergency department?”

Patient “Well I thought it was a heart attack yes.”

Therapist “So this column of the matrix. And how certain were you?”

Patient “About 99% sure.”

Therapist “And what did the doctors or cardiologists who took care of you say?”

Patient “They did not find anything after all the tests; I was there for a few hours.”

Therapist “OK so if you thought heart attack with 99% certainty and the doctors did not find anything that time, which one of the responses best represents the doctors take on this?”

Patient “This column is for doctor saying no.”

Therapist “And which part specifically matches this last visit we’re talking about?”

Patient “It’s this one, false positive.”

Therapist “OK and a false positive is the one we talked about where someone thinks they are having a heart attack, but it turns out after the tests that it wasn’t. It is not uncommon, but I want to check that makes sense to you?”

Patient “It makes sense that people can go to emergency, get tested, and not have a heart attack.”

Therapist “And what do you make of it, this last visit we’re talking about, that you’ve pointed to a false positive?”

Patient “I guess I was wrong. I wasn’t having a heart attack then.”

Therapist “And how certain are you right now that it was a heart attack?”

Patient “With hindsight I am probably 40% confident it was a heart attack.”

Planning Exposure Therapy for Anxiety in CVDs

Exposure-based therapies have patients experience symptoms and situations that may have been associated with threatening outcomes in the past but under the controlled environmental conditions of a therapeutic setting (Urcelay, 2012). Traditional

interoceptive symptom induction maneuvers should be performed only after consultation with a CVD patient's general physician or cardiologist (Sardinha et al., 2009). The reason is that both mental stress and demanding cardiorespiratory tasks can lead to myocardial ischemia or left ventricular dysfunction (Rozanski et al., 1999; Wittstein, 2010), while their combination has not been sufficiently documented as safe for CVD populations (Tremblay et al., *in press*; Tully, 2020). Our work with heart failure patients undergoing the PATCHD protocol (*outlined in Table 9.4*) and its exposure therapies tailored to CVD was successfully performed without major adverse events. Further, we showed a significant reduction in unplanned CVD-cause hospital admissions and hospital length of stay (Tully, 2015; Tully et al., 2017). These CVD-safe exposure therapy techniques are described in detail in Table 9.5, noting where relevant the contraindications and risks posed to certain subpopulations. Moreover, we recommend that all exposure tasks follow a graded hierarchy and continually monitor subjective units of distress (SUDS), pre-exposure, during exposure, and post-exposure.

Interoceptive Symptom Induction Symptom provocation methods have received some empirical attention in the populations with CVDs and usually by comparison to patients without anxiety disorder or free from CVD. The pCO₂ challenge requires panic disorder patients to inhale a gas mixture containing 35% carbon dioxide and 65% oxygen, and this paradigm was applied to patients with and without positive nuclear exercise stress tests (i.e., a test of myocardial ischemia). Unlike standard tests of myocardial ischemia, a nuclear stress test uses what is called a tracer. This is a small amount of radioactive material that an imaging device uses to show blood flow in the heart. Blood flow is measured under resting conditions and during activity to identify areas of poor blood flow or heart damage. Computed tomography and 12-lead ECG showed that CVD patients with positive nuclear exercise stress tests

Table 9.4 Outline of cognitive-behavioral therapy for Panic Attack Treatment in Comorbid Heart Diseases (PATCHD)

Treatment week	Components of therapy session
1–2	Assessment and case formulation Psychoeducation – Information regarding heart disease, risk factors, and anxiety Chain analysis and idiosyncratic panic model Mindfulness – Psychophysiological awareness and self-regulation
3–4	Chest pain action plans (coping skills) Reducing behavioral and situational avoidance Interoceptive exposures targeting specific symptoms Mindfulness – Psychophysiological awareness and self-regulation
5–6	Interoceptive exposures – Commencement of a supervised exercise program Mindfulness – Psychophysiological awareness and self-regulation
7–8	Cognitive restructuring – Identification of thoughts and core beliefs influencing panic symptoms Mindfulness – Psychophysiological awareness and self-regulation

Full description of PATCHD in Tully et al. (2017)

PATCHD Panic Attack Treatment in Comorbid Heart Diseases

Table 9.5 A list of CVD-safe exposure techniques for cardiovascular somatic symptoms

<i>CVD-safe graded exposure</i>	<i>Applicable symptoms</i>	<i>Clinician caveats</i>	<i>Supervision and medical clearance</i>
Walking for 2 minutes at normal pace 2 km/h with 1-minute rest break intervals Use of treadmill at increasing intervals to approximate cardiac “stress testing”	Palpitations, sweating, dyspnea, chest pain, or discomfort	Overt and covert avoidances ^a – Giving up early, excuses not to perform (e.g., rain, too cold) Consider alternatives for patients with peripheral limb amputation, walking frame, or wheelchair	Can be performed unsupervised with chest pain action plan Recommended between session HW exercise Medical clearance required if exposure uses treadmill or progresses to steep inclines, jogging, cycling, or resistance training
Firmly push fingers into pectoral muscle, and hold until discomfort OR place 1–2 kg weight on the chest laying supine	Chest pain or discomfort	Bruising risk in elderly and users of anticoagulants or NSAIDs	Can be performed unsupervised
Breathing with a full chest	Chest pain or discomfort or heaviness	Presence of intercostal neuralgia ^b	Can be performed unsupervised
Place hand on the chest to observe pumping heart OR. Find pulse on the wrist to observe beating heart OR. Listen to own heart with stethoscope. Count beats and observe rhythm, intensity, etc. progressively increase in tolerable intervals of 1 min up to 60 mins and in conjunction with exercise	Palpitations, arrhythmias	Can become a monitoring safety behavior	Can be performed unsupervised ^c
Stand in freezer aisle of supermarket, or place the hand in home freezer. Progressively increase in tolerable intervals of 1 min up to 10 mins	Trembling or shaking, chills	Requires gradual exposure as rapid changes from heat to cool can elicit tachycardia. Possibly contraindicated in HF	Can be performed unsupervised but requires medical clearance for HF
Drink cold glass of water quickly OR tongue depressor OR place tie or scarf around the neck progressively tighter to tolerance	Feelings of choking	Fluid restrictions in congestive HF	Can be performed unsupervised

(continued)

Table 9.5 (continued)

<i>CVD-safe graded exposure</i>	<i>Applicable symptoms</i>	<i>Clinician caveats</i>	<i>Supervision and medical clearance</i>
Brief breath holding at 5- to 10-sec intervals up to max. 1 min	Feelings of choking, dyspnea	Covert avoidances – Not holding breath completely. Consider breath holding under water – e.g., basin, bathtub, swimming pool	Can be performed unsupervised
Slowly spin in circles standing or in swivel chair	Feeling dizzy, unsteady, light-headed, or faint. Derealization (feelings of unreality) or depersonalization (being detached from oneself), nausea	Consider falls risk factors in age > 65 years. Remove objects in proximity	Perform under supervision
Watch point-of-view action sports videos or clips of open-heart surgery procedures	Feeling dizzy, unsteady, light-headed, faint, or nausea	Gradual exposure to surgery stimuli in PTSD	Can be performed unsupervised
Stand up and sit down repeatedly up to ten times with 1-min rest intervals	Feeling dizzy, unsteady, light-headed, or faint	Syncope risk – Remove objects in proximity that may cause concussion Covert avoidances – Performing task slowly	Perform under supervision medical clearance for orthostatic hypotension
Gently blow hair dryer over clothing (e.g., abdomen, arms, legs)	Heat sensations	Burns risk in peripheral vascular diseases, neuropathies, and DM	Can be performed unsupervised
Sit on hands or cross legs to induce numbness and tingling sensation	Paresthesias, numbness, or tingling sensations	Difficulties inducing in peripheral vascular diseases and DM	Can be performed unsupervised
Niacin/ nicotinic acid 30–50-mg dose	Flushing/ embarrassment, paresthesias, numbness, or tingling sensations	Side-effect risk in hyperlipidemia ^d	Can be performed unsupervised
Breathing through straw (not pCO ₂ panic challenge test)	Dyspnea (hyperventilation induction)	Hyperventilation contraindicated in kidney disease as may lead to hypocalcemia	Perform under supervision by cardiac nurse after medical clearance. pCO ₂ challenge leads to myocardial ischemia and is not advised

(continued)

Table 9.5 (continued)

<i>CVD-safe graded exposure</i>	<i>Applicable symptoms</i>	<i>Clinician caveats</i>	<i>Supervision and medical clearance</i>
Mindfulness body scan ^e	Applicable to most cognitive and somatic symptoms	Covert avoidances – Performing task slowly	Can be performed unsupervised. Recommended between session HW exercises

DM diabetes mellitus, *HF* heart failure, *HW* homework, *NSAID* nonsteroidal anti-inflammatory drugs

^aMay benefit from motivational interviewing and consider supervised exercise program or social walking groups

^bNote that if pain runs along the chest wall with the ribcage, it may represent intercostal neuralgia. Intercostal neuralgia pain is usually unilateral and is felt as pulling or cutting that persists or increases with movement and/or breathing. Causes may include rib blockage putting pressure on the nerve, more rarely nerve compression at the spine, even more rarely spinal cord disease

^cPatients with left ventricular assist devices do not have an observable pulse or measurable blood pressure due to the mechanical pumping action of the battery-powered device replacing the heart’s beats

^dCardiovascular side effects may occur for repeated therapeutic doses above 30 mg (Stone et al., 2014)

^eMindfulness body scan technique (Williams et al., 2007)

experiencing a panic attack during the pCO₂ challenge are more likely to develop a reversible myocardial perfusion defect than CVD controls who do not have a panic attack (Fleet et al., 2005). A repeat of this experiment among patients with negative nuclear exercise stress tests revealed only 10% of patients developed reversible myocardial perfusion defects, raising the possibility that hyperventilation induction is relatively safe in low-risk coronary artery disease patients (Fleet et al., 2014). However, nuclear exercise stress test results may not always be available, and anxious patients’ self-report cannot be relied upon. Collectively, the findings likely explain the low exercise tolerance of panic disorder patients with coronary artery disease (Pelletier et al., 2011).

Exercise-Based Exposure A structured exercised program forms a major means of secondary prevention efforts in coronary artery disease (Pogosova et al., 2017) and can be utilized to elicit the most extensive range of panic-like symptoms. However, anxious patients may hold erroneous cognitions about harms from exercise (Farris et al., 2019), and these must be countered along with overt avoidances (Hohls et al., 2020). When devising an exposure to elicit palpitations, sweating, dyspnea, chest pain, or discomfort, elect brisk walking activities. Access to a treadmill is advantageous as this replicates some cardiac stress testing scenarios that take place in out-patient cardiology departments. Therapists are cautioned to not devise exercise-based exposures that approximate a patients’ maximum VO₂. Conversely, care should be taken to observe covert avoidances and safety behaviors that inhibit complete engagement in the exposure. Some creativity may be required on behalf of the therapist to best replicate the idiosyncratic aspects of anxiety. Examples include brisk

walking immediately prior to sitting in a café alone, standing in line, going to a busy supermarket, or crossing a bridge.

Chest Pain Chest pain is challenging to elicit as myocardial infarctions may range from severe crushing pain in the center of the chest, squeezing, tightening, choking, or heavy pressure feelings. Pain may spread from the center of the chest to the shoulders, arms, neck, throat, jaw, or back. The safest strategy is to have the patient hold their index and middle finger together and firmly push these into locations where they have felt chest pain. For younger coronary patients, consider having the patient place a 1–2-kg round weight on their chest while laying supine. The latter maneuver best approximates feelings of heaviness. Each exposure has a bruising risk that is elevated in patients taking anticoagulants or nonsteroidal anti-inflammatory drugs though is unlikely to cause harm.

“Breathing with a full chest” here, patients are asked to fill their lungs completely with air and then inhale and exhale normally, i.e., inhale with full lungs, and empty the lungs only slightly when exhaling. This stretches the intercostal muscles (the small muscles between the ribs), which can trigger pain after only a short time. By focusing attention, the sensation of pain can become much faster and more intense.

Palpitations and Arrhythmias A patients’ own heartbeat can be observed by stethoscope, placing the palm of their hand on the chest, or alternatively finding the pulse on the wrist. Exposure and habituation to the heart’s beating sound and rate can be used at rest and in conjunction with any mild exercise such as walking. Caution is advised that checking rate and rhythm can become a safety behavior made possible by many smart watches and their mobile apps.

Cold and Heat Exposure to cold and heat sensations must be done gradually as rapid changes in temperature can elicit tachycardia. Gradual exposure to the freezer aisle of a supermarket or gently blowing a hairdryer over ones clothes can be performed safely if done so gradually. Patients with peripheral neuropathies have reduced sensations and may be at risk of burns, and medical clearance is required for heart failure patients.

Choking Sensations of choking can be replicated using a tongue depressor or placing a tie or scarf around the neck with increasing tightness dependent on tolerability. Other options of induction such as drinking a cold glass of water quickly should clarify if a patient is on any fluid restrictions (e.g., in congestive heart failure) which may be as low as 1.5 to 2 L p/day.

Dizziness, Light-Headedness, Faintness, Derealization, and Nausea Such inter-related symptoms can be induced with common techniques involving spinning, watching action sports, or standing and sitting repeatedly. The largest risk for these interoceptive maneuvers is related to falls risk in patients aged >65 years and

syncope risk in persons with orthostatic hypertension, the latter requiring medical clearance.

Paresthesias and Flushing Inducing paresthesias in patients can utilize common strategies such as sitting on one's hands or sitting cross-legged for a period of time. Induction in patients with comorbid peripheral neuropathies and diabetes may pose challenging. We also draw attention to the use of niacin when inducing flushing symptoms as this can lead to side effects in patients with dyslipidemia.

Dyspnea and Hyperventilation We recommend against inducing hyperventilation unless medical clearance has been provided based on the severity of heart disease. Even exposures performed in a hospital setting may inadvertently place patients at risk of myocardial ischemia. This is especially relevant in cases of Prinzmetal angina, where hyperventilation may trigger vasospasms. Moreover, we recommend ceasing exposures at a level of breathlessness where hyperventilation is unlikely to occur, and this may be achieved by breathing through a straw for only short intervals with rest intervals.

Imaginal and Situational Exposures Imaginal exposure during treatment for PTSD has received some empirical support. Specifically, imaginal exposure to cardiac-related trauma events was found to not elicit significant changes in blood pressure and heart rate by comparison to an education control group (Shemesh et al., 2011). Replicating the traumatic experience of emergency department visits, intensive care, and sudden cardiac arrest should utilize imaginary exposures and situational exposures. Examples of the latter include visiting a cardiology ward during visiting hours. Also described in Table 9.5 are options for exposure to medical stimuli such as watching videos of open-heart surgery, percutaneous coronary intervention, ablation, or implantation of pacemaker or implantable cardioverter defibrillator.

Case Example The case presented throughout this chapter and Table 9.2 is a typical candidate for exposure therapy after an acute cardiac event. The main target for graded exposure are breathlessness and heart rate because these are the most easily induced symptoms of varying intensities, though this patient displays high overt avoidance that should be considered to ensure the initial exposure task is achievable. When formulating a graded hierarchy of exposure tasks with the patient, those simulating chest pain were rated the lowest (chest weight, pressing sternum), followed by breathing with a full chest, breath holding, and breathing through a straw, with high-intensity exercise performed alone (i.e., jumping jacks) rated the highest. The exposure tasks that involve monitoring heartbeats/pulse were not offered due to the patient's preoccupation with checking the pulse rate which lowers the susceptibility to experience anxiety. Rather, therapy aimed to decrease monitoring to once per day. Likewise, given the tendency toward reassurance-seeking and cognitions about being unable to cope, a key component of therapy is the between-session homework tasks, so that exposures are performed when alone. Dizziness (derealization) is not

targeted as this was not rated as problematic enough by the patient. The agoraphobic tendencies point toward “help not being available” that likely extend from “unable to cope” cognitions. Thus, some additional exposure therapy tasks are designed for the patient to visit public places graded from a corner shop, farmer’s market, grocery store, restaurant, movie theater, and seated concert.

Treatment commenced by developing an idiosyncratic panic model, socializing to the model, and implementing mindfulness techniques. When developing the chest pain action plan, additional care was taken during psychoeducation to outline the role of the chest pain action plan alongside the false-positive examples in the chest pain dilemma matrix (the patient had one emergency department visit early during treatment). Likewise, socializing to the model led to a greater understanding of the heightened awareness and lowered threshold for perceiving symptoms when monitoring pulse. Exposure tasks used the graded hierarchy for chest pain (Session 3, weight, pressing sternum) and dyspnea (Session 3, breathing with a full chest; Session 4, breath holding; Session 5, breathing through a straw). Walking was implemented from Session 1’s homework task and increased in intensity and distance each week. Sessions 6 and 7 were devoted to symptom induction experiments outside of the therapist’s office in public places. Sessions 8 and 9 were devoted to reaching the top of the hierarchy performing jumping jacks alone and at high intensity, with cognitive restructuring focusing on the heart-positive effects of controlled exercise. The latter sessions (6–9) were met with high SUDS ratings (100%). The patient responded well to treatment with a reduction in anxiety symptoms and emergency department visits.

In conclusion, the close overlap between anxiety and CVDs, especially cardiorespiratory symptoms, poses unique challenges for therapists and patients alike. Exposure therapy for patients with anxiety and verified CVDs requires careful planning to ensure the elicitation maneuvers are performed safely while closely resembling feared symptoms. Clinicians can reliably treat anxiety with the exposure therapy techniques outlined here and, importantly, do so without trepidation.

References

- Abramowitz, J. S. (2013). The practice of exposure therapy: Relevance of cognitive-behavioral theory and extinction theory. *Behavior Therapy, 44*(4), 548–558. <https://doi.org/10.1016/j.beth.2013.03.003>
- American Psychiatric Association. (2013). *The diagnostic and statistical manual of mental disorders DSM-5*. American Psychiatric Association.
- Australian Medicines Handbook*. (2021). (Vol. January 2021). Adelaide: Australian Medicines Handbook Pty Ltd.
- Barlow, D. H., Chorpita, B. F., & Turovsky, J. (1996). Fear, panic, anxiety and disorders of emotion. In D. Hope (Ed.), *Nebraska symposium on motivation: Perspectives on anxiety, panic and fear* (Vol. 43, pp. 251–328). University of Nebraska Press.
- Berg, S. K., Rasmussen, T. B., Herning, M., Svendsen, J. H., Christensen, A. V., & Thygesen, L. C. (2020). Cognitive behavioural therapy significantly reduces anxiety in patients with

- implanted cardioverter defibrillator compared with usual care: Findings from the Screen-ICD randomised controlled trial. *European Journal of Preventive Cardiology*, 27(3), 258–268. <https://doi.org/10.1177/2047487319874147>
- Craske, M. G. (2015). Optimizing exposure therapy for anxiety disorders: An inhibitory learning and inhibitory regulation approach. *Verhaltenstherapie*, 25(2), 134–143. <https://doi.org/10.1159/000381574>
- Deb, S., Wijeyesundera, H. C., Ko, D. T., Tsubota, H., Hill, S., & Fremes, S. E. (2013). Coronary artery bypass graft surgery vs percutaneous interventions in coronary revascularization: A systematic review. *JAMA*, 310(19), 2086–2095. <https://doi.org/10.1001/jama.2013.281718>
- Dornelas, E. A. (2008). *Psychotherapy with cardiac patients: Behavioral cardiology in practice*. American Psychological Association.
- Edmondson, D., Richardson, S., Falzon, L., Davidson, K. W., Mills, M. A., & Neria, Y. (2012). Posttraumatic stress disorder prevalence and risk of recurrence in acute coronary syndrome patients: A meta-analytic review. *PLoS One*, 7(6), e38915. <https://doi.org/10.1371/journal.pone.0038915>
- Farris, S. G., Abrantes, A. M., Bond, D. S., Stabile, L. M., & Wu, W.-C. (2019). Anxiety and Fear of Exercise in Cardiopulmonary Rehabilitation: Patient and practitioner perspectives. *Journal of Cardiopulmonary Rehabilitation and Prevention*, 39(2), E9–E13. <https://doi.org/10.1097/hcr.0000000000000401>
- Fleet, R., Foldes-Busque, G., Grégoire, J., Harel, F., Laurin, C., Burelle, D., & Lavoie, K. (2014). A study of myocardial perfusion in patients with panic disorder and low risk coronary artery disease after 35% CO₂ challenge. *Journal of Psychosomatic Research*, 76(1), 41–45.
- Fleet, R., Lesperance, F., Arseneault, A., Gregoire, J., Lavoie, K., Laurin, C., ... Frasure-Smith, N. (2005). Myocardial perfusion study of panic attacks in patients with coronary artery disease. *The American Journal of Cardiology*, 96(8), 1064–1068. <https://doi.org/10.1016/j.amjcard.2005.06.035>
- Furuäng, L., Siennicki-Lantz, A., & Elmståhl, S. (2011). Reduced cerebral perfusion in elderly men with silent myocardial ischaemia and nocturnal blood pressure dipping. *Atherosclerosis*, 214(1), 231–236. <https://doi.org/10.1016/j.atherosclerosis.2010.10.043>
- GBD 2017 Causes of Death Collaborators. (2018). Global, regional, and national age-sex-specific mortality for 282 causes of death in 195 countries and territories, 1980–2017: A systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*, 392(10159), 1736–1788. [https://doi.org/10.1016/S0140-6736\(18\)32203-7](https://doi.org/10.1016/S0140-6736(18)32203-7)
- GBD 2017 DALYs and HALE Collaborators. (2018). Global, regional, and national disability-adjusted life-years (DALYs) for 359 diseases and injuries and healthy life expectancy (HALE) for 195 countries and territories, 1990–2017: A systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*, 392(10159), 1859–1922. [https://doi.org/10.1016/S0140-6736\(18\)32335-3](https://doi.org/10.1016/S0140-6736(18)32335-3)
- GBD 2017 Risk Factor Collaborators. (2018). Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks for 195 countries and territories, 1990–2017: A systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*, 392(10159), 1923–1994. [https://doi.org/10.1016/S0140-6736\(18\)32225-6](https://doi.org/10.1016/S0140-6736(18)32225-6)
- Habibovic, M., Denollet, J., & Pedersen, S. S. (2017). Posttraumatic stress and anxiety in patients with an implantable cardioverter defibrillator: Trajectories and vulnerability factors. *Pacing and Clinical Electrophysiology*, 40(7), 817–823. <https://doi.org/10.1111/pace.13090>
- Hernandez-Palazon, J., Fuentes-Garcia, D., Falcon-Arana, L., Roca-Calvo, M. J., Burguillos-Lopez, S., Domenech-Asensi, P., & Jara-Rubio, R. (2018). Assessment of preoperative anxiety in cardiac surgery patients lacking a history of anxiety: Contributing factors and postoperative morbidity. *Journal of Cardiothoracic and Vascular Anesthesia*, 32(1), 236–244. <https://doi.org/10.1053/j.jvca.2017.04.044>
- Hesser, H., Hedman-Lagerlöf, E., Andersson, E., Lindfors, P., & Ljótsson, B. (2018). How does exposure therapy work? A comparison between generic and gastrointestinal anxiety-specific

- mediators in a dismantling study of exposure therapy for irritable bowel syndrome. *Journal of Consulting and Clinical Psychology*, 86(3), 254–267. <https://doi.org/10.1037/ccp0000273>
- Hohls, J. K., Beer, K., Arolt, V., Haverkamp, W., Kuhlmann, S. L., Martus, P., ... Ströhle, A. (2020). Association between heart-focused anxiety, depressive symptoms, health behaviors and health-care utilization in patients with coronary heart disease. *Journal of Psychosomatic Research*, 131, 109958. <https://doi.org/10.1016/j.jpsychores.2020.109958>
- Kastaun, S., Gerriets, T., Tschernatsch, M., Yeniguen, M., & Juenemann, M. (2016). Psychosocial and psychoneuroendocrinal aspects of Takotsubo syndrome. *Nature Reviews. Cardiology*, 13(11), 688–694. <https://doi.org/10.1038/nrcardio.2016.108>
- Kessler, R. C., Petukhova, M., Sampson, N. A., Zaslavsky, A. M., & Wittchen, H. U. (2012). Twelve-month and lifetime prevalence and lifetime morbid risk of anxiety and mood disorders in the United States. *International Journal of Methods in Psychiatric Research*, 21(3), 169–184. <https://doi.org/10.1002/mpr.1359>
- Mangalmurti, S., Seabury, S. A., Chandra, A., Lakdawalla, D., Oetgen, W. J., & Jena, A. B. (2014). Medical professional liability risk among US cardiologists. *American Heart Journal*, 167(5), 690–696. <https://doi.org/10.1016/j.ahj.2014.02.007>
- McGuire, J. F., Lewin, A. B., & Storch, E. A. (2014). Enhancing exposure therapy for anxiety disorders, obsessive-compulsive disorder and post-traumatic stress disorder. *Expert Review of Neurotherapeutics*, 14(8), 893–910. <https://doi.org/10.1586/14737175.2014.934677>
- Murphy, B. M., Ludeman, D., Elliott, P., Judd, F., Humphreys, J., Edington, J., ... Worcester, M. (2014). Red flags for persistent or worsening anxiety and depression after an acute cardiac event: A 6-month longitudinal study. *European Journal of Preventive Cardiology*, 21(9), 1079–1089. <https://doi.org/10.1177/2047487313493058>
- Pelletier, R., Bacon, S. L., Laurin, C., Arsenault, A., Fleet, R. P., & Lavoie, K. L. (2011). The impact of anxiety disorders on assessment of myocardial ischemia and exercise stress test performance. *Journal of Cardiopulmonary Rehabilitation and Prevention*, 31(1), 60–66. <https://doi.org/10.1097/HCR.0b013e3181ebf2c0>
- Pogosova, N., Kotseva, K., De Bacquer, D., von Känel, R., De Smedt, D., Bruthans, J., & Dolzhenko, M. (2017). Psychosocial risk factors in relation to other cardiovascular risk factors in coronary heart disease: Results from the EUROASPIRE IV survey. A registry from the European Society of Cardiology. *European Journal of Preventive Cardiology*, 24(13), 1371–1380. <https://doi.org/10.1177/2047487317711334>
- Pope, J. H., Aufderheide, T. P., Ruthazer, R., Woolard, R. H., Feldman, J. A., Beshansky, J. R., ... Selker, H. P. (2000). Missed diagnoses of acute cardiac ischemia in the emergency department. *New England Journal of Medicine*, 342(16), 1163–1170. <https://doi.org/10.1056/NEJM200004203421603>
- Rogers, P. A., Bernard, M. L., Madias, C., Thihalolipavan, S., Mark Estes, N. A., 3rd, & Morin, D. P. (2018). Current evidence-based understanding of the epidemiology, prevention, and treatment of atrial fibrillation. *Current Problems in Cardiology*, 43(6), 241–283. <https://doi.org/10.1016/j.cpcardiol.2017.06.001>
- Rosman, L., Whited, A., Lampert, R., Mosesso, V. N., Lawless, C., & Sears, S. F. (2015). Cardiac anxiety after sudden cardiac arrest: Severity, predictors and clinical implications. *International Journal of Cardiology*, 181, 73–76. <https://doi.org/10.1016/j.ijcard.2014.11.115>
- Rozanski, A., Blumenthal, J. A., & Kaplan, J. (1999). Impact of psychological factors on the pathogenesis of cardiovascular disease and implications for therapy. *Circulation*, 99(16), 2192–2217.
- Salkovskis, P. M., Clark, D. M., & Hackmann, A. (1991). Treatment of panic attacks using cognitive therapy without exposure or breathing retraining. *Behaviour Research and Therapy*, 29(2), 161–166.
- Sardinha, A., Nardi, A. E., & Zin, W. A. (2009). Are panic attacks really harmless? The cardiovascular impact of panic disorder. *Revista Brasileira de Psiquiatria*, 31(1), 57–62.
- Shemesh, E., Annunziato, R. A., Weatherley, B. D., Cotter, G., Feaganes, J. R., Santra, M., ... Rubinstein, D. (2011). A randomized controlled trial of the safety and promise of

- cognitive-behavioral therapy using imaginal exposure in patients with posttraumatic stress disorder resulting from cardiovascular illness. *The Journal of Clinical Psychiatry*, 72(2), 168–174. <https://doi.org/10.4088/JCP.09m05116blu>
- Simony, C. P., Pedersen, B. D., Dreyer, P., & Birkelund, R. (2015). Dealing with existential anxiety in exercise-based cardiac rehabilitation: A phenomenological-hermeneutic study of patients' lived experiences. *Journal of Clinical Nursing*, 24(17–18), 2581–2590. <https://doi.org/10.1111/jocn.12867>
- Stone, N. J., Robinson, J. G., Lichtenstein, A. H., Bairey Merz, C. N., Blum, C. B., Eckel, R. H., ... Wilson, P. W. (2014). 2013 ACC/AHA guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular risk in adults: A report of the American College of Cardiology/ American Heart Association Task Force on Practice Guidelines. *Journal of the American College of Cardiology*, 63(25 Pt B), 2889–2934. <https://doi.org/10.1016/j.jacc.2013.11.002>
- Tully, P. J. (2015). A good time to panic? Premorbid and postmorbid panic disorder in heart failure affects cardiac and psychiatric cause admissions. *Australasian Psychiatry*, 23(2), 124–127.
- Tully, P. J. (2020). Cognitive behavioural therapy for anxiety in cardiovascular diseases and implantable devices: A cautionary note. *European Journal of Preventive Cardiology*, 27(19), 2049. <https://doi.org/10.1177/2047487319888594>
- Tully, P. J., & Cosh, S. M. (2019). Post-traumatic stress disorder in heart failure patients: A test of the cardiac disease-induced PTSD hypothesis. *Current Psychiatry Research and Reviews Formerly: Current Psychiatry Reviews*, 15(4), 290–296. <https://doi.org/10.2174/2666082215666191113121558>
- Tully, P. J., Cosh, S. M., & Baumeister, H. (2014). The anxious heart in whose mind? A systematic review and meta-regression of factors associated with anxiety disorder diagnosis, treatment and morbidity risk in coronary heart disease. *Journal of Psychosomatic Research*, 77(6), 439–448.
- Tully, P. J., Cosh, S. M., & Baune, B. T. (2013). A review of the affects of worry and generalized anxiety disorder upon cardiovascular health and coronary heart disease. *Psychology, Health & Medicine*, 18(6), 627–644. <https://doi.org/10.1080/13548506.2012.749355>
- Tully, P. J., Sardinha, A., & Nardi, A. E. (2017). A new CBT model of panic attack treatment in comorbid heart diseases (PATCHD). *Cognitive and Behavioral Practice*, 24(3), 329–341. <https://doi.org/10.1016/j.cbpra.2016.05.008>
- Tremblay, M. A., Denis, I., Turcotte, S., DeGrâce, M., Tully, P. J., & Foldes-Busque, G. (in press). Cognitive-Behavioral Therapy for Panic Disorder in Patients with Stable Coronary Artery Disease: A Feasibility Study. *J Clin Psychol Med Settings*, 1–15. <https://doi.org/10.1007/s10880-022-09876-7>
- Urcelay, G. P. (2012). Exposure techniques: The role of extinction learning. In P. Neudeck & H.-U. Wittchen (Eds.), *Exposure therapy: Rethinking the model – Refining the method* (Vol. 1, pp. 35–63). Springer.
- Verma, M., Grover, S., Singh, T., Dahiya, N., & Nehra, R. (2020). Screening for cognitive impairment among the elderly attending the noncommunicable diseases clinics in a rural area of Punjab, North India. *Asian Journal of Psychiatry*, 50.
- Vilchinsky, N., Ginzburg, K., Fait, K., & Foa, E. B. (2017). Cardiac-disease-induced PTSD (CDI-PTSD): A systematic review. *Clinical Psychology Review*, 55, 92–106. <https://doi.org/10.1016/j.cpr.2017.04.009>
- Wells, A. (1997). Panic disorder. In A. Wells (Ed.), *Cognitive therapy of anxiety disorders: A practice manual and conceptual guide* (pp. 98–132). Wiley.
- Whitehead, D. L., Strike, P., Perkins-Porras, L., & Steptoe, A. (2005). Frequency of distress and fear of dying during acute coronary syndromes and consequences for adaptation. *The American Journal of Cardiology*, 96(11), 1512–1516. <https://doi.org/10.1016/j.amjcard.2005.07.070>
- Wilder Schaaf, K. P., Artman, L. K., Peberdy, M. A., Walker, W. C., Ornato, J. P., Gossip, M. R., & Kreutzer, J. S. (2013). Anxiety, depression, and PTSD following cardiac arrest: A systematic review of the literature. *Resuscitation*, 84(7), 873–877. <https://doi.org/10.1016/j.resuscitation.2012.11.021>

- Williams, J. M., Teasdale, J. D., Segal, Z. V., & Kabat-Zinn, J. (2007). *The mindful way through depression*. Guilford Press.
- Wittstein, I. S. (2010). Depression, anxiety, and platelet reactivity in patients with coronary heart disease. *European Heart Journal*, *31*(13), 1548–1550. <https://doi.org/10.1093/eurheartj/ehq097>
- Wu, K. H., Yen, Y. L., Wu, C. H., Hwang, C. Y., & Cheng, S. Y. (2017). Learning from an analysis of closed malpractice litigation involving myocardial infarction. *Journal of Forensic and Legal Medicine*, *48*, 41–45. <https://doi.org/10.1016/j.jflm.2017.04.003>

Chapter 10

Exposure Therapy when Patients Present with Asthma



Juliet Kroll and Alicia E. Meuret

Abstract Asthma is a major chronic health problem affecting over 300 million individuals worldwide. Asthma and anxiety are highly comorbid, causing reciprocal poorer outcomes in illness management and treatment. This chapter explores basic information about the asthma disease process, comorbid psychological presentations, disease management and medication interactions, symptom differentiation, and important considerations for therapists treating a patient with asthma. The chapter additionally reviews how exposure-based therapies can be safely and effectively harnessed to help alleviate both psychological and physical suffering in patients with asthma. Presentations illustrate how brief exposure-based interventions can be used in both outpatient and medical inpatient settings. Finally, specific exposure ideas, as well as traditional exposures, contraindicated for patients with asthma are provided.

Keywords Interoceptive exposure · Panic · Anxiety · Asthma · Contraindications · Fear of suffocation · Dyspnea · Corticosteroids · Bronchoconstriction · Hyperventilation

J. Kroll
Southern Methodist University, Dallas, TX, USA

The University of Texas MD Anderson Cancer Center, Houston, TX, USA
e-mail: JLKroll@mdanderson.org

A. E. Meuret (✉)
Southern Methodist University, Dallas, TX, USA
e-mail: ameuret@smu.edu

Introduction

Asthma is a common and chronic heterogeneous disease characterized by chronic airway inflammation and airway hyperresponsiveness to various triggers. Asthma is estimated to impact over 339 million individuals globally across the lifespan (GBD, 2017). In the United States, it is estimated that up to 7.5% of children and 7.7% of adults have an asthma diagnosis, with women, Puerto Ricans, Black individuals, and those below the poverty line disproportionately affected by this disease (Leong et al., 2012; CDC, 2019). In addition to the psychological and financial burden inherent in managing a chronic disease, shortness of breath and dyspnea are common. Those with asthma have a large overlap in symptom presentation with anxiety and panic-fear. Perceived difficulty in breathing or sensations of suffocation are one of the most evolutionarily salient interoceptive experiences, as restriction of breathing can lead to severe brain damage and death in just minutes. It is, therefore, no surprise that dyspnea can often be cognitively interpreted as the potential for impending bodily danger or death. Comorbid asthma and anxiety is highly prevalent, with 24% of patients with asthma suffering from any anxiety disorder, clinically relevant anxiety of up to 45% (Feldman et al., 2005), and 1/3 of patients with asthma estimated to specifically suffer from panic disorder (Meuret et al., 2017). The risk of developing anxiety symptoms in asthmatic individuals compared to non-asthmatic controls was double in a recent meta-analysis (Ye et al., 2021). Anxiety has a stronger association with asthma-related health condition than does lung function (Laveneziana et al., 2006), is the strongest predictor of breathlessness in asthma (Spinoven et al., 1997), aggravates symptom perception (Thomas et al., 2011; Ritz et al., 2013), and adversely impacts thoughts and coping behavior (Lavoie et al. 2010). Therefore, a basic understanding of how to effectively treat patients with asthma who present to psychotherapy with exposure therapy, both in general outpatient and medical settings, is warranted. Here, we aim to provide basic information about the asthma disease process, review comorbid mental disorders, outline existing psychological treatments for comorbid asthma and anxiety, and review how exposure-based therapies can be successfully and safely utilized in patients with asthma.

Asthma Disease Processes: What to Expect in a General Setting

As a chronic heterogeneous disease, asthma is considered to be a broad umbrella diagnosis, encompassing many types of respiratory symptoms (e.g., shortness of breath, wheeze, chest tightness, and cough) that vary over time and in intensity and intermittently limit one's ability to exhale with the appropriate force and volume (i.e., expiratory airflow). A hallmark of asthma is the variability in symptoms, which are often triggered by environmental factors (e.g., allergen or irritant exposure, change in weather, viral respiratory infections, strong emotions, and even exercise.)

These “triggers” that can lead to an asthma exacerbation are unique to each individual and do not necessarily cause a uniform respiratory response across individuals or even within the person.

Some surveys indicate that up to 25% of patients with asthma identify strong emotions and stress as triggers for asthma exacerbations. This perception is associated with less adequate illness control and more frequent emergency treatment (Ritz et al., 2016). As such, the possibility exists that the natural elicitation of strong emotions within the therapeutic setting may exacerbate the disease process in some patients. However, if appropriate consultation has occurred with the treating physician and rescue medication is available, a patient’s perception that strong emotions can lead to an asthma exacerbation may be more of a suitable target for exposure-based therapy rather than something to be avoided. In addition, in some cases, incorporating specific hypoventilation breathing training within psychotherapy to target end-tidal carbon dioxide (ETCO₂) measurements (see below for more detail) is observed to reduce the frequency of rescue inhaler use (Ritz et al., 2014).

Key Consideration

Up to 25% of patients with asthma report strong emotions as cause for asthma triggers or exacerbation. Exposure therapy under proper care and precaution is a suitable tool to prevent undue avoidance behaviors.

While asthma symptoms can be absent for months, airway hyperresponsiveness and chronic airway inflammation usually persist. This can pose a danger if patients delay asthma treatment due to symptom under perception, as asthma exacerbations can be life-threatening. Variability in symptoms can be particularly tricky for the patient and therapist to ascertain etiology (e.g., disease exacerbation, anxiety symptoms, or both) (Steele et al., 2012). Symptom variability is an additional factor associated with poor medication adherence, which contributes to the burden of an uncontrolled disease process experienced by an estimated 61.9% of US adults with asthma (CDC, 2016). Therefore, thorough psychoeducation on the variability of asthma symptoms, despite stable physiological disease presentation, should be included in exposure-based therapy.

As there is no cure for asthma, physicians and patients need to work together to achieve asthma control through pharmacological treatment and avoidance of known asthma triggers (e.g., environmental allergens; chemical irritants such as cigarette smoke, cleaning supplies, or heavy perfumes; changes in weather or climate; pests or molds; and even air pollution). Asthma control can be measured with self-report questionnaires such as the Asthma Control Test (ACT), which tracks the frequency of symptoms (e.g., shortness of breath), need for rescue medication use, and interference of symptoms on daily activities and sleep (Nathan et al., 2004). Ideally, patients with asthma control their disease and limit rescue inhaler use by avoiding known triggers and utilizing long-term control medications. Current guidelines for asthma diagnosis and treatment are published annually in the *Global Strategy for*

Asthma Management and Prevention, through the Global Initiative for Asthma (GINA) in the “GINA Report” (ginasthma.org/gina-reports/). Those are helpful resources for the clinician to incorporate into psychoeducation and also improve their own understanding of a patient’s specific asthma presentation.

Psychoeducation on Asthma Symptoms

Disease control is the primary target of asthma treatment, but close to 2/3 suffer from uncontrolled asthma. Asthma pathophysiology is highly variable over time, and tests may fail to detect abnormalities in symptom-free periods. Clinicians can utilize the annual guidelines published in the “GINA Report” for self- and patient psychoeducation.

Asthma and Psychological Distress

Patients with asthma commonly present with panic, generalized anxiety, health anxiety directly related to fear of asthma, and other psychopathology relevant in the general population (Meuret et al., 2020). Such comorbidity extends to children. For instance, in a sample of pediatric patients presenting for psychotherapy, 15% of children with internalizing disorders were also diagnosed with asthma (Meuret et al., 2006). Notably, youth with asthma are observed to have greater internalizing symptoms of somatization than youth without asthma (Seegan et al., 2020). Patients with asthma can also develop illness anxiety directly related to fear of asthma exacerbation as symptoms often overlap with anxiety (Meuret et al., 2017). Indeed, the evolutionary salience of panic/fear in response to difficulty breathing or dyspnea is one of the most basic orienting reactions to a potential threat to life. It is important to note that diagnostic nomenclature (DSM-5) prohibits a diagnosis of anxiety or other mental disorders if the origin is a direct result of a medical condition, such as dyspnea from asthma.

Common medications used to treat mental disorders, including antidepressants, anxiolytics, and hypnotic agents, are observed to be used by asthma patients at twice the general population rate, and their use is correlated negatively with asthma control (Joseph et al., 1996). For instance, the use of benzodiazepines to treat anxiety symptoms can depress the respiratory system and further suppress respiratory drive in patients with a chronically elevated partial pressure of CO₂ (PCO₂) (Ritz et al., 2018). Consequently, exposure therapy as a non-pharmacological intervention can be particularly suitable for asthma patients to avoid managing anxiety with psychotropic medications. Likewise, asthma medication can have psychological and psychophysiological effects (Ritz et al., 2013). For example, long-term use of systemic corticosteroids is associated with an increased risk of depression, mania, and mixed episodes. However, acute high-dose corticosteroids are more strongly associated with irritability and mania symptoms (Judd et al., 2014). Corticosteroids are also associated with neurocognitive changes and hypothalamic-pituitary-adrenal

(HPA) axis suppression (Fardet et al., 2012). Equally significant beta2-adrenergic agonists can lead to sympathetic side effects that can produce or exacerbate panic attack severity in comorbid panic disorder patients (Carr, 1998).

Medication

High-dose or rescue inhaler use can worsen psychiatric symptoms. Likewise, psychiatric medication such as benzodiazepines can aggravate asthma symptoms.

While a physician should manage all medications, including any unintended interactions between psychotropic and asthma medications, to avoid side effects of polypharmacy, the therapist should have a general understanding of how current medications may uniquely impact the present physiology and psychological symptom presentation. For example, if a patient initiates oral steroids (e.g., prednisone) during exposure therapy, distress levels can increase due to the medication. A therapist may be tempted to introduce a different strategy, believing that the patient does not respond favorably to this specific exposure strategy. However, the patient could likely be experiencing the well-known side effects of steroids, which will subside once the course of steroids is completed (typically within 5–10 days). It would be more beneficial for the patient to repeat the exposure while taking steroids to learn that they can successfully engage in a specific feared behavior, regardless of their subjective distress. If the impact of medication is suspected to be influencing the patient's psychological well-being, reinforcing psychoeducation on physiological contributions to symptoms of anxiety can be particularly helpful. If symptoms persist, consultation with the prescribing physician is warranted.

Asthma and Anxiety

Asthma and anxiety share similar symptoms, including air hunger, suffocation, chest tightness, and shortness of breath. However, bodily sensations are highly complex, and a differential diagnosis is far from straightforward, given that symptoms of mental disorders, particularly those of anxiety and panic, closely mimic those of several critical medical conditions (Meuret et al., 2017). Consequently, the presentation of nonspecific, medically unexplained symptoms can cause errors in diagnosis and treatment and even lead to mutual illness exacerbation (Potokar & Nutt, 2000, Carr, 1998). Likewise, mental healthcare providers frequently overlook medical comorbidity once an anxiety diagnosis is established. Therefore, referral to a physician for patients presenting with chronic respiratory distress to rule out any comorbid medical etiology is essential.

Intense negative emotions and anxiety contribute directly to pathophysiology by increasing bronchoconstriction (Ritz et al., 2000, 2011a; Sandberg et al., 2000) and airway inflammation (Kullowatz et al., 2008; Ritz et al., 2011b). Evidence suggests

that comorbid anxiety complicates asthma management and is a risk factor for more significant asthma morbidity (Feldman et al., 2005; Dirks et al., 1980). Asthma patients with high anxiety are furthermore more likely to visit the hospital and ER and make use of healthcare providers (Goodwin et al., 2005; ten Thoren & Petermann, 2000; Haarasilta et al., 2003; ten Brinke et al., 2001; Greaves et al., 2002). Comorbidity is also associated with greater asthma medication use (Jaunay et al., 2006; Ritz et al., 2001), poorer perceived health status, and reduced quality of life (Balkrishnan et al., 2002; Bonala et al., 2003; Nishimura et al., 2004; Oğuztürk et al., 2005; Lavoie et al., 2005). A certain level of panic-fear about asthma symptoms is thought to motivate self-management behaviors (Kinsman et al., 1980). However, greater levels are tied to adverse outcomes, including recurrent use of primary care providers (Feldman et al., 2005), lengthier episodes of oral corticosteroid use (Ritz et al., 2001), and longer and more frequent asthma-related hospital stays (Dirks et al., 1978). Prospectively, panic disorder has been linked to emergency treatments (Schneider et al., 2008) and compromised asthma control (Favreau et al., 2014). Lastly, comorbid anxiety is thought to contribute to the strong associations between asthma and suicidal ideation, attempts, and completed suicides (Goodwin & Eaton 2003; Boden et al., 2007). As such, treatment of psychological distress in patients with asthma is imperative for their mental and physical well-being.

Comorbidity

Comorbid asthma and anxiety are highly prevalent and are associated with overall poorer disease control and higher physical and mental morbidity.

Hyperventilation and Dyspnea: A Core Complicating Factor in Asthma and Anxiety

Acute shortness of breath or dyspnea, a common panic/anxiety symptom and cardinal signal of acute disease exacerbation in asthma, is present among a broad range of medical diagnoses. The majority (85%) of cases initially presenting with dyspnea are eventually diagnosed with pulmonary or cardiovascular diseases (Gillespie & Staats, 1994; Karnani et al., 2005). This reinforces the concern of patients (and their therapists) who present to psychotherapy with dyspnea and highlights the relevance of medical consultation. One way to distinguish pulmonary diseases, including asthma, from the experience of panic or anxiety is through pulmonary function testing: spirometry, reversibility testing with a bronchodilator, or methacholine challenge tests to determine airway hyperreactivity. Additional, asthma-specific antecedents to symptom exacerbation, such as exposure to smoke inhalation, should be considered.

When working with asthma patients, it is important to be aware that current research points toward symptom perception differences among patients with asthma.

For instance, compared to asthma patients without panic, individuals with comorbid panic disorder and asthma tend to find dyspneic symptoms more distressing, both during the onset and prolonged course of their disease (Freire et al., 2010). They also report higher levels of breathlessness during induced bronchoconstriction and more dyspnea during CO₂ inhalation challenge (Van Peski-Oosterbaan et al., 1996; Boudreau et al., 2017). More generally, individuals with elevated anxiety sensitivity levels report more intense feelings of shortness of breath and panic symptoms in response to dyspnea induction (Alius et al., 2013). Indeed, neuroimaging studies support the idea that an individual's anxiety level influences habituation to dyspnea, with low levels being associated with faster habituation (Stoeckel et al., 2015). Additionally, personality traits such as neuroticism correlate positively with an individual's dyspnea intensity report (Nowobilski et al., 2007).

Because asthma pathophysiology is highly variable over time, some tests will not necessarily detect abnormalities in symptom-free periods. Therefore, it is essential to keep in mind that patients presenting with shortness of breath may meet diagnostic criteria for both asthma and anxiety.

Medical reference tools recommend that even in the case of patients with respiratory disease, to “assume exacerbation of their medical disease is cause of the dyspnea until proven otherwise” (Ahmed & Graber, 2020). Because no published guidelines are available to discriminate between medical and nonmedical symptoms common to anxiety, panic, and asthma (e.g., dyspnea), caution is warranted. Once it has been determined that respiratory symptoms are benign or psychogenic, non-emergent treatments, including exposure therapy, can be used to target symptom perception.

Symptom Differentiation

Distinguishing asthma symptoms from the experience of panic or anxiety is imperative to avoid treatment complications.

Hyperventilation (or hypercapnia) is commonly observed in anxiety and panic patients. It is also a concern in asthma, as it can trigger bronchoconstriction (Herxheimer, 1946, van den Elshout et al., 1991). Studies have reported a heightened prevalence of symptoms suggestive of hyperventilation in asthma (e.g., D'Alba et al., 2015; de Groot et al., 2013; Gridina et al., 2013). Asthma patients who also report hyperventilation symptoms perceive their health status as more compromised, even when controlling other asthma symptoms. This association is mediated by low feelings of control over asthma, most likely because asthma medication cannot sufficiently address hyperventilation symptoms (Ritz et al., 2008). Elevated ventilation accompanying panic attacks may also worsen hyperinflation and reduce inspiratory capacity to critical levels in chronic obstructive pulmonary disease (COPD) (Kummer, 2010). Hyperventilation and hyperpnea can also have adverse effects on lung function (Sterling, 1968; van den Elshout et al., 1991). Additionally, individuals with asthma tend to respond more forcefully with ventilation to physical

challenges (Dal Negro & Allegra, 1989; Ritz et al., 1998), facilitating hypocapnia. The ensuing symptoms and overuse of bronchodilators, which cannot provide relief, may spiral to life-threatening states.

Key Symptom: Hyperventilation

Hyperventilation or is common in asthma. It is associated with adverse effects on lung function, poorer quality of life and perceived health, bronchodilator overuse, and comorbid panic-fear.

Need for Adjunct Psychosocial Treatments for Comorbid Asthma and Anxiety

Despite the challenges that arise from a comorbid presentation of asthma and anxiety/panic and repeated calls for standardized and evaluated appropriate interventions, most are directed toward improving self-management behaviors (Nozaki-Taguchi et al., 1995; Ritz & Roth 2003; Bobb et al., 2010; Gibson et al., 2003; Ritz et al., 2013). Psychosocial interventions remain rare, and of those, only a few target anxiety directly (Roy-Byrne et al., 2008; Goodwin et al., 2003; Katon et al., 2004; Carr, 1998). Specifically, interventions of comparable effectiveness to psychotropic medication for anxiety are preferable (Laforest et al., 2008).

Several systematic reviews support the benefit of cognitive behavioral therapy (CBT) for targeting asthma-related quality of life, asthma symptoms, asthma control, and anxiety (e.g., Pateraki & Morris, 2018; Yorke et al., 2015; Kew et al., 2016). Exposure techniques include interoceptive exposures to reduce participants' fear of bodily sensations associated with anxiety reactions and panic attacks (Ross et al., 2005; Lehrer et al., 2008) and hypothesis testing on appropriate ways to manage an asthma episode (Parry et al., 2012). Feldman and colleagues investigated a culturally adapted CBT combined with heart rate variability (HRV) biofeedback (i.e., CBPT) for Latinos with comorbid panic disorder and asthma. While improvements in asthma control and panic disorder severity were comparable to the active control condition (music relaxation), CBPT resulted in superior medication adherence (Feldman et al., 2016). Notably, improvements were neither mediated by changes in heart rate variability nor end-tidal CO₂ (Nelson et al., 2020).

In children, school-based CBT interventions used to teach children how to cope with stressful situations, negative feelings about asthma, and asthma triggers significantly improved asthma management and health outcomes (Bruzzeze et al., 2008, 2011), reduced anxiety, and increased asthma management self-efficacy and asthma-related quality of life (McGovern et al., 2019). Conversely, CBT interventions that help identify somatic reactions when anxious, introduce relaxation exercises, and build positive coping strategies report less favorable treatment outcomes (Papneja & Manassis, 2006).

In the only study to date with a direct focus on exposure-based CBT in children, Bonnert et al. (2020) found significant improvements in generalized worry, catastrophizing about asthma, asthma control, and perceived stress following treatment completion (Bonnert et al., 2020). The results align with previous research that found CBT reduced asthma-specific fear (Parry et al., 2012) and improved quality of life, asthma symptoms, attitude toward asthma, self-efficacy, and negative emotionality (Put et al., 2003).

Caution is warranted for all CBT interventions, particularly exposure-based ones, as they can involve risks for a patient with asthma. For example, CBT commonly uses interoceptive exposure exercises, including voluntary hyperventilation, that could trigger bronchoconstriction (Butler et al., 2006; Meuret et al., 2006). Likewise, standard CBT typically includes slow abdominal breathing training without control of PCO_2 levels, leading to hyperpnea or hyperventilation (Butler et al., 2006; Meuret et al., 2003, 2006; Lehrer et al., 2008; Ritz & Roth 2003). Therefore, extra care must be used to tailor anxiety interventions to the specific needs of asthma patients.

Treatment Contraindications

Traditional exposure techniques to reduce behavioral avoidance and symptom misperception may involuntarily trigger or exacerbate hyperventilation and bronchoconstriction.

Biofeedback interventions can act as exposures to feared respiratory sensations while at the same time limiting the risk of bronchoconstriction due to anxiety-induced hyperventilation. Specifically, capnometry-assisted respiratory training (CART) has been used to target respiratory abnormalities in panic disorder (Meuret et al., 2008; Meuret et al., 2010; Kim et al., 2012; Tolin et al., 2017) and asthma (Meuret et al., 2007; Ritz et al., 2014). While CART's primary aim is to normalize hypocapnia (lower than normal levels of PCO_2), the training simultaneously acts as an interoceptive exposure through repeated induction of dyspnea (Meuret et al., 2018, Meuret & Ritz, 2021 review). Preliminary findings suggest superior reductions in anxiety sensitivity in highly anxious asthmatics (Meuret et al., 2014) through hypoventilation-induced interoceptive exposure.

Treatment Considerations

Exposure-based CBT improves asthma-specific fear, management, and symptoms, anxiety, and quality of life. Safety and efficacy can be enhanced by PCO_2 and O_2 biofeedback.

Case Examples

The following case observations are based on real-life examples of conducting exposures while working in outpatient settings and on a medical hospital consultation liaison service. When working with patients with asthma, noninvasive monitors such as commercial finger pulse oximetry to monitor oxygen saturation or a capnometer to measure end-tidal carbon dioxide in addition to O₂ are extremely helpful as behavioral observations when initiating exposure therapy. While CO₂ varies with respiratory volume and rate, oxygen saturation is remarkably stable – even in patients with asthma. Caution should be applied to avoid any biofeedback devices becoming safety aids or dysfunctional safety signals (e.g., if a patient learns they are only safe when they can confirm their O₂ is stable or able to be readily assessed). Thus, it is recommended such devices are utilized only during initial exposures and then discontinued further into treatment.

In inpatient settings, monitors are standardly available at the bedside or easily accessed by the medical team. CO₂ can be ambulatorily monitored with a capnometer for outpatient settings. Pulse oximeters are widely available at a low cost and are easily slipped over a patient's finger. However, pulse oximetry may be less accurate in individuals with darker pigmented skin, and dark fingernail polish may also interfere with results (Sjoding et al., 2020).

Outpatient Asthma Patient with Comorbid Panic Symptoms

Our first case example presented here was a 48-year-old White woman, “SP,” initially diagnosed with chronic asthma in childhood, who presented to psychotherapy to address “severe anxiety.” The *Structured Clinical Interview for DSM-5* revealed a diagnosis of panic disorder, in addition to subclinical symptoms of illness anxiety disorder. SP experienced symptoms of shortness of breath, wheezing, and chest tightness multiple times a week. She was treated with an inhaled corticosteroid maintenance medication and utilized her rescue inhaler five to six times each week when experiencing shortness of breath. However, her asthma exacerbations coincided with a panic attack once a week, often with an escalation of anxiety symptoms in response to shortness of breath.

Psychoeducation Psychoeducation included basic education on the biopsychosocial model of panic, an explanation on how patients with asthma can tend to over-breathe or hyperventilate (e.g., breathe more than their metabolic demand) and how utilization of rescue inhaler to alleviate any symptoms of shortness of breath can reinforce symptoms of anxiety. SP identified that she would immediately use her inhaler when she felt any shortness of breath, regardless of whether she thought it was due to asthma exacerbation or anxiety.

Interoceptive Exposure Within Hypoventilation Training Hypoventilation training to control hyperventilation (i.e., normalizing PCO₂ levels) simulates interoceptive exposure surrounding the experience of shortness of breath. For a more detailed description of hypoventilation training, see the case report in Jeter et al. (2012). Practicing slow and shallow breathing can initially lead to air hunger sensation, when in fact, the patient has sufficient oxygenation. SJ was able to test that even when she breathed slowly and shallowly, initially leading to air cravings, her oxygen saturation remained remarkably stable without using her rescue inhaler. SJ repeated the same exposure for a more extended period; this time testing if a panic attack followed her sensation of shortness of breath. SJ learned that shortness of breath sensations did not lead to the onset of a panic attack.

Hospitalized Patient with Severe Respiratory Distress

“AG” was a 20-year-old Latino male with asthma and multiple comorbid medical conditions, including organ failure. AG was continuously monitored for vital signs on a medical intensive care unit while awaiting a solid organ transplant. To remain on the transplant list per hospital policy, AG was required to walk and eat daily. AG experienced severe dyspnea and accompanying anxiety upon exertion and physical deconditioning due to prolonged hospital stay and experienced general demoralization as he observed his body shrinking. He shared; “I used to be able to run and jump while playing soccer, now I’m too anxious to even walk around the room.” Psychology service was consulted to address “Symptoms of depression and anxiety. Patient too anxious to eat or walk for three days. Don’t want to give benzos due to critical status.” After an assessment that the patient’s goals aligned with those of his medical team – to walk daily and that general risk of further decompensation due to inactivity outweighed any brief fluctuations in vital signs (e.g., oxygen desaturation) – a course of twice-daily exposure therapy emphasizing inhibitory learning was proposed and collaboratively agreed upon by the patient and the medical team.

Psychoeducation and Treatment Rationale Psychoeducation on inhibitory learning and treatment rationale for exposure were provided to both the patient and members of the patient’s proximal care team (e.g., nurse, medical assistant, physical therapist). A particular emphasis was placed on the biopsychosocial model, highlighting the evolutionary salience of anxiety accompanying dyspnea to normalize the experience of anxiety. Attention was paid to reduce stigma from family members present at the bedside who viewed anxiety as a moral failure due to lack of faith. Skills targeting minimizing comments of catastrophic thinking, e.g., “I can’t do this” and “I’m too anxious,” were also provided. Normalizing AG’s anxiety in response to dyspnea helped to validate that his emotional distress had clear physiological contributions – that it wasn’t “all in his head.” The treatment team set up exposures to “test out” the patient’s ability to engage in physical movement while tolerating dyspnea. Just as for standard exposure, exposure for comorbid asthma

and anxiety should target behavioral outcomes (i.e., ability to engage in physical movement) rather than setting up hypothesis tests for distress (i.e., “I will be too anxious”).

Therapist: “We expect you to be anxious, and you will experience distress. Anxiety is the most basic alerting response your body has, particularly to changes in breathing. Often, even when we feel like we are not getting enough oxygen or feel out of breath, our oxygen saturation is still stable. That mismatch is common in people with and without respiratory disease. We will use the monitor here to make sure you stay at a safe oxygen level.”

Finding Common Language Before initiating exposure, the therapist introduced AG to a 1–10 rating scale to describe emotional distress and provided education about physician-determined acceptable oxygen saturation (>90% saturation). These numbers were written on a whiteboard in AG’s room to facilitate between-session continued practice.

Collaboratively Defining Exposure As AG generally feared he would be “too anxious to move,” identifying specific behavioral targets was important. In his case, exposure was comprised of repeated, sequential behavioral experiments surrounding physical movement with increasing duration and intensity. For example, AG tested sitting up in bed for 30 seconds and 45 seconds, sitting on the side of the bed for 30 seconds, raising each leg from the side of the bed for 30 seconds, then eventually swinging his legs, standing, and walking with various degrees of physical support from the medical team. Before initiating each exposure, the therapist asked AG, “If you do _____, what are you absolutely convinced will happen?” AG feared his body would not be able to get sufficient oxygen while engaging in each movement. Therefore, AG and the clinician monitored pulse oximetry readings throughout the session and tested if his oxygen saturation dropped below 90%.

Consolidating Learning After each exposure, it was important to consolidate AG’s learning by asking him to briefly summarize what he just did, whether his anticipated outcome did or did not occur, and to validate that he could tolerate the emotional distress of engaging in the exposure. Exposure therapy indirectly provided opportunities for increased self-efficacy as AG reengaged in physical movement. Despite AG’s continued poor health, his symptoms on the PHQ-9 and GAD-7 improved as he set and reached tangible goals and progressed in physical therapy.

The exposure therapy did not address AG’s asthma symptoms or respiratory distress; however, it targeted the negative impact the associated anxiety was having on his functional status of walking and helped him remain on the transplant list.

General Recommendation for Using Exposure Therapy with Asthma Patients Interoceptive, in vivo, and imaginal exposures can all be utilized for asthma patients, with some modifications for safety, by avoiding voluntary hyperventilation and exposure to any known asthma trigger identified by the patient (cigarette smoke, allergens, etc.). A patient’s rescue inhaler should be present at every

Table 10.1 Exposure ideas for patients presenting with asthma

	Exposure ideas
Interoceptive exposure	+moderate exercise with pulse oximeter to measure oxygen saturation +slow and shallow breathing with capnometer to monitor CO ₂ levels -contraindicated: Voluntary hyperventilation or deep (volume) breathing without monitoring CO ₂ levels
In vivo	+systematically and collaboratively engaging in any activity or situation that patient avoids (e.g., crowded places, social situations) -contraindicated: Exposure to any known asthma triggers as identified by the patient (e.g., cigarette smoke, allergens such as cats or dust, changes in temperature)
Imaginal	+imagining any safe situation that patient typically avoids due to fear of asthma exacerbation (e.g., exercise, being in an enclosed space, allergens) to elicit any conditioned response (e.g., shortness of breath) that may lead to anxiety or panic

Note: It is important to ensure patient's rescue inhaler is present at every session for safety

session. Exposure ideas include moderate exercise with or without pulse oximeter to measure oxygen saturation; slow and shallow breathing with capnometer to monitor CO₂ levels; induction of mild dyspnea (e.g., breathing through a straw, deep breathing while monitoring CO₂ levels); engaging in any anxiety-providing situation, related or unrelated to asthma symptoms; and imagining any safe situation that a patient typically avoids due to fear of exacerbation (e.g., exercise, being in enclosed spaces). See Table 10.1.

Conclusion

Therapists can be unsure about the use of exposure in patients with asthma. They may have concerns about inadvertently exacerbating a disease process or potentially stigmatizing patients who may view psychological treatment as invalidating of their physical condition. Yet, if the above points are considered, exposure-based interventions can not only be beneficial but also necessary to both treat anxiety symptomatology and support an adaptative management style of a chronic respiratory disease. Further, thoughtful psychoeducation, which includes physiological contributions to anxiety, can validate a patient's experience. Finally, while there are various ways to achieve favorable patient outcomes in the treatment of psychological distress, exposures are known to be some of the most efficacious and time-efficient strategies. Indeed, the case studies outlined above were both conducted in the context of brief psychotherapy (i.e., weeks vs. months). Thoughtful use of exposure therapies, incorporating strategies and considerations reviewed here, has great potential to reduce the prolonged suffering of patients with asthma and has a lasting impact on the patient's management of this chronic disease.

References

- Ahmed, A., & Graber, M. A. (2020, September). *Evaluation of the adult with dyspnea in the emergency department*. UpToDate. Retrieved October 2020, from <https://www.uptodate.com/contents/evaluation-of-the-adult-with-dyspnea-in-the-emergency-department>
- Alius, M. G., Pané-Farré, C. A., Von Leupoldt, A., et al. (2013). Induction of dyspnea evokes increased anxiety and maladaptive breathing in individuals with high anxiety sensitivity and suffocation fear. *Psychophysiology*, *50*(5), 488–497.
- Balkrishnan, R., Christensen, D. B., & Bowton, D. L. (2002). Self-reported health status, prophylactic medication use, and healthcare costs in older adults with asthma. *Journal of the American Geriatrics Society*, *50*(5), 924–929.
- Bobb, C., Ritz, T., Rowlands, G., et al. (2010). Effects of allergen and trigger factor avoidance advice in primary care on asthma control: A randomized-controlled trial. *Clinical and Experimental Allergy*, *40*(1), 143–152.
- Boden, J. M., Fergusson, D. M., & Horwood, L. J. (2007). Anxiety disorders and suicidal behaviours in adolescence and young adulthood: Findings from a longitudinal study. *Psychological Medicine*, *37*(3), 431–440.
- Bonala, S. B., Pina, D., Silverman, B. A., et al. (2003). Asthma severity, psychiatric morbidity, and quality of life: Correlation with inhaled corticosteroid dose. *Journal of Asthma*, *40*(6), 691–699.
- Bonnert, M., Andersson, E., Serlachius, E., et al. (2020). Exposure-based cognitive behavior therapy for anxiety related to asthma: A feasibility study with multivariate baseline design. *Scandinavian Journal of Psychology*, *61*(6), 827–834.
- Boudreau, M., Bacon, S. L., Paine, N. J., et al. (2017). Impact of panic attacks on bronchoconstriction and subjective distress in asthma patients with and without panic disorder. *Psychosomatic Medicine*, *79*(5), 576–584.
- Bruzzese, J. M., Sheares, B. S., Vincent, E. J., et al. (2011). Effects of a school-based intervention for urban adolescents with asthma—a controlled trial. *American Journal of Respiratory and Critical Care Medicine*, *183*(8), 998–1006.
- Bruzzese, J. M., Unikel, L., Gallagher, R., et al. (2008). Feasibility and impact of a school-based intervention for families of urban adolescents with asthma: Results from a randomized pilot trial. *Family Process*, *47*(1), 95–113.
- Butler, A. C., Chapman, J. E., Forman, E. M., et al. (2006). The empirical status of cognitive-behavioral therapy: A review of meta-analyses. *Clinical Psychology Review*, *26*(1), 17–31.
- Carr, R. E. (1998). Panic disorder and asthma: Causes, effects and research implications. *Journal of Psychosomatic Research*, *44*(1), 43–52.
- Center for Disease Control (2016). Behavioral Risk Factor Surveillance System (BRFSS)—Adult Asthma Call-back Survey Data.
- Centers for Disease Control and Prevention. (2019). CDC’s National Asthma Control Program Asthma stats. July 2019. Accessed January 20, 2021. Available at: https://www.cdc.gov/asthma/asthma_stats/default.htm
- D’Alba, I., Carloni, I., Ferrante, A. L., et al. (2015). Hyperventilation syndrome in adolescents with and without asthma. *Pediatric Pulmonology*, *50*(12), 1184–1190.
- Dal Negro, R., & Allegra, L. (1989). Blood gas changes during and after nonspecific airway challenge in asthmatic and normal subjects. *Journal of Applied Physiology* (Bethesda, Md. : 1985), *67*(6), 2627–2630.
- de Groot, E. P., Duiverman, E. J., & Brand, P. L. (2013). Dysfunctional breathing in children with asthma: A rare but relevant comorbidity. *European Respiratory Journal*, *41*(5), 1068–1073.
- Dirks, J. F., Fross, K. H., & Paley, A. (1978). Panic-fear in asthma—State-trait relationship and rehospitalization. *Journal of Chronic Diseases*, *31*(9–10), 605–609.
- Dirks, J. F., Schraa, J. C., Brown, E. L., et al. (1980). Psycho-maintenance in asthma: Hospitalization rates and financial impact. *British Journal of Medical Psychology*, *53*(4), 349–354.

- Fardet, L., Petersen, I., & Nazareth, I. (2012). Suicidal behaviors and severe neuropsychiatric disorders following glucocorticoid therapy in primary care. *American Journal of Psychiatry*, *169*(5), 491–497.
- Favreau, H., Bacon, S. L., Labrecque, M., et al. (2014). Prospective impact of panic disorder and panic-anxiety on asthma control, health service use, and quality of life in adult patients with asthma over a 4-year follow-up. *Psychosomatic Medicine*, *76*(2), 147–155.
- Feldman, J. M., Matte, L., Interian, A., et al. (2016). Psychological treatment of comorbid asthma and panic disorder in Latino adults: Results from a randomized controlled trial. *Behaviour Research and Therapy*, *87*, 142–154.
- Feldman, J. M., Siddique, M. I., Morales, E., et al. (2005). Psychiatric disorder and asthma outcomes among high-risk inner-city patients. *Psychosomatic Medicine*, *67*(6), 989–996.
- Freire, R. C., Perna, G., & Nardi, A. E. (2010). Panic disorder respiratory subtype: Psychopathology, laboratory challenge tests, and response to treatment. *Harvard Review of Psychiatry*, *18*(4), 220–229.
- GBD 2016 Disease and Injury Incidence and Prevalence Collaborators. (2017). Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: A systematic analysis for the global burden of disease study 2016. *Lancet (London, England)*, *390*(10100), 1211–1259.
- Gibson, P. G., Powell, H., Coughlan, J., et al. (2003). Self-management education and regular practitioner review for adults with asthma. *Cochrane Database Systematic Reviews*, *1*, CD001117.
- Gillespie, D. J., & Staats, B. A. (1994). Unexplained dyspnea. *Mayo Clinic Proceedings*, *69*(7), 657–663.
- Global Initiative for Asthma (GINA). (2005). *Global strategy for asthma management and prevention: NHLBI/WHO workshop report*. National Institutes of Health, National Heart, Lung and Blood Institute.
- Goodwin, R. D., & Eaton, W. W. (2003). Asthma and the risk of panic attacks among adults in the community. *Psychological Medicine*, *33*(5), 879–885.
- Goodwin, R. D., Messineo, K., Bregante, A., et al. (2005). Prevalence of probable mental disorders among pediatric asthma patients in an inner-city clinic. *Journal of Asthma*, *42*(8), 643–647.
- Goodwin, R. D., Olfson, M., Shea, S., et al. (2003). Asthma and mental disorders in primary care. *General Hospital Psychiatry*, *25*(6), 479–483.
- Greaves, C. J., Eiser, C., Seamark, D., et al. (2002). Attack context: An important mediator of the relationship between psychological status and asthma outcomes. *Thorax*, *57*(3), 217–221.
- Gridina, I., Bidat, E., Chevallier, B., et al. (2013). Prévalence du syndrome d'hyperventilation chronique chez les enfants et les adolescents [Prevalence of chronic hyperventilation syndrome in children and teenagers]. *Archives de pediatrie: organe officiel de la Societe francaise de pediatrie*, *20*(3), 265–268.
- Haarasilta, L., Marttunen, M., Kaprio, J., et al. (2003). Major depressive episode and health care use among adolescents and young adults. *Social Psychiatry and Psychiatric Epidemiology*, *38*(7), 366–372.
- Herxheimer, H. (1946). Hyperventilation asthma. *Lancet*, *247*(6386), 83–87.
- Jaunay, E., Consoli, A., Greenfield, B., et al. (2006). Treatment refusal in adolescents with severe chronic illness and borderline personality disorder. *Journal of the American Academy of Child and Adolescent Psychiatry*, *15*(3), 135–142.
- Jeter, A. M., Kim, H. C., Simon, E., et al. (2012). Hypoventilation training for asthma: A case illustration. *Applied Psychophysiology and Biofeedback*, *37*(1), 63–72.
- Joseph, K. S., Blais, L., Ernst, P., et al. (1996). Increased morbidity and mortality related to asthma among asthmatic patients who use major tranquilizers. *BMJ (Clinical research ed.)*, *312*(7023), 79–82.
- Judd, L. L., Schettler, P. J., Brown, E. S., et al. (2014). Adverse consequences of glucocorticoid medication: Psychological, cognitive, and behavioral effects. *The American Journal of Psychiatry*, *171*(10), 1045–1051.

- Karnani, N. G., Reisfield, G. M., & Wilson, G. R. (2005). Evaluation of chronic dyspnea. *American Family Physician*, 71(8), 1529–1537.
- Katon, W. J., Richardson, L., Lozano, P., et al. (2004). The relationship of asthma and anxiety disorders. *Psychosomatic Medicine*, 66(3), 349–355.
- Kew, K. M., Nashed, M., Dulay, V., et al. (2016). Cognitive behavioural therapy (CBT) for adults and adolescents with asthma. *The Cochrane Database of Systematic Reviews*, 9(9), CD011818.
- Kim, S., Wollburg, E., & Roth, W. T. (2012). Opposing breathing therapies for panic disorder: Randomized controlled trial of lowering vs raising end-tidal PCO₂. *The Journal of Clinical Psychiatry*, 73(7), 931–939.
- Kinsman, R. A., Dirks, J. F., Jones, N. F., et al. (1980). Anxiety reduction in asthma: Four catches to general application. *Psychosomatic Medicine*, 42(4), 397–405.
- Kullowatz, A., Rosenfield, D., Dahme, B., et al. (2008). Stress effects on lung function in asthma are mediated by changes in airway inflammation. *Psychosomatic Medicine*, 70, 468–475.
- Kummer, F. (2010). Panic attacks in COPD and the somato-psycho-somatic feedback. *The European Respiratory Journal*, 36(2), 457–458.
- Laforest, L., Van Ganse, E., Devouassoux, G., et al. (2008). Factors influencing dispensing of psychotropic medications to patients with asthma: A community pharmacy-based survey. *Annals of Allergy, Asthma, and Immunology*, 100(3), 230–236.
- Laveneziana, P., Lotti, P., Coli, C., Binazzi, B., Chiti, L., Stendardi, L., ... Scano, G. (2006). Mechanisms of dyspnoea and its language in patients with asthma. *European Respiratory Journal*, 27(4), 742–747.
- Lavoie, K. L., Bouthillier, D., Bacon, S. L., Lemiere, C., Martin, J., Hamid, Q., ... Ernst, P. (2010). Psychologic distress and maladaptive coping styles in patients with severe vs moderate asthma. *Chest*, 137(6), 1324–1331.
- Lavoie, K. L., Cartier, A., Labrecque, M., et al. (2005). Are psychiatric disorders associated with worse asthma control and quality of life in asthma patients? *Respiratory Medicine*, 99(10), 1249–1257.
- Lehrer, P. M., Karavidas, M. K., Lu, S. E., et al. (2008). Psychological treatment of comorbid asthma and panic disorder: A pilot study. *Journal of Anxiety Disorders*, 22(4), 671–683.
- Leong, A. B., Ramsey, C. D., & Celdon, J. C. (2012). The challenge of asthma in minority populations. *Clinical Reviews in Allergy and Immunology*, 43(1–2), 156–183.
- McGovern, C. M., Arcoleo, K., & Melnyk, B. (2019). COPE for asthma: Outcomes of a cognitive behavioral intervention for children with asthma and anxiety. *School Psychology*, 34(6), 665–676.
- Meuret, A. E., Ehrenreich, J. T., Pincus, D. B., et al. (2006). Prevalence and correlates of asthma in children with internalizing psychopathology. *Depression and Anxiety*, 23(8), 502–508.
- Meuret, A. E., Kroll, J. L., & Ritz, T. (2017). Panic disorder comorbidity with medical conditions and treatment implications. *Annual Reviews of Clinical Psychology*, 13, 209–240.
- Meuret, A. E., & Ritz, T. (2021). In M. P. Lehrer, R. L. Woolfolk, & W. E. Sime (Eds.), *End-tidal CO₂ biofeedback. Principles and practice of stress management* (4th ed.). Guilford Press.
- Meuret, A. E., Ritz, T., Wilhelm, F. H., et al. (2007). Targeting pCO₂ in asthma: Pilot evaluation of a capnometry-assisted breathing training. *Applied Psychophysiology and Biofeedback*, 32(2), 99–109.
- Meuret, A. E., Ritz, T., Wilhelm, F. H., et al. (2018). Hypoventilation therapy alleviates panic by repeated induction of dyspnea. *Biological Psychiatry. Cognitive Neuroscience and Neuroimaging*, 3(6), 539–545.
- Meuret, A. E., Rosenfield, D., Seidel, A., et al. (2010). Respiratory and cognitive mediators of treatment change in panic disorder: Evidence for intervention specificity. *Journal of Consulting and Clinical Psychology*, 78(5), 691–704.
- Meuret, A. E., Rosenfield, D., Steele, A. M., et al. (2014, September 19–21). *Pilot study of hypoventilation treatment on anxiety in patients with asthma*. Paper presented at the 21st annual meeting of the International Society for the Advancement of Respiratory Psychophysiology, New Brunswick, NJ.

- Meuret, A. E., Tunnell, N., & Roque, A. (2020). Anxiety disorders and medical comorbidity: Treatment implications. *Advances in Experimental Medicine and Biology*, *1191*, 237–261.
- Meuret, A. E., Wilhelm, F. H., Ritz, T., et al. (2003). Breathing training for treating panic disorder – Useful intervention or impediment? *Behavior Modification*, *27*(5), 731–754.
- Meuret, A. E., Wilhelm, F. H., Ritz, T., et al. (2008). Feedback of end-tidal pCO₂ as a therapeutic approach for panic disorder. *Journal of Psychiatric Research*, *42*(7), 560–568.
- Nathan, R. A., Sorkness, C. A., Kosinski, M., et al. (2004). Development of the asthma control test: A survey for assessing asthma control. *Journal of Allergy and Clinical Immunology*, *113*(1), 59–65.
- Nelson, K. L., Lu, S. E., Oken, T., et al. (2020). Further exploration of treatment response in Latinos with comorbid asthma and panic disorder: A brief report of HRV and ET-CO₂ as potential mediators of treatment response. *Applied Psychophysiology and Biofeedback*, *45*(2), 67–74.
- Nishimura, K., Hajiro, T., Oga, T., et al. (2004). Health-related quality of life in stable asthma: What are remaining quality of life problems in patients with well-controlled asthma? *Journal of Asthma*, *41*(1), 57–65.
- Nowobilski, R., Furgal, M., Czyn, P., et al. (2007). Psychopathology and personality factors modify the perception of dyspnea in asthmatics. *The Journal of Asthma: Official Journal of the Association for the Care of Asthma*, *44*(3), 203–207.
- Nozaki-Taguchi, N., Isono, S., Nishino, T., et al. (1995). Upper airway obstruction during midazolam sedation: Modification by nasal CPAP. *Canadian Journal of Anesthesia*, *42*(8), 685–690.
- Oğuztürk, O., Erkici, A., Kara, M., et al. (2005). Psychological status and quality of life in elderly patients with asthma. *Psychosomatics*, *46*(1), 41–46.
- Papneja, T., & Manassis, K. (2006). Characterization and treatment response of anxious children with asthma. *Canadian Journal of Psychiatry*, *51*(6), 393–396.
- Parry, G. D., Cooper, C. L., Moore, J. M., et al. (2012). Cognitive behavioural intervention for adults with anxiety complications of asthma: Prospective randomised trial. *Respiratory Medicine*, *106*(6), 802–810.
- Pateraki, E., & Morris, P. G. (2018). Effectiveness of cognitive behavioural therapy in reducing anxiety in adults and children with asthma: A systematic review. *Journal of Asthma*, *55*(5), 532–554.
- Potokar, J. P., & Nutt, D. J. (2000). Chest pain: Panic attack or heart attack? *International Journal of Clinical Practice*, *54*(2), 110–114.
- Put, C., van den Bergh, O., Lemaigre, V., et al. (2003). Evaluation of an individualised asthma programme directed at behavioural change. *The European Respiratory Journal*, *21*(1), 109–115.
- Ritz, T., Ayala, E. S., Trueba, A. F., et al. (2011b). Acute stress-induced increases in exhaled nitric oxide in asthma and their association with endogenous cortisol. *American Journal of Respiratory and Critical Care Medicine*, *183*(1), 26–30.
- Ritz, T., Bobb, C., Edwards, M., et al. (2001). The structure of symptom report in asthma: A reevaluation. *Journal of Psychosomatic Research*, *51*(5), 639–645.
- Ritz, T., Dahme, B., & Wagner, C. (1998). Effects of static forehead and forearm muscle tension on total respiratory resistance in healthy and asthmatic participants. *Psychophysiology*, *35*(5), 549–562.
- Ritz, T., Kroll, J. L., Werchan, C. W., et al. (2018). Lung Diseases. In Levison (Ed.), *Essentials of psychosomatic medicine, consult liaison psychiatry*. American Psychiatric Association Publishing.
- Ritz, T., Meuret, A. E., Trueba, A. F., et al. (2013). Psychosocial factors and behavioral medicine interventions in asthma. *Journal of Consulting and Clinical Psychology*, *81*(2), 231–250.
- Ritz, T., Rosenfield, D., Meuret, A. E., et al. (2008). Hyperventilation symptoms are linked to a lower perceived health in asthma patients. *Annals of Behavioral Medicine: A Publication of the Society of Behavioral Medicine*, *35*(1), 97–104.
- Ritz, T., Rosenfield, D., Steele, A. M., et al. (2014). Controlling asthma by training of capnometry-assisted hypoventilation (CATCH) vs slow breathing. *Chest*, *146*(5), 1237–1247.

- Ritz, T., & Roth, W. T. (2003). Behavioral interventions in asthma: Breathing training. *Behavior Modification, 27*(5), 710–730.
- Ritz, T., Steptoe, A., DeWilde, S., et al. (2000). Emotions and stress increase respiratory resistance in asthma. *Psychosomatic Medicine, 62*(3), 401–412.
- Ritz, T., Wilhelm, F. H., Meuret, A. E., et al. (2011a). Airway response to emotion- and disease-specific films in asthma, blood phobia, and health. *Psychophysiology, 48*(1), 121–135.
- Ritz, T., Wittchen, H. U., Klotsche, J., et al. (2016). Asthma trigger reports are associated with low quality of life, exacerbations, and emergency treatments. *Annals of the American Thoracic Society, 13*(2), 204–211.
- Ross, C. J., Davis, T. M., & MacDonald, G. F. (2005). Cognitive-behavioral treatment combined with asthma education for adults with asthma and coexisting panic disorder. *Clinical Nursing Research, 14*(2), 131–157.
- Roy-Byrne, P. P., Davidson, K. W., Kessler, R. C., et al. (2008). Anxiety disorders and comorbid medical illness. *General Hospital Psychiatry, 30*(3), 208–225.
- Sandberg, S., Paton, J. Y., Ahola, S., et al. (2000). The role of acute and chronic stress in asthma attacks in children. *Lancet, 356*(9234), 982–987.
- Schneider, A., Löwe, B., Meyer, F. J., et al. (2008). Depression and panic disorder as predictors of health outcomes for patients with asthma in primary care. *Respiratory Medicine, 102*(3), 359–366.
- Seegan, P. L., Martin, S. R., Boergers, J., et al. (2020). Internalizing symptoms and sleep outcomes in urban children with and without asthma. *Journal of clinical sleep medicine: JCSM: Official publication of the American Academy of Sleep Medicine, 16*(2), 207–217.
- Sjoding, M. W., Dickson, R. P., Iwashyna, T. J., et al. (2020). Racial bias in pulse oximetry measurement. *New England Journal of Medicine, 383*(25), 2477–2478.
- Spinhoven, P., van Peski-Oosterbaan, A. S., Van der Does, A. J., Willems, L. N., & Sterk, P. J. (1997). Association of anxiety with perception of histamine induced bronchoconstriction in patients with asthma. *Thorax, 52*(2), 149–152.
- Steele, A., Meuret, A. E., Millard, M., et al. (2012). Discrepancies between lung function and self-reported asthma control: A categorization of asthma perception and its association with demographics and anxiety. *Asthma and Allergy Proceedings, 33*, 500–507.
- Sterling, G. M. (1968). The mechanism of bronchoconstriction due to hypocapnia in man. *Clinical Science, 34*(2), 277–285.
- Stoeckel, M. C., Esser, R. W., Gamer, M., et al. (2015). Amygdala response to anticipation of dyspnea is modulated by 5-HTTLPR genotype. *Psychophysiology, 52*(7), 973–976.
- ten Brinke, A., Ouwkerk, M. E., Zwinderman, A. H., et al. (2001). Psychopathology in patients with severe asthma is associated with increased health care utilization. *American Journal of Respiratory and Critical Care Medicine, 163*(5), 1093–1096.
- ten Thoren, C., & Petermann, F. (2000). Reviewing asthma and anxiety. *Respiratory Medicine, 94*(5), 409–415.
- Thomas, M., Bruton, A., Moffat, M., & Cleland, J. (2011). Asthma and psychological dysfunction. *Primary Care Respiratory Journal, 20*(3), 250–256.
- Tolin, D. F., McGrath, P. B., Hale, L. R., et al. (2017). A multisite benchmarking trial of capnometry guided respiratory intervention for panic disorder in naturalistic treatment settings. *Applied Psychophysiology and Biofeedback, 42*(1), 51–58.
- van den Elshout, F. J., van Herwaarden, C. L., & Folgering, H. T. (1991). Effects of hypercapnia and hypocapnia on respiratory resistance in normal and asthmatic subjects. *Thorax, 46*(1), 28–32.
- Van Peski-Oosterbaan, A. S., Spinhoven, P., Van der Does, A. J., et al. (1996). Is there a specific relationship between asthma and panic disorder? *Behaviour Research and Therapy, 34*(4), 333–340.
- Ye, G., Baldwin, D. S., & Hou, R. (2021). Anxiety in asthma: A systematic review and meta-analysis. *Psychological Medicine, 51*, 11–20.
- Yorke, J., Fleming, S., Shuldham, C., et al. (2015). Non-pharmacological interventions aimed at modifying health and behavioural outcomes for adults with asthma: A critical review. *Clinical and Experimental Allergy, 45*(12), 1750–1764.

Chapter 11

Exposure Therapy with Patients Who Are Pregnant



Fiona L. Challacombe and Megan A. Jansen

Abstract Approximately 15% of pregnant women are known to have an anxiety disorder. In addition to causing distress to women, studies have highlighted the longstanding impact of untreated maternal anxiety on infant and child outcomes. Whilst many studies have demonstrated that cognitive behavioural approaches using exposure are effective for anxiety disorders, scant evidence exists of their use with pregnant women. Furthermore, women are sometimes denied treatment due to assumptions about the risks involved. This chapter reviews evidence and techniques for the use of exposure-based treatments in pregnancy, presenting case material on the treatment of obsessive-compulsive disorder and post-traumatic stress disorder.

Keywords Pregnancy · Anxiety disorders · Exposure · Cognitive behavioural therapy · Treatment · Safety

Pregnancy can be a longed-for yet daunting process for women, even in the best of circumstances. It is accompanied by a range of significant physical, psychological and social changes, with birth marking both the endpoint of the phase of gestation and the beginning of a new and challenging phase of parenting a newborn. There can be varying degrees of medical complications to navigate through pregnancy, as well as the uncertainties of labour and birth for mother and child. Whilst many women manage well, it is not surprising that anxiety is a relatively common experience. During pregnancy, the prevalence of significant anxiety symptoms is high, increasing across the trimesters from 18.2% of women in the first trimester to 24.6%

F. L. Challacombe (✉)

Institute of Psychiatry, Psychology & Neuroscience, King's College London, London, UK

Centre for Anxiety Disorders & Trauma, South London & Maudsley NHS Trust, London, UK

e-mail: fiona.challacombe@kcl.ac.uk

M. A. Jansen

Institute of Psychiatry, Psychology & Neuroscience, King's College London, London, UK

e-mail: megan.a.jansen@kcl.ac.uk

in the third trimester (Dennis et al., 2017). This may be anxiety specifically related to the pregnancy and birth ('pregnancy-related anxiety') or have another focus. Antenatal (occurring during pregnancy) anxiety disorders are very common, affecting approximately 15% of women (Dennis et al., 2017). For some women, aspects of being pregnant may precipitate an anxiety disorder, whilst those with a pre-existing problem may experience an exacerbation of symptoms (Biaggi et al., 2016; Fairbrother et al., 2016; Viswasam et al., 2019). In all cases, the context of pregnancy is crucial to understanding how to formulate and treat the problem.

Anxiety disorders encompass a broad range of problems including specific phobias, generalised anxiety disorder (GAD), panic disorder and social anxiety disorder. Other relevant anxiety presentations (recategorised since DSM-5) are obsessive-compulsive disorder (OCD) and post-traumatic stress disorder (PTSD). Many have direct relevance to pregnancy, such as tokophobia (fear of childbirth), emetophobia (fear of vomiting), blood-injury phobia and PTSD caused by a previous traumatic birth (Nath et al., 2020). OCD can present with distressing intrusive thoughts of deliberately harming the unborn child or fears the baby will be harmed by contamination (Abramowitz et al., 2003). All anxiety-related disorders are by definition distressing and demanding, with functional impairment common to the diagnosis; and anxiety disorders during pregnancy are no exception (Martini et al., 2010). Therefore, timely treatment is important for all sufferers. Almost all women are in contact with health services at some point during their pregnancy, presenting a unique opportunity for screening and treatment of mental health problems.

Anxiety disorders during pregnancy have been associated with greater risk of emergency Caesarean and instrumental deliveries (Dekel et al., 2019) as well as obstetric complications and preterm delivery (Ding et al., 2014; Martini et al., 2010). Associations with greater pregnancy-related anxiety symptoms have also been reported (Martini et al., 2016).

Many women are motivated to seek treatment in order to help them manage through the pregnancy and to prevent any postpartum impact of their disorder on their child or their parenting. This is a reasonable concern, with associations between antenatal and postnatal anxiety disorders and impairments in parent-child interactions and quality of life shown by several studies (Challacombe et al., 2016; Murray et al., 2008; Petzoldt et al., 2016). Antenatal anxiety disorders have also been associated with postpartum depression, which may explain some of this impact (Coelho et al., 2011; Martini et al., 2010; Tietz et al., 2014).

There has been considerable research attention on the impact of antenatal anxiety, and women and professionals alike are often concerned about the impact of anxiety on the foetus. In large longitudinal studies, antenatal anxiety has been associated with long-ranging impacts on child development, including emotional and behavioural problems, leading some authors to suggest it might be a sensitive time for relevant aspects of foetal brain development (Capron et al., 2015; O'Connor et al., 2003). Potential mechanisms include HPA axis dysfunction (Van den Bergh et al., 2005) and anxiety-related changes in uterine blood flow (Teixeira et al. 1999). Consistently elevated stress, depression and anxiety have been associated with increased cortisol levels that may alter placental functioning to impact the foetus,

although these associations are correlational (Buss et al., 2010; Kane et al., 2014; Sarkar et al., 2008). Much is yet to be understood about the complex interplay between maternal mood, mechanisms of transmission and infant outcomes. However, given the range of impacts of untreated antenatal anxiety, providers have many reasons to treat pregnant women to maximise the benefit to them and their offspring. The rest of the chapter will focus on the issues of delivery and content related to using exposure-based therapy with pregnant women with anxiety disorders.

Delivering Therapy with Pregnant Women

Pregnant women demonstrate a strong preference for psychological therapy over medication, often due to fears of teratogenic effects (Arch, 2013). This preference explicitly includes a willingness to engage in exposure therapy. Recent reviews suggest that SSRI use (the most common pharmacological intervention for anxiety) can elevate the small absolute risk of adverse outcomes in infants (Fischer Fumeaux et al., 2019). Cognitive behavioural approaches (CBT), in particular those including exposure therapy, are well-developed for anxiety-related disorders, having demonstrated efficacy and effectiveness in the general population in many studies (Hans & Hiller, 2013; Olatunji et al., 2010). However, despite the high prevalence of anxiety-related problems in pregnancy, there are no large-scale trials investigating the delivery of such treatments at this time (Marchesi et al., 2016; Nillni et al., 2018). One factor behind this has been the historical exclusion of pregnant women in intervention research, due in part to fears of additional risks in treating this group. Similar fears that pregnant women may be at risk of harm from exposure-based treatments are sometimes raised in clinical settings, where clinicians may encounter resistance at a service level. Furthermore, some clinicians can be unwilling to do exposure therapy due to their own anxious beliefs (Meyer et al., 2014). Clinicians therefore need a good grasp of the issues involved.

How Safe Is Exposure Therapy During Pregnancy?

A key component of CBT interventions for anxiety is deliberate, planned and repeated exposure to what is feared, including objects, situations, memories, images and body sensations (Lohr et al., 2012). The main controversy around using exposure in pregnancy stems from the idea that as exposure entails an initial rise in anxiety when the person confronts their fears, this may be associated with a rise in cortisol that negatively impacts the baby. The arguments are summarised eloquently and in detail by Arch et al. (2012). (1) The evidence base highlights the biological impact of *untreated* maternal anxiety on children; women seeking treatment are by definition already anxious. (2) Pregnant women present with unique biological

differences during this period: healthy pregnant women have an increased HPA axis reactivity, with cortisol levels which would be considered pathological in non-pregnant women (Mastorakos & Ilias, 2003). Additionally, pregnant women may have a diminished physiological response to acute stress on a variety of physiological indices (de Weerth & Buitelaar, 2005). Potentially, pregnant women who undergo exposure-based therapy may not have the same heightened physiological anxiety response commonly seen in non-pregnant peers. This could have an impact on efficacy rather than safety. (3) Perhaps most importantly, the stress response from undertaking exposure is temporary, lasting 60–90 minutes and often much less before habituation occurs. Exposure leads to overall reductions in anxiety between sessions (Craske et al., 2008).

Recent studies examining the physiology of exposure exercises have found that there is no strong evidence (in non-pregnant populations) of a lasting effect on cortisol, even in the context of high subjective distress (Kellner et al., 2020; Mayer et al., 2017). (4) The short-lived nature of any increase in anxiety seems consistent across disorders. Exposure to the trauma memory in PTSD can lead to a temporary increase in intrusions which resolves, and is not related to worse treatment outcome (Foa et al., 2002). Exposure in general is not highly distressing or the cause of lasting physiological impact. Whilst specific data are needed for pregnant women, it is highly likely that the potential benefits of exposure-based treatments outweigh any risks in pregnancy.

In one of the few treatment trials of exposure treatment of pregnant women, Lilliecreutz et al. (2010) designed a group treatment for pregnant women with blood and injection phobia and reported no adverse effects (Lilliecreutz et al., 2010). Blood-injury-injection phobias have a different physiological response involving a vasovagal/parasympathetic surge and therefore are unique amongst the anxiety disorders. In a recent review of the safety and effectiveness of non-pharmacological interventions for PTSD, Bass and colleagues collected safety data during pregnancy from available trials (Baas et al., 2020). A range of interventions were looked at including trauma-focused CBT, EMDR therapy, self-hypnosis and relaxation. No adverse effects on the mother or the unborn child were reported, suggesting that these treatments are safe. In their review of treatments for antenatal anxiety disorders, including three studies using CBT, no adverse effects of non-pharmacological treatments were reported (Marchesi et al., 2016). However, caution is warranted as the majority of the evidence available is from case studies. In summary, the existing evidence base, though limited in size and scope, has not highlighted any adverse effects from the use of exposure-based treatments in pregnancy.

How Effective Are Exposure-Based Treatments in Pregnancy?

The evidence suggests that CBT is effective in pregnancy, although detailed information on the use of exposure within these treatments is not available (Marchesi et al., 2016). The only trial to date is a non-randomised study examining a

two-session group exposure intervention to reduce blood and injection phobias. Groups comprised four to six women, and trial took place at 25–30 weeks of pregnancy, with the second group a month later, and they were co-led by a therapist and midwife. Forty-six women acted as non-treated controls (Lilliecreutz et al., 2010). Eleven women preferred an individual intervention, the results of which have not been published. In this trial, women improved significantly on several measures including the Injection Phobia Scale–Anxiety, Anxiety subscale and measures of anxiety and depression.

A recent meta-analysis demonstrated that when exposure was a component in CBT-based treatment, there was a larger effect size on perinatal anxiety symptoms than when it was not (Maguire et al., 2018). However, the meta-analysis included only three studies. It should be noted that most of the CBT treatments consisted of a more cognitive approach and included relaxation strategies when treating pregnant women with an anxiety disorder, possibly due to the inclusion of guided self-help protocols in this study or due to concerns of treating pregnant women with exposure therapy.

Practical Considerations when Considering Exposure Therapy in Pregnancy

Timing of Treatment

Given the time-limited context, practical considerations are paramount in treating pregnant women. Considering the possibility of adverse impact on mother and child, it is imperative that women are offered treatment as soon as possible once they present with clinical anxiety. NICE guidelines recommend accelerating women into treatment within 4 weeks of referral (CG192).

Pregnant women may have many demands on their time, often balancing midwife or obstetrician appointments and hospital scans, work and other caring responsibilities. CBT is typically offered in a course of 8–16 sessions depending on the problem; clinicians should consider the pregnant women's gestation stage and the number of sessions that are available to feasibly complete psychoeducation and exposure tasks to meet the woman's therapy goals. If women are referred later in pregnancy, careful assessment should be made of what can reasonably be achieved in the time before the birth, including the woman's physical state, and resources available to allow her to commit to the sessions and between-session practice. Although no robust research evidence is available, consideration should be given to postponing formal treatment if the woman is referred after 32 weeks of pregnancy. Support may still be provided, or alternatively, focused treatment around birth-related anxiety.

There is some evidence that benefit can be gained from shorter treatment protocols. In the general population, research has emerged suggesting that briefer

versions of CBT (perhaps as few as four sessions) offer similar effectiveness to longer versions (8–16 sessions). Improvements were reported in those who had four or five sessions of CBT for panic disorder (Craske et al., 1995), seven sessions of CBT for panic disorder with agoraphobia (Marchand et al., 2009) and one session of exposure for specific phobias (Ost, 1989). Given the effectiveness of a two-session intervention for blood-injury phobia described above (Lilliecreutz et al., 2010), further research is needed to explore the impact of briefer CBT interventions with exposure in pregnant women with anxiety disorders.

Time-Intensive Therapy

Considering the pressure to improve anxiety symptomatology as quickly as possible during pregnancy, clinicians may also want to consider offering accelerated or intensive exposure therapy programme. Time-intensive treatment involves the patient being offered the same number of sessions over a shorter time frame, rather than the typical weekly schedule. Outside of pregnancy this has been shown to be beneficial in the treatment of OCD (Storch et al., 2008), agoraphobia (Knuts et al., 2015) and panic disorder (Wootton & MacGregor, 2018). Additionally, findings reported that enhanced longer-term benefits were observed. CBT with exposure has been used to treat postnatal OCD over a 2-week period. Mothers reported this approach to be acceptable and reported reductions in OCD symptoms and benefits to parenting (Challacombe & Salkovskis, 2011). Given the time parameters, a similar approach could be tested with anxiety disorders in pregnancy (Challacombe et al., 2021).

Group Versus Individual Therapy

Clinicians may want to consider the pros and cons of group versus individual exposure therapy. Group therapy may be a cost-effective option, although preliminary findings suggest that individual CBT may be superior to group CBT for pregnant women with anxiety (Maguire et al., 2018). This mirrors the general literature which showed greater benefits in individual CBT versus group CBT in the treatment of panic and agoraphobia (Sharp et al., 2004) and social anxiety (Stangier et al., 2003). However, groups do offer additional benefits such as normalising patient concerns, peer support and the sharing of ideas which could be particularly useful for pregnant women, given the importance of peer support in general at this time (Huang et al., 2020).

Online Therapy

There has been an increased interest in online therapies which can increase access and may be useful for pregnant women given other limitations. Emerging evidence suggests that online programmes focusing on improving anxiety symptomatology in pregnant women offer some benefits (Loughnan et al., 2019). However, it may be more difficult to conduct exposure treatment in this format, due to limitations in modelling and other constraints. Further research, however, is needed to fully understand the benefits of remote (online) treatment for anxiety disorders.

Assessment

The context of pregnancy frames an understanding of the presentation and treatment of anxiety throughout a course of treatment. A standard assessment includes questions about the presenting symptoms and history of the disorder as well as comorbid problems. It is also important to ascertain a medical history alongside any pregnancy-related complications in order to consider any limitations to the tasks tackled in exposure therapy. For example, exposure may be significantly modified (or not used) in those with respiratory, cardiac and pulmonary conditions. If there is a query about an underlying physical diagnosis that may be related to presenting symptoms (e.g. heart palpitations), it is advisable for the woman to seek guidance from a medical practitioner before proceeding.

Pregnant women may abruptly cease taking psychotropic medication when they find out they are pregnant or feel intense guilt and anxiety about the decision to continue (Einarson et al., 2001). Medication status should therefore be carefully assessed, alongside the woman's feelings about her decision to use (or not use) such agents. Feelings about becoming a parent should also be included in the assessment as they are highly relevant to current mood. Parenting characterised by high control and low warmth confers additional risk for anxiety and depression in pregnancy, over and above other times (Biaggi et al., 2016).

It is important to consider instruments which have been validated in the perinatal population, in particular those which are less reliant on the physical symptoms of anxiety (Meades & Ayers, 2011). Commonly used measures are the General Health Questionnaire, the State-Trait Anxiety Inventory (STAI) and the Depression Anxiety Stress Scale (DASS-21).

Note that pregnancy is a dynamic state and many of these factors will warrant reassessment at every treatment contact, for example, the medical status of the pregnancy and any change in circumstances. Table 11.1 provides a checklist of items to assess pregnant women presenting for the treatment of anxiety.

Table 11.1 Checklist for assessment in pregnancy

Anxiety disorder – content, severity, onset, relationship with pregnancy
Comorbid disorders
Early history and course of anxiety problems
Due date/gestational stage
Circumstances of current pregnancy
Planned
Assisted conception
Feelings about the pregnancy
Pregnancy history – past miscarriage, terminations, birth and postpartum experiences including mood and anxiety disorder
Medical circumstances of current pregnancy – high-risk conditions
Pregnancy-related anxiety
Medication status and feelings about this
Partner and social support and resources
Other children and available childcare
Additional stressors and instability (e.g. housing, domestic violence, etc.)
Risks to self and from others
Availability for treatment (can attend regular sessions)

Treatment

Pregnancy is an opportunity for women to address psychological problems before becoming a parent, and therapy presents the potential for benefitting both mother and child. This point can be used to increase incentive to help women approach exposure tasks within CBT. Still, it is important to provide a clear rationale for exposure tasks since it will involve deliberately provoking discomfort. Modifications to the nature and intensity of exposure (relative to its use with non-pregnant patients) are likely, and less may be needed to trigger anxiety. For example, Arch (2012) lists a number of possible exercises to induce panic-like sensations in pregnancy such as holding one's breath (fears of suffocation) or staring at a light and then looking away (fears of derealisation).

Two case studies are presented in this section to illustrate particular considerations when treating these disorders in pregnant women. Common elements include gaining a shared understanding of how the anxiety problem interacts with the woman's specific pregnancy, introducing exposure adapted to this context and the use of modelling during exposure to enhance engagement. Where possible, once the person has a good understanding of the model and has begun to use exposure, partners or family members should be invited to a session in order to support the person to continue practice at home.

OCD in Pregnancy

OCD can take a number of different forms, any of which may coincide with pregnancy, with an overall estimated prevalence of approximately 2% at this time, slightly higher than the general population prevalence (Russell et al., 2013). For many women, obsessions and compulsions centre around the wellbeing of the unborn baby. Distressing intrusive thoughts or images of deliberately or accidentally harming the baby or that something is wrong may dominate. This can lead to extensive avoidance, checking and excessive reassurance seeking from the internet, family and health professionals. OCD is associated with inflated responsibility (Salkovskis et al., 2000), and the combination of responsibility and uncertainty inherent in pregnancy can be difficult for many women with OCD. Pregnant women are bombarded with information about possible threats to their baby, and treating OCD in this context needs to take this into account.

Case Example Chanelle, a 30-year-old married occupational therapist, was referred for treatment by her midwife when she was 16 weeks' pregnant with her first child. She had no formal history of OCD but reported experiencing mild anxiety from obsessive-compulsive thoughts as a child and described herself as a perfectionist. She had conceived after two early miscarriages following 3 years of trying to become pregnant. Her anxiety began at the start of her pregnancy, and she was becoming increasingly distressed by her fears that she might eat contaminated food or come into contact with something that could terminate the pregnancy or harm her unborn baby. Her diet was becoming increasingly restrictive and she was finding it difficult to attend work due to her fears. She was excessively cleaning herself and her house to avoid contamination. In order to limit contact with others, she had also stopped doing many of the things she enjoyed, such as Yoga, and was spending several hours a day researching ingredients of household products to determine whether they were safe to use during pregnancy. Finally, Chanelle's relationship with her husband was becoming increasingly strained. Her scores on measures of anxiety, depression and OCD were in the severe range.

Following an initial assessment, Chanelle was encouraged to set treatment goals for the next few weeks and remainder of the pregnancy, and for after childbirth (see Table 11.2). She initially found this difficult and was asked to consider what would be reasonable for a pregnant woman at the same stage to be eating and doing. Setting goals for beyond the pregnancy helped Chanelle consider herself as a parent and start to think more broadly about the impact of her intense focus on physical safety on herself, her baby and her husband.

A formulation of Chanelle's symptoms was developed using the cognitive behavioural model of OCD (Salkovskis, 1999). This helped her see that the key fear driving her behaviours was the idea that unless she did *everything possible* to prevent harm coming to her baby, something could go wrong and this would have been her fault. Chanelle felt that she could not cope with this outcome. Normalising the motivation was important: this idea is understandable and desirable for parents, and the

Table 11.2 Chanelle's treatment goals

<i>Short-term goals</i>
Increase food intake and variety
Reduce handwashing (from 30 times a day to before food prep and after toilet)
Go to Yoga class
Reduce seeking reassurance from husband and obstetrician.
Stop googling!
<i>Medium-term goals</i>
Allow husband to cook meal
Use favourite shampoo
Eat something on best before date
<i>Long-term goals</i>
Reduce anxiety before baby comes
Be a relaxed parent – not too much checking of the baby
Take baby to groups and allow baby to explore

difficult circumstances of conception were relevant to her fear. However, the rigidity with which she was applying this was causing the problem, leading her to do far in excess of what was required. Chanelle's compulsions of avoidance, checking, reassurance seeking and cleaning were therefore all aimed at helping her feel she had done everything she could. At the same time, doing these things maintained the belief that the precautions were necessary and responsible.

Although Chanelle knew that her behaviour was excessive, she also held a belief that to change things would lead to intolerable feelings of guilt if anything went wrong; and she therefore felt stuck. Chanelle would have been reluctant to make any changes if she did not have a clear understanding of why and how this could help. It was necessary to present a new but credible perspective to inform exposure and behavioural change and create a therapeutic atmosphere where Chanelle could *choose* to do things differently.

Chanelle was asked to consider her problem as one of excessive anxiety rather than danger, and she and her therapist created the table in Table 11.3. Chanelle was not at any more risk than other pregnant women based on her medical history. Yet ironically, everything she was doing to stay 'safe' was in fact increasing her anxiety which was causing a number of immediate problems.

Following completion of this table together, the therapist wanted to move Chanelle to the action stage. The following dialogue took place:

Therapist (T): So, what explanation do you think is the best fit with your experiences?

Chanelle (C): I see that perhaps I have been doing my best to solve the wrong problem, that it's anxiety.

T: That's right. It makes sense as everything in the pregnancy is new, and it's so precious to you. You've understandably been taking a 'better safe than sorry' approach.

C: Yes, that's exactly what I've been doing.

Table 11.3. Defining and evaluating problems

The problem is I must do everything possible to keep my baby safe or I will be responsible for harm [OCD says this is true]	The problem is I am afraid of things going wrong [OCD is this problem]
Evidence	
Babies can be harmed by contamination	...but I am not at more risk than the average person I have lost a baby in the past...although this was not due to contamination Other pregnant women do not follow these rules and this is fine. No evidence that OCD keeps you safe and evidence that if you are very stressed, this can be bad for your pregnancy I have a tendency to be anxious Husband, friends and family have all said that what I'm doing is excessive
What do I do if this is true?	
More checking, reassurance and avoidance Don't go out at all!	Follow the guidance for pregnant women, which doesn't include having OCD! Reduce excessive checking and reassurance seeking Make sure I look after myself – Go to yoga, eat well
Where will this lead?	
Misery; lots of anxiety in pregnancy	Will feel better Will have a better pregnancy and relationship

T: And what's the problem with that?

C: It seems like it doesn't keep you particularly safe and it definitely makes you very sorry!

T: So would you be willing to try making a few changes?

Chanelle had a clear understanding of the benefits of therapy and felt ready to try testing things out. The next several sessions were spent doing exposure-based experiments based on her treatment goals, which formed the foundations of an exposure hierarchy. For example, Chanelle brought some fruit to eat during one therapy session. The therapist ate some of the fruit without washing it and even after placing it on the floor for a little while. When it was Chanelle's turn to try this exposure, she insisted on washing her fruit as this was consistent with normal precautions, but she agreed not to wash her own hands before eating it – a difficult step for her. Although her anxiety level (SUDS) increased to 90% just before the task, she was surprised to find that her level of distress was temporary and that she was able to manage these feelings better than she had anticipated. Chanelle discussed the need to challenge self-critical and guilty thoughts if they came up and to remind herself of the benefit to her baby of working on her anxiety in pregnancy. Regular tasks were set as homework and discussed in sessions each week, along with check-ins on questionnaire measures and issues around pregnancy.

Other elements of treatment were bringing Chanelle's husband into a session to help him better understand her behaviour and to develop alternatives to reassurance. Chanelle suggested he could praise her and help her delay reassurance seeking,

should she feel the need to ask. During this session, Chanelle and her husband set up new tasks that would benefit her therapy and their relationship such as going out for a meal. A relapse prevention plan was developed including anticipating how to deal with obsessions about the baby's health in the postpartum period. Follow-up sessions were arranged for the postpartum period.

PTSD in Pregnancy

The prevalence rate of post-traumatic stress disorder (PTSD) ranges from 0.6% to 16% during pregnancy (Viswasam et al., 2019). Pregnant women often experience similar traumatic events to those experienced by the non-pregnant population, but providers should be aware that there are particularly high rates of concurrent partner abuse (James et al., 2013) and that PTSD treatment is not appropriate if threatening conditions continue to exist. Pregnant women may also experience PTSD-related anxiety during a subsequent pregnancy if they previously experienced previous birth complications or a traumatic delivery (Yildiz et al., 2017). Care should be taken when deciding whether to treat historic sexual trauma, and a careful assessment should be made of the woman's resources to engage in treatment. Liaison with midwives and obstetric colleagues may be necessary to help the woman with potentially triggering situations such as intimate exams and aspects of the birth.

Case Example India experienced a traumatic birth 2 years before her current pregnancy. This experience involved a prolonged labour during which she thought her baby would not survive. Although the newborn was treated in the neonatal intensive care unit and ultimately healthy, India experienced flashbacks and significant anxiety in the postpartum period. These eventually resolved on their own yet re-emerged when she became pregnant for a second time. During her initial consultation with her midwife at 12 weeks' gestation, she became very panicky, experienced a recurrence of her flashbacks and was referred for assessment and therapy. As India had a busy job, she decided to undergo intensive therapy, in which treatment was delivered in a series of longer sessions over 2 weeks (Ehlers et al., 2014). She took leave from her work for this time period to focus on the therapy.

Treatment followed the protocol for trauma-focused cognitive behavioural therapy developed by Ehlers and Clark (Ehlers & Clark, 2000). This involves imaginal exposure to the memory of the traumatic experience to help process these memories, stimulus discrimination techniques to help gain control over flashbacks triggered by sensory similarities to the trauma, behavioural activation to address depression and anhedonia and cognitive therapy to challenge dysfunctional beliefs and appraisals. As this chapter focuses on exposure therapy, we will focus on this element here.

Initial assessment established that India was in a stable and supportive home situation and wished to work on her PTSD in order to feel better in pregnancy and have

a more positive birth experience. The possibility of an increase in traumatic memories after initial sessions was raised, and India discussed strategies with her therapist to deal with this should it arise. After initial goal setting and psychoeducation about the nature of traumatic memories, India was asked to ‘relive’ her experience (with pre-established start and endpoints), using the first person present voice, with eyes closed and focusing the sensory qualities of the memory to increase ‘nowness’. The therapist was careful to identify ‘hotspots’, moments of the trauma that were particularly difficult and associated with high emotion in reliving them (see Table 11.4). It was these moments that India was re-experiencing in flashbacks (Crawley et al., 2018). India went through reliving twice, with a reduction in intensity and distress between the two exposures, suggesting some initial habituation of fear in response to the memory was occurring. Two key moments were identified for updating.

To update hotspot one, India was asked to look at a recent picture of Jenson (her firstborn son) in which he was playing, very much alive and well. She was then asked to relive and expose herself to her trauma narrative again, pausing at the key moment to insert the updated information of what she knew now, and to visualise Jenson as he is in the present. In the initial reliving which began to piece the memory together, India had recalled that the nurse had later returned to talk to her, something she had previously forgotten. This information allowed her to update her appraisal made at the time, that the nurse was callous and she was alone at the worst moment, something that is predictive of perinatal PTSD (Ford & Ayers, 2011). During the imaginal exposure, India was able to insert the updated information. She listened to recordings of the updated narrative at home, and experienced significant reductions in distress, along with reductions in the frequency and intensity of her flashbacks (Grey et al., 2002).

Other elements of India’s treatment included a site visit to the hospital where the birth took place in order to focus on differences between then and now and tackling of avoidance of engaging with professionals in her current pregnancy. India’s scores on measures of PTSD, anxiety and depression substantially improved after the 2-week treatment period.

Table 11.4 India’s hotspots

Hotspot	Meaning and emotion	Update (what I know now)
The moment when India’s baby Jenson was taken to NICU	He is dead Fear and horror	He did not die
The moment a midwife turned away when India asked what was happening to her baby	I’m alone. She doesn’t care Sadness	Jenson had just been born and was in distress. She needed to attend to him in that moment. She returned to me later to explain

Conclusions

Exposure-based treatments have been used successfully with pregnant women and the available evidence indicates that they are safe. This is important as there are clear impacts on mother and child from untreated anxiety problems. CBT demands that exposure exercises are tailored to the individual and the specific circumstances of the pregnant woman should be explored in detail in order to set up and conduct successful treatment. Ideally, some sessions should take place in the postpartum period in order to support woman into this period. We have discussed important points for clinicians to consider with regard to the use of exposure-based CBT for pregnant women. We have also outlined an appropriate assessment strategy. Finally, we have detailed the use of exposure therapy in two perinatal patients with clinical anxiety.

References

- Abramowitz, J. S., Schwartz, S. A., Moore, K. M., & Luenzmann, K. R. (2003). Obsessive-compulsive symptoms in pregnancy and the puerperium: A review of the literature. *Journal of Anxiety Disorders, 17*, 461–478.
- Arch, J. J. (2013). Cognitive behavioral therapy and pharmacotherapy for anxiety: Treatment preferences and credibility among pregnant and non-pregnant women. *Behaviour Research and Therapy, 51*, 1–10. <https://doi.org/10.1016/j.brat.2013.11.003>
- Arch, J. J., Dimidjian, S., & Chessick, C. (2012). Are exposure-based cognitive behavioral therapies safe during pregnancy? *Archives of Women's Mental Health, 15*, 445–457. <https://doi.org/10.1007/s00737-012-0308-9>
- Baas, M. A. M., van Pampus, M. G., Braam, L., Stramrood, C. A. I., & de Jongh, A. (2020). *The effects of PTSD treatment during pregnancy: systematic review and case study European journal of psychotraumatology, 11*, 1762310. <https://doi.org/10.1080/20008198.2020.1762310>
- Biaggi, A., Conroy, S., Pawlby, S., & Pariante, C. M. (2016). Identifying the women at risk of antenatal anxiety and depression: A systematic review. *Journal of Affective Disorders, 191*, 62–77. <https://doi.org/10.1016/j.jad.2015.11.014>
- Buss, C., Davis, E. P., Muftuler, L. T., Head, K., & Sandman, C. A. (2010). High pregnancy anxiety during mid-gestation is associated with decreased gray matter density in 6-9-year-old children. *Psychoneuroendocrinology, 35*. <https://doi.org/10.1016/j.psyneuen.2009.07.010>
- Capron, L. E., et al. (2015). Associations of maternal and paternal antenatal mood with offspring anxiety disorder at age 18 years. *Journal of Affective Disorders, 187*, 20–26. <https://doi.org/10.1016/j.jad.2015.08.012>
- Challacombe, F. L., & Salkovskis, P. M. (2011). Intensive cognitive-behavioural treatment for women with postnatal obsessive-compulsive disorder: A consecutive case series. *Behaviour Research and Therapy, 49*, 422–426. <https://doi.org/10.1016/j.brat.2011.03.006>
- Challacombe, F. L., Salkovskis, P. M., Woolgar, M., Wilkinson, E. L., Read, J., & Acheson, R. (2016). Parenting and mother-infant interactions in the context of maternal postpartum obsessive-compulsive disorder: Effects of obsessional symptoms and mood. *Infant Behavior and Development, 44*, 11–20. <https://doi.org/10.1016/j.infbeh.2016.04.003>
- Challacombe, F. L., Potts, L., Carter, B., Lawrence, V., Husbands, A., Howard, L. M. (2021). Optimising psychological treatment for Anxiety Disorders in Pregnancy (ADEPT): study protocol for a feasibility trial of time-intensive CBT versus weekly CBT. Pilot Feasibility

- Stud. 7(1):101. PMID: 33931111; PMCID: PMC8085465. <https://doi.org/10.1186/s40814-021-00838-8>
- Coelho, H. F., Murray, L., Royal-Lawson, M., & Cooper, P. J. (2011). Antenatal anxiety disorder as a predictor of postnatal depression: A longitudinal study. *Journal of Affective Disorders, 129*, 348–353. <https://doi.org/10.1016/j.jad.2010.08.002>
- Craske, M. G., Kircanski, K., Zelikowsky, M., Mystkowski, J., Chowdhury, N., & Baker, A. (2008). Optimizing inhibitory learning during exposure therapy. *Behaviour Research and Therapy, 46*, 5–27. <https://doi.org/10.1016/j.brat.2007.10.003>
- Craske, M. G., Maidenberg, E., & Bystritsky, A. (1995). Brief cognitive-behavioral versus nondirective therapy for panic disorder. *Journal of Behavior Therapy and Experimental Psychiatry, 26*, 113–120. [https://doi.org/10.1016/0005-7916\(95\)00003-1](https://doi.org/10.1016/0005-7916(95)00003-1)
- Crawley, R., Wilkie, S., Gamble, J., Creedy, D. K., Fenwick, J., Cockburn, N., & Ayers, S. (2018). *Characteristics of memories for traumatic and nontraumatic birth Applied Cognitive Psychology*. No Pagination Specified. <https://doi.org/10.1002/acp.3438>.
- de Weerth, C., & Buitelaar, J. K. (2005). Physiological stress reactivity in human pregnancy – A review. *Neuroscience and Biobehavioral Reviews, 29*, 295–312. <https://doi.org/10.1016/j.neubiorev.2004.10.005>
- Dekel, S., Ein-Dor, T., Berman, Z., Barsoumian, I. S., Agarwal, S., & Pitman, R. K. (2019). Delivery mode is associated with maternal mental health following childbirth. *Archives of Women's Mental Health, 22*, 817–824. <https://doi.org/10.1007/s00737-019-00968-2>
- Dennis, C.-L., Falah-Hassani, K., & Shiri, R. (2017). Prevalence of antenatal and postnatal anxiety: Systematic review and meta-analysis. *The British Journal of Psychiatry, 211*, 116–123. <https://doi.org/10.1192/bjp.bp.116.187179>
- Ding, X.-X., et al. (2014). Maternal anxiety during pregnancy and adverse birth outcomes: A systematic review and meta-analysis of prospective cohort studies. *Journal of Affective Disorders, 159*, 103–110. <https://doi.org/10.1016/j.jad.2014.02.027>
- Ehlers, A., & Clark, D. M. (2000). A cognitive model of posttraumatic stress disorder. *Behaviour Research and Therapy, 38*, 319–345. [https://doi.org/10.1016/s0005-7967\(99\)00123-0](https://doi.org/10.1016/s0005-7967(99)00123-0)
- Ehlers, A., et al. (2014). A randomized controlled trial of 7-day intensive and standard weekly cognitive therapy for PTSD and emotion-focused supportive therapy. *The American Journal of Psychiatry, 171*, 294–304. <https://doi.org/10.1176/appi.ajp.2013.13040552>
- Einarson, A., Selby, P., & Koren, G. (2001). Abrupt discontinuation of psychotropic drugs during pregnancy: Fear of teratogenic risk and impact of counselling. *Journal of Psychiatry & Neuroscience, 26*, 44–48.
- Fairbrother, N., Janssen, P., Antony, M. M., Tucker, E., & Young, A. H. (2016). Perinatal anxiety disorder prevalence and incidence. *Journal of Affective Disorders, 200*, 148–155. <https://doi.org/10.1016/j.jad.2015.12.082>
- Fischer Fumeaux, C. J., et al. (2019). Risk-benefit balance assessment of SSRI antidepressant use during pregnancy and lactation based on best available evidence – An update expert opinion on drug safety, *18*, 949–963. <https://doi.org/10.1080/14740338.2019.1658740>
- Foa, E. B., Zoellner, L. A., Feeny, N. C., Hembree, E. A., & Alvarez-Conrad, J. (2002). Does imaginal exposure exacerbate PTSD symptoms? *Journal of Consulting and Clinical Psychology, 70*, 1022–1028. <https://doi.org/10.1037/0022-006X.70.4.1022>
- Ford, E., & Ayers, S. (2011). Support during birth interacts with prior trauma and birth intervention to predict postnatal post-traumatic stress symptoms. *Psychology & Health, 26*, 1553–1570. <https://doi.org/10.1080/08870446.2010.533770>
- Grey, N., Young, K., & Holmes, E. (2002). Cognitive restructuring within reliving: A treatment for peritraumatic emotional “hotspots” in posttraumatic stress disorder. *Behavioural and Cognitive Psychotherapy, 30*, 37–56. <https://doi.org/10.1017/S1352465802001054>
- Hans, E., & Hiller, W. (2013). A meta-analysis of nonrandomized effectiveness studies on outpatient cognitive behavioral therapy for adult anxiety disorders. *Clinical Psychology Review, 33*, 954–964. <https://doi.org/10.1016/j.cpr.2013.07.003>

- Huang, R., Yan, C., Tian, Y., Lei, B., Yang, D., Liu, D., & Lei, J. (2020). Effectiveness of peer support intervention on perinatal depression: A systematic review and meta-analysis. *Journal of Affective Disorders*, 276, 788–796. <https://doi.org/10.1016/j.jad.2020.06.048>
- James, L., Brody, D., & Hamilton, Z. (2013). Risk factors for domestic violence during pregnancy: A meta-analytic review. *Violence and Victims*, 28(3) 359–380. PMID: 23862304 <https://doi.org/10.1891/0886-6708.VV-D-12-00034>
- Kane, H. S., Schetter, C. D., Glynn, L. M., Hobel, C. J., & Sandman, C. A. (2014). Pregnancy anxiety and prenatal cortisol trajectories. [references]. *Biological Psychology*, 100(2014), 13–19. <https://doi.org/10.1016/j.biopsycho.2014.04.003>
- Kellner, M., Yassouridis, A., Adel, F., Muhtz, C., Jelinek, L., & Wiedemann, K. (2020). Cortisol, DHEA and DHEA-S during exposure therapy in patients with obsessive-compulsive disorder – Secretion patterns and prediction of treatment response. *Psychiatry Research*, 291, 113288. <https://doi.org/10.1016/j.psychres.2020.113288>
- Knuts, I. J. E., Esquivel, G., Overbeek, T., Schruers, K. R. (2015). Intensive behavioral therapy for agoraphobia. *J. Affect. Disord.* 174, 19–22. <https://doi.org/10.1016/j.jad.2014.11.029>
- Lilliecreutz, C., Josefsson, A., & Sydsjo, G. (2010). An open trial with cognitive behavioral therapy for blood- and injection phobia in pregnant women – A group intervention program. *Archives of Women's Mental Health*, 13, 259–265. <https://doi.org/10.1007/s00737-009-0126-x>
- Lohr, J. M., Lilienfeld, S. O., & Rosen, G. M. (2012). Anxiety and its treatment: Promoting science-based practice. *Journal of Anxiety Disorders*, 26, 719–727. <https://doi.org/10.1016/j.janxdis.2012.06.007>
- Loughnan, S. A., Joubert, A. E., Grierson, A., Andrews, G., & Newby, J. M. (2019). Internet-delivered psychological interventions for clinical anxiety and depression in perinatal women: A systematic review and meta-analysis. *Archives of Women's Mental Health*, 22, 737–750. <https://doi.org/10.1007/s00737-019-00961-9>
- Maguire, P. N., Clark, G. I., & Wootton, B. M. (2018). The efficacy of cognitive behavior therapy for the treatment of perinatal anxiety symptoms: A preliminary meta-analysis. *Journal of Anxiety Disorders*, 60, 26–34. <https://doi.org/10.1016/j.janxdis.2018.10.002>
- Marchand, A., Roberge, P., Primiano, S., & Germain, V. (2009). A randomized, controlled clinical trial of standard, group and brief cognitive-behavioral therapy for panic disorder with agoraphobia: A two-year follow-up. *Journal of Anxiety Disorders*, 23, 1139–1147. <https://doi.org/10.1016/j.janxdis.2009.07.019>
- Marchesi, C., Ossola, P., Amerio, A., Daniel, B. D., Tonna, M., & De Panfilis, C. (2016). Clinical management of perinatal anxiety disorders: A systematic review. *Journal of Affective Disorders*, 190, 543–550. <https://doi.org/10.1016/j.jad.2015.11.004>
- Martini, J., Asselmann, E., Einsle, F., Strehle, J., & Wittchen, H. U. (2016). A prospective-longitudinal study on the association of anxiety disorders prior to pregnancy and pregnancy- and child-related fears. *Journal of Anxiety Disorders*, 40, 58–66. <https://doi.org/10.1016/j.janxdis.2016.04.007>
- Martini, J., Knappe, S., Beesdo-Baum, K., Lieb, R., & Wittchen, H.-U. (2010). Anxiety disorders before birth and self-perceived distress during pregnancy: Associations with maternal depression and obstetric, neonatal and early childhood outcomes. *Early Human Development*, 86, 305–310. <https://doi.org/10.1016/j.earlhumdev.2010.04.004>
- Mastorakos, G., & Ilias, I. (2003). Maternal and fetal hypothalamic-pituitary-adrenal axes during pregnancy and postpartum. *Annals of the New York Academy of Sciences*, 997, 136–149. <https://doi.org/10.1196/annals.1290.016>
- Mayer, S. E., Snodgrass, M., Liberzon, I., Briggs, H., Curtis, G. C., & Abelson, J. L. (2017). The psychology of HPA axis activation: Examining subjective emotional distress and control in a phobic fear exposure model. *Psychoneuroendocrinology*, 82, 189–198. <https://doi.org/10.1016/j.psychneuen.2017.02.001>
- Meades, R., & Ayers, S. (2011). Anxiety measures validated in perinatal populations: A systematic review. *Journal of Affective Disorders*, 133, 1–15. <https://doi.org/10.1016/j.jad.2010.10.009>

- Meyer, J. M., Farrell, N. R., Kemp, J. J., Blakey, S. M., & Deacon, B. J. (2014). Why do clinicians exclude anxious clients from exposure therapy? *Behaviour Research and Therapy*, *54*, 49–53. <https://doi.org/10.1016/j.brat.2014.01.004>
- Murray, L., de Rosnay, M., Pearson, J., Bergeron, C., Schofield, E., Royal-Lawson, M., & Cooper, P. J. (2008). Intergenerational transmission of social anxiety: The role of social referencing processes in infancy. *Child Development*, *79*, 1049–1064. <https://doi.org/10.1111/j.1467-8624.2008.01175.x>
- Nath, S., Busuulwa, P., Ryan, E. G., Challacombe, F. L., & Howard, L. M. (2020). The characteristics and prevalence of phobias in pregnancy. *Midwifery*, *82*, 102590. <https://doi.org/10.1016/j.midw.2019.102590>
- Nillni, Y. I., Mehralizade, A., Mayer, L., & Milanovic, S. (2018). Treatment of depression, anxiety, and trauma-related disorders during the perinatal period: A systematic review. *Clinical Psychology Review*, *66*, 136–148. <https://doi.org/10.1016/j.cpr.2018.06.004>
- O'Connor, T. G., Heron, J., Golding, J., & Glover, V. (2003). Maternal antenatal anxiety and behavioural/emotional problems in children: A test of a programming hypothesis. *Journal of Child Psychology and Psychiatry*, *44*, 1025–1036.
- Olatunji, B. O., Cisler, J. M., & Deacon, B. J. (2010). Efficacy of cognitive behavioral therapy for anxiety disorders: A review of meta-analytic findings. *The Psychiatric Clinics of North America*, *33*, 557–577. <https://doi.org/10.1016/j.psc.2010.04.002>
- Ost, L. G. (1989). One-session treatment for specific phobias. *Behaviour Research and Therapy*, *27*, 1–7. [https://doi.org/10.1016/0005-7967\(89\)90113-7](https://doi.org/10.1016/0005-7967(89)90113-7)
- Petzoldt, J., Wittchen, H., Einsle, F., & Martini, J. (2016). Maternal anxiety versus depressive disorders: Specific relations to infants' crying, feeding and sleeping problems. *Child: Care, Health and Development*, *42*, 231–245. <https://doi.org/10.1111/cch.12292>
- Russell, E. J., Fawcett, J. M., & Mazmanian, D. (2013). Risk of obsessive-compulsive disorder in pregnant and postpartum women: A meta-analysis. *Journal of Clinical Psychiatry*, *74*, 377–385.
- Salkovskis, P. M. (1999). Understanding and treating obsessive-compulsive disorder. *Behaviour Research and Therapy*, *37*, S29–S52.
- Salkovskis, P. M., et al. (2000). Responsibility attitudes and interpretations are characteristic of obsessive compulsive disorder. *Behaviour Research and Therapy*, *38*, 347–372.
- Sarkar, P., Bergman, K., O'Connor, T. G., & Glover, V. (2008). Maternal antenatal anxiety and amniotic fluid cortisol and testosterone: Possible implications for foetal programming. *Journal of Neuroendocrinology*, *20*, 489–496. <https://doi.org/10.1111/j.1365-2826.2008.01659.x>
- Sharp, D. M., Power, K. G., & Swanson, V. (2004). A comparison of the efficacy and acceptability of group versus individual cognitive behaviour therapy in the treatment of panic disorder and agoraphobia in primary care. *Clinical Psychology & Psychotherapy*, *11*, 73–82. <https://doi.org/10.1002/cpp.393>
- Stangier, U., Heidenreich, T., Peitz, M., Lauterbach, W., & Clark, D. M. (2003). Cognitive therapy for social phobia: Individual versus group treatment. *Behaviour Research and Therapy*, *41*, 991–1007. [https://doi.org/10.1016/s0005-7967\(02\)00176-6](https://doi.org/10.1016/s0005-7967(02)00176-6)
- Storch, E. A., et al. (2008). Cognitive-behavioral therapy for obsessive-compulsive disorder: A non-randomized comparison of intensive and weekly approaches. *Journal of Anxiety Disorders*, *22*, 1146–1158. <https://doi.org/10.1016/j.janxdis.2007.12.001>
- Teixeira, J. M., Fisk, N. M., & Glover, V. (1999). Association between maternal anxiety in pregnancy and increased uterine artery resistance index: Cohort based study. *BMJ (Clinical research ed)*, *318*, 153–157. <https://doi.org/10.1136/bmj.318.7177.153>
- Tietz, A., Zietlow, A., & Reck, C. (2014). Maternal bonding in mothers with postpartum anxiety disorder: The crucial role of subclinical depressive symptoms and maternal avoidance behaviour. *Archives of Women's Mental Health*, *17*, 433–442. <https://doi.org/10.1007/s00737-014-0423-x>
- Van den Bergh, B. R., Mulder, E. J., Mennes, M., & Glover, V. (2005). Antenatal maternal anxiety and stress and the neurobehavioural development of the fetus and child: Links and possible mechanisms. *A review Neuroscience and Biobehavioral Reviews*, *29*, 237–258. <https://doi.org/10.1016/j.neubiorev.2004.10.007>

- Viswasam, K., Eslick, G. D., & Starcevic, V. (2019). Prevalence, onset and course of anxiety disorders during pregnancy: A systematic review and meta analysis. *Journal of Affective Disorders*, 255, 27–40. <https://doi.org/10.1016/j.jad.2019.05.016>
- Wootton, B. M., & MacGregor, A. (2018). Accelerated outpatient individual cognitive-behaviour therapy for panic disorder: A case study. *Clinical Psychologist*, 22, 92–98. <https://doi.org/10.1111/cp.12100>
- Yildiz, P. D., Ayers, S., & Phillips, L. (2017). The prevalence of posttraumatic stress disorder in pregnancy and after birth: A systematic review and meta-analysis. *Journal of Affective Disorders*, 208, 634–645. <https://doi.org/10.1016/j.jad.2016.10.009>

Section III
Distinct Developmental Populations with
Anxiety Disorders

Chapter 12

Applying Exposure Therapy with Children



Silvia Schneider, Verena Pflug, and Kristen L. Lavallee

Abstract Exposure is a highly effective treatment for anxiety disorders in children and a key ingredient in many empirically supported therapies. Exposure aims to provide the child with new experiences in anxiety-provoking situations, and is usually used as a complement to other CBT interventions. Its effectiveness and high acceptance by patients strongly support its inclusion in treatment protocols with children with a host of anxiety disorders, including specific phobia, social phobia, and separation anxiety. Increased utilization by therapists in practice is expected to improve outcomes. Exposure can be massed for adolescents or adults, but for children under 12, a graduated approach is recommended. One-session treatment is an effective approach for specific phobias that takes place over the course of a 3-hour session. Multi-session treatment, such as the Children Cope with Fear (KibA) program, based on the TAFF program (Schneider et al., *Psychotherapy and Psychosomatics*, 80:206–215, 2011; *Journal of Consulting and Clinical Psychology*, 81:932–940, 2013), provides a graduated approach that can be applied to a broader range of childhood anxiety disorders, including separation anxiety, social phobia, and specific phobia, and can be used with children ages 8–16. The present chapter provides background on exposure as well as an illustrative, extended case study.

Keywords Exposure therapy · Child · Phobia · Fear · Anxiety

Theoretical and Empirical Background

In one of the earliest examples of translational research, in 1924, “little Peter” (Cover Jones, 1924), a nearly 3-year-old boy with a fear of rats, rabbits, and other fluffy objects (fur coat, feather, cotton), was treated by learning theorist Mary Cover Jones using a process called “unconditioning,” a precursor of systematic

S. Schneider (✉) · V. Pflug · K. L. Lavallee
University of Bochum, Bochum, Germany
e-mail: verena.pflug@ruhr-uni-bochum.de

desensitization later developed by Wolpe (Wolpe, 1954, 1958). In a laboratory study, Cover Jones combined gradual exposure (approaching a live rabbit over several sessions) with modelling (observing other children playing with the rabbit without fear) and documented Peter's therapeutic progress through behavioral observation and protocols (Cover Jones, 1924). Although this work was criticized due to the single case study design ($N = 1$), her study brought her recognition as the first to use the method of exposure for the treatment of anxiety.

Since then, behavioral therapy interventions have gained acceptance in therapeutic practice, and the method of exposure introduced by Cover Jones is considered a central and evidenced-based factor in the effectiveness of cognitive behavioral therapy (CBT) for anxiety disorders. Patients, in particular, overwhelmingly tend to view it as a very helpful intervention (Whiteside et al., 2016). In stark contrast to research and patients' own views, some therapists tend not to view exposure as a crucial ingredient to successful therapy for anxiety disorders, and do not often use it unless they have doctoral training and specific experience with it as a positive treatment and with children receiving it as resilient (Whiteside et al., 2016). Research on the effectiveness of exposure, combined with patients' views that it is helpful, indicates that exposure is an underutilized treatment paradigm in clinical practice (Wolitzky-Taylor et al., 2015). There is great room for growth in this area, and increased use is expected to result in improved outcomes for patients.

The present chapter summarizes the current state of evidence for, and issues surrounding, exposure in the treatment of childhood anxiety disorders and illustrates the use of a treatment protocol for anxiety for children.

Anxiety Disorders in Childhood

Anxiety disorders are among the most common mental disorders in childhood and adolescence, with prevalence rates of 6–20% (Cartwright-Hatton et al., 2006; Polanczyk et al., 2015). Childhood and adolescence are of particular importance in two respects. First, this age range represents the main risk period for the development of an anxiety disorder: 75% of all anxiety disorders start before the age of 21, and 50% start before the age of 11 (Kessler et al., 2005). Second, anxiety disorders in childhood and adolescence are often a precursor to mental disorders in adulthood. As recent meta-analyses indicate (Kossowsky et al., 2013; Woodward & Fergusson, 2001), having an anxiety disorder in childhood and adolescence increases the risk of developing an anxiety disorder or other mental disorders as an adult.

CBT for Childhood Anxiety Disorders

Numerous meta-analyses and reviews support the efficacy of cognitive behavioral therapy for the treatment of anxiety disorders in children and adolescents (In-Albon & Schneider, 2007; James et al., 2013; Reynolds et al., 2012; Silverman et al.,

2008). Two meta-analyses of 24 (In-Albon & Schneider, 2007) and 48 (Reynolds et al., 2012) randomized controlled trials showed average remission rates between 56% and 69%, and mean pre-post treatment effect sizes of 0.58 (intent-to-treat) and 0.86 (completers). CBT for anxiety disorders was also superior to control conditions (pre-post waiting list $d = 0.13$) (In-Albon & Schneider, 2007). In comparison to passive and active control groups, the average effect size at the end of therapy was 0.66 (Reynolds et al., 2012). Some research indicates that disorder-specific treatments tend to be more effective than general treatments for childhood anxiety (Reynolds et al., 2012), while other research indicates no difference in efficacy (Lavalley & Schneider, 2017; Mohr & Schneider, 2014; Schneider et al., 2011; Schneider et al., 2013).

The Contribution of Exposure to the Effectiveness of CBT in Children

The strength of effect sizes in treatment for anxiety disorders makes clear that, while CBT can demonstrate high treatment success, there is still room for further improvement. Also, despite its effectiveness, not all patients respond equally to CBT. Even after successful therapy, relapse rates of up to 44% are reported in both children and adolescents (In-Albon & Schneider, 2007). Therefore, current research is working to identify the active “ingredients” in CBT in order to use them specifically to improve treatment success. The meta-analysis of In-Albon and Schneider found that 90.5% of successful treatment programs in children and adolescents that use exposure interventions demonstrate empirical support for exposure as central to the effectiveness of CBT (In-Albon & Schneider, 2007). In 2 studies on CBT for separation anxiety (TAFF; TrennungsAngstprogramm Für Familien; English: Separation Anxiety Family Therapy) in a total of 107 children (ages 5–14 years), high-frequency, long-term exposures and cognitive behavioral interventions were implemented to consolidate new learning experiences (Schneider et al., 2011; Schneider et al., 2013). Both studies showed large pre- to post-treatment effect sizes ($d = 0.96$ – 1.66), similar to those found in studies with adults. In a recent dismantling study, the importance of exposure therapy in the treatment of children and adolescents with speech anxiety was demonstrated, and the addition of relaxation training or cognitive strategies to exposure therapy did not show any further improvement compared to exposure therapy alone (Jong et al., 2021).

Massed Versus Graduated Exposure

The success rates for massed exposure seem to be better with adolescents and adults than with younger children (Bertuzzi et al., 2021; Ollendick et al., 2015). A general rule of thumb is that the massed approach should be selected for older children and the gradual approach for younger children up to the age of 12. Otherwise in our

clinical experience, when very strong fear reactions are elicited in younger children, there is a risk that children will become *more* sensitive to their fear reactions rather than *less* sensitive. That is, a child may be able to withstand a strong fear reaction in a feared situation, but he or she does not process the experience in terms of the habituation model. Rather than recalling that the fear diminished over time, the child may simply remember the experience as terrifying, and may feel he or she never wants to be in a similar situation again. Here, there may be limits to adequate processing of exposure in highly anxiety-provoking situations due to the child's cognitive development that must be considered. In the gradual approach, however, care should still be taken to ensure that the exposure is begun with a moderately anxiety-provoking situation; otherwise the child will not be able to experience enough anxiety, and thus to learn that the anxiety will naturally diminish over time. Flooding, sometimes referred to as massed exposure, involves exposure to the full-strength feared stimulus all at once, while the graduated approach builds up to the most feared stimulus in a slower and more incremental way. The One-Session Treatment (OST) program is an example of a treatment program designed for specific phobias that involves flooded exposure to feared stimuli. It has been widely tested in children and adolescents primarily for animal phobias, but a range of studies have also established the treatment for across various types of specific phobias including blood phobia, injection phobia, injury phobia, and fear of vomiting (Ollendick & Davis, 2013; Öst & Ollendick, 2017). Unlike traditional CBT programs, the OST program emphasizes "high-dose" exposure treatment for the child in a single, but lengthy session, typically lasting 3 hours, as part of a 9-10 hour therapy program involving evaluation, a parent meeting, and feedback (personal communication with Tom Ollendick 2018).

Promoting Self-Efficacy

Children with anxiety disorders often have low self-efficacy. This means that they believe they neither (a) have the ability to influence events in their lives through their own behavior nor (b) are able to cope with situations on their own (Bandura et al., 1982; Messer & Beidel, 1994). Several studies have demonstrated a relationship between low self-efficacy and anxiety, including anxiety about dental treatment (Murray et al., 1989) and anxiety about testing (Yue, 1996). Low self-efficacy results in the child perceiving a situation as uncontrollable, when it could possibly be controlled by the child. For example, a dog-phobic child with low self-efficacy may feel at the mercy of the situation when encountering a dog, even though the dog is confined, on a leash, or small enough to be managed by the child (Weems & Silverman, 2006). An important aid in reducing such anxiety is to promote the child's self-efficacy. This involves using cognitive restructuring (e.g., finding evidence for and against the dangerousness/uncontrollability of the situation) and positive self-instructions (e.g., "I'm brave!"; "I can do it!") to increase the child's confidence in his or her ability to control the phobic stimulus. Newer treatment

approaches for childhood and adolescent anxiety disorders aim to strengthen the child's self-efficacy in addition to providing opportunities for habituation via exposure (Schneider et al., 2011, 2013). Both the child's fears and evaluations of the anxiety-provoking situation and their assessment of their own coping abilities should ideally be addressed in therapy, in an age-appropriate manner, and, if necessary, redeveloped, strengthening the child's ability to tackle and solve difficult situations and problems.

Implementation of Exposure Therapy with Children

In this section, we provide an overview of an empirically supported, graduated approach to conducting exposure therapy for children with anxiety disorders. Following this, we provide suggestions for clinicians implementing these protocols. We then provide a case example that illustrates the use of these techniques.

The Children Cope with Fear (KibA) Program

The Children Cope with Fear program (Kinder bewältigen Angst, KibA) (Schneider & Pflug, 2016) is a graduated treatment for separation anxiety disorder, specific phobia, and social anxiety disorder in youth ages 8–16. The program was developed as part of a randomized control trial funded by the German Ministry of Education and Research. This trial included 391 children between the ages of 7 and 16, and the initial analysis indicated strong efficacy of the KibA treatment across all anxiety disorders treated, consistent with findings from Schneider et al. examining the effectiveness of a similar treatment for separation anxiety disorder (Schneider et al., 2011, 2013).

The theoretical basis for the development of KibA program lies in the habituation (Foa & Kozak, 1986) and extinction models (Bouton, 1993; Craske et al., 2014) detailing the process of diminishing fear reactions. An intensified and optimized exposure therapy protocol was developed for children and adolescents based on these habituation and extinction models. The central component of KibA is the systematic, repeated confrontation of the feared stimulus in the feared situation (exposure). Based on the established therapy program (TAF; TrennungsAngstprogramm Für Familien; English: Separation Anxiety Family Therapy) (Schneider et al., 2011, 2013), core components of the therapy are designed in such a way that patients and their therapists can tailor them in intensified form to meet their particular anxiety situations. Patients should experience anxiety in these exposure situations, but without the consequences they feared. Therapeutic strategies involve (a) temporal condensation of the exposure exercises, (b) systematic violation of negative expectations of results, (c) targeted stimulus and context variation, (d) consistent abandonment of anxiety control strategies (such as avoidance), and (e) combination of multiple

anxiety stimuli in a situation. The KibA manual is available in German from the first author.

The child-alone therapy is the most efficient treatment with full empirical support, and can be used alone. The parent can be included for very young children, or when so desired, but it is unclear whether treatment efficacy is improved by including the parent, so while optional, including the parent in any sessions other than the first session is not a focus here. If the therapist wishes to include parents, all sessions may be carried out together with the parents and the child. The individual sessions are all structured in the same way:

1. Short introduction and overview of the session and discussion of any homework.
2. Content block that varies from session to session but builds successively. The initial sessions focus on providing psychoeducation on anxiety disorders and coping strategies and introducing the rationale for exposure. Later sessions are dedicated to planning and performing exposure exercises in vivo. The last sessions are dedicated to wrapping up the therapy and creating a product that showcases the child's progress to the family (such as a video interview of the child highlighting what they have learned in therapy).
3. Review and homework task.
4. Playtime for the child. This can be skipped with older adolescents.

Guidance for Planning Exposure Exercises

The planning of exposure exercises requires the therapist to have organizational skills and a good knowledge of the child's life, family, and living situation. The following points should be considered when planning exposure to feared stimuli:

1. The exercises must be individually adapted to the symptoms of the child. There are no standard situations to be practiced. Rather, the life, family, and living situation of the child must be considered individually, and it is in light of this background that each exposure exercise must be tailored to the individual child.
2. Exposures start with situations that provoke mild to moderate anxiety for the child. Situations that are too easy may not allow the child to attain the desired habituation experience. However, a situation that triggers too much anxiety can lead to a "flood of fear," especially in younger children, which may be experienced so aversively by the child, that despite the habituation experience, the child cannot be motivated to engage in further exposure trials.
3. The first exposure trials should take place in a place where there is no risk of disruption.
4. Exercises should be varied and repeated across multiple different situations. Exercises such as speaking in front of others can be varied, for example, by speaking in front of others (1) in the presence of friends, (2) in the presence of older people, (3) in the child's classroom, and (4) in a different classroom.

5. Different anxiety-provoking stimuli should be combined with one another to deepen the extinction, that is, following successful exposure with individual stimuli (e.g., exposure to a dog on a leash barking; exposure to a dog with no leash). These stimuli can then be combined (e.g., exposure to a dog that is not on a leash barking).
6. Exposure exercises must be performed frequently. Specifically, the child should perform several exposures in succession every day beginning with the start of treatment. It is important that parents and child allow sufficient time for exposure exercises in their daily lives when they agree to exposure therapy. If the parents cannot guarantee this, treatment might be postponed until such time that sufficient time for exposure can be expected.
7. The exposure duration should be systematically extended, depending on the exposure stimulus or situation and the age of the child. For example, for a child with separation anxiety, parents can conduct an initial block of exercises at home, initially leaving the house for 10 minutes during the first exercise. For the second exercise, they may, for example, increase the duration by 5 minutes and repeat this principle until the child reports a significant reduction in anxiety, and learns that being home alone is safe and manageable. This process is intended to ensure that the child receives the exposure to their fear in a manner appropriate to their age while at the same time providing the reassurance that their parents will return.
8. In general, double sessions are sufficient to perform exposure exercises in the KibA program (the session is longer in OST). In justified exceptional cases (e.g., flying by plane, boat trip), longer exposure sessions lasting more than 2 hours may be conducted in KibA.

Implementing Exposure to Violate Expectations

Directly before the start of exposure, the child should be asked about their expectations regarding the anxiety situation, and these responses should be documented. Care must be taken to ensure that expectations are formulated and written down in such a way that they are verifiable and relate to the concrete situation. Verifiable expectations would be, for example:

- Specific phobia: “When I am in a room with the dog, I will be so scared that I won’t be able to move at all.”
- Separation anxiety: “If I do not check under my bed to see if there is a burglar, I will be kidnapped at night.”
- Social anxiety: “If I ask a stranger for directions, he will laugh at me for asking.”

Non-verifiable expectations that should *not* be written down would be, for example:

- Specific phobia: “Someday a spider will crawl into my mouth.”
- Separation anxiety: “When my mom leaves, I will never be happy again.”
- Social phobia: “A student at school will secretly laugh at me.”

Further, the child should be asked to indicate on how confident he or she is that this expectation will come true (0–100%) and to estimate how afraid he or she is of the exercise (0–100%). The purpose of this task is to provide an opportunity to violate (or *disconfirm*) fear-based expectations. After every exposure trial, experiences with the exercises are documented, with the child reflecting on whether the expected outcome came true, how he or she realized the fear did not come true, what they learned, and how much the child thinks that the fear will occur next time. Additionally, in KibA, the child and therapist plot or graph the level of anxiety on a curve to illustrate the habituation process and to point out violations of expectations, so that children discover that their fear decreases with time during the exercise and with repetition of the exercise, as they habituate to the stimulus or situation.

Guidelines for Conducting Exposure Exercises

When conducting the exposure exercise, it is important to adhere to the following guidelines:

1. Initial exercises are always accompanied by the therapist. The first exercises must be planned and performed with particular care, as they are crucial for the further course of therapy. A poorly planned or performed exposure exercise can possibly demotivate a motivated child and motivated parents, leading them to break off the exposure. The accompaniment of the first exercises by the therapist therefore ensures that the child quickly visits the situation to be practiced (without long discussions with the child beforehand) and stays in the situation long enough to experience habituation.
2. The practice situations should be started quickly during the session. For the child, the most difficult part of an exposure is the moment when he or she faces the fear and has to overcome his fear of expectation. It is therefore crucial for a successful exposure that the exercise situation is begun quickly and without a long preliminary discussion. Rather, the therapist gives an empathic yet clear and unambiguous indication that the situation will be practiced, just as discussed.
3. There must be sufficient time for the individual exercises, so that the child has the opportunity to experience a reduction of their fear in the situation and to check their fears. In vivo exposure exercises typically cannot be usefully conducted in a 50-minute therapy session format. The therapist must therefore ensure that she has sufficient time (i.e., double sessions are planned for the first exposure exercises). To be on the safe side, the therapist should also schedule extra time beyond the double session, in case the child has not experienced anxiety reduction and/or has not been able to disprove any fears during the allotted time.
4. Both during and after exposure, the child should be praised for being brave and facing their fear, rather than for being fearless. Acknowledging that the child had fear but stood up to it and was brave is critical to therapeutic success. Being fear-

less is not the goal. Any attempt by the child to confront his fear should be acknowledged. If the child does not experience fear, the reason for this is explored, and a new exercise situation is sought that is more likely to cause fear. No anxiety increase should be considered problematic in the context of the exposure exercise, because it means the child was not provided with a new learning experience. Rather, the child should learn that fear diminishes when it is confronted.

5. Successes should be memorialized. Once the child has successfully mastered a situation, this should be documented for the child with the help of photos/videos (e.g., a picture with a spider on the child's arm, a picture of the child at the top of a high tower) or similar (e.g., receipt from the first shopping trip, a positive diary entry) so that the child can relive the situation with the help of the memory aid. The child can also keep an exposure journal, in which he or she takes notes and pastes pictures or draws memories, etc. for each exposure exercise.

Extended Case Study

Anna, 12 years old, was very afraid of the dark, and therefore had not been able to sleep alone in her bed. She slept with her parents almost every night. Anna also reported that she heard a scary story about a "murder doll" in elementary school and subsequently developed a fear of encountering such a character in the dark. In the story, the murder doll became active at night and killed both parents and children. Anna was very worried and suffered from the thought that the invisible murder doll might attack her family. Although she was able to verbalize that the murder doll does not actually exist, she was not able to go to the cellar or other rooms in the house where there was no light. In addition, her fears expanded beyond the murder doll. After watching the Harry Potter movies, she developed fears of Bellatrix Lestrange and Lord Voldemort, wizards from the film series.

The family was severely restricted by Anna's anxiety. For example, the family needed to purchase a new bed for Anna with a bed frame that left no space between the floor and mattress, so that there was no possibility that the murder doll could hide under it. The family also engaged in frequent accommodation, for example, by letting her know in advance when they wanted to watch a crime movie in the evening, so that Anna would not enter the living room, as doing so could put her at risk of nightmares about the movie. Further, Anna was always awakened by her parents in the morning, so that she did not risk waking up alone. She could be alone for a few minutes during the day, but she did not feel comfortable with this. In the evening she could not stay alone at all. She was also worried that something could happen to her parents (e.g., that they could have a car accident and she would lose them). The developmental course of the fears had been gradual, triggered by hearing the murder doll story in elementary school, and reaching its current climax over several years. The family had not sought psychotherapeutic help before. Anna met DSM-5 criteria for diagnoses of specific phobia and separation anxiety disorder.

Before Exposure: Psychoeducation

Good preparation before the first exposures is particularly important with children. Psychoeducation around anxiety and about the feared object or situation is essential, as children usually have much less expert knowledge about anxiety than adults and the lines between reality and fiction are more difficult for them to draw. Children are more likely than adults to present with fear content based on incorrect or irrational assumptions. For example, Tom, who had a specific phobia of spiders, assumed that spiders could be 2 meters tall because he had seen spiders the size of humans in a science fiction film. Lisa, who had a specific phobia of syringes, believed that her skin would not heal after an injection and she would retain a hole in her arm forever after being injected with a syringe. Finally, Paul, who was afraid of flying, believed that planes crash very often. Before any exposure, it is important to make note of any incorrect assumptions of the children, surrounding their fears. These assumptions should be clarified and corrected within the context of CBT before the start of exposure therapy.

The first few sessions with Anna also focused on education. The therapist reassured Anna that everyone has fears, and Anna shared the fears she knew about in her family. She was then asked if she also knew the difference between healthy fear and anxiety that felt unhealthy. The therapist illustrated how healthy fear, for example, can be useful in escaping danger, such as an oncoming car or an aggressive animal, while unhealthy fear didn't serve the same purpose: *"People with unhealthy anxiety are afraid of things or situations that are not really dangerous. That is the big difference from healthy fear. If a car drives towards you, then that is really dangerous. In that type of situation, it's good that you get scared, because now you have to act fast and run away and your fear helps you by mobilizing all your strength. But if you are very afraid of a daddy longlegs spider, or of sleeping alone in your bed, your fear is actually unnecessary and actually hinders you, because neither the daddy longlegs nor sleeping in your bed are dangerous. Children with unhealthy fears sometimes think harmless things or situations are dangerous, when they are not."* Further, to demonstrate that Anna is not alone, and that other children are also affected by anxiety disorders, the therapist used a worksheet to illustrate the prevalence of anxiety disorders, showing her that about one in ten children has an anxiety disorder.

In a next step in the psychoeducation phase, the therapist illustrated the three components of fear: Fear is felt in the body, it has a thought component, and it manifests itself in behavior. Anna marked all the places in the body on a worksheet showing the outline of a body where she herself felt fear (e.g., stomachache) and reported her thoughts (e.g., "When it gets dark, the murder doll comes. It will kill my parents!") and her behavior (e.g., stay close to my parents) during anxiety-provoking situations. The influence of thoughts on feelings was illustrated by a story: *"Imagine a child wakes up at night because he heard a noise. The child thinks to himself 'Oh, it must be a burglar!'. How does he feel then? ... Yes, that's right, he gets very scared. The child's brother also woke up from the same noise at night. He thinks, 'It*

was just a branch blown by the wind against the window,' and turns over in his bed. How does the brother feel? ... That's right, he's not scared at all and just goes back to sleep. Thus, the situation is the same, but both brothers have different thoughts and then different feelings." With the help of the story, Anna became aware that you can change your feelings by changing your thoughts and interpretations. In order to illustrate how thoughts can also influence bodily reactions, the therapists explained that when you think about or listen to a very sad or very touching experience, you might start to cry. Anna was asked if she knew a child who is less afraid than she is in the threatening situation and what this child would probably think to herself in that situation. Anna learned to replace unhelpful thoughts, such as "I can't do this" or "my mom isn't coming back," with helpful thoughts, such as "I am brave" or "I am strong and can handle anxiety," strengthening her self-efficacy (i.e., that she can handle anxiety-provoking situations on her own). She made index cards (the child could also make a poster or a voice recording that she could listen to), as ways to remember the thoughts and use them during future practice situations.

After developing helpful thoughts, the next step was to look at behaviors that would help Anna to overcome her fears. First the therapist asked Anna about situations that she originally experienced as unpleasant but became less scary over time, with experience. Anna reported that she was always afraid of jumping in from the edge of the pool, but now, that she has done it many times, she actually enjoyed it. The aim of the task was to guide Anna to understand that fears can be conquered by practicing doing things that are scary at first. Her experience of learning to enjoy pool jumping was compared to the anxiety-provoking situation of sleeping alone in her bed. Using guided discovery, Anna realized that in contrast to pool jumping, she had not tried sleeping in her own bed very often. The few times she tried it, she got up after a short time and went back to her parents' bed. The therapist guided Anna to the realization that she avoided this feared situation. It is important to make it clear to the children that their behavior is a very understandable action: *"You then went to your parents' bedroom and I can understand why: it makes you feel better right away. One of the things we know is that escape, although helpful immediately, can get in the way of overcoming the fear altogether. That is, if we stay in the situation when we experience fear, we can see that what we are afraid is going to happen does not actually happen."*

The therapist and Anna agreed that the purpose of the therapy sessions in the following weeks would be to seek out fearful situations and check whether what she feared would really happen. Additionally, the therapist and Anna discussed what she could do, behaviorally, to seek out and master anxiety situations more successfully. A distinction was made between strategies that can be used *before* and *during* the anxiety situation. Concrete strategies Anna chose to engage in before the anxiety situation included holding a bravery rock, giving a big hug, and saying to herself: "Afterwards you can be really proud of yourself!" Strategies to use during the anxiety-provoking situation included engaging in activities such as reading a book, playing a favorite game, or repeating positive cognitions such as "I am strong and can do this." All of her strategies were easy to implement, which increased the likelihood that she would use them.

Fear Hierarchy

Anna and her therapist brainstormed a list of different situations that caused anxiety and that Anna would like to enter in the future. They were sorted into low (“staying home alone for 30 minutes during the day”; “seeing a picture of Bellatrix Lestrange”), medium (“walking through dark rooms and into the basement in the evening,” “leaving the closet open when it is dark in my room”), and strong fear-inducing situations (“staying in my own room in the dark”; “sleeping alone in my own bed”). The therapist and Anna then planned for the first exposure exercise (staying in the dark room) and decided on rewards for successfully staying in the anxiety-provoking situation. With children, it is recommended to start with low to medium anxiety-provoking situations from the fear hierarchy.

Exposures to the Dark

The therapist and Anna started with exposure to the dark in her own room, with the therapist accompanying the exposure. The session was carefully planned. It was agreed that the blinds in the room would be lowered and that both of them would first explore the dark room together in the light of a flashlight. This also made the exposure time feel more fun and adventurous. After this initial exploration, they both sat down on the floor, and the therapist turned off her flashlight and put it out of reach so that Anna was now the only one with the flashlight. This served to show that Anna now had sole “control over the light” and that the therapist trusted her. As a first exercise, when Anna was ready, she was to turn off the flashlight, and the therapist would count how many seconds she had managed to stay in the dark room. Anna was told she could turn the flashlight back on at any time, but the goal was to manage to keep it off for as long as possible. Anna said loudly to herself “I am strong; I can do this” and then the exercise began.

The first time, Anna managed to stay in the situation for 30 seconds. No matter how long a child can stand to leave the flashlight off, this exercise was designed to succeed, with therapist ready to praise the child for the great success even with “only” 2 seconds: “Super job, how great, you have already managed 30 seconds (or 2 seconds).” The second time, the therapist did not immediately demand more or put Anna under pressure, but rather asked whether Anna would have the confidence to repeat the exercise again and be able to hold out for another 30 seconds. After repeating the exercise five times, the therapist and Anna turned the lights back on and graphed anxiety curves to plot and graphically show the anxiety at the beginning, during, and end of the different exercises (1–5). They discussed how the graphs illustrated the underlying habituation process. Anna understood that with repetition her fear had diminished, just as it had with jumping in at the edge of the pool. Sitting in the dark for 30 seconds was no longer difficult for her after five repetitions.

Next, the therapist explained that now the roles should be reversed and only the therapist should have a flashlight. The idea of giving up control over the light scared Anna. She feared that if she did not have her own flashlight, she would not be able to tolerate her anxiety, and would run out of the room. The expectation was recorded on a worksheet, and the therapist told Anna that she would only find out if Anna's expectation was true or whether she was stronger than she thought. Anna agreed to try it and the therapist conducted the exercise and turned the flashlight back on after 30 seconds. Anna was successful at staying in the room and smiled with pride. Both during and after exposure, Anna was praised for being brave and confronting and tolerating her fear, rather than for being fearless. After these exercises, a wide variety of other exercises in the dark were carried out in several rooms with different durations. Anna was encouraged to set the pace: *"How many seconds do you think you can do now? How long should I leave the flashlight off? Would you like to have the flashlight again and I'll count how long you can do it?"* Care was also taken that the exercises were somewhat playful, including excursions to the cellar and an obstacle course in Anna's room that she had to navigate in the dark.

Exposure with Scary Characters from Film and Stories

The next set of exposure exercises was centered around fear of Bellatrix Lestrange. The first thing the therapist showed Anna was a pleasant picture of the actress Helena Bonham, who played Bellatrix in Harry Potter, and the therapist asked her if she knew who it was. The person looked familiar to Anna, but she couldn't place her. When the therapist clarified that the actress played Bellatrix Lestrange, Anna was surprised that the actress could look so nice and nonthreatening. After that, they watched videos together on YouTube, such as behind-the-scenes or making-of videos, which illustrated that Harry Potter is a fictional film and Bellatrix is an acted character. Anna could stop the videos at any time if she wanted to. Twice she did this, but she managed to encourage herself to keep the video going by looking at the prepared cards and reading helpful phrases like "Afterwards you will be very proud of yourself." Next it was agreed to watch a 1-minute clip of the original movie but without sound. Instead the therapist turned on funny music. To make it even more funny, the video was played at different speeds. Finally, the music was left out and the original sound was turned on. Over the weeks, Anna repeated these exercises with different film clips and then did the same with Lord Voldemort. Her parents supported her, and together they laughed at the distorted voices and movements when the film was shown at a different speed. With each exercise her anxiety of these two characters diminished, so that, after a few weeks, she was able to see the whole movie.

In contrast to exposures with film characters, therapists have to be even more creative when conducting exposure with characters from stories, such as the murder doll. In the murder doll exposures sequence, Anna was first asked to describe the figure of the murder doll as well as possible so that the therapist and Anna could

collaborate to draw a life-size murder doll on a large flip chart. Although Anna had succeeded very well in all the confrontations before, her fear of the murder doll was substantial, and she expressed a desire to stop exposures regarding this character. Her written expectation before the exercise was as follows: “When I draw the murder doll, my anxiety will get so big so that I won’t ever be able to finish the picture.” She stated she was 100% convinced of this. Anna attempted to use multiple coping strategies in the exposure situations with the murder doll. First she tried reading her the positive thoughts cards, but she did not find them sufficiently encouraging. She was frustrated and said that the cards were nonsense. On the one hand, she didn’t want to avoid the picture and leave the room, but on the other hand, she couldn’t bring herself to continue drawing either. So she sat in front of the half-finished painting for several minutes and struggled to continue. A reminder that she would receive the next volume in a favorite book series as a reward if she managed to finish the picture, as previously arranged with Anna and her parents, helped Anna to muster enough motivation to finish the task. She was an avid reader and was looking forward to the book, which was already waiting for her at home. In the end, she succeeded and smiled proudly when she told her parents about her success and showed them the finished picture.

Over the next therapy sessions, various exercises were carried out with a combination of all stimuli, for example, sitting on the bed in the dark room while the picture of the murder doll was hung in the open closet. Anna had also identified her heroine Katniss from the book as a role model and wanted to become just as brave as her. Thus, she managed to stay alone, spend the night in her bed, and also cope with not being woken up by her parents in the morning.

Relapse Prevention and Wrap-Up

At the end of therapy, Anna participated in making a video in which she talked about how she felt when she first came to therapy and what she had learned and mastered during the sessions together. This video was played for Anna and her parents in the last lesson, and her success story was celebrated with cake and drinks. Her parents were proud of Anna now sleeping in her own room. Anna was given a copy of the video to take home. In case her fear should increase again, with the help of the video, Anna could be reminded of the most important elements in overcoming fears.

Chapter Summary

Exposure is a highly effective treatment for anxiety disorders in children and a key ingredient in many empirically supported therapies. Exposure aims to provide the child with new experiences in anxiety-provoking situations and is usually used as a

complement to other CBT interventions. The primary mechanism of exposure is the activation of habituation and extinction processes, and thus it does not require complex higher-order cognitions. This can make it a useful alternative to cognitive approaches for very young children, for whom this may be too complex. Through exposure, the child can learn that their fears are unfounded, and through repetition of this experience, stable fear reduction may be achieved. In addition to reducing the fear response, successful exposure therapy must necessarily include strategies that reliably facilitate long-term memory recall of the non-fear association newly learned in exposure therapy.

Exposure can be massed for adolescents or adults, but for children under 12, a graduated approach is recommended. One-session treatment is an effective graduated approach for specific phobias that takes place over the course of a 3-hour session. The Children Cope with Fear (KibA) program is a graduated exposure treatment based on the TAFF program (Schneider et al., 2011, 2013) that can be applied to a broader range of childhood anxiety disorders, including separation anxiety, social phobia, and specific phobia, and can be used with children ages 8–16. Exposures in this program are stretched over several sessions and follow standard CBT psychoeducational sessions. Though exposure is typically underutilized by therapists in practice, its effectiveness and high acceptance by patients strongly support its inclusion in treatment protocols with children with a host of anxiety disorders, including specific phobia, social phobia, and separation anxiety.

Disclosure KLL and SS are also the authors of *What to Do When You Don't Want to Be Apart: A Kid's Guide to Overcoming Separation Anxiety* (Lavalley & Schneider, 2017) and receive royalties from the book sales. The authors have no biomedical financial interests or other conflicts of interest. Parts of this chapter were translated and excerpted in part or in whole from Mohr and Schneider (Mohr & Schneider, 2015) and (Schneider, 2019).

References

- Bandura, A., Reese, L., & Adams, N. E. (1982). Microanalysis of action and fear arousal as a function of differential levels of perceived self-efficacy. *Journal of Personality and Social Psychology*, 43(1), 5–21. Retrieved from http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=7108745
- Bertuzzi, V., Fratini, G., Tarquinio, C., Cannistrà, F., Granese, V., Giusti, E. M., ... Pietrabissa, G. (2021). *Single-session therapy by appointment for the treatment of anxiety disorders in youth and adults: A systematic review of the literature*. *Frontiers in Psychology*. Retrieved from: 10.3389/fpsyg.2021.721382.
- Bouton, M. E. (1993). Context, time, and memory retrieval in the interference paradigms of Pavlovian learning. *Psychological Bulletin*, 114(1), 80–99. <https://doi.org/10.1037/0033-2909.114.1.80>
- Cartwright-Hatton, S., McNicol, K., & Doubleday, E. (2006). Anxiety in a neglected population: Prevalence of anxiety disorders in pre-adolescent children. *Clinical Psychology Review*, 26(7) Retrieved from http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16517038
- Cover Jones, M. (1924). A laboratory study of fear: The case of Peter. *Pedagogical Seminary*, 31, 308–315.

- Craske, M. G., Treanor, M., Conway, C. C., Zbozinek, T., & Vervliet, B. (2014). Maximizing exposure therapy: An inhibitory learning approach. *Behaviour Research and Therapy*, 58, 10–23. <https://doi.org/10.1016/j.brat.2014.04.006>
- Foa, E. B., & Kozak, M. J. (1986). Emotional processing of fear: Exposure to corrective information. *Psychological Bulletin*, 99, 20–35.
- In-Albon, T., & Schneider, S. (2007). Psychotherapy of childhood anxiety disorders: A meta-analysis. *Psychotherapy and Psychosomatics*, 76(1), 15–24. <https://doi.org/10.1159/000096361>
- James, A. C., James, G., Cowdrey, F. A., Soler, A., & Choke, A. (2013). Cognitive behavioural therapy for anxiety disorders in children and adolescents. *Cochrane Database of Systematic Reviews* (6). ARTN CD004690. 10.1002/14651858.CD004690.pub3.
- Jong, R., Lommen, M. J. J., Timmerman, M. E., van Haut, W. J. P. J., Kuipers, R. C. W. M., de Jong, P. J., & Nauta, M. H. (2021). Treating speech anxiety in youth: A randomized controlled microtrial testing the efficacy of exposure only versus exposure combined with anxiety management strategies. *Behavior Therapy*. <https://doi.org/10.1016/j.beth.2021.03.010>
- 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, 593–768.
- Kossowsky, J., Pfaltz, M. C., Schneider, S., Taeymans, J., Locher, C., & Gaab, J. (2013). The separation anxiety hypothesis of panic disorder revisited: A meta-analysis. *The American Journal of Psychiatry*, 170(7), 768–781. <https://doi.org/10.1176/appi.ajp.2012.12070893>
- Lavallee, K., & Schneider, S. (2017). *What to do when you don't want to be apart: A kid's guide to overcoming separation anxiety*. Magination Press.
- Messer, S. C., & Beidel, D. C. (1994). Psychosocial correlates of childhood anxiety disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*, 33(7), 975–983.
- Mohr, C., & Schneider, S. (2014). Intensive treatments for separation anxiety disorder in children and adolescents. *Psychopathology Review*, 1(1), 201–208. <https://doi.org/10.5127/pr.035013>
- Mohr, C., & Schneider, S. (2015). Zur Rolle der exposition bei der Therapie von Angststörungen [The role of exposure in therapy for anxiety disorders]. *Verhaltenstherapie*, 25(1), 32–39.
- Murray, P., Liddell, A., & Donohue, J. (1989). A longitudinal study of the contribution of dental experience to dental anxiety in children between 9 and 12 years of age. *Journal of Behavioral Medicine*, 12, 309–320.
- Ollendick, T. H., Halldorsdottir, T., Fraire, M. G., Austin, K. E., Noguchi, R. J., Lewis, K. M., ... Whitmore, M. J. (2015). Specific phobias in youth: A randomized controlled trial comparing one-session treatment to a parent-augmented one-session treatment. *Behavior Therapy*, 46, 141–155.
- Ollendick, T. H., & Davis, T. E., 3rd. (2013). One-session treatment for specific phobias: a review of Ost's single-session exposure with children and adolescents. *Cognitive behaviour therapy*, 42(4), 275–283. <https://doi.org/10.1080/16506073.2013.773062>
- Öst, L. G., & Ollendick, T. H. (2017). Brief, intensive and concentrated cognitive behavioral treatments for anxiety disorders in children: A systematic review and meta-analysis. *Behavior therapy*(97), 134–135.
- Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015). Annual research review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, 56(3), 345–365. <https://doi.org/10.1111/jcpp.12381>
- Reynolds, S., Wilson, C., Austin, J., & Hooper, L. (2012). Effects of psychotherapy for anxiety in children and adolescents: A meta-analytic review. *Clinical Psychology Review*, 32(4), 251–262. <https://doi.org/10.1016/j.cpr.2012.01.005>
- Schneider, S. (2019). Spezifische Phobien [specific phobias]. In S. Schneider & J. Margraf (Eds.), *Lehrbuch der Verhaltenstherapie. Band 3: Psychologische Therapie bei Indikationen im Kindes- und Jugendalter* (Vol. 2). Springer.
- Schneider, S., Blatter-Meunier, J., Herren, C., Adornetto, C., In-Albon, T., & Lavallee, K. (2011). Disorder-specific cognitive-behavioral therapy for separation anxiety disorder in young children: A randomized waiting-list-controlled trial. *Psychotherapy and Psychosomatics*, 80(4), 206–215. <https://doi.org/10.1159/000323444>

- Schneider, S., Blatter-Meunier, J., Herren, C., In-Albon, T., Adornetto, C., Meyer, A., & Lavalée, K. L. (2013). The efficacy of a family-based cognitive-behavioral treatment for separation anxiety disorder in children aged 8-13: A randomized comparison with a general anxiety program. *Journal of Consulting and Clinical Psychology, 81*(5), 932–940. <https://doi.org/10.1037/a0032678>
- Schneider, S., & Pflug, V. (2016). *Behandlungsmanual "Kinder bewältigen Angst (KibA)"* [Unpublished manuscript]. Mental Health and Research Center, Ruhr University Bochum.
- Silverman, W. K., Pina, A. A., & Viswesvaran, C. (2008). Evidence-based psychosocial treatments for phobic and anxiety disorders in children and adolescents. *Journal of Clinical Child Adolescent Psychology, 37*(1), 105–130.
- Weems, C. F., & Silverman, W. K. (2006). An integrative model of control: Implications for understanding emotion regulation and dysregulation in childhood anxiety. *Journal of Affective Disorders, 91*(2–3), 113–124. <https://doi.org/10.1016/j.jad.2006.01.009>
- Whiteside, S. P., Deacon, B. J., Benito, K., & Stewart, E. (2016). Factors associated with practitioners' use of exposure therapy for childhood anxiety disorders. *Journal of Anxiety Disorders, 40*, 29–36. <https://doi.org/10.1016/j.janxdis.2016.04.001>
- Wolitzky-Taylor, K., Zimmerman, M., Arch, J. J., De Guzman, E., & Lagomasino, I. (2015). Has evidence-based psychosocial treatment for anxiety disorders permeated usual care in community mental health settings? *Behavior Research and Therapy, 72*, 9–17.
- Wolpe, J. (1954). Reciprocal inhibition as the main basis of psychotherapeutic effects. *Archives of Neurology and Psychiatry, 72*, 205–226.
- Wolpe, J. (1958). *Psychotherapy by reciprocal inhibition*. Stanford University Press.
- Woodward, L. J., & Fergusson, D. M. (2001). Life course outcomes of young people with anxiety disorders in adolescence. *Journal of the American Academy of Child and Adolescent Psychiatry, 40*, 1086–1093.
- Yue, X. (1996). Test anxiety and self-efficacy: Levels and relationship among secondary school students in Hong Kong. *Psychologia: An International Journal of Psychology in the Orient, 39*(3), 193–202.

Chapter 13

Applying Exposure Therapy with Older Adults



Simon Forstmeier and Jan Ochel

Abstract Anxiety disorders belong to the most common mental health diagnoses in older adults. One of the cognitive-behavioral treatment approaches for late-life anxiety disorders is exposure therapy. This chapter discusses several characteristics of older adults that are important to consider when using exposure therapy with this population, including physical and cognitive changes, content of fears and worry, and chronicity of anxiety disorders. When preparing older adults for exposure, comorbid disorders must be considered in order to stabilize the patient and their symptoms; psychoeducation should be sensitive to cognitive decline; and activating and practicing resources is a helpful prerequisite. Adaptations of the procedure of exposure sessions are described for fear of falling, fear of memories in PTSD (prolonged and narrative exposure), and fear of thoughts in GAD. General adaptations include the distinction between avoidance and adequate caution, monitoring the physiological arousal, gradual exposure, and creativity in the treatment. To illustrate, a case study is provided.

Keywords Old age · Older adults · Elderly · Veterans · Physical decline · Cognitive decline · Prolonged exposure · Narrative exposure · In vivo exposure · Imaginal exposure

S. Forstmeier (✉) · J. Ochel
University of Siegen, Siegen, Germany
e-mail: simon.forstmeier@uni-siegen.de; Jan.Ochel@uni-siegen.de

© The Author(s), under exclusive license to Springer Nature Switzerland AG 2022
J. A. J. Smits et al. (eds.), *Clinical Guide to Exposure Therapy*,
https://doi.org/10.1007/978-3-031-04927-9_13

239

Introduction

One method in the cognitive-behavioral treatment approach for late-life anxiety disorders, including GAD and PTSD, is exposure therapy. Researches including older adults usually include samples 65+, sometimes 60+ or 55+. A recent review of the clinical application of exposure techniques with community-dwelling older adults with anxiety found that the most frequently used techniques were in vivo and imaginal exposure, and most studies found a reduction in anxiety symptoms (Jayasinghe et al., 2017). However, most of these studies incorporated exposure within a broader multicomponent treatment, and it is unclear in many studies which possible adaptations of the general exposure procedure have been implemented.

One recent meta-analysis on the efficacy of GAD treatment found that psychological therapies, mainly CBT treatments, showed a medium-to-large effect size ($g = 0.76$) compared to control groups (waiting list, placebo, treatment as usual) for GAD across all age groups (Carl et al., 2020). The mean age was a significant moderator of outcome. Studies involving non-elderly adult participants showed a larger effect size ($g = 0.87$) than studies involving older adult participants ($g = 0.47$).

Other meta-analyses that included studies on late-life GAD and panic disorder found moderate effect sizes for CBT compared with waiting list controls but low effect sizes for CBT compared with active controls (Gould et al., 2012; Hall et al., 2016; Hendriks et al., 2008; Piquart & Duberstein, 2007; Thorp et al., 2009).

RCTs on treatment for PTSD in older adults are scarce. However, there are first results from RCTs in support for both prolonged and narrative exposure. Prolonged exposure therapy with older veterans with PTSD as a result of their military service found treatment gains from pre- to posttest, but those gains were lost in the follow-up (Thorp et al., 2012, 2019). Another study with older veterans found a large (uncontrolled) effect size (Yoder et al., 2013).

Narrative exposure, combined with a structured life review, with older adults showed a large effect size at the follow-up compared with a psychoeducation control group (Bichescu et al., 2007). An internet-based writing therapy called integrative testimonial therapy (ITT) with WWII survivors combining narrative exposure and life review elements found moderate decreases in PTSD symptoms (Böttche et al., 2012; Knaevelsrud et al., 2017). An RCT on life review therapy including narrative exposure with Holocaust survivors is currently being conducted (Forstmeier et al., 2020).

In the following sections, we describe characteristics of older adults that are important to consider when using exposure with them.

Table 13.1 Characteristics of older adults and consequences for exposure therapy

Characteristics of older adults	Consequences for exposure therapy
Physical changes	Distinguishing between the realistic component of health-related anxiety and the unrealistic or catastrophizing component of it. Communicating with the physician
Course of anxiety reactions: Lower reactivity, slower recovery	Depending on the physical status of the patient (communicating with the physician!), deciding whether low-arousing exposure techniques are preferred over high-arousing techniques
Cognitive changes	Consider cognitive screening and possibly referring to a memory clinic; psychoeducation and instructions may require repetition; if possible executive function training
Different contents of fears	Inquire about the specific content and nature of fears
Age-specific avoidance behavior might be biased by negative aging stereotypes	To judge how maladaptive avoidance behavior is, consider the past patterns of behavior, the functional impairment of the behavior, and the response of others to this behavior
Chronicity	Consider a higher number of exposure sessions and additional fear management techniques such as acceptance, focusing on resources, and life review therapy

Characteristics of Older Adults that Are Important to Consider When Using Exposure with This Population

Various factors may be considered when administering exposure therapy to older adults, including physical illness or disability, changes to the physiological arousal pattern, cognitive changes, different content of fears, age-specific avoidance behavior, and chronicity of anxiety (see Table 13.1 for an overview).

Physical Changes

Older people, in particular those aged 80 or older, often suffer from one or more chronic illnesses or disabilities. The most frequent illnesses are cardiovascular diseases; disorders of the back (dorsopathy), joints (osteoarthritis), or bones (osteoporosis); chronic obstructive pulmonary disease (COPD); and diabetes. Symptoms of physical diseases such as pain and limited mobility may complicate exposure therapy. Health-related anxiety such as that experienced in panic disorder or GAD is often related to a real illness or an exaggeration of real illness concerns.

Thus, in order to prepare the patient for exposure therapy, the clinician should first understand physical symptoms and imitating medical diagnoses. It is important to distinguish between the realistic component of health-related anxiety and the unrealistic or catastrophizing component of it. Communication with the physician is an important prerequisite to making this distinction.

Since older patients may have one or more (physical and mental) comorbid disorders that might interfere with exposure therapy, the therapist often has the role of a “therapy manager” in the first phase of treatment which involves the interaction with physicians and initiating medical treatments (Hyer & Sohnle, 2001).

Course of Anxiety Reactions

The experienced physiological arousal associated with anxiety or stress reactions seems to be lower in older adults. This might be due to the increased self-regulatory competencies but also as result of the “positivity effect” which has been reported in old age. The positivity effect can be defined as “the relative difference between older and younger people in attention to and memory for *positive* as opposed to *negative* material” (Reed & Carstensen, 2012) which seems to be mainly due to older adults tending more than younger adults to actively downregulate affective responses to negative but not positive stimuli. However, once aroused, they need longer to downregulate physiological arousal (Wrzus et al., 2014). This can be explained with diminishing physiological (in this case cardiovascular) flexibility when people are aging. The model of strength and vulnerability integration (SAVI) combines those two processes (Charles & Luong, 2013). An improved emotion regulation capacity is a strength of older people, leading to a lower affective reactivity, but at the same time, a decreased physiological flexibility represents a vulnerability, leading to a slower affective recovery from high levels of distress. Consequently, the therapist should be aware that older adults are more inclined to avoid highly distressing situations and need longer to recover. It depends on the physical status of the patient whether low-arousing exposure techniques such as narrative exposure are preferred over high-arousing techniques. Again, communication with the physician is important in making this decision.

Cognitive Changes

Apart from cognitive impairment due to dementia, normal aging is accompanied by cognitive changes. The most important age-related changes are the decline in performance in cognitive tasks that require one to quickly process or transform information to make a decision, including the speed of processing, working memory, and executive cognitive function (Murman, 2015). In contrast, cumulative knowledge and experiential skills tend to be well maintained into advanced age. Consequently, psychoeducation and instructions may require repetition. In addition, reduced executive function seems to be a predictor of poorer response to treatment (Mohlman, 2013). It is therefore considered advisable to offer executive function training in parallel to anxiety treatment. However, there is no evidence yet linking decreased cognitive performance to poor exposure therapy outcomes (Cook & Dinnen, 2015).

Brief cognitive screens (e.g., Montreal Cognitive Assessment; Nasreddine et al., 2005) can help detect cognitive impairment that goes beyond normal aging. If this is the case, the patient should be referred to a memory clinic for dementia testing. CBT for anxious people with dementia focuses on calming thoughts, strategies for feeling safe, and behavioral experiments rather than exposure therapy, generally characterized by slowing the pace, using simplified material, more repetition and practice, and including a family member or friend in treatment as a coach (Paukert et al., 2013).

Nature of Fear and Anxiety

It is important for a clinician working with older adults to inquire about their specific fears as older adults tend to express different fears compared to younger adults (Wolitzky-Taylor et al., 2010). In addition, the therapist must be able to recognize avoidance behavior and recognize that he might be biased by negative aging stereotypes. To judge how maladaptive the behavior is, the past patterns of behavior, the functional impairment of the behavior, and the response of others to this behavior can be considered (Mohlman et al., 2012).

Worry Worry tends to be focused on issues of physical health and family issues, rather than of achievement or social status or perception. An example of age-specific avoidance behavior associated with worries is daily calls to children.

Specific Phobias Including Fear of Falling Specific phobias in old age are more frequently related to fear of falling and the patient's natural environment. A fear of falling and actual falls are interrelated, but distinct, conditions, and both are potentially debilitating. Almost half of those having experienced a fall develop a fear of falling, but a significant proportion of older adults who have never fallen experience a fear of falling as well (Wetherell et al., 2016). Prevalence of falls is about 30% in older adults and increases with age. The prevalence of fear of falling in community-dwelling older adults is 20 to 40% and also increases with age.

The restriction in activity, e.g., avoiding exercise or public transportation, can be interpreted as avoidance behavior associated with fear of falling. A related age-specific avoidance behavior is refusing to use moving aids such as a walker or hearing aids due to fear of appearing old. As a result, exposure therapy can be part of a multimodal treatment approach.

Social Phobia Common social fears include forgetting information in front of other people, asking others for help, talking about business, and writing or typing in front of others (Ciliberti et al., 2011). Avoiding social situations can remain unrecognized as an avoidance behavior if the therapist attributes social isolation to "normal aging."

Chronicity of Anxiety Disorders in Older Adults

A recent meta-analysis found a mean age of onset of all anxiety disorders of 21.3 years (Lijster et al., 2016). Consequently, most older anxiety patients have a chronic anxiety disorder. An exception is GAD: Almost a half of older patients with GAD have an age of onset after age 50 (Le Roux et al., 2005).

Preparing for Exposure Since many older adults have been avoiding thoughts, feelings, places, and objects associated with the fear of certain (traumatic) events for a large portion of their lives, exposure therapy may be threatening. Therefore, psychoeducation on the link between avoidance and symptoms is very important, and because of cognitive changes, it might be necessary to describe the treatment rationale several times. For many older adults, it is also very helpful to hear that other older adults experience the same, thus addressing the possible perceived stigma of psychological help seeking. In addition, it is important that the patients activate available (personal and social) resources and learn and practice new resources (see Table 13.2).

Conducting Exposure Sessions with Older Adults

This section provides a description of the adaptations of exposure protocols with older adults. We will examine fear of falling closely as an age-related specific phobia, as well as PTSD. General adaptations that can be found in any of these cases are described in Table 13.3.

Table 13.2 Activating and practicing resources

Technique	Explanation
Resource interview	Explicitly asking for experiences of social support, personal strengths, and self-care skills
Pleasant activities	In the preparatory phase: Scheduling pleasant events including social interactions and sleep hygiene. In the exposure phase: Homework combining exposure tasks and pleasant activities
Relaxation techniques	Given the change in downregulating physiological arousal (see above) among older adults and in the presence of cardiopulmonary diseases (see above), breathing relaxation or progressive muscle relaxation (PMR) can be trained and later used in the exposure therapy protocol to help regulate arousal. However, there is no research showing that breathing relaxation or PMR is necessary for exposure to be effective in older adults
Leveraging positive memories	Reconstructing a self-narration with a focus on positive memories, which is needed in narrative exposure but can also be used to incorporate prolonged exposure

Table 13.3 General adaptations to exposure therapy with older adults

Adaptation	Description
Avoidance	The distinction between avoidance (including being overcautious) and adequate caution is more difficult to judge than with younger adults. For older adults, certain cautious behaviors that would already be considered avoidance behaviors for younger adults (e.g., taking small steps, using assistive means or technology) are warranted and appropriate
Monitoring physiological arousal	Physiological arousal is expected in exposure therapy. It is for this reason advisable to consult the patient's primary care physician before the exposure sessions in order to know the individual risk of heightened arousal. In addition, the physician can regularly check the patient for adverse physiological changes during the exposure sessions
Gradual exposure	In the presence of potential risks of heightened arousal, gradual exposure is advisable rather than flooding, and the use of relaxation is likewise advisable (i.e., the patient starts exposure with a feared stimulus very low on the anxiety hierarchy in a relaxed state)
Creativity	When physical impairments limit in vivo exposure and/or cognitive impairments limit imaginal exposure, the therapist needs to find creative ways to combine low-intensity exposure with other strategies such as anxiety management and skill learning

Fear of Falling

Since fear of falling is associated with physical impairment and disability, a multi-modal treatment approach including physical exercise, home safety assessments (fall prevention psychoeducation), exposure therapy, and cognitive restructuring is suggested (Gillespie et al., 2012). Treatment programs that include exposure therapy are *A Matter of Balance* (Tennstedt et al., 1998), *Strategies for Increasing Independence, Confidence and Energy (STRIDE)* (Parry et al., 2016), *Back on Your Feet* (Jayasinghe et al., 2014), and *Activity, Balance, Learning, and Exposure (ABLE)* (Wetherell et al., 2016). Here, only the exposure component will be described, borrowed from the ABLE program, which includes seven steps applied over six sessions:

1. *Psychoeducation about anxiety and the role of avoidance in maintaining anxiety.*
The patient learns that fear of falling is associated with avoiding physical and social activities which, in turn, might lead to increased disability, problems with activities of daily living like bathing and shopping, problems with walking and balance, and an increased risk to actually fall. They learn that the problem of avoidance is that the person doing it never allows themselves to experience that it is not really dangerous or that they can cope with it. Also, typical thoughts or beliefs when feeling anxious about falling (e.g., "People will think that I am weak if I use a cane. If I fall, I will be badly hurt. I will not be able to cope with this situation.") and helpful thoughts (e.g., "I can do this on my own if I take it slowly. A cane helps me exercise so I stay strong and healthy.") are discussed. Exposure therapy is described as the opposite of avoidance and as an effective

treatment for anxiety because the patient experiences that they can handle the situation better than they thought before.

2. *Identifying specific triggers.* The first step in creating a fear hierarchy is to identify the situations (as specific as possible) that the patient associates with a fear of falling. Examples are walking up or down a staircase, walking up or down a ramp, walking on wet ground, putting on shoes, rushing to the telephone, and getting into the bathtub.
3. *Identifying avoidance behaviors.* The starting point here is a specific goal that includes a situation or activity that has been avoided before, for example, getting into the bathtub. The patient divides the goal into smaller parts (or lists all steps that are needed in order to achieve the goal) with the help of the therapist, e.g., undressing, walking to the bathtub, reaching for the grab bar, climbing into the bathtub, etc.
4. *Creating a fear hierarchy.* Using the detailed list of steps connected to certain goals, the patient categorizes the steps according to the degree to which they would bother them (e.g., steps that would not bother too much; that would bother somewhat; that would bother quite a bit).
5. *Conducting exposure exercises.* The patient is instructed to do one thing every day, for about 30 minutes, that makes them anxious about falling. The first exercise is done with the therapist before the patient is asked to do it on their own. It is advisable to use gradual exposure. The therapist assures the patient that what they do together is safe to minimize the risk of falling (e.g., using a cane or walker might be needed). The patient is instructed to practice with one situation repeatedly every day until they become less afraid or feel more able to handle it. As the therapy progresses, the therapist helps the patient to identify subtle forms of avoidance such as always going near a wall.
6. *Identifying negative thoughts and developing helpful alternatives.* The patient is given a list of typical dysfunctional (“unhelpful”) thoughts and their functional (“helpful”) alternatives (e.g., “I cannot use the bathtub anymore.” and “I can get in and out of the bathtub safely with water shoes and a grab bar.”). The patient lists their unhelpful thought and, with the help of the therapist, formulates helpful thoughts. They are then encouraged to use helpful thoughts when doing the exposure exercise. A structured diary is used to note progress regarding a specific exposure situation, including the date, a rating from 0 (didn’t bother at all) to 10 (bothered a lot), and time spent.
7. *Managing setbacks.* There might be two potential setbacks: Sometimes the patient would fail to do their exposure exercises gradually enough. In this case the patient is instructed to divide the goal into even smaller steps and start with an easier step, e.g., walking down the stairs with a person in front of them before walking on their own. Another kind of setback might be caused by an event that was a shock to the patient, e.g., a fall or almost falling. In this case, the therapist analyzes the reason for this event and plans solutions, e.g., using a cane or walker, or working more on the strength and balance (physical exercises) before the goal can be tackled again, or providing for other aids such as a bar grip in the bathtub or a walker.

The last point shows that any exposure therapy must be embedded into a multi-modal, interdisciplinary treatment concept including at least physical exercise and home safety assessments (fall prevention psychoeducation). It is not advisable that a psychologist/psychotherapist conducts the whole treatment without the inclusion of physiotherapists and without close communication with a physician.

And finally, the therapist must be aware of the distinction between avoidance (including being overcautious) and an appropriate level of caution. The latter includes taking small steps, using assistive means or technology, training strength and balance, and training safe walking habits.

Fear of Memories in PTSD

It was estimated that over 70% of adults experience at least one traumatic event at some point in their lives (Benjet et al., 2016). The lifetime prevalence of PTSD among older adults is 2.5–3.9% (Böttche et al., 2012). Older adults report more frequently collective violence and less frequently interpersonal violence, sexual violence, accidents/injuries, and being mugged than younger adults. Increasing age seems to be associated with a lower prevalence of PTSD and less severe PTSD symptoms (Reynolds et al., 2016). Longitudinal studies with Holocaust survivors suggest that avoidance increases while re-experiencing and hyperarousal decrease across time (Yehuda et al., 2009). In addition, PTSD symptoms sometimes reemerge later in life, which might be due to triggers such as difficult events during life (e.g., loss), medical conditions (e.g., cardiovascular diseases), or medical treatments (e.g., surgery) (Hiskey et al., 2008). These results suggest that older adults should be screened for PTSD symptoms, in particular for avoidance behavior.

Two forms of exposure therapy have been investigated so far with older adults, prolonged and narrative exposure.

Prolonged Exposure

Prolonged exposure, as has been described by Foa et al. (2019), consists of four strategies, namely, psychoeducation, breathing training, in vivo exposure, and imaginal exposure. Physiological arousal is not only expected during imaginal and in vivo exposure, but it is considered a necessary sign of emotional processing of the traumatic memory. The physical decline or even presence of physical disease, especially cardiac or respiratory illnesses, in older adults led some authors and practitioners to the question whether prolonged exposure might increase physiological arousal and, thus, be harmful in this age group. Another question concerns cognitive decline, e.g., reduced cognitive speed and flexibility, which might be seen as a problem for imaginal exposure.

However, there are a number of case studies and RCTs which show that prolonged exposure can also be applied with older adults, although may be less efficacious in them (Cook et al., 2017; Cook & Dinnen, 2015; McCarthy & Cook, 2019; Thorp, 2020; Thorp et al., 2012, 2019). However, several adaptations for use with older adults should be considered, as described in Table 13.3.

Narrative Exposure

Narrative exposure is a less intensive form of exposure than prolonged exposure. The goal in such form of exposure is to reconstruct the fragmented memories of the traumatic event and transform them into a coherent narrative. Narrative exposure has been incorporated in biographically oriented narrative therapies such as life review therapy (LRT) which has a long tradition in the treatment of late-life depression (Butler, 1963). LRT very well meets the often-reported need of older adults to review their lives, evaluate gains and losses, and find meaning. Structured LRT has been shown to have a large effect size in the treatment of depression in old age (M. Pinquart & Forstmeier, 2012).

The goal of incorporating narrative exposure in LRT for traumatized older adults is to integrate the reconstructed trauma narrative into the patient's biography and reassess the meaning of the events. The logical consequence of such an approach is that narrative exposure cannot get by without a structured life review. In addition, treatment protocols for late-life PTSD usually add cognitive reconstructing and behavioral activation to narrative exposure and life review (Forstmeier et al., 2020). Here, we only describe narrative exposure and structured life review.

Narrative exposure and life review are not two successive therapy phases, but narrative exposure sessions rather are interspersed in between the sessions of life review, exactly before the session in which the life phase is discussed in which the traumatic event took place. Thus, the patient constructs a narrative of their life from birth to their current age and gives a detailed report of the traumatic experiences when the narrative comes to the age in which the events transpired. This paper discusses life review and narrative exposure separately here for didactic reasons only.

Structured Life Review After an introductory session, in which the rationale of LRT and its course is described, the therapist and patient work on a timeline (or lifeline) to gain an overview of the patient's life and potentially critical or traumatic life events. In creating and going through the timeline, the focus is on facts and not emotions, i.e., the events of the patient's life should be noted objectively and placed in a chronological order.

The main part of LRT typically consists of eight sessions (more if enough time is available), in which each phase of the patient's life (childhood, adolescence, early, middle, and late adulthood) is reviewed in one to three sessions each. Each session begins with questions building on the last session and/or an evaluation of homework. Then the most important memories of the phase of life are reviewed. In order to stimulate rather detailed memories, it is advisable to use photos or other personal mementos (e.g., old postcards, letters, diary entries) as a starting point. The therapist can also use lists of helpful questions so that they would not miss important topics of the respective life phase. Without a photo to start, the first question should be rather open, e.g., for childhood "What is your earliest memory? Go as far back as possible." After that, important topics such as parents, siblings, atmosphere at home, punishments received as a child, hobbies, friends, school, and various positive and negative experiences are reviewed (examples for childhood). Example questions can be found in Table 13.4 (see also Haight and Haight (2007)).

Table 13.4 Example questions for life review

Phase of life	Example questions
Childhood	Can you tell me about your first memories as a child? What were your parents (brothers, sisters) like? What was disciplining like in your family? Do you recall any disruptions in important relationships? What are some examples of activities you enjoyed?
Adolescence	Who were the important people for you as a teenager? Did you feel like you were part or not part of certain groups? What were your favorite leisure activities in your youth? Can you tell me about your experiences in school? Do you remember feeling left alone or abandoned, or not being loved as a teenager?
Adulthood	What have been the most important events in your adult years? What kind of professional or academic training did you receive? Describe the significant relationships in early (middle, late) adulthood? Can you tell me about your children? Were you affected by any wars or other events in your life? Can you tell me about retirement?

In the final 5 to 10 minutes of a session, some pages are added to the life book. One or more photos are selected as representing the most important memories in this life phase; a caption is formulated for each photo, and maybe the narrative of the experience can be written down as homework. For each life phase, lists of hobbies, positive experiences, and accomplishments are filled in and also added to the life book.

In the final part of LRT (one or two sessions), the experiences discussed in the main part of the life review are summarized, evaluated, and integrated. Summarizing here means looking back at the patient’s life as a whole, not as isolated events. Evaluation builds on the summary and means an assessment of how one has lived one’s life. Ideally, evaluation leads to acceptance of what one cannot change. New insights are made possible; new interpretations of events are a rather common phenomenon. Finding meaning and obtaining a balanced view of one’s life becomes possible. When bad experiences are spoken about, it should be worked out and highlighted how the patient overcame them and how these experiences sometimes resulted in something good (reframing). As the life review nears its end, the focus is shifted to the future. Ideally, the patient has not just gained new insights about the past but has also found new interests or rediscovered old ones.

Narrative Exposure Typically, one 90-minute session is conducted in which one traumatic event is reviewed in detail and written down in the form of a narrative. A second session can be added to repeat narrative exposure, and homework includes reading the trauma narrative daily. It is helpful to look at the lifeline, as this facilitates contextualization of the traumatic event, which is one of the goals of narrative exposure.

Table 13.5 Example questions for narrative exposure

Phase of narrative exposure	Example questions
Clarifying the context	Where were you living at that time? What were you doing? What time of the year was it when it happened?
Details of a single event	Imagine now the beginning of the event. What were you doing? Go through the events slowly, step by step. What happened next? Asking for sensory details: What did you see, smell or hear? What did you think then? What did you feel in this moment? Relate present experiences to the past experience, e.g., you feel pain right now, is this the same pain you felt during the traumatic event? Filling gaps: Can we stop for a moment? There is something missing in this story. You have said that...what happened next?
Ending the narrative	After the arousal has been reduced: Let's go a bit further. When did the event end? Where were you? What were you doing? What happened following the event? Who was with you? What did you feel?
Making meaning of the event (often in the following session)	Do you have new insights into the meaning of the event? Have these experiences yielded anything that has been positive? Do you think you have processed this experience? How could a closure look like?

First, questions are asked about the context of the event so that it can be placed in the larger biography. Example questions can be found in Table 13.5.

Second, the patient is then asked to describe the experiences slowly and step by step with as many sensory details as possible. The therapist looks out for gaps in the narrative and the avoidance of affective components. Accordingly, the therapist asks questions for as long as is necessary until the event, in chronological order, has been understood as completely as possible and contains as many sensory and affective aspects as possible. The therapists must ensure that the patient moves back and forward between two processes in parallel: (a) Using exploratory questions regarding sensory, cognitive, and emotional components of the experience, they help the patient activate the memory as completely as possible, to experience it again, and to endure the bad feelings; (b) they help the patient put all parts of the memory into words and add increasingly to the narrative in order to reach as complete a narrative as possible.

Third, in time (and with multiple recounting of the narrative), the physiological arousal and emotional participation decrease. Time should also be taken to end the narrative and to talk about the hours, days, weeks, and months after the event.

Fourth, to conclude the session or in the next session, the therapist is to ask about positive changes due to surviving the trauma and struggling with the new reality after the trauma (posttraumatic growth). If the patient says there are none, the topic of finding closure can be addressed at this point.

Case Example

Anamnesis Mr. W., a 93-year-old patient of German origin, experienced the Second World War as a soldier forced to join the German Wehrmacht. As a soldier behind the front lines, he experienced several traumatic events which remained with him for the rest of his life. These events involved the brutal death of comrades due to accidents or from enemy fire. He also lost two of his brothers, the second one a mere 2 days after the official end of the war at the hands of soldiers of the Waffen-SS. He came to treatment after reporting depressive symptoms which he had been experiencing following the death of his wife. He also experienced growing pain in his back which led Mr. W. to feeling helplessness in dealing with the pain.

Complaints During the first clinical interview, Mr. W. reported memories and dreams interrupting his sleep at night, with severe feelings of anguish and physiological arousal followed by thoughts caused by grief and anger. Mr. W. never experienced any kind of psychological treatment before and did not get into contact with theories on psychological health. These psychological symptoms were compounded by physiological symptoms of muscular tension in his jaws, increased sweating, and tremor when he was triggered by memories. Mr. W. described depressive mood and apathy while doing things he normally used to appreciate. The patient had apparently been experiencing problems sleeping and especially insomnia for nearly 22 years before starting treatment.

History Mr. W. experienced the years of war as a mechanic working in a vehicle maintenance and supply unit. During his time in the war, Mr. W. witnessed a number of soldiers dying by enemy sniper fire or by tanks, and also the mutilation of soldiers by artillery fire and grenades. In 1942, his oldest brother died fighting as an infantry soldier. Later, 2 days after Germany's surrender, his second brother died at the western front at the hands of a group of soldiers driven by ideological fervor. Mr. W.'s old family home was destroyed by a night bombing so that the patient started rebuilding it brick after brick and he returned to his former place of work as an industrial master craftsman. The main events breaking the course of his life were the death of his parents and the birth of his two sons. Five years before coming into therapy, his wife died from a heart attack. After her death, Mr. W. spent his life living alone, with his sons visiting him every other week.

Assessment According to DSM-5 criteria, Mr. W. met criteria for the diagnosis of PTSD, a major depressive disorder, and insomnia disorder at the beginning of treatment. Furthermore, he reported symptoms of physical pain due to a disc prolapse and arthrosis. The loss of physical capabilities and resources, such as working in his garden on his apple trees and roses, became a certain problem in daily life.

Explaining the Therapeutic Rationale At the beginning of treatment, the first session was used to assess symptoms and explain the therapeutic rationale to Mr.

W., followed by an overview over his biography during two further sessions with the aim of obtaining a picture of personal experiences throughout different periods of his life. The validation of ICD-10 diagnoses followed by using the Diagnostic Interview for Mental Disorders (DIPS) clinical interview and psychoeducation was meant to help the patient understand his own mental problems and the course of treatment, especially trauma exposure. Personal and social resources which could help the patient deal with mental problems were assessed in another session.

Psychoeducation About Exposure Therapy The education started with providing the patient with more information about his psychological problems, such as of PTSD and typical reactions after traumatic events, followed by a focus on the subsequent symptoms of a depressive mood in examples of behavioral analyses. Understanding the symptoms improved already the mood a bit, and using resource-oriented life experiences (e.g., happy memories) was applied as a strategy to stabilize mood. Further explanations appeared to be necessary to help the patient understand the importance of confronting traumatic memories so that at first a trauma landscape was used to stress traumatic events throughout his lifetime.

Due to the memory problems more prevalent in older patients than in younger ones, the therapist needed to repeat central explanations and to ask the patient to repeat his understanding of the functional aspects of psychological maladaptation and disorders. He also used written material given to the patient and drawings to help him understand the interaction between situations and the thoughts and feelings they engender.

Relationship Between Patient and Therapist To foster a good relationship with Mr. W., it was important that the therapist listen with patience to his way of telling personal stories and to show that they had a knowledge and understanding of historical aspects and themes of the time when the patient had experienced the events that traumatized him and the burden of loss. It also was important to get a view of the everyday living situation of a retired person in such a high age, especially the good mobility Mr. W. showed despite having reached the advanced age of 93.

Exposure Sessions The experience of witnessing the death of comrades from enemy rifle fire was focused as a main event of psychological distress and helplessness, so that a narrative of the event was elaborated and written down together with Mr. W. and used in the following four sessions as a script in prolonged exposure. It is important to stress that a great focus was placed on referring the patient to the narrow connection of traumatic experiences and events which appeared to be an experience of redeeming good moments holding the potential to help reframe the sense of traumatic experiences and deal with emotional distress and thoughts, which tend to distort one's interpretation of difficult events.

In the sessions following prolonged exposure, Mr. W. was encouraged to read the narrative in his home and to note down the level of anxiety and distress as well as changes in the way he thought and felt about the traumatic events.

Throughout exposure sessions, a brief explanation of the course of exposure and the time needed was important. Repetitions of the narrative facilitated change over the course of sessions. The therapist helped the patient to focus on the central thoughts of autobiographic memory, and at the end of the sessions, the narrative was completely repeated once again. It was also important to repeat resources to use after the exposure and to keep a time to relax after the exposition.

Example Dialogue for Narrative Exposure

Therapist (T), after having explained the subjective unit of distress (SUD; rating 1–10): How strong is your distress right now?

W: Seven.

T: Okay, I will listen. Where does it take part?

W: We are in a Russian landscape, several Panzer IV standing on the dry soil, where normally wheat was growing, but the wheat has been ground by the chains of the tanks...

T: What else do you see?

W: There are my comrades of my company. We are standing scattered behind the tanks...

T: Is there anything you can hear?

W: ...*(Breathes heavily, talks slower)*...I hear the growling of the engines; there is the sound of guns and artillery firing. I can hear the sound of planes flying above.

T: Please tell me further; how strong is your distress?

W: Nine *(sweating)*.

T *(after a few minutes talking about sensory details)*: What is happening then?

W: The tank...*(short pause)*...the tank drives backward after firing *(W is trembling)*.

T: Okay, tell me what is happening; what can you see?

W: The soldier to my left, Ferdinand, is screaming. He has fallen to the ground, pushed backward by the tank.

T: Keep on; tell me what is happening. What do you feel?

W: I cannot feel my body. He cannot stand up. I cannot help him...

T: What do you feel?

W: I am guilty.

T: What is happening?

W: The tank is driving backward, crushing the whole leg, torso, and shoulder of Ferdinand. He screams so terribly.

T: What do you do?

W: I just stand there; I cannot move.

T: Can you please go further? What is happening?

W: I fall down on my knees.

T: What can you perceive? Please tell me what is happening?

W: There is the blood, crushed bones, flesh, the uniform. He is not by my side.

T: What do you mean?

W: He is gone. He has died. Nothing.

T: How much is the distress?

W: Six.

The patient described how two soldiers of his company took him behind the tanks. SUD decreased to four. After ending the narrative, a cognitive dispute followed about the meaning of guilt and the search for different meanings, the personal situation of Mr. W. as a soldier, and helpful thoughts such as the personal distress in the situation causing a psychological moment of shock and loss of control due to a reduced blood pressure and derealization.

Results of the Treatment At the beginning of trauma exposition, there was a SUD score of 6 to 9, which decreased throughout the sessions and cognitive restructuring of the memories and their meaning. On the Impact of Events Scale-Revised (IES-R), a reduction of hyperarousal and avoidance could be seen, and intrusive memories disappeared completely. The BDI-II score decreased from 29 to 7. Sleep was still interrupted by physiological needs but without dreaming about distressing events in his biography. Mr. W. also reported experiencing a better mood, which he saw manifests as a growing interest in things around him, e.g., spending more time working in his garden. Furthermore, there were a revival of vital energies and increase in motivational targets and a reduction of senseless cognitive rumination about death, the past, and a bleak view of the future.

References

- Benjet, C., Bromet, E., Karam, E. G., Kessler, R. C., McLaughlin, K. A., Ruscio, A. M., Shahly, V., Stein, D. J., Petukhova, M., Hill, E., Alonso, J., Atwoli, L., Bunting, B., Bruffaerts, R., Caldas-de-Almeida, J. M., de Girolamo, G., Florescu, S., Gureje, O., Huang, Y., ... Koenen, K. C. (2016). The epidemiology of traumatic event exposure worldwide: Results from the World Mental Health Survey Consortium. *Psychological Medicine, 46*, 327–343.
- Bichescu, D., Neuner, F., Schauer, M., & Elbert, T. (2007). Narrative exposure therapy for political imprisonment-related chronic posttraumatic stress disorder and depression. *Behaviour Research and Therapy, 45*(9), 2212–2220. <https://doi.org/10.1016/j.brat.2006.12.006>
- Böttche, M., Kuwert, P., & Knaevelsrud, C. (2012). Posttraumatic stress disorder in older adults: An overview of characteristics and treatment approaches. *International Journal of Geriatric Psychiatry, 27*(3), 230–239. <https://doi.org/10.1002/gps.2725>
- Butler, R. N. (1963). The life review: An interpretation of reminiscence in the aged. *Psychiatry, 26*, 65–76.
- Carl, E., Witcraft, S. M., Kauffman, B. Y., Gillespie, E. M., Becker, E. S., Cuijpers, P., Van Ameringen, M., Smits, J. A. J., & Powers, M. B. (2020). Psychological and pharmacological treatments for generalized anxiety disorder (GAD): A meta-analysis of randomized controlled trials. *Cognitive Behaviour Therapy, 49*(1), 1–21. <https://doi.org/10.1080/16506073.2018.1560358>
- Charles, S., & Luong, G. (2013). Emotional experience across adulthood: The theoretical model of strength and vulnerability integration. *Current Directions in Psychological Science, 22*, 443–448. <https://doi.org/10.1177/0963721413497013>

- Ciliberti, C., Gould, C., Smith, M., Chorney, D., & Edelstein, B. (2011). A preliminary investigation of developmentally sensitive items for the assessment of social anxiety in late life. *Journal of Anxiety Disorders*, 25(5), 686–689. <https://doi.org/10.1016/j.janxdis.2011.03.003>
- Cook, J. M., & Dinnen, S. (2015). Exposure therapy for late-life trauma. In P. A. Areán (Ed.), *Treatment of late-life depression, anxiety, trauma, and substance abuse*. (2014-25808-007; S. 133–161). American Psychological Association. <https://doi.org/10.1037/14524-007>
- Cook, J. M., McCarthy, E., & Thorp, S. R. (2017). Older adults with PTSD: Brief state of research and evidence-based psychotherapy case illustration. *The American Journal of Geriatric Psychiatry*, 25(5), 522–530. <https://doi.org/10.1016/j.jagp.2016.12.016>
- Foa, E., Hembree, E. A., Rothbaum, B. O., & Rauch, S. (2019). *Prolonged exposure therapy for PTSD: Emotional processing of traumatic experiences – Therapist guide* (2nd ed.). Oxford University Press. <https://doi.org/10.1093/med-psych/9780190926939.001.0001>
- Forstmeier, S., van der Hal, E., Auerbach, M., Maercker, A., & Brom, D. (2020). Life review therapy for holocaust survivors (LRT-HS): Study protocol for a randomised controlled trial. *BMC Psychiatry*, 20(1), 186. <https://doi.org/10.1186/s12888-020-02600-5>
- Gillespie, L. D., Robertson, M. C., Gillespie, W. J., Sherrington, C., Gates, S., Clemson, L., & Lamb, S. E. (2012). Interventions for preventing falls in older people living in the community. *Cochrane Database of Systematic Reviews*, 9. <https://doi.org/10.1002/14651858.CD007146.pub3>
- Gould, R. L., Coulson, M. C., & Howard, R. J. (2012). Efficacy of cognitive behavioral therapy for anxiety disorders in older people: A meta-analysis and meta-regression of randomized controlled trials. *Journal of the American Geriatrics Society*, 60(2), 218–229. <https://doi.org/10.1111/j.1532-5415.2011.03824.x>
- Haight, B. K., & Haight, B. S. (2007). *The handbook of structured life review*. Health Professions Press.
- Hall, J., Kellett, S., Berrios, R., Bains, M. K., & Scott, S. (2016). Efficacy of cognitive behavioral therapy for generalized anxiety disorder in older adults: Systematic review, meta-analysis, and meta-regression. *The American Journal of Geriatric Psychiatry*, 24(11), 1063–1073. <https://doi.org/10.1016/j.jagp.2016.06.006>
- Hendriks, G. J., Voshaar, R. C. O., Keijsers, G. P. J., Hoogduin, C. A. L., & Balkom, A. J. L. M. V. (2008). Cognitive-behavioural therapy for late-life anxiety disorders: A systematic review and meta-analysis. *Acta Psychiatrica Scandinavica*, 117(6), 403–411. <https://doi.org/10.1111/j.1600-0447.2008.01190.x>
- Hiskey, S., Luckie, M., Davies, S., & Brewin, C. R. (2008). The emergence of posttraumatic distress in later life: A review. *Journal of Geriatric Psychiatry and Neurology*. <https://doi.org/10.1177/0891988708324937>
- Hyer, L., & Sohne, S. J. (2001). *Trauma among older people: Issues and treatment*. Brunner-Routledge.
- Jayasinghe, N., Finkelstein-Fox, L., Sar-Graycar, L., Ojje, M.-J., Bruce, M. L., & Difede, J. (2017). Systematic review of the clinical application of exposure techniques to community-dwelling older adults with anxiety. *Clinical Gerontologist*, 40(3), 141–158. <https://doi.org/10.1080/07317115.2017.1291546>
- Jayasinghe, N., Sparks, M. A., Kato, K., Wilbur, K., Ganz, S. B., Chiamonte, G. R., Stevens, B. L., Barie, P. S., Lachs, M. S., O'Dell, M., Evans, A. T., Bruce, M. L., & Difede, J. (2014). Exposure-based CBT for older adults after fall injury: Description of a manualized, time-limited intervention for anxiety. *Cognitive and Behavioral Practice*, 21(4), 432–445. <https://doi.org/10.1016/j.cbpra.2014.01.003>
- Knaevelsrud, C., Böttche, M., Pietrzak, R. H., Freyberger, H. J., & Kuwert, P. (2017). Efficacy and feasibility of a therapist-guided Internet-based intervention for older persons with childhood traumatization: A randomized controlled trial. *American Journal of Geriatric Psychiatry*, 25(8), 878–888. <https://doi.org/10.1016/j.jagp.2017.02.024>

- Le Roux, H., Gatz, M., & Wetherell, J. L. (2005). Age at onset of generalized anxiety disorder in older adults. *The American Journal of Geriatric Psychiatry*, *13*(1), 23–30. <https://doi.org/10.1097/00019442-200501000-00005>
- Lijster, J. M. de, Dierckx, B., Utens, E. M. W. J., Verhulst, F. C., Zieldorff, C., Dieleman, G. C., & Legerstee, J. S. (2016). The age of onset of anxiety disorders: A meta-analysis. *The Canadian Journal of Psychiatry*. <https://doi.org/10.1177/0706743716640757>
- McCarthy, E., & Cook, J. M. (2019). Using prolonged exposure with an older male US veteran with childhood sexual abuse-related PTSD. *Clinical Case Studies*, *18*(2), 115–127. <https://doi.org/10.1177/1534650118819140>
- Mohlman, J. (2013). Executive skills in older adults with GAD: Relations with clinical variables and CBT outcome. *Journal of Anxiety Disorders*, *27*(1), 131–139. <https://doi.org/10.1016/j.janxdis.2012.12.001>
- Mohlman, J., Sirota, K. G., Papp, L. A., Staples, A. M., King, A., & Gorenstein, E. E. (2012). Clinical interviewing with older adults. *Cognitive and Behavioral Practice*, *19*(1), 89–100. <https://doi.org/10.1016/j.cbpra.2010.10.001>
- Murman, D. L. (2015). The impact of age on cognition. *Seminars in Hearing*, *36*(3), 111–121. <https://doi.org/10.1055/s-0035-1555115>
- Nasreddine, Z. S., Phillips, N. A., Bédirian, V., Charbonneau, S., Whitehead, V., Collin, I., Cummings, J. L., & Chertkow, H. (2005). The Montreal cognitive assessment, MoCA: A brief screening tool for mild cognitive impairment. *Journal of the American Geriatrics Society*, *53*(4), 695–699. <https://doi.org/10.1111/j.1532-5415.2005.53221.x>
- Parry, S. W., Bamford, C., Deary, V., Finch, T. L., Gray, J., MacDonald, C., McMeekin, P., Sabin, N. J., Steen, I. N., Whitney, S. L., & McColl, E. M. (2016). Cognitive-behavioural therapy-based intervention to reduce fear of falling in older people: Therapy development and randomised controlled trial – The Strategies for Increasing Independence, Confidence and Energy (STRIDE) study. *Health Technology Assessment*, *20*(56), 1–206. <https://doi.org/10.3310/hta20560>
- Paukert, A. L., Kraus-Schuman, C., Wilson, N., Snow, A. L., Calleo, J., Kunik, M. E., & Stanley, M. A. (2013). The peaceful mind manual: A protocol for treating anxiety in persons with dementia. *Behavior Modification*, *37*(5), 631–664. <https://doi.org/10.1177/0145445513477420>
- Pinquart, M., & Forstmeier, S. (2012). Effects of reminiscence interventions on psychosocial outcomes: A meta-analysis. *Aging and Mental Health*, *16*, 541–558.
- Pinquart, M., & Duberstein, P. R. (2007). Treatment of anxiety disorders in older adults: A meta-analytic comparison of behavioral and pharmacological interventions. *American Journal of Geriatric Psychiatry*, *15*(8), 639–651. <https://doi.org/10.1097/JGP.0b013e31806841c8>
- Reed, A. E., & Carstensen, L. L. (2012). The theory behind the age-related positivity effect. *Frontiers in Psychology*, *3*. <https://doi.org/10.3389/fpsyg.2012.00339>
- Reynolds, K., Pietrzak, R. H., Mackenzie, C. S., Chou, K. L., & Sareen, J. (2016). Post-traumatic stress disorder across the adult lifespan: Findings from a nationally representative survey. *The American Journal of Geriatric Psychiatry*, *24*(1), 81–93. <https://doi.org/10.1016/j.jagp.2015.11.001>
- Tennstedt, S., Howland, J., Lachman, M., Peterson, E., Kasten, L., & Jette, A. (1998). A randomized, controlled trial of a group intervention to reduce fear of falling and associated activity restriction in older adults. *The Journals of Gerontology: Series B*, *53B*(6), P384–P392. <https://doi.org/10.1093/geronb/53B.6.P384>
- Thorp, S. R. (2020). Prolonged exposure therapy with an older adult: An extended case example. *Cognitive and Behavioral Practice*. <https://doi.org/10.1016/j.cbpra.2020.04.002>
- Thorp, S. R., Ayers, C. R., Nuevo, R., Stoddard, J. A., Sorrell, J. T., & Wetherell, J. L. (2009). Meta-analysis comparing different behavioral treatments for late-life anxiety. *The American Journal of Geriatric Psychiatry*, *17*(2), 105–115. <https://doi.org/10.1097/JGP.0b013e31818b3f7e>
- Thorp, S. R., Glassman, L. H., Wells, S. Y., Walter, K. H., Gebhardt, H., Twamley, E., Golshan, S., Pittman, J., Penski, K., Allard, C., Morland, L. A., & Wetherell, J. (2019). A randomized controlled trial of prolonged exposure therapy versus relaxation training for older veterans

- with military-related PTSD. *Journal of Anxiety Disorders*, 64, 45–54. <https://doi.org/10.1016/j.janxdis.2019.02.003>
- Thorp, S. R., Stein, M. B., Jeste, D. V., Patterson, T. L., & Wetherell, J. L. (2012). Prolonged exposure therapy for older veterans with posttraumatic stress disorder: A pilot study. *The American Journal of Geriatric Psychiatry*, 20(3), 276–280. <https://doi.org/10.1097/JGP.0b013e3182435ee9>
- Wetherell, J. L., Johnson, K., Chang, D., Ward, S. R., Bower, E. S., Merz, C., & Petkus, A. J. (2016). Activity, balance, learning, and exposure (ABLE): A new intervention for fear of falling. *International Journal of Geriatric Psychiatry*, 31(7), 791–798. <https://doi.org/10.1002/gps.4393>
- Wolitzky-Taylor, K. B., Castriotta, N., Lenze, E. J., Stanley, M. A., & Craske, M. G. (2010). Anxiety disorders in older adults: A comprehensive review. *Depression and Anxiety*, 27(2), 190–211. <https://doi.org/10.1002/da.20653>
- Wrzus, C., Müller, V., Wagner, G. G., Lindenberger, U., & Riediger, M. (2014). Affect dynamics across the lifespan: With age, heart rate reacts less strongly, but recovers more slowly from unpleasant emotional situations. *Psychology and Aging*, 29(3), 563–576. <https://doi.org/10.1037/a0037451>
- Yehuda, R., Schmeidler, J., Labinsky, E., Bell, A., Morris, A., Zelman, S., & Grossman, R. A. (2009). Ten-year follow-up study of PTSD diagnosis, symptom severity and psychosocial indices in aging holocaust survivors. *Acta Psychiatrica Scandinavica*, 119(1), 25–34. <https://doi.org/10.1111/j.1600-0447.2008.01248.x>
- Yoder, M. S., Lozano, B., Center, K. B., Miller, A., Acierno, R., & Tuerk, P. W. (2013). Effectiveness of prolonged exposure for PTSD in older veterans. *The International Journal of Psychiatry in Medicine*, 45(2), 111–124. <https://doi.org/10.2190/PM.45.2.b>

Section IV
Clinical Populations with Problems
Outside of Anxiety Disorders

Chapter 14

Exposure Therapy in the Treatment of Substance Use Disorders



R. Kathryn McHugh, Jesse D. Kosiba, and Alexandra R. Chase

Abstract Although exposure has traditionally been underutilized in substance use disorder treatment, the application of exposure to this population has garnered increased attention in recent years. Anxiety disorders are highly prevalent in people with substance use disorders, and treatment of the substance use disorder alone does not generally result in remission from the anxiety disorder. Exposure can play two important roles in the treatment of substance use disorders: (1) the application of fear exposure for people with co-occurring anxiety and traumatic stress-related disorders and (2) exposure targeting substance use disorder-related mechanisms. This chapter describes these two applications of exposure. The safety and efficacy of fear exposure in people with substance use disorders are briefly reviewed. Applications of exposure to target heightened anxiety sensitivity, sensitivity to drug withdrawal, and conditioned drug cues are also described. A case example of a woman with co-occurring panic disorder and alcohol use disorder is presented to demonstrate application of these procedures. Exposure therapy is an efficacious and safe treatment for substance use disorders. Expanding its application has promise to improve outcomes, particularly for people with co-occurring disorders.

Keywords Substance use disorder · Exposure therapy · Anxiety disorders · Cue exposure · Interoceptive exposure · Co-occurring disorders

R. K. McHugh (✉) · J. D. Kosiba
Division of Alcohol, Drugs and Addiction, McLean Hospital, Belmont, MA, USA

Department of Psychiatry, Harvard Medical School, Boston, MA, USA
e-mail: kmchugh@mclean.harvard.edu; jkosiba1@partners.org

A. R. Chase
Division of Alcohol, Drugs and Addiction, McLean Hospital, Belmont, MA, USA
e-mail: kmchugh@mclean.harvard.edu

Exposure Therapy in the Treatment of Substance Use Disorders

Substance use disorders (SUDs) are among the most common psychiatric disorders. Approximately 29% of people in the United States meet criteria for an alcohol use disorder in their lifetime, and approximately 10% meet criteria for a drug use disorder (Grant et al., 2015, 2016). Anxiety and traumatic stress-related disorders commonly co-occur with SUDs (Conway et al., 2006; Grant et al., 2015, 2016). An estimated 30–50% of people with an SUD also have an anxiety disorder, and 30–60% also have posttraumatic disorder (PTSD); these numbers are even higher among people with severe SUDs and people who seek treatment. Accordingly, there is a significant need for the effective treatment of anxiety in people with SUDs.

Behavioral therapies are a primary treatment modality for SUDs. Only three SUDs have FDA-approved pharmacotherapies at this time (nicotine/tobacco use disorder, alcohol use disorder, and opioid use disorder). Although exposure therapy has historically been underused in this population, this trend is beginning to shift, in part because of a growing body of research supporting the safety and efficacy of exposure in people with SUDs. Exposure has two primary applications in this population, (1) traditional fear exposure for treating co-occurring anxiety and related disorders and (2) exposure targeting behavioral mechanisms underlying SUDs. In this chapter, we will discuss these two types of exposure and how they may be applied in the treatment of SUDs.

Utilization of Fear Exposure for Co-occurring Substance Use Disorders

Despite the high prevalence of anxiety disorders in people with SUDs, exposure-based therapies have been poorly integrated in SUD treatment. Although some of this gap is likely attributable to the siloing of SUD treatment from other mental health care, it is also due to questions about the safety and efficacy of exposure-based therapies in this population. Many clinicians fear that exposure will serve as a trigger for relapse. Another concern is that fear exposure will not be effective in people with SUDs because of the negative impact of chronic substance use on the brain, which can impair the learning mechanisms central to fear exposure. In recent years, research has begun to answer these questions about both safety and efficacy.

Safety and Efficacy of Fear Exposure in SUDs

Although the majority of clinical trials of exposure-based treatments for anxiety disorders exclude people with SUDs, recent studies have tested the efficacy of exposure-based therapies in people with co-occurring anxiety disorders and SUDs. These trials consistently indicate that there is not an increased risk for SUD relapse or symptom worsening in people who participate in exposure therapy (Back et al., 2019; Foa et al., 2013; Tripp et al., 2020; Wolitzky-Taylor et al., 2018). Several of these studies have included severe SUD samples, providing significant support for the safety of exposure in this population. Confidence in these findings is bolstered by a long history of data in the anxiety disorders suggesting that exposure therapy is a safe treatment when administered properly. As with exposure in other populations, the stress created by exposure is commensurate with the stress that most people with SUDs will encounter naturally in their daily lives.

Research on the efficacy of exposure-based treatment is more mixed. The most promising results have been in the area of exposure for co-occurring PTSD. For example, Concurrent Treatment of PTSD and Substance Use Disorders Using Prolonged Exposure (COPE) (Brady et al., 2001) combines Prolonged Exposure for PTSD with cognitive behavioral treatment for SUDs to combat historically poor outcomes among people with co-occurring PTSD and SUDs. Two randomized trials have compared COPE to SUD treatment (treatment as usual or an evidence-based SUD treatment) and found better PTSD outcomes among participants receiving COPE (Back et al., 2019; Mills et al., 2012). There were no differences in SUD outcomes between those who received COPE compared to standard SUD treatment, with significant improvement in both treatment arms. Although dropout rates have been high in studies using COPE—around 40% in the largest trial conducted (Mills et al., 2012)—this is only slightly higher than the overall treatment dropout rates overall among people with co-occurring PTSD and SUDs.

Despite these indicators of efficacy, animal and human research suggest that drugs such as alcohol, opioids, and nicotine can interfere with extinction learning. Indeed, some studies have shown only modest benefits of exposure-based therapies (Kushner et al., 2013; Wolitzky-Taylor et al., 2018) or have not shown a benefit of exposure therapy (Foa et al., 2013) in people with SUDs. Accordingly, more research is needed to understand how to optimize the success of fear exposure-based therapies in this population. Nonetheless, initial indications of efficacy, combined with the safety data, suggest that exposure is not contraindicated in this population and can be administered without significant concern about increased relapse risk.

Adapting Fear Exposure for SUDs

Although the application of fear exposure in SUDs is very similar to standard exposure for anxiety disorders, the integration of elements of behavioral interventions for the SUD may help to optimize outcomes (Back et al., 2019).

Integration of elements of SUD treatment can start from the earliest stages of treatment with psychoeducation. Framing co-occurring disorders as a single condition, rather than multiple isolated conditions, is often used in the treatment of co-occurring SUDs and other psychiatric disorders (Weiss et al., 2007) and is consistent with transdiagnostic treatment approaches in general (Barlow et al., 2017; McHugh et al., 2009). This framing can focus on the overlapping and intersecting features of these disorders, emphasizing the bidirectional nature of substance use and anxiety. Specifically, although substances of abuse can provide short-term alleviation of anxiety symptoms, over time substances increase anxiety both indirectly (via increases in life stressors) and directly (via sensitization of stress systems). This approach simplifies psychoeducation and the application of cognitive behavioral skills, rather than presenting distinct information for each disorder separately.

In addition to the benefits of a single disorder framework for simplifying treatment principles, this education can also address a barrier to treatment success: the perception that the disorders are truly distinct and that one condition is driving the other. It is common for patients to express the belief that their substance use is entirely secondary to the anxiety disorder. In other words, “I only use because I’m anxious.” The belief that substance use is entirely attributable to anxiety can serve as a barrier to engaging in SUD-specific care, under the assumption that it is not necessary and that the substance use will simply remit or no longer be problematic if the anxiety is successfully treated. However, even if the SUD was *directly caused* by the anxiety disorder, it is still a disorder that comes with its own set of symptoms, behavioral mechanisms, and treatment considerations distinct from the anxiety disorder. This perception that substance use is secondary to anxiety may be particularly problematic among those for whom a medication may be indicated for the SUD (e.g., people with opioid use disorder). Framing the conditions as a single disorder can be one way to challenge this perception and to facilitate engagement in treatment.

Even in people without SUDs, a general principle in the application of exposure therapy for anxiety disorders is to avoid substance use immediately following an exposure session (to avoid potential interference with learning). This principle is even more important in people with SUDs, even if abstinence is not the goal of treatment. The interfering effects of substance use on exposure can be framed behaviorally and/or pharmacologically. First, substance use following an exposure can function like any escape/avoidance behavior, which should be avoided to optimize efficacy. Second, substances of abuse are known to interfere with fear extinction, thus serving as a pharmacological barrier to exposure success. Although providing this information is important, it is likely insufficient in people with SUDs because the hallmark symptom of an SUD is difficulty controlling substance use. For

someone with an SUD, targeted skills or strategies may be needed to support the patient in avoiding substances following an exposure session.

These strategies may include (1) ensuring that access to the substance is limited (e.g., alcohol has been removed from the house), (2) engaging a supportive friend or family member, (3) ensuring that the patient has a structured plan for how to spend their time for the rest of the day, and (4) providing skills for managing substance craving and other triggers. Making environmental changes to limit access to substances might entail leveraging a significant other who is aware of the patient's treatment, ensuring alcohol or other substances are not in the home, or removing reminders or triggers from the patient's environment (e.g., a favorite drinking glass, drug paraphernalia, etc.). When considering environmental triggers, assessing for "people, places, and things" that might trigger substance use can provide a useful inventory of risks. Additionally, ensuring that the patient has a plan and some structure for the remainder of the day following an in-session exposure is another important step to prevent downtime that might serve as a trigger or reminder of substance use. A calendar can be a helpful tool in helping people to structure their time, especially for someone with substantial windows of free time (e.g., someone who is unemployed).

Substance craving can occur on its own (uncued) or may be triggered by stress or seeing a drug or something that reminds the patient of a drug (drug cues). Accordingly, it is not unusual for patients to experience craving for a substance after an exposure. Prior to initiating exposure, this should be normalized and skills for managing craving discussed. For people with SUDs, adding self-monitoring of craving to standard exposure and symptom tracking forms can be useful for people who endorse drug craving. This can be assessed simply with a single item, such as "How strong is your urge or desire to use drugs or alcohol right now?", scaled from 0 to 10. Craving states can be treated similarly to anxiety states, encouraging patients to "ride the wave" without attempting to control or mitigate these feelings. Extending the three-component model of emotion to craving (see Fig. 14.1) can provide a model for craving that is aligned with education provided for anxiety. Emotion regulation skills can similarly be deployed using this model, such as cognitive reappraisal, mindfulness, relaxation strategies, or other behavioral interventions. Below is an exchange with a patient demonstrating this intervention.

Therapist: *We can think of craving just like we do an emotion. It is a feeling we have that motivates us to behave.*

Patient: *When I crave, all I can think of is wanting to use.*

Therapist: *Exactly! Remember when we broke anxiety into thoughts, physical sensations, and behaviors? When you feel craving, what are some of those thoughts?*

Patient: *I can't handle this. One drink won't hurt.*

Therapist: *Sounds similar to when you feel anxious?*

Patient: *I guess so. And there are physical feelings too. My heart beats fast; my breathing speeds up; I get sweaty.*

Therapist: *What about the third part, your behavior?*

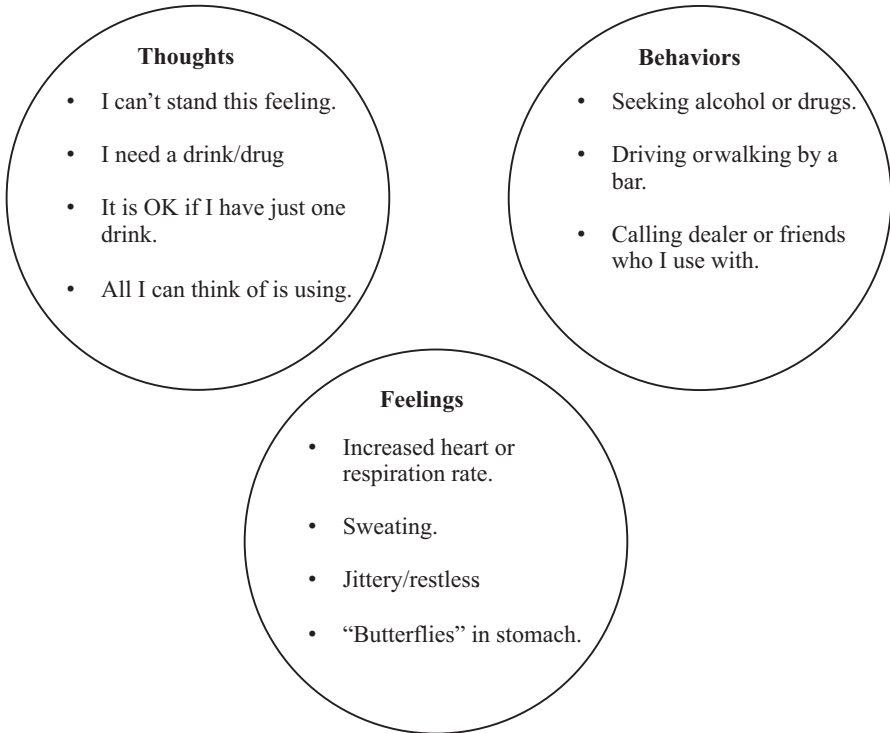


Fig. 14.1 Application of the three-component model of emotion to substance craving

Patient: *I usually drink! But I might also pace around or try to "test" myself to see if I will drink by driving by the bar or going to the grocery store that sells alcohol.*

Some elements of SUD treatment provide opportunities for skills development to support SUD recovery *and* can serve as a fear exposure. Refusal skills are the ability to decline offers for drugs or alcohol. Because these skills require navigating anxiety about assertiveness, they also provide an opportunity for social anxiety exposure. A typical application of refusal skills training entails first conducting an inventory of (1) situations in which substances may be offered and (2) people who may offer substances. These may include places like family gatherings or restaurants or people like a friend or drug dealer. Then, patients generate a clear response to an offer of alcohol or drugs. This statement is preferably clear, uncomplicated, and argument-proof. For example, avoiding "excuses" like a medical or logistical reason for saying no (e.g., I'm on a medication; I need to pick up my kids) in favor of something simple like "no, I'm not drinking" is strongly preferable. The final step of this exercise is to rehearse this skill. This rehearsal may also serve as an assertiveness exposure and could be conducted in a graded fashion. In-session role

plays can be useful here as a first step, as actual offers of substances are typically a high-risk situation that should be avoided early in treatment, if possible.

A core component of behavioral therapy for SUDs is identifying high-risk situations. These are situations in which someone is at risk for using substances and can include internal (e.g., loneliness, anxiety, sleep disruption) or external (e.g., bars, social contacts, anniversaries) situations. Conducting an inventory of situations can help to inform planning for exposure. For example, high-risk situations, if they overlap with potential in vivo exposure targets, may be avoided until later in treatment. Contrary to the core tenets of exposure therapy, avoidance may be *encouraged* in SUD treatment, particularly early in treatment. Specifically avoiding high-risk situations is an important component of early treatment and may remain a component of treatment in the long term for certain people. During this time, role plays in session (e.g., role plays of refusal exercises with increasing difficulty) can be used as a bridge to eventual re-engagement with higher-risk situations. As treatment progresses, increasing the difficulty of these role plays or other exercises may include introducing higher-risk contexts, such as assigning them for homework or engaging in practice in a more challenging context (e.g., refusing a drink at a restaurant). Nonetheless, avoidance of some high-risk situations may be an ongoing recommendation for some people with substance use disorders.

This contradiction can be challenging to navigate. A guiding principle in the discrimination between useful exposures and high-risk situations that should be avoided is as follows: *is anxiety interfering with a valued goal?* People with SUDs and anxiety may feel anxious going to bars. For someone with an alcohol use disorder, going to bars may be an activity that no longer is a valued goal. Alternatively, going to restaurants or family gatherings where alcohol may be served is a common valued goal. Exposure to those settings is more consistent with the treatment goals, even if they need to be targeted for later stages in treatment. Furthermore, leveraging supportive friends and family is an important strategy in SUD treatment. Although typically fear exposure would seek to remove safety signals, these supports can play an important role in substance use prevention. Decisions about removing these supportive others for the purpose of exposure should be made cautiously and informed by continued assessment of treatment progress toward anxiety symptom reduction, which can provide insight into whether supports may be interfering with exposure (i.e., is anxiety not declining or generalizing despite ongoing fear exposure). Such decisions may also be guided by ongoing assessment of craving and self-efficacy. Specifically, this can be assessed by asking patients about (1) how strong their urges are to use, (2) how strong their urges are when something reminds them of using (e.g., being in a risky situation), and (3) how likely they would be to use if they were in a situation where they used to use alcohol or drugs. These questions can provide some indication of both the motivational state for use and the individual's perceived ability to resist that motivation to use. If the reported severity on each of these questions is both low and stable, proceeding with expansion to new settings may be appropriate.

Importantly, pharmacotherapy is an effective treatment for alcohol, nicotine, and opioid use disorder, and clinicians working with patients with severe SUDs may

encounter patients on these medications. Collaborating with prescribers can help to facilitate medication adherence and to identify potential risks for relapse or other adverse outcomes. Another benefit of working directly with prescribers is that the medication strategy may fluctuate over the course of treatment. In the early stages of recovery when withdrawal symptoms may occur, medication changes are common and may include short-term as-needed prescriptions for anxiolytic medications (e.g., benzodiazepines). Given the potential influence of these medications on extinction learning, therapists may consider waiting for medication stabilization prior to initiating exposure-based interventions. Although there is potential (and as of yet not entirely understood) risk of medications to interfere with fear extinction learning, in some cases—particularly for people with opioid use disorder—medication can be lifesaving and a necessary component of treatment.

Other Applications of Exposure in SUDs

Even among people without anxiety or related conditions, exposure can play a role in SUD treatment. In this section, we discuss two applications of exposure that are not specific to co-occurring anxiety-related conditions: interoceptive exposure and cue exposure.

Interoceptive Exposure in the Treatment of SUDs

Although initially designed for the treatment of anxiety and related disorders, interoceptive exposure has been expanded to the many conditions in which anxiety sensitivity (the fear of anxiety-related symptoms and physical sensations) may play a role. Anxiety sensitivity is heightened in people with SUDs (McHugh & Otto, 2011) and linked to poor outcomes such as treatment dropout (Lejuez et al., 2008). Accordingly, interoceptive exposure may be appropriate for people with SUDs and elevated anxiety sensitivity.

Assessing anxiety sensitivity should be standard across all SUDs and not only in people who are misusing an anxiolytic substance (e.g., alcohol, benzodiazepines). The self-medication hypothesis posits that people will select substances that treat their underlying condition (e.g., people feeling depressed will choose stimulants, and people feeling anxious will select depressants or anxiolytics). Although there is some support for the differential selection of substances based on such symptoms, it is important to note that many factors influence drug choice: availability and acceptability are as important as any. Furthermore, even substances with stimulating effects can provide stress and anxiety reduction. Thus, the appropriateness of interoceptive exposure should be determined based on direct assessment of anxiety sensitivity rather than assumptions based on drug of choice alone.

The application of exposure in this population is very similar to standard interoceptive exposure. Creativity is always a useful approach to interoceptive exposure to most directly recreate feared sensations. For example, we have found that following a dizziness exposure (e.g., spinning in place) with lying down on the ground can be an effective exposure for people with alcohol use disorder to recreate the sensation of being intoxicated on alcohol. Engaging the patient in curiously seeking the best combination of behaviors to activate the target sensations is an important principle in any application of interoceptive exposure, including in people with SUDs.

Drug withdrawal, much like any physiological symptom, can trigger a strong anxious response, further exacerbating withdrawal symptoms and increasing the motivation to escape them. Accordingly, interoceptive exposure may be particularly useful for reducing anxious responding to drug withdrawal, which may serve as a trigger for relapse. Interoceptive exposure has been successfully applied to improve successful taper off of benzodiazepines in people with anxiety disorders (Otto et al., 1993, 2010). Withdrawal from substances can in many cases mimic anxiety symptoms, particularly panic-related symptoms. Indeed, anxiety is a common withdrawal symptom for several substances (e.g., alcohol, opioids, cannabis). Interoceptive exposure applications for withdrawal aim to reduce fear of these withdrawal symptoms. Fear of withdrawal symptoms is hypothesized to increase the motivation to use drugs or alcohol to achieve relief (much like fear of anxiety symptoms can result in escape or avoidance behaviors in panic disorder).

Framing interoceptive exposure for drug withdrawal should follow a similar rationale to that used for panic disorder, in which a fear response to withdrawal symptoms elevates these symptoms and increases risk for escape/avoidance (in this case, typically substance use). This does not preclude the benefits—and in some cases necessity—of concurrent medical management of withdrawal symptoms. Withdrawal syndromes can be highly distressing, and withdrawal from some substances (e.g., alcohol, sedatives) can result in severe health consequences, including seizure or death. Accordingly, working with a medical team to identify and manage these risks is necessary in this population. Working with the medical team can also help with the timing of the interoceptive exposure to align with medication adjustments that may result in withdrawal (e.g., benzodiazepine or buprenorphine taper).

Cue Exposure

The contexts in which substances are used include environmental (i.e., people, places, objects), emotional (i.e., anxiety, sadness), and physical (i.e., withdrawal symptoms, smell). These contexts can become cues that trigger drug craving through a process of associative learning. For example, an initially neutral stimulus (e.g., hypodermic needle, smell of cigarette smoke) that is repeatedly paired with an unconditioned stimulus (e.g., positive effects of opioids or nicotine) eventually becomes a conditioned stimulus capable of eliciting drug craving. Such cue-evoked craving, often referred to as cue reactivity, is a potent reinforcement mechanism in

SUDs (Milton & Everitt, 2010; Wolter et al., 2019) and is even observed among people who are not physiologically dependent on the substance (Wang et al., 2019). Cue-evoked cravings persist post-cessation and have been identified as predictive of relapse. Exposure-based treatments based on Pavlovian conditioning and inhibitory learning have been developed to mitigate the potential of cue-evoked cravings to prompt lapse/relapse.

Cue exposure-based extinction training (CET) is a treatment that aims to reduce or extinguish the strength of the relationship between the substance-related cue and craving/behavior. For example, repeatedly exposing someone with nicotine use disorder to a lit cigarette while practicing resisting smoking may come to reduce to influence of the sight and smell of the cigarette on smoking behavior. Experimental tests of CET have used both *in vivo* and imaginal exposure to substance-related cues to elicit psychophysiological drug craving. Overall, research has produced mixed findings with modest efficacy for drinking outcomes when compared with or added to traditional cognitive behavioral therapy (Conklin & Tiffany, 2002; Mellentin et al., 2017). However, the strong data suggesting that cue-induced craving can be extinguished in laboratory settings has maintained an enthusiasm for trying to optimize this treatment. The following section briefly reviews similarities and differences between CET and anxiety-focused exposure, as well as practical considerations in conducting cue exposures.

Reactivity to drug cues is highly individual and thus tailoring cue exposure-based treatment is important. Thus, the first step of CET requires a detailed and individualized assessment of cues for drug craving. *In vivo* self-monitoring or retrospective assessment may be used to track craving and identify potential cues for drug craving. Providers may also wish to consider gathering data in the therapy office. For example, therapists might ask patients to report intensity of craving while they are handling their vape device or while imagining or experiencing specific emotions (e.g., frustration). Gathering collateral information from those who are commonly around the patient when using, such as a partner or friend, may be useful when the patient's insight is limited.

Once reliable cues have been identified, *in vivo* and/or imaginal exposure sessions are conducted using identified stimuli. For example, patients might be presented with their favorite alcoholic beverage or a lit cigarette of their preferred brand or asked to imagine sitting down for a drink at their favorite bar. Sessions may occur with the therapist only and may also be assigned as self-guided, behavioral experiments outside of therapy sessions. The amount of support provided during each CET practice should be partly based an assessment of possible risk related to substance use should it occur (i.e., escalation of use, consequences of use). A typical course of CET might involve graded *in-session* exposures followed by systematically introducing *in vivo*, self-guided exposures. Trials of CET have been conducted with as little as two exposure sessions, yet more sessions are likely needed to achieve adequate clinical response (i.e., 4–12). CET session length can be dictated by total time (i.e., 50 minutes) or based on reduction in self-reported craving (e.g., $\geq 50\%$ decrease).

As exposure sessions progress, monitoring reduction in cue-evoked craving can be used to guide the intensity of treatment. For example, the clinician and patient may begin CET with exposure to single cues and then progress to combinations of multiple cues. Similar to exposure therapy for anxiety disorders, the use of multiple-cue exposure sessions capitalizes on a process termed deepened extinction (Rescorla, 2006). This strategy may involve both external cues typical of CET (i.e., hypodermic needle) and internal cues (i.e., frustration). For example, patients might progress from exposure to a sealed pack of cigarettes in the therapy office to holding a lit cigarette outside where they typically smoke. The assessment phase of CET may find that a patient experiences minimal craving to drink when presented with alcohol during the daytime but strong cravings in the evening. Successful implementation of CET relies on careful assessment of both the cues for substance craving and the contexts in which they are encountered.

Unlike exposure therapy for anxiety disorders, CET's mechanism of action may be partly a function of increasing self-control rather than simply a reduction in the strength of the conditioned response (Stevenson et al., 2017). As a result, combining CET with practice of coping skills for urges to use may be helpful (Mellentin et al., 2017). Patients are also encouraged to describe the experience of craving during exposure session, such that it becomes easier to recognize as it waxes and wanes in subsequent and more intense contexts. Cognitive strategies can also be integrated with CET. This may include identifying and challenging self-control biases (i.e., "I can't resist a cigarette when I really want one."; "I can only function after I get rid of an urge to drink."). Indeed, exposure sessions are often useful such that they provide patients with concrete evidence to challenge such distorted thinking and beliefs.

Importantly, the focus of cue exposure is extinguishing the conditioning craving response to reminders of drug and alcohol use. One potential explanation for the mixed findings with respect to CET is that it does not address the operant learning that occurs when consumption of the drug is followed by the drug effect. In other words, even if craving in response to a cue is extinguished, the patient is still aware that consumption of the drug will yield a desirable drug effect. Accordingly, other cognitive behavioral strategies (and possibly pharmacological strategies) should also be used in treatment.

In sum, cue exposure therapy aims to reduce the strength of the relationship between cues and craving and increase self-control over substance use. Tailored application of CET including thorough assessment and monitoring of patient progress and application of best practice strategies for exposure therapies can improve SUD treatment outcomes. Although the efficacy data are somewhat mixed, patients who present with significant cue-induced craving—particularly craving that triggers use—may benefit from exposure to extinguish this response. For example, in some people, cue-induced craving can generalize widely to unavoidable everyday cues, such as a phone ringing or eating in a restaurant. CET may be indicated in cases such as those.

Case Example

Ginny is a 38-year-old, engaged, heterosexual female. She works in a veterinary hospital as an aide and loves her work. She describes herself as a “social drinker” for many years, which she characterized as drinking one to two drinks with dinner most nights and three to four drinks on weekend nights without substantive negative consequences. At age 36, her drinking escalated following the death of her grandfather, with further escalation after a work-related incident in which she believes she was unfairly disciplined. At the time she presented for treatment, she was drinking one bottle of wine every night and two bottles on Thursdays through Saturdays. She also has a history of panic disorder, which had been controlled with antidepressants (citalopram) but worsened as her drinking escalated in the prior 2 years. She reported panic attacks at work, which were worsened when she was in a large meeting or other “cramped” setting. A predominant symptom for her was fear of vomit, and she reported that she would avoid food and water during the day and “binge” on food and alcohol when she returned home at night.

Due to her daily drinking pattern, Ginny first completed an evaluation for need for detoxification and medical clearance. She required a 4-day chlordiazepoxide taper to safely discontinue her alcohol use. Ginny’s goals when starting treatment were to reduce her panic disorder symptoms, to be able to engage in work and social events, and to be abstinent from alcohol at least for 6 months with the plan to later consider a return to social drinking.

Treatment first started with psychoeducation on how anxiety and alcohol use can overlap. Ginny reported that her common responses to panic were to avoid (e.g., not to eat) or escape (e.g., leave meetings early, call out of work). Likewise, although drinking initially had served a reward-based function (to feel good and to engage socially with others), her recent drinking was focused on relief of anxiety, shame, and alcohol withdrawal symptoms. Her drinking and avoidance/escape behaviors were framed as “quick fix” behaviors, behaviors that obtain quick, often powerful relief but in the long run worsen her symptoms. The rationale for exposure therapy was presented, with a focus on interoceptive exposure for her panic symptoms.

Several substance-specific strategies were deployed throughout treatment, including removing alcohol from her home environment, enlisting the support of her fiancé (who agreed not to drink in front of her and to support her abstinence goal), and discussing high-risk situations for alcohol use and strategies to either avoid or cope with these situations. She also initiated extended-release injectable naltrexone (a medication treatment for alcohol use disorder) to support her alcohol abstinence goal.

At session 4, fear exposure was initiated with a focus on interoceptive exposure. When conducting a straw-breathing exercise, Ginny reported some alcohol craving.

Ginny: *Wow, this feels a lot like when I want to drink.*

Therapist: *Can you say more about that?*

Ginny: *I just feel amped-up and jittery, like I’m on fast-forward. Alcohol would always slow me down a little.*

Therapist: So, alcohol would really help when you felt like this.

Ginny: Absolutely, it was the only thing that would help.

(After a few minutes)

Therapist: What do you notice feeling now?

Ginny: The feelings are still there a little, but they are getting better.

Therapist: OK, you are noticing them slowly go away.

Ginny: I guess I never even thought to ride it out. As soon as I felt like this, I would either reach for a drink or think about how I could drink when I got home.

Therapist: Good, that last part is really important. Do you think you would feel different now if you were telling yourself you could drink when you got home?

Ginny: Yeah, I would feel worse! Just anxious to get home. I would be watching the clock. I might even leave work early if I was at work.

When the sensations remind someone of a substance trigger, this can be a particularly useful target, both for fear exposure and for “internal” cue exposure. In this circumstance, craving was closely monitored throughout the remainder of the exposure session. Additionally, the therapist reviewed a plan with Ginny to stay busy following the session. She texted her fiancé during the session to ask that he stop by the grocery store so she could go home following the session, and they planned to cook dinner together and to watch a movie.

Ginny made quick progress with interoceptive exposures focused on nausea, feeling hot, and feeling jittery and was highly compliant with homework assignments. In vivo exposures progressed from at-home interoceptive exposure to interoceptive exposure while parked in her car at work to eventually exposure at work (e.g., sitting far away from the door during meetings). Her panic symptoms improved substantially, and she maintained abstinence from alcohol with minimal craving. At session 10, she came to the session reporting a lapse to alcohol use.

Ginny: I screwed up.

Therapist: What happened?

Ginny: I drank this weekend. I feel awful and I feel like I let you down and let everyone down.

Therapist: You’re feeling a lot of guilt and shame.

Ginny: Yeah.

Therapist: I’m really glad you told me; it’s not easy to do that, especially when you are feeling like this. Guilt and shame can be really tough emotions. Does this trigger thoughts of drinking for you?

Ginny: Yes, and that makes me feel even worse! Why would I want to drink because I screwed up trying not to drink?

Therapist: It seems like it makes no sense, right!

Ginny: It’s so frustrating.

Therapist: Remember when we talked about why we behave the way we do?

Ginny: Yeah...to feel more good or less bad.

Therapist: So, what would drinking do for you guilt?

Ginny: *I'd get some relief! But then I'd feel even worse.*

Therapist: *Right, so let's talk about some alternatives. You can't un-ring the bell, but let's see if we can figure out what happened so we can work on preventing it next time; how does that sound?*

Walking through the precipitants to the lapse provided the opportunity to identify a high-risk situation. Ginny was excited by the announcement of the victory of her strongly preferred presidential candidate and had the thought that she needed alcohol to celebrate. She reported that she experienced several thinking traps, including “just this once” thinking that is common in SUDs. She reported that she had thoughts that it would be acceptable to drink because it was a special occasion, so drinking once would not be a problem. After identifying this thought, the therapist discussed its pitfalls, including the potential for difficulty controlling continued drinking and the risk for the thought to generalize across situations (i.e., the list of “acceptable” occasions grows over time). Typical cognitive reappraisal strategies, including evidence for and against the statement, were rehearsed. In addition, Ginny reported that seeing friends drink generated significant craving during this lapse. Cue exposures were conducted in session including watching videos of people drinking and advertisements for wine (her drink of choice). Ginny reported moderate craving in these settings. In the next session, imaginal exposure was added to recreate a high-risk social drinking situation. These in-session exercises were combined with at-home exposure to movies with strong drinking themes. Craving in these settings decreased quickly over the course of 3 weeks, with some remaining “nostalgia” but no substantive urge to drink.

After 14 sessions of treatment, Ginny's panic symptoms had reduced significantly. She returned to eating at work and was no longer calling in sick. She had remained abstinent from alcohol with the exception of the one lapse and was contemplating a longer-term abstinence plan because of how much better she felt.

Ginny: *I just feel so much better now that I'm not drinking. I don't miss the social part as much as I expected. My friends don't seem to even notice anymore.*

Therapist: *What feels better?*

Ginny: *I think that the alcohol was making my panic worse. I was drinking on an empty stomach and feeling hung over, which couldn't be helping. It's so nice to go to bed at night and not feel the room spinning.*

Therapist: *Does this impact your goals at all?*

Ginny: *I don't know that I will want to go back to drinking. I kind of just want to leave it off the table for now.*

Summary and Conclusions

Exposure-based therapies have been underutilized for people with SUDs; however, data support the safety and potential efficacy of exposure for this population. Fear exposure can be administered in this population with little required modification;

however, integrating elements of cognitive behavioral therapy for substance use disorders and framing substance use as an avoidance or escape behavior can help to target both disorders. Interoceptive exposure may have broad applications in people with SUDs to treat co-occurring anxiety, heightened anxiety sensitivity, or anxiety about withdrawal or medication discontinuation. Data on the application of cue exposure is more mixed but may play a role in treatment, particularly for patients with strong evidence of cue-induced craving. Continued research will be needed to determine how to optimize effective learning and the efficacy of exposure-based treatments.

References

- Back, S. E., Killeen, T., Badour, C. L., Flanagan, J. C., Allan, N. P., Ana, E. S., ... Brady, K. T. (2019). Concurrent treatment of substance use disorders and PTSD using prolonged exposure: A randomized clinical trial in military veterans. *Addictive Behaviors, 90*, 369–377. <https://doi.org/10.1016/j.addbeh.2018.11.032>
- Barlow, D. H., Farchione, T. J., Bullis, J. R., Gallagher, M. W., Murray-Latin, H., Sauer-Zavala, S., ... Cassiello-Robbins, C. (2017). The unified protocol for Transdiagnostic treatment of emotional disorders compared with diagnosis-specific protocols for anxiety disorders: A randomized clinical trial. *JAMA Psychiatry, 74*(9), 875–884. <https://doi.org/10.1001/jamapsychiatry.2017.2164>
- Brady, K. T., Dansky, B. S., Back, S. E., Foa, E. B., & Carroll, K. M. (2001). Exposure therapy in the treatment of PTSD among cocaine-dependent individuals: Preliminary findings. *Journal of Substance Abuse Treatment, 21*(1), 47–54.
- Conklin, C. A., & Tiffany, S. T. (2002). Applying extinction research and theory to cue-exposure addiction treatments. *Addiction, 97*(2), 155–167. <https://doi.org/10.1046/j.1360-0443.2002.00014.x>
- Conway, K. P., Compton, W., Stinson, F. S., & Grant, B. F. (2006). Lifetime comorbidity of DSM-IV mood and anxiety disorders and specific drug use disorders: Results from the National Epidemiologic Survey on alcohol and related conditions. *Journal of Clinical Psychiatry, 67*(2), 247–257.
- Foa, E. B., Yuskov, D. A., McLean, C. P., Suvak, M. K., Bux, D. A., Jr., Oslin, D., ... Volpicelli, J. (2013). Concurrent naltrexone and prolonged exposure therapy for patients with comorbid alcohol dependence and PTSD: A randomized clinical trial. *JAMA, 310*(5), 488–495. <https://doi.org/10.1001/jama.2013.8268>
- Grant, B. F., Goldstein, R. B., Saha, T. D., Chou, S. P., Jung, J., Zhang, H., ... Hasin, D. S. (2015). Epidemiology of DSM-5 alcohol use disorder: Results from the National Epidemiologic Survey on alcohol and related conditions III. *JAMA Psychiatry, 72*(8), 757–766. <https://doi.org/10.1001/jamapsychiatry.2015.0584>
- Grant, B. F., Saha, T. D., Ruan, W. J., Goldstein, R. B., Chou, S. P., Jung, J., ... Hasin, D. S. (2016). Epidemiology of DSM-5 drug use disorder: Results from the National Epidemiologic Survey on alcohol and related conditions-III. *JAMA Psychiatry, 73*(1), 39–47. <https://doi.org/10.1001/jamapsychiatry.2015.2132>
- Kushner, M. G., Maurer, E. W., Thuras, P., Donahue, C., Frye, B., Menary, K. R., ... Van Demark, J. (2013). Hybrid cognitive behavioral therapy versus relaxation training for co-occurring anxiety and alcohol disorder: A randomized clinical trial. *Journal of Consulting and Clinical Psychology, 81*(3), 429–442. <https://doi.org/10.1037/a0031301>
- Lejuez, C. W., Zvolensky, M. J., Daughters, S. B., Bornovalova, M. A., Paulson, A., Tull, M. T., ... Otto, M. W. (2008). Anxiety sensitivity: A unique predictor of dropout among inner-city her-

- oin and crack/cocaine users in residential substance use treatment. *Behaviour Research and Therapy*, 46(7), 811–818. <https://doi.org/10.1016/j.brat.2008.03.010>
- McHugh, R. K., Murray, H. W., & Barlow, D. H. (2009). Balancing fidelity and adaptation in the dissemination of empirically-supported treatments: The promise of transdiagnostic interventions. *Behaviour Research and Therapy*, 47(11), 946–953. <https://doi.org/10.1016/j.brat.2009.07.005>
- McHugh, R. K., & Otto, M. W. (2011). Domain-general and domain-specific strategies for the assessment of distress intolerance. *Psychology of Addictive Behaviors*, 25(4), 745–749. <https://doi.org/10.1037/a0025094>
- Mellentin, A. I., Skøt, L., Nielsen, B., Schippers, G. M., Nielsen, A. S., Stenager, E., & Juhl, C. (2017). Cue exposure therapy for the treatment of alcohol use disorders: A meta-analytic review. *Clinical Psychology Review*, 57, 195–207. <https://doi.org/10.1016/j.cpr.2017.07.006>
- Mills, K. L., Teesson, M., Back, S. E., Brady, K. T., Baker, A. L., Hopwood, S., ... Ewer, P. L. (2012). Integrated exposure-based therapy for co-occurring posttraumatic stress disorder and substance dependence: A randomized controlled trial. *JAMA*, 308(7), 690–699. <https://doi.org/10.1001/jama.2012.9071>
- Milton, A. L., & Everitt, B. J. (2010). The psychological and neurochemical mechanisms of drug memory reconsolidation: Implications for the treatment of addiction. *European Journal of Neuroscience*, 31(12), 2308–2319. <https://doi.org/10.1111/j.1460-9568.2010.07249.x>
- Otto, M. W., McHugh, R. K., Simon, N. M., Farach, F. J., Worthington, J. J., & Pollack, M. H. (2010). Efficacy of CBT for benzodiazepine discontinuation in patients with panic disorder: Further evaluation. *Behaviour Research and Therapy*, 48(8), 720–727. <https://doi.org/10.1016/j.brat.2010.04.002>
- Otto, M. W., Pollack, M. H., Sachs, G. S., Reiter, S. R., Meltzer-Brody, S., & Rosenbaum, J. F. (1993). Discontinuation of benzodiazepine treatment: Efficacy of cognitive-behavioral therapy for patients with panic disorder. *American Journal of Psychiatry*, 150(10), 1485–1490.
- Rescorla, R. A. (2006). Deepened extinction from compound stimulus presentation. *Journal of Experimental Psychology Animal Behavior Processes*, 32(2), 135–144. <https://doi.org/10.1037/0097-7403.32.2.135>
- Stevenson, J. G., Oliver, J. A., Hallyburton, M. B., Sweitzer, M. M., Conklin, C. A., & McClernon, F. J. (2017). Smoking environment cues reduce ability to resist smoking as measured by a delay to smoking task. *Addictive Behaviors*, 67, 49–52. <https://doi.org/10.1016/j.addbeh.2016.12.007>
- Tripp, J. C., Haller, M., Trim, R. S., Straus, E., Bryan, C. J., Davis, B. C., ... Norman, S. B. (2020). Does exposure exacerbate symptoms in veterans with PTSD and alcohol use disorder? *Psychological Trauma: Theory, Research Practice and Policy*. <https://doi.org/10.1037/tra0000634>
- Wang, W., Zhornitsky, S., Le, T. M., Dhingra, I., Zhang, S., Krystal, J. H., & Li, C. R. (2019). Cue-elicited craving, thalamic activity, and physiological arousal in adult non-dependent drinkers. *Journal of Psychiatric Research*, 116, 74–82. <https://doi.org/10.1016/j.jpsychires.2019.06.005>
- Weiss, R. D., Griffin, M. L., Kolodziej, M. E., Greenfield, S. F., Najavits, L. M., Daley, D. C., ... Hennen, J. A. (2007). A randomized trial of integrated group therapy versus group drug counseling for patients with bipolar disorder and substance dependence. *American Journal of Psychiatry*, 164(1), 100–107. <https://doi.org/10.1176/appi.ajp.164.1.100>
- Wolitzky-Taylor, K., Krull, J., Rawson, R., Roy-Byrne, P., Ries, R., & Craske, M. G. (2018). Randomized clinical trial evaluating the preliminary effectiveness of an integrated anxiety disorder treatment in substance use disorder specialty clinics. *Journal of Consulting and Clinical Psychology*, 86(1), 81–88. <https://doi.org/10.1037/ccp0000276>
- Wolter, M., Huff, E., Spiegel, T., Winters, B. D., & Leri, F. (2019). Cocaine, nicotine, and their conditioned contexts enhance consolidation of object memory in rats. *Learning and Memory*, 26(2), 46–55. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/30651377>. <https://doi.org/10.1101/lm.048579.118>

Chapter 15

Using Exposure Therapy for Eating Disorders



Carolyn Black Becker, Nicholas R. Farrell, and Glenn Waller

Abstract Exposure therapy is a critical evidence-based treatment for eating disorders, addressing a range of symptoms. However, it is substantially underused and is not always well understood by clinicians. This chapter outlines ways in which exposure therapy needs to be adapted for eating disorders, allowing for risk management and nutritional recovery. It also stresses the benefits of using more contemporary methods of exposure, particularly inhibitory learning methods. Based on a case presentation (Isabela) and the evidence from a brief literature review, different ways of using exposure therapy for eating disorders are outlined. These include exposure to food and eating; exposure to weight and fear of weight gain; exposure to emotional and interpersonal triggers for eating disorder behaviors; cue exposure for recurrent binge eating; and exposure methods used to address body image anxiety/avoidance. We conclude that it is critical to understand the rationale for using exposure therapy for eating disorders and to design individualized exposure tasks that maximize inhibitory learning.

Keywords Eating disorders · Exposure therapy · Inhibitory learning · Eating · Cue exposure · Body image

C. B. Becker (✉)
Trinity University, San Antonio, TX, USA
e-mail: cbecker@trinity.edu

N. R. Farrell
NOCD, Chicago, IL, USA
e-mail: nicholas.farrell@nocdhelp.com

G. Waller
University of Sheffield, Sheffield, UK
e-mail: g.waller@sheffield.ac.uk

Introduction

As a clinician, you have likely encountered patients who engage in behaviors commonly associated with eating disorders (EDs). Some of the most common of these behaviors include limiting overall dietary intake, avoiding feared foods, binge eating, self-induced vomiting, laxative and/or diuretic use, compulsive exercising, and negative body image-related behaviors (e.g., avoidance or overuse of mirrors). Formal ED diagnoses listed in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5: American Psychiatric Association, 2013), include (but are not limited to) anorexia nervosa (AN), bulimia nervosa (BN), binge-eating disorder (BED), and avoidant restrictive food intake disorder (ARFID), as well as other specified feeding and eating disorders (OSFED), which include less-studied problems such as purging disorder.

Although we acknowledge the utility of knowing the diagnostic criteria for the different ED diagnoses, we do not review them in this chapter for two primary reasons. First, the criteria are easily accessible in many other resources (e.g., DSM-5). Second, and more importantly, many of the ED features that you will target with exposure therapy are transdiagnostic. For instance, restricted food intake is common in the vast majority of ED presentations, regardless of diagnosis. Similarly, you will encounter binge eating in patients who meet criteria for AN, BN, BED, and OSFED. For this reason, we focus on the use of exposure to address common ED features, as opposed to concentrating on diagnoses.

Misunderstandings About Exposure Therapy for Eating Disorders

Exposure has long been used in the treatment of EDs, with authors writing about the use of exposure in the treatment of EDs decades ago (e.g., Mavissakalian, 1982; Rosen & Leitenberg, 1982). Yet, despite this long history, the use of exposure in ED treatment often has remained somewhat hidden, conceptually muddled, and/or underdiscussed. For instance, although exposure forms the backbone of cognitive behavioral therapy for EDs (CBT-ED) in many ways (e.g., patients are exposed to their fears of eating more food, eating specific foods, being weighed, gaining weight, and seeing their bodies), the term “exposure” does not appear in the index of one of the most widely used CBT manuals for EDs (Fairburn, 2008).

All evidence-based approaches for EDs that are marked by weight suppression emphasize the importance of nutrition stabilization. ED clinicians often assume that any such contact with feared stimuli is equivalent to exposure therapy – a supposition that is clearly problematic, since certain conditions are typically needed to promote inhibitory/safety learning.

Key Message

Exposure to food needs to be planned, rather than simply assuming that the patient is undertaking exposure every time that they eat (e.g., eating with others as part of intensive treatment). Otherwise, learning and maintenance of benefits is likely to be negligible.

For instance, many clinicians assume that mandatory refeeding is equivalent to exposure therapy and will result in safety learning with respect to food. While some ED patients do learn something useful about safety during such refeeding, many do not. Indeed, some learn enhanced fear. This is because the conditions associated with mandatory refeeding are not conducive to inhibitory/safety learning. Such conditions include (a) the “exposure” to food not being voluntary; (b) the fact that patients’ feared outcomes ostensibly occur (e.g., gaining weight); and (c) that active attempts to avoid experiencing anxiety (e.g., via distraction) are often encouraged by those overseeing the refeeding. Planned exposure therapy for EDs, in contrast, is designed to optimize the probability of patients learning what they need to learn, using the existing exposure therapy literature. This is the type of exposure we focus on in this chapter.

Adapting Exposure for Eating Disorders

In some ways, exposure for EDs differs little from exposure for panic disorder, obsessive-compulsive disorder, social anxiety disorder, or other disorders where it is commonly used. EDs are, after all, essentially anxiety-based, with substantial diagnostic comorbidity and many shared characteristics with other anxiety-based disorders (Pallister & Waller, 2008; Schaumberg et al., 2021; Swinbourne & Touyz, 2007). Nonetheless, as with any exposure implementation, you will need to consider how to adapt the delivery of exposure therapy to the specific presenting fears and associated avoidance and safety behaviors while maintaining the therapy’s principles.

Using exposure therapy with EDs also presents a few unique challenges, which is why training and supervision are highly recommended. In particular, you will need to consider a wider context of patient safety. EDs are not only associated with elevated rates of suicide attempts (Udo et al., 2019) – they also often present with greater medical risk than other anxiety-based disorders (see Birmingham & Treasure, 2010). Unlike many other disorders, nutrition is key. Treating EDs requires you to address starvation and semi-starvation symptoms from the beginning. Initially, this ensures that biologically driven cognitive limitations and emotional instability are reduced (particularly through weight normalization and restoration of serotonin levels). Addressing starvation/semi-starvation also decreases the occurrence of binge-eating episodes that are primarily instigated via malnutrition.

Thereafter, eating differently is used to elevate anxiety within an exposure therapy framework so that you can address the fear of uncontrollable weight gain as well as a host of related feared outcomes (e.g., social ostracism, career/academic failure, romantic rejection, etc.).

In addition to attending to physical safety and nutrition, you should be prepared to address therapy-interfering behaviors, which can be common in EDs (Linehan, 1993). Compared to many other patients with anxiety-based disorders, patients with EDs are often relatively ambivalent about “giving up” their disorder. At times, this leads to therapists becoming very concerned about building and maintaining the therapeutic relationship. Although the therapeutic alliance is linked to outcomes, it is important to remember that the evidence shows the alliance is driven by early behavioral change rather than vice versa (Graves et al., 2017) and that it is early symptom change that drives the best outcomes in EDs (Farrell et al. 2019a, b; Vall & Wade, 2015). Therefore, you should aim for exposure work as early in ED treatment as possible, rather than delaying in the hope that the alliance will develop first.

It is also important to remember that our own beliefs and emotions can get in the way of delivering exposure therapy. As with other anxiety disorders (Deacon et al., 2013), clinicians working with EDs are prone to reducing the pressure for the patient to change during exposure therapy if they are anxious themselves (Mulkens et al., 2018). The potentially life-threatening nature of EDs can make the temptation to “dial down” exposure particularly appealing, so you might need to work on your own uncertainty as well as that of your patient. While ethical issues are sometimes raised about the implementation of exposure therapy, particularly with EDs, remember that the evidence does not support such concerns (Olatunji et al., 2009), so focus on the strong benefits of exposure for your patients.

Finally, you will need to consider how exposure fits with other familiar methods (e.g., cognitive work, behavioral experiments), as well as disorder-specific methods. It is important to note that different CBT-ED treatment guidelines vary in their use of exposure therapy. For example, Fairburn’s CBT-E (2008) uses a relatively unstructured approach to exposure. While family-based treatment (FBT; Lock & Le Grange, 2015) does not use the term, it can be argued that much of FBT relies on exposure but is used in a less planned way. In contrast, Becker et al. (2019) and Waller et al. (2019) advocate a more structured approach, based on inhibitory learning theory. It is worthy of note that this inhibitory learning approach appears to be as effective as CBT-E in the short and long term but requires less time in treatment (Tatham et al., *in press*). However, regardless of the specific approach to exposure, it is clear that exposure is a critical element of the treatment of EDs, as outlined below.

Key Message

Different forms of evidence-based CBT for eating disorders vary widely in how much they employ exposure.

Case Example

As outlined above, exposure therapy for EDs is best applied to features that are common across multiple EDs, as opposed to any particular diagnosis. These transdiagnostic features include eating and weight-related anxiety and avoidance, recurrent binge-eating episodes, body image anxiety, and interpersonal/emotional difficulties that manifest in ED behaviors. In working with individuals with EDs, you will note in the majority of cases that several of these transdiagnostic features are present simultaneously. As such, your treatment approach will need to involve multiple forms of ED-focused exposure utilized in concert. We will illustrate this need by referencing the following case example throughout this chapter.

Isabela is a 29-year-old Hispanic woman with a history of an eating disorder that dates back to her early adolescence, when she began to dance flamenco and developed significant anxiety regarding her body image. Aiming to follow in the footsteps of her two older and thinner sisters (who were both very successful dancers), Isabela became increasingly concerned with her own body size and shape. In particular, she experienced a strong desire to have a very petite build, believing that flamenco costumes looked better on such a body type. As a result, Isabela grew steadily more preoccupied with trying to modify her physique, even though her teacher said many different body types could bring something to flamenco. Accordingly, Isabela began engaging in frequent body checking behaviors, such as scrutinizing her physique in mirrors and other reflective surfaces on many occasions throughout the day. She also started to weigh herself ritualistically each morning as well as after each time she ate. Any time that Isabela's weight was higher than the last time she checked it, she engaged in rapid, compulsive physical activity (e.g., jumping jacks) with the aim of decreasing her weight.

Closely tied to her increased body image anxiety, Isabela developed highly restrictive eating habits that involved limiting her overall quantity of food intake to only one midmorning snack and one meal that she usually ate later in the afternoon. In addition to limiting the amount of food she ate, Isabela also began cutting many "junk foods" (e.g., desserts, fried foods, and other calorie-dense foods) out of her diet. Further, Isabela began skipping family meals because she perceived her mother's traditional cooking as "fattening." This led to significant conflict in her family, which placed high value on family meals. Isabela also began to avoid eating around her friends and fellow dancers due to anxiety about her food choices being judged by others, which increased her isolation. Isabela's pattern of restraint in her eating ultimately caused her to lose some weight and temporarily feel a sense of satisfaction. However, her anxiety about body size and shape quickly returned, which further fueled her patterns of restrictive eating habits, body checking behaviors, and compulsive physical activity.

Because Isabela's diet was limited in both overall volume and variety of food, her body's energy needs were continually unmet throughout much of her adolescence. This contributed to uncontrollable episodes of bingeing on many of the foods that she desperately tried to avoid, such as ice cream, cookies, and chocolate. These binge-eating episodes quickly became more frequent, especially when Isabela attempted to "double down" on her dietary restriction in the aftermath of a binge episode. Even during short periods of time when she was eating enough to meet her body's energy needs, Isabela would continue to experience periodic binge-eating episodes and noticed that they would occur most often when she was alone during later evening hours.

As her eating disorder persisted, Isabela came to inadvertently learn that many of the behavioral features of her eating disorder (e.g., withholding food from herself, compulsive exercising, binge eating) had temporary anxiolytic effects. As such, Isabela engaged in these behaviors more frequently in response to interpersonal stressors and other negative mood states she experienced. To illustrate, on one occasion when she was angry after having an argument with her romantic partner over the phone, she deliberately ate nothing for the next 36 hours before succumbing to a bingeing episode and subsequent compulsive exercising. Because of the temporary "relief" from negative emotions provided by her eating disorder behaviors, Isabela came to rely on these behaviors to cope with a wide variety of distressing interpersonal and emotional experiences.

Although the complexity of Isabela's case may initially appear significant given the myriad of concurrent ED features, her case is actually fairly typical. Indeed, a wide array of ED features interacting with one another is often the norm in EDs. Like many individuals with EDs, Isabela will benefit from several different forms of exposure therapy, carefully implemented sequentially or simultaneously. In the following sections of this chapter, we use Isabela's case as a frame of reference for describing how various forms of exposure therapy can be effectively used for individuals with EDs.

Initial Considerations

Before you embark on exposure for EDs, there are several things you should keep in mind. To start, it is critical that you provide a rationale for engaging with anxiety, including the need to learn tolerance of anxiety and uncertainty. Several factors underpin this recommendation. First and foremost, patients who do not understand the rationale for exposure, which can be a difficult and unpleasant treatment strategy in the short term, are simply unlikely to engage or actively participate in treatment. Second, research suggests that receiving a rationale for exposure therapy

Key Message

Always explain exposure therapy to the patient before you begin, so that the patient is more engaged and confident.

enhances the benefit that is experienced from the treatment (Cowdrey, 2014). Third, when you sell the rationale for exposure, you increase your patient's expectancy that treatment can work, even when other interventions have failed. Finally, demonstrating that you believe your patient's problems are both understandable and treatable often improves the therapeutic relationship. It is beyond the scope of this chapter to get into the details of presenting the rationale for exposure – for additional guidance, see Becker et al. (2019).

Another key consideration is the importance of careful functional analysis because fears that appear similar on the surface may be quite different in detail – and those details matter when you are designing exposure tasks (see Becker et al., 2019). For instance, like many patients with EDs, Isabela intensely fears weight gain. She is particularly concerned about how she looks in her flamenco dress and how that will impact her ability to be a successful dancer, and she also engages in significant comparison with her older sisters and other dancers. Other patients, however, may fear weight gain for entirely different reasons. For instance, James, who was very low weight, feared uncontrollable weight gain that would never stop. He predicted he would ultimately weigh 400+ pounds. Sasha, in contrast, was convinced that her boyfriend would break up with her if she gained 10 pounds and developed a “stomach pooch.” Jerry, who was already living in a higher-weight body, feared additional pressure and scorn from family if he gained any further weight. As you can see, fear of weight gain means something very different for each of these patients. As a result, exposure will also look quite different.

In addition to the above considerations, you also will need to think through the sequencing of exposure assignments. For instance, there are several types of exposure that are commonly used to address binge-eating behavior, including *in vivo* food exposure, exposure to emotions, and cue exposure (see below for examples). Unless your functional analysis provides a compelling rationale for starting with something else, you will almost always start with food exposure, because this is likely to give you the biggest return on investment. Once patients start eating enough food (including preferred though feared foods) with sufficient frequency, a significant amount of binge eating will typically remit. At this point, you will be in a better position to functionally assess remaining binge eating. Often, the next most logical place to proceed is binge eating driven by emotions. Cue exposure can then be used to address any remaining binge-eating behaviors.

Brief Literature Review

Although it is outside the scope of this chapter to comprehensively review the literature on the effects of exposure therapy for EDs, it is important to know that the significant majority of studies indicate overall positive treatment outcomes among individuals receiving this treatment. We direct readers interested in a more comprehensive review to Becker et al. (2019), Butler and Heimberg (2020), and Koskina et al. (2013). Herein, we provide concise summaries of treatment outcome literature in three exposure domains – food and eating exposure, body-focused exposure, and cue exposure.

There are a fair number of studies showing that food exposure therapy is useful in reducing food anxiety and preoccupation with eating-related consequences in individuals with EDs (e.g., Steinglass et al., 2012). Importantly, these benefits of food exposure have also been found when the treatment has been adapted to higher levels of care, including inpatient (Farrell et al. 2019a, b), residential (Simpson et al., 2013), and day treatment settings (e.g., Levinson & Byrne, 2015). There is also growing evidence that food-based exposure therapy produces large reductions in eating-related anxiety and avoidance among individuals diagnosed with ARFID (e.g., Dumont et al., 2019). It is important that despite the positive treatment outcomes associated with food exposure, the majority of these studies have been case series designs lacking a credible control condition.

Body-focused exposure has been found to consistently reduce body image anxiety when measured on a subjective self-report basis (e.g., Vocks et al., 2007) as well as on a physiological level (e.g., Trentowska et al., 2017). In particular, a type of body-focused exposure known as mirror exposure has been studied across a range of ED diagnoses and is effective in reducing body-related anxiety and avoidance (Griffen et al., 2018). Furthermore, the benefits of body-focused exposure are apparent when the treatment is delivered both as a standalone intervention (Hilbert & Tuschen-Caffier, 2004) and as an adjunctive component within CBT treatment packages (Hildebrandt et al., 2012).

Early work using cue exposure therapy to address recurrent binge eating showed that the frequency of binge-eating episodes reduced substantially (e.g., Kennedy et al., 1995), though these studies contained small sample sizes. Larger controlled studies comparing binge cue exposure to relaxation training among patients who had received an initial course of CBT found that binge cue exposure was associated with larger reductions in binge-eating frequency (Bulik et al., 1998), and these advantages were durable over a 5-year time period (McIntosh et al., 2011). Finally, several studies have shown that cue exposure is a successful “second stage therapy” for addressing recurrent binge eating among patients who do not respond to traditional CBT (Martinez-Mallén et al., 2007; Toro et al., 2003).

Types of Exposure Used in Treating Eating Disorders

As mentioned above, the role of exposure therapy in treating EDs is diverse, because anxiety permeates many key eating symptoms and behaviors. Our approach to exposure is similarly flexible in that it is not completely dominated by one theoretical model of exposure.

Based on the existing exposure literature, we view the primary goals of exposure as (1) fear expectancy violation, (2) improved toleration of anxiety/uncertainty, and (3), in the long term, anxiety reduction. It is important to note that while many ED patients will experience considerable reduction in anxiety during exposure, some patients who ultimately benefit from exposure do not show reliable early reductions in anxiety. Therefore, we encourage you to emphasize the importance of learning tolerance to anxiety and uncertainty during exposure, per the inhibitory learning model. Learning to tolerate anxiety also increases self-efficacy and a sense of self-control for many patients (for additional discussion see Becker et al., 2019).

Key Message

It is important to be aware of the different models of exposure that are relevant to eating disorders – particularly the more recent development of inhibitory learning approaches.

Exposure to Food and Eating

Following the restoration of basic nutritional adequacy (even at a low weight), your patient's cognitive flexibility and emotional stability will allow exposure therapy to be used to address anxiety about eating and food. However, even the initial nutritional restoration stage can have an exposure element, raising anxiety that some patients can learn from, particularly if they engage in food exposure voluntarily (Farrell et al. 2019a). Isabela's case (above) illustrates key food and eating-related targets that need to be addressed. Specifically, Isabela has limited the range and amount of her food intake, with fewer meals, less calorie-dense food, and avoidance of foods and settings that she sees as very risky (e.g., her mother's cooking; family meals). The consequences are that Isabela binges on foods that she has been avoiding and that give her fast-access carbohydrates when she is experiencing cravings (e.g., chocolate, ice cream).

Isabela is anxious that food will make her binge-eat and gain weight. She also believes that carbohydrates are a particular threat. The link between carbohydrates and binge eating has been enhanced by her repeated evening experience of binge eating. While the main drivers of her binges are actually her cravings and hunger secondary to limited food intake, she associates binge eating with starting to eat any carbohydrate, meaning that she is fearful of the foods and eating, rather than of starvation.

Isabela's exposure therapy began with the setting of her first homework, where food was discussed at length, raising her anxiety about what was to come. A conservative exposure approach often would involve adding in more structure to eating (e.g., eat something at each meal/snack point, without pushing for specific foods) and then adding in increasingly feared foods over coming weeks. However, to maximize early learning, the approach used with Isabela began by finding out the maximum dietary change (and elevation of anxiety) that she was willing to tolerate. Isabela was prepared to try structured eating, with carbohydrates at each meal (including small portions of her mother's family meals), but not at snack times. Thus, she was asked to change the carbohydrates eaten throughout the week, to maximize her anxiety and her learning.

In the inhibitory learning model, it is important to ensure that your patient is as anxious as can be tolerated. This ensures maximal expectancy violation, so your patients will learn more rapidly that their fears are not justified. Therefore, if Isabela had said that she did not think the overall change in her eating would do much to her binge frequency, you would redesign the homework to increase her anxiety about overeating. For instance, you might stress that she should eat snacks with carbohydrates as well. In addition, to facilitate expectancy violation, you would want to ask Isabela to make a prediction about what will happen if she eats all the assigned homework food (see Fig. 15.1): "I think I will binge at least three times every day and gain at least 15 pounds this week if I eat all that."

Once Isabela's anxiety about bingeing starts to decline, the next step is to maintain the uncertainty, so that she remains anxious (e.g., adding in different carbohydrates; eating the full family meal; changing locations; eating ice cream in a controlled way, following the meal). That way, the expectancy violation remains maximal throughout, until Isabela's anxiety about eating is minimized (e.g., she eats breakfast in response to hunger, without fear of bingeing). We find that the anxiety often reduces surprisingly quickly, sometimes over just two to three sessions.

It should be noted that this approach to exposure reflects changing eating in a way that directly targets the individual's anxiety levels in their natural environment. To make this approach work in more intensive settings will require you and your associated team to be flexible with regard to the needs and anxiety levels of your individual patients, rather than offering a homogeneous eating experience for all patients (the latter is common in many intensive treatment settings). Homogenous eating experiences are unlikely to teach many patients what they need to learn and will typically generalize poorly to other settings (e.g., post-inpatient time).

Key Message

In intensive settings, exposure needs to be responsive to the individual, rather than being geared to the wider group (e.g., exposing a specific patient to a specific feared food, rather than expecting all patients to eat the same). This requires the team to be flexible rather than maintaining similar rules for all patients.

EXPOSURE FEARED OUTCOME FORM

Prior to Starting Exposure

- A. Explain what you will do during exposure.

- B. Describe what safety behaviors you will prevent and how you will prevent them.

- C. What do you fear will happen during exposure? Rate probability of this outcome on 0–100 scale.

- D. Image that your feared outcome actually happened. Rate how bearable this would be on a 0–100 scale with 0 being easy and 100 being completely unbearable.

After Finishing Exposure.

- E. What happened during exposure? Did your feared outcome occur?

- F. If your feared outcome did happen, how bearable was it? Rate 0 to 100 like above.

- G. Summarize what you learned during this exposure. Make sure to include your thoughts/ratings on the actual degree of risk associated with doing this exposure and the degree to which you think you can tolerate the feared outcome in the future.

Fig. 15.1 Exposure feared outcome form

Exposure to Weight and Fear of Weight Gain

Exposure to weight is not a problem for many patients, but some are anxious about what they might weigh and are reluctant to know their weight. They *avoid* weighing themselves as a safety behavior that briefly reduces the anxiety. This is a problem that can be exacerbated if the clinician “blind weighs” such patients (either through agreement with the patient or as a local decision by the clinician or service, regardless of the patient’s willingness to be weighed). Such avoidance is a clinician safety behavior, reducing our anxiety about distressing the patient in the short term but maintaining their concerns in the longer term. Therefore, we have a situation where openly weighing the patient is a requirement of all evidence-based therapies for EDs (Waller & Mountford, 2015), but it is not practiced by many clinicians who claim to be delivering those therapies (e.g., Forbush et al., 2015), particularly if that clinician is more anxious themselves (Mulken et al., 2018).

Other patients *check* their weight in a compulsive manner, as in Isabela's case. Her repeated use of scales to check her weight is a safety behavior to reduce her anxiety about weight gain. In this case, the clinical imperative is to reduce Isabela's self-weighing behaviors to ensure that she experiences the anxiety and learns either that it fades relatively quickly or that she can tolerate the anxiety of not knowing what she weighs at all times. This means ensuring that she does not use her safety behavior of weighing herself between sessions so that her anxiety has the chance to decline and/or she practices tolerating the anxiety of not knowing. It is also important not to weigh Isabela the moment she walks into the clinic, as that too can serve as a safety behavior. Waller and Mountford (2015) point out the importance of weighing a patient like Isabela after she has had the time to focus on her eating pattern (reviewing diaries) and to experience the consequent anxiety of seeing how much she has eaten. This optimizes her chance of learning that such anxiety is not an accurate indicator of her weight.

Weight gain is a concern for nearly all patients in treatment for their ED, partly because it is a goal of therapy in some cases, partly because many patients have been experiencing such gain for a long time (either continuously or intermittently), and partly because their own bodies and other people are pressuring them to eat. It is also noteworthy that clinicians sometimes worry that getting the patient to change their eating will have this effect (e.g., Isabela's clinician goes to supervision and says: "But what if her weight really *does* go up 10 pounds after eating two cookies per day for a week?").

The reason for weight gain being a substantial fear is that the underlying concern is about *uncontrollable* weight gain. Therefore, the target of exposure needs to be to teach Isabela that eating does not result in uncontrollability. This requires using exposure to teach a patient like Isabela that her weight does not rise overall while she is changing her eating pattern, even if it fluctuates on a week-by-week basis. Again, the inhibitory learning approach, in which you encourage your patients to both make bigger changes in their behavior and to verbalize the more extreme predictions they think but often don't share, results in more rapid learning (e.g., Isabela: "I ate my mother's meals and dessert *every day for a week* and predicted that my weight would shoot up by at least *10 pounds*, but it only went up by half a pound, so I feel safer trying proper meals next week.") than the hierarchy-based habituation approach (e.g., Isabela: "Well, I ate my mother's meals on *2 days this week* and my weight went up by half a pound, which is nearly the *pound that I predicted*, so eating more food means that my weight shoots up, as I thought, so adding any more food would be dangerous, of course.").

When the patient needs to gain weight, the fear of uncontrollability remains key. For instance, patients with AN need to learn that the weight gain is controllable and that it needs to happen early on if they are to maintain weight gain toward a healthy level. The inhibitory learning approach suggests that one should aim for a "mixing it up" approach where change in eating should be large overall to maximize expectancy violation. However, the amount and type of food should vary so that (a) it does not generate consistent weight gain and (b) your patient can see that weight change is predictable overall, rather than being predictable minute by minute. It is also

useful to agree brief periods where the patient can suspend weight gain, to demonstrate that weight gain is controllable.

Clinically, it is an error to agree to a firm weight target with your patients, as you will have no evidence as to what will be a viable weight for any given patient to be able to stabilize at. An agreed weight range estimate (“Let’s see what works for your body.”) is more viable. Remember, however, this is an easy mistake to make because your patients will be very anxious or even unwilling to try eating differently unless they have absolute certainty about where they will stop. You need to stress that nobody can possibly know what weight the patient will need to achieve in order to be free of starvation, and hence free of anorexic cognitions and behaviors. This requires both you and your patient to tolerate your collective anxiety without using calming safety behaviors, until the anxiety subsides through exposure.

Emotional and Interpersonal Exposure

Emotional states and interpersonal encounters can both be experienced negatively and can trigger either impulsive or compulsive behaviors that block awareness of those states (e.g., Arnow et al., 1995; Steiger et al., 1999). Examples of such eating behaviors include bingeing, purging, or restriction as a result of perceived intolerable negative emotions (as Isabela’s case demonstrates) and body avoidance as a result of social anxiety. Other factors can contribute to these links (e.g., difficulties in tolerating interpersonal interaction if the person has comorbid autism spectrum condition issues; starvation-based emotional instability), so these need to be addressed appropriately in treatment planning in order to ensure that your patient can benefit maximally from exposure therapy.

The reasons for emotionally and interpersonally driven eating behaviors are sometimes hard to identify, as the emotional blocking effect can mean that your patient is less able to identify the triggers behind them. In such cases, you will often hear the term *It’s just a habit*, and a core task of therapy is to help your patient to recognize the trigger emotions and the underlying cognitions and social interactions. In such a case, speculating with your patient about plausible emotional states in the specific situation can be helpful, but it can be more useful to use a diary of emotional states and underlying cognitions (e.g., Becker et al., 2019; Waller et al., 2019) to identify the chain of trigger-cognition-emotion-behavior. In that situation, where awareness has been created, your patient can be encouraged to focus on and tolerate the anxiety so that exposure becomes an effective tool.

In contrast, other patients are fully aware of the negative emotion that they were experiencing, as in Isabela’s case. She was deliberately using restriction to suppress emotional arousal when distressed about her partner. Then, when the resultant craving meant that Isabela lost control of her eating due to her cravings, she was aware that her binges served the function of reducing emotional arousal. In this case, during the initial period of restriction, the exposure therapist’s role is likely to be one of pressing Isabela to eat rather than restrict so that she can experience the emotions

and interpersonal conflict that she is trying to avoid and can thus learn that those emotions are reduced and/or tolerated better than she had imagined. When she experiences the urge to binge, it is possible to use exposure to teach Isabela that she can tolerate emotions rather than needing to block them with food. However, this is less easy in a case such as Isabela's, where her urge to binge is driven by an extreme starvation state more than by a desire for anxiolytic effects. Hence, in Isabela's case, it would be important to ensure that exposure starts as an effort to ensure adequate nutrition and only later is used to focus on the anxiolytic effects that drive some binges independently of starvation effects.

Cue Exposure

Most patients who experience recurrent binge-eating episodes do so at least initially as a consequence of prolonged self-starvation. When one's energy intake needs are not sufficiently met on a consistent basis, a person is physiologically disposed to consume abnormally large quantities of food with diminished ability to prevent this occurrence (e.g., Stice et al., 2008). Because of the role played by self-starvation in instigating binge-eating episodes, it is critical to guide your patient in swiftly normalizing their eating habits (i.e., well-balanced meals and snacks each day) such that energy needs are regularly met. As reviewed earlier in this chapter, food and eating-related exposure can be a useful tool to facilitate improved normalization of eating.

Key Message

Cue exposure is a critical tool to consider using where previously explained approaches have not overcome learned cravings and consequent binges.

Whereas some patients may enjoy an elimination of their binge eating when they successfully establish a more normal pattern of eating and have addressed any overt emotional and interpersonal triggers, many are discouraged when at least some of their binge-eating episodes continue. The continuation of some binge eating in the absence of ongoing self-starvation is relatively common in EDs, yet it is often a mystery to patients (e.g., "Why do I let this keep happening even after I've stopped starving myself and am no longer hungry all day?"). Indeed, as you read earlier in Isabela's case, her successful initiation of a more normalized eating routine did not stop her from experiencing further bingeing episodes with sweet, calorie-dense foods, nor did reducing her emotional triggers. In such cases, you should consider cue learning as potential explanation and cue exposure as a related solution.

Your first (and perhaps most important) task in preparing your patient for cue exposure is to help them understand the psychological underpinnings of binge eating. Jansen et al. (1989, 1991, 1992) provide an empirically supported classical

conditioning model of binge eating that is, in our experience, clearly understood by most patients. The fundamental point you want your patient to comprehend is the environmental and contextual stimuli that were paired with their previous binge-eating episodes often develop the power to elicit strong physiological responses in anticipation of food, which the patient experiences as seemingly irresistible cravings. Examples of stimuli that commonly cue patients' binge-eating cravings include sensory input related to food (e.g., smelling baked goods); physical sensations or emotional states present immediately prior to binge episodes; and the time of day and/or physical location(s) where previous binges occurred (Bongers & Jansen, 2017).

Cue exposure is essentially a higher-order form of *extinction learning*. Akin to how Pavlov purportedly “counter-conditioned” dogs to inhibit their conditioned salivary response by repetitively presenting a conditioned stimulus paired with the absence of food, cue exposure involves guiding your patients in confronting the stimuli that elicit a conditioned appetitive response (i.e., craving) while blocking the subsequent tendency to binge-eat. For example, you might ask your patient who has learned a “see and smell the cookie-eat the cookie” link to smell, touch, and observe the cookie but without eating it, in order to break that link.

This process usually yields reduced frequency and intensity of cued cravings to binge, which in turn decreases the frequency of binge-eating episodes (Jansen et al., 2016). Cue exposure will also help your patient to develop an improved confidence in their capability to tolerate the distressing emotions associated with cued binge cravings without giving in to those cravings. In Isabela's case, cue exposure could help her learn that the cravings she experiences in the presence of ice cream or cookies, in spite of their intensity, are only temporary stressors that she is able to endure with less difficulty than she previously believed.

After providing your patient with psychoeducation on the physiological and psychological maintenance of recurrent binge eating and a rationale for cue exposure, you proceed by collaborating with your patient to identify the common stimuli (i.e., cues) that seem to elicit strong cravings to binge-eat. Whereas some patients will have a refreshingly keen awareness of their common binge cues, others will lack this awareness and may need your guidance in carefully self-monitoring to identify antecedent factors in their binge episodes (e.g., type of food consumed, location where bingeing took place, what was happening, emotions and body sensations experienced prior to bingeing, etc.; for additional discussion and sample monitoring form, see Becker et al., 2019). In general, we recommend self-monitoring with nearly all patients who struggle with recurrent binge eating when their starvation and emotional triggers have been addressed. In our experience, patients may easily recognize certain cues that evoke binge cravings (e.g., presence of large quantity of rich, palatable foods) but fail to recognize less obvious cues (e.g., distressing emotions that accompany interpersonal interactions).

Once you have identified the stimuli that appear to cue your patient's binge-eating cravings, cue exposure follows a similar course to most other forms of exposure-based therapy. You may elect to create a timeline or plan for how your patient will confront their cues and prevent binge eating in a progressive fashion

(i.e., cue exposure hierarchy). During cue exposure, you guide your patient in engaging with the cue stimuli and carefully attending to the cravings and associated thoughts and sensations that are evoked. For cue exposure activities that involve direct interaction with food, you can encourage your patient to “experiment” with different sensory interactions with the food in order to titrate the intensity of cued cravings. To illustrate, if Isabela reported surprisingly low cravings while looking at or touching a peanut butter cookie, she should be encouraged to smell and/or taste the cookie in order to elicit stronger cravings (Becker et al., 2019).

There are some important considerations to be mindful of when implementing cue exposure. First, although it is important to begin cue exposure as early in treatment as possible, you want to first ensure that your patient is eating enough to meet their energy needs consistently and not physiologically “setting themselves up” to binge due to self-starvation. Also, given that many patients describe the presence of a clinician as a “safety signal” preventing them from bingeing (and thereby disrupting inhibitory learning), you will need to speak with your patients about this and negotiate ways to remove your presence from the cue exposure context (e.g., speaking with your patient via phone periodically during cue exposure from a different location; Jansen et al., 1992). Lastly, as with many other forms of exposure therapy, the context for cue exposure is critical. Your patient will experience maximal benefit as a function of efforts made to closely approximate the patient’s “real-life” binge-eating cues as much as possible (Jansen et al., 2016). Consider reasonable measures such as accompanying your patient to their typical binge locations (e.g., food courts, fast-food drive-thru lanes) and encouraging your patient to wear their typical “binge clothing” to your session.

Body Image Exposure

As demonstrated in the case of Isabela, anxiety-related body image concerns are often (but not always) central to both the onset and maintenance of EDs. As a result, comprehensive treatment of EDs requires you to address body image concerns when they are present. Both avoidance (e.g., wearing baggy clothing, restricting social interactions, eschewing settings where revealing clothing is the norm such as gyms, beaches, and pools) and safety behaviors (mirror checking, body checking) are commonly used by patients to manage body image-related anxiety and can be targeted with exposure.

Key Message

While the specific forms of mirror/body exposure show limited difference in outcomes, they are all powerful. It remains vital to use these approaches to overcome body avoidance, even if the therapist is anxious about doing so.

For instance, although Isabela's dance aspirations were sufficient to keep her attending dance classes and wearing the required clothing, Isabela stopped going to the pool at her gym even though she greatly enjoyed swimming. She also wore baggy clothing whenever possible so she would not have to feel the clothes "pushing at my fat." As noted above, Isabela weighed herself multiple times per day to reassure herself that she had not gained weight. She also regularly pinched the fat near her waist to determine if it was getting smaller or bigger.

Isabela's body image exposure began with mirror exposure. Like many patients, Isabela largely avoided looking at mirrors. The exceptions to this avoidance included quickly checking her appearance before leaving the house or studying the amount of fat around her abdomen to see if it had grown (a checking rather than avoidance behavior). Although mirror exposure is the best studied form of body image exposure, a number of clinical questions remain about how it is best delivered (see Becker et al. [2019] and Griffen et al. [2018] for more detailed discussion). For instance, multiple forms of mirror exposure exist, yet relatively little research indicates what form of exposure will be most effective for a given patient. In addition, it is unclear whether it is better to stay with one form of mirror exposure or to use different forms of mirror exposure with a single patient. From an inhibitory learning perspective, however, mixing things up makes sense.

Isabela's therapist had a choice between pure mirror exposure, guided nonjudgmental mirror exposure (sometimes referred to as mindfulness-based mirror exposure), and cognitive dissonance-based mirror exposure. In pure mirror exposure, patients are encouraged to practice acceptance of their anxiety and discomfort while verbalizing the thoughts and emotions they are experiencing – this form of mirror exposure probably fits best with the inhibitory learning model. In nonjudgmental mirror exposure, patients are encouraged to systematically describe their body parts in as objective and nonjudgmental a manner as possible. Instructions may include asking patients to describe their bodies in way that would allow someone to draw them based on the description. Cognitive dissonance-based mirror exposure, which has been most widely used in prevention programs for body image concerns, consists of having your patient stand in front of a mirror while listing positive things they like about their body (including at least some appearance features) and their personality.

Because pure mirror exposure was the most consistent approach with Isabela's previous exposure experiences in treatment, Isabela's therapist opted for this approach to start in session. Per a previous agreement, Isabela came to session wearing revealing workout attire that she covered with a large sweatshirt. When it came time to start mirror exposure, Isabela removed her sweatshirt, stood in front of the mirror, and let herself experience the anxiety of seeing herself in the mirror. Isabela's fear expectancy was that she would burst into tears, run out of the office, throw up in disgust at her body, and "make a fool of herself" in front of the therapist and anyone who happened to be in the waiting room when she ran out of session. Although Isabela teared up during exposure, she discovered that she was able to tolerate seeing her body without losing control. She also experienced some habituation during the session, noting that her distress decreased over time even though she still did not like the way she looked.

Other forms of exposure can also be used to address body image-related concerns. In Isabela's case, her therapist made ample use of *in vivo* exposure by encouraging her to return to avoided activities like swimming. In this example, Isabela was able to test out her fear expectancy that everyone at the pool would shame her for being too fat. It is important to note that Isabela had a moderately lean body, albeit a body that was considerably larger and more voluptuous than her older sisters' extremely petite bodies. As a result, Isabela's therapist felt confident that Isabela's harm expectancy would not come to pass. When working with patients living in higher-weight bodies, however, you will not be able to make such an assumption because weight stigma is very prominent in many cultures. As a result, patients in higher-weight bodies often have past experiences with very real weight shaming, and their expectancies of future shaming may not be unreasonable. In such cases, you will want to help shape the expectancy around your patient's ability to cope with the rude behavior from other people. In some cases, adding some assertiveness training may be appropriate, and you might find it helpful to consult with the social anxiety disorder literature on social mishap exposure (e.g., Fang et al., 2013). It is important to note that clinicians are sometimes worried about using body image exposure with patients who have higher-weight bodies; exposure (including mirror exposure), however, remains a very viable strategy to help patients with higher-weight bodies find increased tolerance of body image concerns.

Isabela's therapist also made use of more experimental forms of body image exposure, including imaginal exposure to address lingering fear of hypothetical fatness that persisted even after weight exposure (see Levinson et al., 2014, 2020). In addition, because Isabela reported that wearing revealing clothing was much more distressing if her stomach felt full, her therapist added an interoceptive component. For instance, Isabela and her therapist designed an exposure homework during which Isabela repeatedly went to the gym wearing tight yoga clothes and just stretched (as opposed to engaging in activity that would reduce her body image anxiety) after eating a relatively large meal and drinking several glasses of water that exacerbated sensations of stomach fullness (see Boswell et al., 2015 for additional discussion).

Conclusion

EDs include a substantial anxiety component, which is readily addressed using exposure therapy techniques. However, exposure is often not used by clinicians working with EDs, sometimes due to reluctance and sometimes due to the lack of clear detailing of exposure therapy in existing protocols. A further significant impediment in the use of exposure for EDs has been the relative lack of modern conceptualizations of exposure within the ED literature. This is increasingly being addressed by ED scholars and clinicians. Exposure strategies are optimized when therapists and patients understand the rationale underlying exposure and design

exposure tasks based on a careful functional analysis of ED behaviors, so that patients have the optimal chance of maximizing inhibitory safety learning.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders, fifth edition*. Arlington.
- Arnow, B., Kenardy, J., & Agras, W. (1995). The emotional eating scale: The development of a measure to assess coping with negative affect by eating. *International Journal of Eating Disorders, 18*, 79–90.
- Becker, C. B., Farrell, N. R., & Waller, G. (2019). *Exposure therapy for eating disorders*. Oxford University Press.
- Birmingham, C., & Treasure, J. (2010). *Medical Management of Anorexia Nervosa* (2nd ed.). Cambridge University Press.
- Bongers, P., & Jansen, A. (2017). Emotional eating and Pavlovian learning: Evidence for conditioned appetitive responding to negative emotional states. *Cognition and Emotion, 31*, 284–297.
- Boswell, J. F., Anderson, L. M., & Anderson, D. A. (2015). Integration of interoceptive exposure in eating disorder treatment. *Clinical Psychology: Science and Practice, 22*, 194–210.
- Bulik, C. M., Sullivan, P. F., Carter, F. A., McIntosh, V. V., & Joyce, P. R. (1998). The role of exposure with response prevention in the cognitive behavioral therapy for bulimia nervosa. *Psychological Medicine, 28*, 611–623.
- Butler, R. M., & Heimberg, R. G. (2020). Exposure therapy for eating disorders: A systematic review. *Clinical Psychology Review, 78*, 101851.
- Cowdrey, N. D. (2014). *Perspectives on eating disorders: Attitudes to sufferers, and patient experiences of what goes on in cognitive behavioural therapy*. Doctoral dissertation, University of Sheffield, Sheffield.
- Deacon, B. J., Farrell, N. R., Kemp, J. J., Dixon, L. J., Sy, J. T., Zhang, A. R., & McGrath, P. B. (2013). Assessing therapist reservations about exposure therapy for anxiety disorders: The Therapist Beliefs about Exposure Scale. *Journal of Anxiety Disorders, 27*, 772–780.
- Dumont, E., Jansen, A., Kroes, D., de Haan, E., & Mulkens, S. (2019). A new cognitive behavior therapy for adolescents with avoidant/restrictive food intake disorder in a day treatment setting: A clinical case series. *International Journal of Eating Disorders, 52*, 447–458.
- Fairburn, C. G. (2008). *Cognitive behavior therapy and eating disorders*. Guilford.
- Fang, A., Sawyer, A. T., Asnaani, A., & Hofmann, S. G. (2013). Social mishap exposures for social anxiety disorder: An important treatment ingredient. *Cognitive and Behavioral Practice, 20*, 213–220.
- Farrell, N. R., Bowie, O. R., Cimperman, M. M., Smith, B. E. R., Riemann, B. C., & Levinson, C. A. (2019a). Exploring the preliminary effectiveness and acceptability of food-based exposure therapy for eating disorders: A case series of adult inpatients. *Journal of Experimental Psychopathology, 10*, 1–9.
- Farrell, N. R., Brossof, L. C., Vanzhula, I. A., Christian, C., Bowie, O. R., & Levinson, C. A. (2019b). Exploring mechanisms of action in exposure-based cognitive behavioral therapy for eating disorders: The role of eating-related fears and body-related safety behaviors. *Behavior Therapy, 50*, 1125–1135.
- Forbush, K. T., Richardson, J., & Bohrer, B. K. (2015). Clinicians' practices regarding blind versus open weighing among patients with eating disorders. *International Journal of Eating Disorders, 48*, 905–911.
- Graves, T. A., Tabri, N., Thompson-Brenner, H., Franko, D. L., Eddy, K. T., Bourion-Bedes, S., Brown, A., Constantino, M. J., Flückiger, C., Forsberg, S., Hildebrandt, T., Isserlin, L., Couturier, J., Paulsson Karlsson, G., Mander, J., Teufel, M., Mitchell, J. E., Crosby, R. D.,

- Prestano, C., ... Thomas, J. J. (2017). A meta-analysis of the relation between therapeutic alliance and treatment outcome in eating disorders. *International Journal of Eating Disorders*, *50*, 323–340.
- Griffen, T. C., Naumann, E., & Hildebrandt, T. (2018). Mirror exposure therapy for body image disturbances and eating disorders: A review. *Clinical Psychology Review*, *65*, 163–174.
- Hilbert, A., & Tuschen-Caffier, B. (2004). Body image interventions in cognitive-behavioural therapy of binge-eating disorder: A component analysis. *Behaviour Research and Therapy*, *42*, 1325–1339.
- Hildebrandt, T., Loeb, K., Troupe, S., & Delinsky, S. (2012). Adjunctive mirror exposure for eating disorders: A randomized controlled pilot study. *Behaviour Research and Therapy*, *50*, 797–804.
- Jansen, A., Broekmate, J., & Heymans, M. (1992). Cue-exposure vs self-control in the treatment of binge eating: A pilot study. *Behaviour Research and Therapy*, *30*, 235–241.
- Jansen, A., Schyns, G., Bongers, P., & van den Akker, K. (2016). From lab to clinic: Extinction of cued cravings to reduce overeating. *Physiology & Behavior*, *162*, 174–180.
- Jansen, A., & Van den Hout, M. (1991). On being led into temptation: “Counterregulation” of dieters after smelling a “preload”. *Addictive Behaviors*, *16*, 247–253.
- Jansen, A., Van den Hout, M. A., De Loof, C., Zandbergen, J., & Griez, E. (1989). A case of bulimia successfully treated by cue exposure. *Journal of Behavior Therapy and Experimental Psychiatry*, *20*, 327–332.
- Kennedy, S. H., Katz, R., Neitzert, C. S., Ralevski, E., & Mendlowitz, S. (1995). Exposure with response prevention treatment of anorexia nervosa-bulimic subtype and bulimia nervosa. *Behaviour Research and Therapy*, *33*, 685–689.
- Koskina, A., Campbell, I. C., & Schmidt, U. (2013). Exposure therapy in eating disorders revisited. *Neuroscience & Biobehavioral Reviews*, *37*, 193–208.
- Levinson, C. A., & Byrne, M. (2015). The fear of food measure: A novel measure for use in exposure therapy for eating disorders. *International Journal of Eating Disorders*, *48*, 271–283.
- Levinson, C. A., Christian, C., Ram, S. S., Vanzhula, I., Brosol, L. C., Michelson, L. P., & Williams, B. M. (2020). Eating disorder symptoms and core eating disorder fears decrease during online imaginal exposure therapy for eating disorders. *Journal of Affective Disorders*, *276*, 585–591.
- Levinson, C. A., Rapp, J., & Riley, E. N. (2014). Addressing the fear of fat: Extending imaginal exposure therapy for anxiety disorders to anorexia nervosa. *Eating and Weight Disorders*, *19*, 521–524.
- Linehan, M. M. (1993). *Cognitive-behavioral treatment of borderline personality disorder*. Guilford Publications.
- Lock, J., & Le Grange, D. (2015). *Treatment manual for anorexia nervosa: A family-based approach*. Guilford Publications.
- Martinez-Mallén, E., Castro-Fornieles, J., Lázaro, L., Moreno, E., Morer, A., Font, E., Julian, J., Montserrat, V., & Toro, J. (2007). Cue exposure in the treatment of resistant adolescent bulimia nervosa. *International Journal of Eating Disorders*, *40*, 596–601.
- Mavissakalian, M. (1982). Anorexia nervosa treated with response prevention and prolonged exposure. *Behaviour Research and Therapy*, *20*, 27–31.
- McIntosh, V. V. W., Carter, F. A., Bulik, C. M., Frampton, C. M. A., & Joyce, P. R. (2011). Five-year outcome of cognitive behavioral therapy and exposure with response prevention for bulimia nervosa. *Psychological Medicine*, *41*, 1061–1071.
- Mulkens, S., de Vos, C., de Graaff, A., & Waller, G. (2018). To deliver or not to deliver cognitive behavioral therapy for eating disorders: Replication and extension of our understanding of why therapists fail to do what they should do. *Behaviour Research and Therapy*, *106*, 57–63.
- Olatunji, B. O., Deacon, B. J., & Abramowitz, J. S. (2009). The cruellest cure? Ethical issues in the implementation of exposure-based treatments. *Cognitive and Behavioral Practice*, *16*, 172–180.
- Pallister, E., & Waller, G. (2008). Anxiety and eating disorders: Understanding the overlap. *Clinical Psychology Review*, *28*, 366–386.

- Rosen, J. C., & Leitenberg, H. (1982). Bulimia nervosa: Treatment with exposure and response prevention. *Behavior Therapy, 13*, 117–124.
- Schaumberg, K., Reilly, E. E., Gorrell, S., Levinson, C. A., Farrell, N. R., Brown, T. A., Smith, K. M., Schaefer, L. M., Essayli, J. H., Haynos, A. F., & Anderson, L. A. (2021). Conceptualizing eating disorder psychopathology using an anxiety disorders framework: Evidence and implications for exposure-based clinical research. *Clinical Psychology Review, 83*, 101952.
- Simpson, H. B., Wetterneck, C. T., Cahill, S. P., Steinglass, J. E., Franklin, M. E., Leonard, R. C., Weltzin, T. E., & Riemann, B. C. (2013). Treatment of obsessive-compulsive disorder complicated by comorbid eating disorders. *Cognitive Behavior Therapy, 42*, 64–76.
- Steiger, H., Gauvin, L., Jabalpurwala, S., Séguin, J. R., & Stotland, S. (1999). Hypersensitivity to social interactions in bulimic syndromes: Relationship to binge eating. *Journal of Consulting and Clinical Psychology, 67*, 765–775.
- Steinglass, J., Albano, A. M., Simpson, H. B., Carpenter, K., Schebendach, J., & Attia, E. (2012). Fear of food as a treatment target: Exposure and response prevention for anorexia nervosa in an open series. *International Journal of Eating Disorders, 45*, 615–621.
- Stice, E., Davis, K., Miller, N. P., & Marti, C. N. (2008). Fasting increases risk for onset of binge eating and bulimic pathology: A 5-year prospective study. *Journal of Abnormal Psychology, 117*, 941–946.
- Swinbourne, J. M., & Touyz, S. W. (2007). The co-morbidity of eating disorders and anxiety disorders: A review. *European Eating Disorders Review, 15*, 253–274.
- Tatham, M., Hewitt, C., & Waller, G. (in press). Outcomes of brief and enhanced cognitive-behavioural therapy for adults with non-underweight eating disorders: A non-randomized comparison. *European Eating Disorders Review*. <https://doi.org/10.1002/erv.2765>
- Toro, J., Cervera, M., Feliu, M. H., Garriga, N., Jou, M., Martinez, E., & Toro, E. (2003). Cue exposure in the treatment of resistant bulimia nervosa. *International Journal of Eating Disorders, 34*, 227–234.
- Trentowska, M., Svaldi, J., Blechert, J., & Tuschen-Caffier, B. (2017). Does habituation really happen? Investigation of psycho-biological responses to body exposure in bulimia nervosa. *Behaviour Research and Therapy, 90*, 111–122.
- Udo, T., Bitley, S., & Grilo, C. M. (2019). Suicide attempts in US adults with lifetime DSM-5 eating disorders. *BMC Medicine, 17*, 120.
- Vall, E., & Wade, T. D. (2015). Predictors of treatment outcome in individuals with eating disorders: A systematic review and meta-analysis. *International Journal of Eating Disorders, 48*, 946–971.
- Vocks, S., Legenbauer, T., Wächter, A., Wucherer, M., & Kosfelder, J. (2007). What happens in the course of body exposure? Emotional, cognitive, and physiological reactions to mirror confrontation in eating disorders. *Journal of Psychosomatic Research, 62*, 231–239.
- Waller, G., & Mountford, V. A. (2015). Weighing patients within cognitive-behavioural therapy for eating disorders: How, when, and why. *Behaviour Research and Therapy, 70*, 1–10.
- Waller, G., Turner, H. M., Tatham, M., Mountford, V. A., & Wade, T. D. (2019). *Brief cognitive behavioural therapy for non-underweight patients: CBT-T for eating disorders*. Routledge.

Chapter 16

Exposure Exercises for Overeating, Binge Eating, and Obesity



Kerri N. Boutelle, Dawn M. Eichen, and Nicole E. Virzi

Abstract This chapter explores applying exposure exercises to the treatment of overeating and binge eating to reduce obesity. First, we describe current treatments for overeating, binge eating, and obesity and describe their shortcomings. Then we describe the Regulation of Cues (ROC) program which incorporates exposure exercises to help overcome this gap. We then provide guidelines on how to incorporate exposure exercises into treatment. Initially, we detail psychoeducation and content that should be provided to patients prior to conducting any exposure exercises followed by the guidelines for these exposure exercises. Next, we describe the three main parts of the sessions with exposure exercises: pre-processing, exposure practice, and post-processing. Then we provide guidance for continuing exposure exercises and at-home practice for patients. Lastly, we conclude with variations of incorporating exposure exercises and common challenges with utilizing exposure exercises in treatment.

Keywords Overeating · Exposure · Obesity · Treatment · Binge eating

The objective of this chapter is to orient you, the clinician, to the use of exposure exercises for the treatment of overeating, binge eating, and obesity. The goals of the chapter include the following: (1) Describe the current treatments for overeating, binge eating, and obesity and their shortcomings; (2) describe the Regulation of Cues (ROC) program which incorporates exposure exercises to improve current treatments; and (3) provide guidelines on how to incorporate exposure exercises into treatment. The guidelines on exposure exercises include details regarding the psychoeducation and content needed prior to conducting any exposure exercises, the three main parts of the exposure exercise, guidance for at-home practice, and

K. N. Boutelle (✉) · D. M. Eichen · N. E. Virzi
University of California San Diego, San Diego, CA, USA
e-mail: kboutelle@health.ucsd.edu; deichen@ucsd.edu; Nvirzi@ucsd.edu

© The Author(s), under exclusive license to Springer Nature
Switzerland AG 2022

J. A. J. Smits et al. (eds.), *Clinical Guide to Exposure Therapy*,
https://doi.org/10.1007/978-3-031-04927-9_16

variations of incorporating exposure exercises and common challenges with utilization of exposure exercises in treatment.

Rationale for Exposure Exercises in the Treatment of Overeating, Binge Eating, and Obesity

Eating past nutritional needs, including overeating and binge eating, is one of the most proximal causes of obesity rates (Swinburn et al., 2009). Overweight or obesity affects 71% of the adults and 33% of children in the USA (Hales et al., 2017). Individuals with overweight or obesity are at risk for significant health problems, including cardiovascular diseases, diabetes, musculoskeletal disorders, and some cancers (World Health Organization, 2020). Societal advances have created an “obesogenic” environment, and calorically dense foods are easily available, highly variable, tasty, relatively inexpensive, and portable which makes it easy to overeat. Binge eating also involves overeating; however, the definition of binge eating includes both overeating and feelings of loss of control. Binge eating disorder (BED), for which binge eating is the key component, is the most prevalent eating disorder and affects 2.6% of the population (American Psychiatric Association, 2013), and many of these individuals have overweight or obesity (Kessler et al., 2013).

Behavioral weight loss (BWL) programs for adults and family-based treatment (FBT) programs for children are the gold standard treatments for adults and children with overweight or obesity. These programs include nutrition and physical activity education and behavior therapy techniques, including self-monitoring, stimulus control, goal setting, managing high-risk situations, meal planning, slowing eating, problem-solving, social support, cognitive restructuring, and lapse and relapse prevention skills. The programs for children also include parenting and parent-management techniques. However, trials in adults show that weight loss is modest to moderate with a significant rebound once the intervention ends (Diabetes Prevention Program (DPP) Research Group, 2002; Look AHEAD Research Group, 2007). For children who participate in weight loss programs, 2/3 of children do not respond in the long term (Epstein et al., 1994).

The empirically supported treatment for BED is cognitive behavioral therapy (CBT) (NICE, 2004; Yager et al., 2012). CBT focuses on disrupting the restraint/binge cycle by improving maladaptive thoughts surrounding eating, shape, and weight and encouraging healthy weight control behaviors. Although CBT is effective in treating individuals with BED (Brownley et al., 2016), it fails to produce significant weight loss (Brownley et al., 2016; Grilo et al., 2011) raising questions about whether eating behavior actually changes.

These therapies for weight loss and binge eating assume that individuals can access and consciously control cognitions and behaviors that maintain overeating or binge eating. However, dual process theories (Strack & Deutsch, 2004) suggest that

implicit processes may also exert control over behavior, even when the behavior is not consistent with long-term goals. Addressing implicit processes could enhance treatments for overeating and binge eating which ultimately could improve weight loss and/or maintenance.

Interestingly, not everyone who lives in the current obesogenic environment has overweight or obesity, suggesting that some individuals have a susceptibility to overeat when exposed to palatable food while others do not. The behavioral susceptibility theory (BST) (Carnell et al., 2013; Carnell & Wardle, 2008; Llewellyn & Fildes, 2017; Llewellyn & Wardle, 2015) proposes that genetically determined appetitive traits interact with the environment and lead to overeating and weight gain in individuals with specific risk factors. The BST focuses on two important aspects of appetite, eating onset driven by cues in the environment (food cue responsiveness (FR)) and eating offset, driven by the ability to stop eating due to satiety (satiety responsiveness (SR)). Data suggest that both FR (Carnell et al., 2008; Velders et al., 2012) and SR (Carnell et al., 2008; Llewellyn et al., 2010; Wardle et al., 2008) are highly heritable. Furthermore, the BST states that genes interact with the obesogenic food environment to influence both FR and SR in susceptible individuals.

Beyond genetic susceptibility (Llewellyn & Fildes, 2017), overeating develops mainly through basic learning processes, memory, and neural changes (Berridge et al., 2010; Boutelle & Bouton, 2015; Boutelle et al., 2020). In today's obesogenic food environment, there are a plethora of opportunities to overeat through associations of cues in the environment with food, and over time, these cues can trigger FR. Through Pavlovian conditioning, these food cues become directly associated with food intake and can elicit arousal, cravings, expectancies, thoughts, urges, and motivation to eat (Watson et al., 2014). There are also opportunities for operant conditioning, where the association of food seeking actions or eating is paired with the reinforcing effects of eating (Bouton, 2011). Finally, research shows that a Western diet can have deleterious effects on cognitive processes and neural substrates which can drive overeating and weight gain (Davidson et al., 2019).

Exposure Exercises Can be Used to Address Food Cue Responsiveness

Exposure exercises can be used to address FR and ultimately overeating at an implicit level. Exposure is based on extinction learning which suggests that exposing individuals to the cue (i.e., brownie) without eating over time with repetition results in reduced urges to eat (i.e., cravings). Extinction learning theory focuses on extinction and suggests that new learning replaces and competes with old learning. However, we now understand that this old learning cannot be replaced and is subject to renewal, including spontaneous recovery and reinstatement. Inhibitory learning theory (Craske et al., 2014; Craske et al., 2008) states that extinction learning

modifies memory structures that underlie overeating, and new associations between the cue and cravings inhibit previously learned associations rather than replace them. Inhibitory learning theory focuses on a number of mechanisms to strengthen inhibitory learning, including violation of expectancies, reducing distraction, generalizing inhibitory associations, deepening extinction, physical activity, occasional reinforced extinction, affect labeling, increasing variety of stimuli, increasing context in which exposure exercises occur, and retrieval cues (Craske et al., 2018; Weisman & Rodebaugh, 2018).

Importantly, there are several theoretical challenges associated specifically with food exposure exercises. Food is ubiquitous, and you cannot live without eating. Thus, the goal is learning to moderate behavior. Additionally, there are multiple foods in the same category (think about how many different cheese pizzas there are), and developing inhibitory learning to one cheese pizza may not translate to another brand. Additionally, overeating occurs in a multitude of contexts, including different locations (i.e., restaurants, sports events, their kitchen, their car) and different times of day, in conjunction with different emotions, which suggests that exposure learning may not translate to other contexts.

Novel Treatment Incorporating Exposure Exercises: The Regulation of Cues (ROC) Program

We have developed a new model based on the BST for the treatment of obesity named Regulation of Cues (ROC). The ROC program targets both FR and SR and uses psychoeducation and an experiential learning approach to promote proactive management of these appetitive traits that influence eating behavior. For the ROC program, we developed specific protocols for doing exposure exercises with food for individuals who overeat. Our pilot data suggest that the ROC program is feasible and acceptable and shows initial efficacy in binge eating and weight loss among adults who binge eat (Boutelle et al., 2017) as well as among children with overweight and obesity (Boutelle et al., 2011, 2014). We have recently conducted a large efficacy study with adults, which shows that the ROC model has promise for weight loss (under review). Emerging studies have now shown that exposure therapy can be a successful method for reducing cravings, physiological arousal, overeating, and binge eating (Schyns et al., 2020; van den Akker et al., 2018). Therefore, this treatment modality could help your patient gain control over their eating and, by extension, assist in their weight management efforts. Based on our experiences to date, the steps to conducting exposure therapy to decrease overeating are described below.

Psychoeducation Session Prior to Exposure Exercises in Session

Prior to beginning the exposure exercises in sessions, it is critical to hold a psychoeducation session with your patient. The purpose of this session is to provide a rationale for conducting exposure therapy, an overview of what the exposure exercises will entail, and guidelines for your patient to follow before, during, and after each session to both promote and maintain the efficacy of the treatment. This session also serves the crucial function of preparing your patient for what to expect by informing them of the wide variety of thoughts and feelings they may experience as a result of engaging in food exposure practice (see Table 16.1 for a list of topics to cover in a psychoeducation session).

It helps to begin your explanation of the rationale behind this type of therapy. You can tell your patient that there are strong neurobiological data that suggest that individuals who overeat or binge eat have brains that are triggered to overeat. This is why some individuals do not overeat in this obesogenic food environment. You can also discuss the behavioral susceptibility theory. We like to talk to our patients about how their brains are tricking them into overeating when their body doesn't physically need it. This is important to relieve any guilt, shame, or feelings of responsibility for their current situation. We point out that it is not their fault.

Next, you should provide a general overview of exposure therapy. Of note, you want to convey to them that it is an evidence-based modality that has been shown to help people tolerate cravings and discomfort by teaching them to resist acting on their urges to overeat. Though your patient may not suffer from anxiety, they likely

Table 16.1 Checklist for psychoeducation session

Rationale for using exposure exercises	Strong neurobiological data that shows that individuals who overeat or binge eat have brains that are set up to overeat and binge eat in today's environment
Review behavioral susceptibility theory	People are born with certain appetitive traits. Some people are more likely to eat when they are triggered by food rather than hunger. Focus on reducing guilt
Describe two types of hunger and describe how they feel	Stomach hunger (physical hunger) and head hunger (psychological hunger/cravings)
Overview of exposure therapy for overeating and binge eating	Goal is to train client to decrease overeating and binge eating We do this by teaching them how to inhibit their urges to overeat and to tolerate cravings
Challenges with exposure	Describe exposures – Number of foods – Hold, smell, taste, throw away
	May feel physiological urges including salivation and increased heart rate
Procedural guidelines	May feel psychological urges including craving, anxiety-type feelings, stress
	Conduct when not physically hungry; pick tough foods to do in session; don't eat foods for 24 hours before or after

know what it's like to feel overwhelmed with temptation whenever they are in the presence of certain irresistible foods. Many of our patients state that this can feel similar to anxiety and is often accompanied by strong and sometimes disorienting compulsions to consume these foods to reduce their feelings of temptation, even if they are not physically hungry.

It is important to provide a description of the two types of hunger: "stomach hunger" and "head hunger." Stomach hunger refers to physical hunger which originates in the stomach and usually occurs when an individual has gone for a minimum of 2–3 hours without eating anything. Stomach hunger is often accompanied by various physical symptoms that can indicate the need for food (e.g., a growling sensation in the stomach, light-headedness, fatigue) and dissipates shortly after food has been consumed. Stomach hunger can be relieved by eating a number of different foods. Head hunger refers to psychological hunger and occurs when your patient is not physically hungry. Head hunger often manifests as a craving, which describes a sudden and intense desire for food. In contrast to true hunger, which involves an interest in and need for food in general, cravings are usually for specific foods, such as chocolate or pizza. Head hunger can also be habitual eating, and most importantly, head hunger refers to eating when not physically hungry. Usually, patients seeking this type of treatment will express that they know this head hunger all too well, though they might not have previously had an official term to describe it.

After introducing the vernacular that will be used during treatment, you can now discuss the overall aim of the treatment, which is to use a series of in-session activities and exercises to help train the patient to reduce the amount of eating and overeating they do in response to head hunger in real-life settings. These exercises will consist of food exposure practice during which they will engage deeply with a variety of different foods by holding, looking at, smelling, tasting, and thinking about the food (or imagining themselves doing so). It is important to conduct these exposure exercises when your patient is not physically hungry, as overeating beyond nutritional needs is the target. During the exposure exercises, patients will be encouraged to pay attention to any thoughts, feelings, and physiological responses that arise and will rate the strength of their cravings for the food on a 5-point Likert scale at regular 30-second intervals. After the exposure practice, patients will throw the remainder of the food away to prevent themselves from eating any more of it. You and your patient will then process these exposure exercises together. These exposure exercises will be used to learn that the urges and cravings don't need to be associated with eating. Strengthening your patient's ability to resist, or inhibit, eating when they are not experiencing true hunger will bolster their ability to stop themselves from overeating in their daily life.

It is paramount to inform your patient that these exposure exercises can be particularly challenging, as they are specifically designed to elicit the type of physiological activation pattern that accompanies intense food craving (e.g., salivation, increased heart rate) and psychological activation (cravings, anxiety-type feelings), and that some individuals may become distressed during the activation, especially when they know they will only be able to take two bites of the food. Therefore, stress to your patient that they should be prepared to experience a wide array of both

physical and emotional reactions during and after the exposure practice. In our clinic, we often share with patients that we have seen food exposure exercises move even the “toughest” of individuals (i.e., military veterans) to tears and to pull food out of the garbage. We have now done these exposure exercises with hundreds of individuals, and we assure them that although it may be uncomfortable, they too can learn to manage it.

Text Box 1: Sample Introduction of Exposure Exercise Rationale

As we have explained, the propensity to overeat is biological. It comes from your brain interacting with the current environment. Research shows that people with the propensity to overeat react differently in the presence of food. It is not your fault that you react this way – this is how your brain reacts! You and many other people like you experience increased urges to eat in the presence of these foods and food cues, sometimes without even being aware of this – and then you might be tricked into overeating even if you are not hungry. During the exposure exercises, we will purposefully expose you to these foods when you are not hungry so that you can recognize and experience these tough urges and cravings. We want to make it as hard as possible in session while you have my support. This may be very difficult – you might feel very uncomfortable, you may experience a whole range of emotions, but this is all part of the process. We want you to learn that you can experience these tough cravings and emotions and handle it! You will learn to tolerate the discomfort of being around these foods and not overeating them. This will help you learn that you can resist overeating, and with more practice it will hopefully become easier to resist these same urges in the real world.

Food Selection

Food selection is a critical process in the exposure exercises, as individuals crave very specific foods. Therefore, patients should generate their lists according to their own experiences and preferences. Ask your patient to generate a list of foods that they experience as being particularly triggering or difficult to resist, especially when they are not physically hungry. Patients will be asked to bring in these food items themselves in order to cater to these specific preferences. Please note there are certain foods that are not as enticing when they are not hot or rewarmed in a microwave (such as French fries), so avoid these foods for in-session exposure exercises.

Individuals who have overeating or binge eating habits can often identify a number of different foods they find to be being particularly triggering or harder to resist than others. Although older exposure protocols included a graded hierarchy of stimuli from easiest to hardest, inhibitory learning theory suggests variety in presentation is an important component. It is best to do exposure exercises to multiple foods during your sessions. We have done this with different foods sequentially, while

others have done it in a buffet-type setting. You should invite your patients to bring in their most triggering or highly craved food items for in-session exposure practice, and you can tell them that you want them to experience their most difficult cravings when they have support in these sessions from you. We encourage our patients to really challenge themselves with us, so that events outside of the clinic seem easier.

Finally, your patient should bring in an amount of each of the food that is sufficiently large enough to invoke a craving. For instance, an individual who has a difficult time resisting Doritos should bring in a sizeable bag of the chips, instead of an individual chip, as the bag mimics a real-life situation in which the individual is at risk for overeating or binge eating. In our experience, some patients will be tempted to bring in less in order to avoid perceived food waste (see challenging situations). We encourage these individuals to bring in a portion that will in fact increase their cravings. Patients may also struggle with having their exposure foods at home. One tip is to pick up the food items immediately prior to session if they can. If this is not possible, we offer to let them drop off their foods with us for safekeeping immediately after purchasing them in order to deter this possibility.

Procedural Guidelines

During the psychoeducation session, it's essential to inform your patient of the guidelines that must be followed both before and after exposure exercises in order to maximize the inhibitory learning that takes place during sessions. First and foremost, in order to serve the larger treatment goal of teaching patients how to resist eating when they are not experiencing true hunger, exposure sessions should only be conducted when your patient is not physically hungry. Any diversion from this prerequisite runs the risk of inadvertently teaching patients the maladaptive and dangerously problematic behavior of resisting food when their body legitimately needs it. To assure compliance with this guideline, we encourage participants to consume a meal or snack between 30 minutes and 1 hour before the exposure exercises. If patients arrive to the session feeling hungry, we recommend you provide a snack, which you should have on hand (i.e., granola bars, pretzels).

In addition, optimally, exposure exercises should be scheduled at times during which patients are most susceptible to overeat, binge eat, and experience cravings, which tend to be the afternoon and/or evenings. For instance, it does not make sense to conduct an exposure exercise with ice cream at breakfast or lunch, when your patient typically eats ice cream as a dessert after dinner. In order to prevent unnecessary delays and ensure a smooth progression through session protocols, patients should come to sessions with their chosen foods prepared and ready to eat.

If your clinic space does not have a microwave or freezer, warn patients that they will need to both preheat cooked foods or pre-cool/freezer items meant to be served chilled and transport them to session in temperature-preserving containers. Combinations of food items such as sandwiches should be prepared ahead of time and arrive ready to eat. Patients should refrain from eating the exposure exercises

food for 24 hours prior to the exposure exercise to increase the chances that their craving will be high during the exercise since the patient hasn't recently eaten it. Moreover, in order to solidify the learning that takes place during the exposure exercises, we tell our patients to refrain from eating the exposure foods for 24 hours after the session. We chose 24 hours as it is practical for patients to avoid a food for at least 24 hours. Furthermore, we recommend that your patient does not consume any food for 1 hour after the exposure exercises. We recommend this in order to allow intentionally provoked cravings to dissipate entirely on their own following the session and ensure they did not satisfy their urge by substituting another food. Together, these two rules help create increased self-efficacy to resist.

Patients typically ask if they are required to bring a new food item to each exposure exercise or if they are allowed to bring in some items more than once. Some particularly irresistible food items can benefit from multiple exposure exercise sessions and can therefore be used more than once. However, since we want to vary the stimuli as much as possible, we encourage patients to bring in different and multiple foods each session. The goal is to utilize multiple stimuli as a means to provoke a challenging emotion (urge, craving, anxiety, etc.) and learn to respond differently to it. We want to induce the challenging urges/cravings and prevent the patient's previous response of overeating/binge eating. It is important for the patient to learn that they can face strong urges/cravings and change their response (not overeat). This will also help to increase the likelihood of generalizability of resisting in the face of tempting foods. Too many repeated exposure exercises to one food might just induce habituation to that one food rather than teach the patient to tolerate the difficult urges/cravings.

Before proceeding with treatment sessions, check to see if your patient has any questions about the treatment or any of the information you have provided (usually, there will be quite a few!). After answering all questions, ensure that you confirm your patient's understanding of what it is they will be doing during sessions, the purpose of these activities, and the overall aim of the treatment that they are about to begin.

Exposure Exercise Sessions

There are three distinct sections of each exposure session – (1) pre-processing; (2) exposure exercises; and (3) post-processing. Pre- and post-processing are essential to enhance learning and for breaking expectations and should be included with every single exposure exercise conducted. You should have pre- and post-processing paperwork printed as well as an actual form for your patient to use during the exposure exercises. It is essential to make sure there is a trash can available that can easily be moved outside of the therapy room. It also may be nice for you to have some cutlery, plates/bowls, and napkins available, as well as a microwave, refrigerator/freezer, snacks in case your patient comes hungry, and backup foods in case your patient forgets to bring exposure exercises foods.

First Exposure Exercise

At the first exposure exercise session, orient your patient as to what to expect as part of the upcoming exposure exercises. It is important to explain the rationale for pre- and post-processing as well as set the groundwork for what to expect during the exposure exercises.

Text Box 2: Sample Clinician Introduction of Exposure Exercise Practice

Today we will be doing your first exposure exercise with the food(s) you brought with you. Before we get into the actual exposure exercises, we will start off by discussing what you think will happen during the exposure exercises, then we will do the exposure exercises, and then we will discuss what happened in the exposure exercises. Part of these discussions will be comparing what you expected would happen to what actually happened. These pre- and post-processing of the session are really important for learning. During the exposure exercises, you will be focusing on your craving level. I will prompt you to rate your cravings and you will write down how strong you feel your craving is in that moment. All you have to do is listen to what I say and follow my instructions and make your ratings. I will ask you to hold the food, smell the food, think about the food, and even taste the food. When we are finished, I will instruct you to throw the food out before processing the exposure exercises. Just try to pay attention to your physical cravings and your feelings as you focus on the food.

Pre-Processing

At the start of the session, it is important to make sure that your patient is not hungry or thirsty. As mentioned above, if your patient is hungry or thirsty, give them a snack or water to ensure the exposure exercises are conducted in at least a neutral or full state. Next, complete pre-processing with your patient. It will be important for this information to be written down so your patient's responses can be referred back to during the post-processing phase. Your patient should reflect and respond to what they anticipate will happen during the exposure exercises focusing on how they will physiologically feel and emotions they expect to experience and identify any fears, concerns, or anxiety about the pending exposure exercises. Additionally, your patient should rate how strong their cravings are prior to starting the exposure exercises, how high they think their cravings will reach, how hard the exposure exercises will be, their confidence at lasting through the exposure exercises, and urge to avoid.

Exposure Practice

As mentioned earlier, the goal of exposure practice is to have your patient experience strong cravings and urges so that they can learn to resist eating or finishing the food. Our group typically conducts exposure exercises for 5 minutes per food, which is the amount of time it takes to work through the cycle of look, hold, smell, take a small taste, and put down the food two times. We have found that 5 minutes of focusing on one single food tends to be enough to initially increase cravings and can make the patient feel uncomfortable. It slows down the process by forcing the patient to sit with the foods that they typically eat very quickly without even realizing it. It is not essential for cravings to decrease during the exposure exercise for learning to occur; however, with 5 minutes and 11 ratings, many patients experience some variation in their craving ratings. Additionally, we tend to keep them to 5 minutes to allow for multiple foods per session and ample time for the essential processing. We prompt patients to rate their cravings every 30 seconds while holding, smelling, and tasting the food and then put it down. During the 5 minutes, we repeat each major prompt twice (e.g., two holds, two smells, two tastes) so patients can see whether their cravings change the second time around. During the exposure exercises, we also prompt our patients to focus on the food, experience the physiological and psychological arousal, or retrieve memories associated with the food (i.e., “think about the last time you ate this food”). We go through this series twice, and then following the final prompt, you encourage your patient to make their final rating, and then have your patient throw it out. It is best that your patient puts the food in the trash themselves so they have the successful experience of throwing it away. To help avoid temptation and promote sustained success, you should physically remove the trash can from the room. It is also useful to make sure your patient will not pass the trash on their way exiting the appointment. Your patient can start on the post-processing while you remove the trash with the foods in it.

Text Box 3: Sample Clinician Exposure Exercise Language

0 seconds – “Please pick up the [food], hold it in your hands, and rate your cravings.”

30 seconds – “Now smell the [food] and rate your cravings.”

60 seconds – “Now take one small bite of the [food] and rate your cravings.”

90 seconds – “Now put it down and write down your craving ratings.”

Post-Processing

During the post-processing portion, your patient will process the thoughts and feelings that occurred during the exposure exercises. You should validate your patient’s experience, praise your patient for resisting and throwing out the food, and help your patient evaluate how the actual experience compared to the expectations. It is

important to help your patient recognize that they were able to survive their urges – if their cravings were stronger or equivalent to what was anticipated – praising their ability to still resist eating all of the food is warranted. However, sometimes the reverse may occur and patients do not experience as high of cravings or feel it was easier than expected. This is important to acknowledge as other faulty cognitions may exist (inability to resist when food is in front of them; can't stop eating something once they start; etc.). Praise them for noticing that their urges weren't as high. During exposure exercises, by slowing things down and focusing on their physical sensations, some patients may realize they actually don't like the smell or taste of a certain food that they thought they had strong cravings for. By recognizing this, if your patient can learn and commit this to memory, it may help them inhibit urges to overeat or binge eat. When patients are surprised by the strength of their cravings for the exposure food, it is important to process how your patient tolerated and persisted. It is helpful for your patient to identify what part of the exposure exercises may have peaked their cravings the most (e.g., thinking about the food, smelling the food, or tasting the food) for a given food. Patients should process the physiological responses they experienced. If multiple exposure exercises are completed in a single session, comparing the experiences can be helpful – discussing what was harder and easier – similarities and differences of the experiences particularly related to the physiological and affective feelings and cognitions that occurred. It is important to note that we do not expect habituation, but if it occurs, it can be pointed out. It is also sometimes worth discussing how long your patient has resisted the specific food in the real world, and compare this to how they did in the exposure practice. Most individuals we have worked with have typically never resisted the foods they bring in for exposure exercises.

Ending the Exposure Exercise Session

It is incredibly important to praise and validate your patient for their hard work. You should also prepare your patient for facing some challenges following the exposure exercises and process their preparedness. Remind your patient they should refrain from eating anything at all during the next hour and resist eating the exposure exercise foods for at least 24 hours to help solidify learning. If your patient is expressing strong urges to purchase the exposure exercise foods or other foods, you may need to discuss coping strategies to try to help your patient resist. We have worked with our patients to use behavioral strategies (i.e., delay, stimulus control, hunger tracking, drinking water, physical activity, replacement activities), cognitive strategies (i.e., distraction, reading, completing puzzles, planning, emailing/texting), and emotional strategies (i.e., mindfulness, journaling, diaphragmatic breathing, progressive muscle relaxation) for use after the exposure exercise. For example, you may develop a plan with your patient for them to call a friend on the drive home, drive in a route that doesn't pass a tempting store, or have an activity prepared to do immediately after the session.

Subsequent Exposure Exercise Work

At the session following an exposure exercise, it is important to process the previous exposure exercise. Research shows that learning occurs between sessions as well as within sessions, so it is important to help patients recognize this whenever possible. Further, you must know whether your patient was successful at maintaining their resistance to the craved food and whether any of their other eating was influenced. This information will help you plan for when to introduce at-home exposure exercise work and to understand whether additional coping skills could be useful.

As mentioned earlier, it is important to conduct exposure exercises with multiple foods, and specific challenging foods can be repeated if necessary. Further, as cravings can be impacted by many state-based features like mood or even the order in which a food was presented in session, having the opportunity to experience and process these differences can contribute to patient learning.

Out-of-Session Exposure Exercises

When it's clinically appropriate (meaning your patient has participated in a few exposure exercises and understands the concepts), it is helpful to discuss the importance of out-of-session exposure exercises. Though the work your patients will be doing during sessions will be very impactful, they do not live most of their lives inside of a clinic. Context plays an important role in learning, so it will be important for your patient to learn to resist cravings and not overeat outside of the clinician's office. Therefore, it's critical that they begin practicing tolerating and resisting cravings out in the real world in different contexts outside of sessions. You may help your patient plan specific exposure exercises, and your patient can also work on trying to practice resistance of cravings whenever the opportunity arises.

Patients can practice a formal exposure exercise out of the clinic, similar to the exposure exercises completed in session. To facilitate this, you may provide an audio file of you, the clinician, providing the different prompts to help pace the exposure exercise that your patient can listen to while they complete the exposure exercise and use the same paperwork with pre- and post-processing questions and craving ratings. Patients can bring this to subsequent sessions and to discuss with you to help solidify learning. It is also helpful to assist your patients in translating exposure exercises into real-world situations. For example, one patient had success by practicing exposure exercises while out to dinner. Together with her spouse, this patient would order dessert and practice eating a bite and resisting the rest. Your patient would take the time to really focus on the food; recognize the level of craving, physiological sensations, thoughts, and feelings; and refrain from eating more than one or two bites. Other out-of-session examples could include going into a tempting situation, and not engaging in habitual consumption or purchases. For example, a patient can walk into a bakery taking in the smells and sights, recognize the urges in the body and the corresponding thoughts and feelings, and walk out

without purchasing anything. This could be a very unique exposure exercise for patients who habitually buy and consume sweets. Relatedly, a patient can practice going to the movies and not eating popcorn (or anything for that matter). As with the in-session exposure exercises, it is important that the out-of-session exposure exercises are also conducted when they are not physically hungry.

Group or Individual

Exposure exercises can be conducted in an individual or group format, as our team has successfully employed both methods. In group, patients can benefit from the built-in social support and “in this together” mentality that we’ve seen permeate groups, which can have a positive impact on each patient’s confidence in their ability to resist their respective foods. Those in attendance are able to process these exposure exercises as a group, which can allow for the discovery of similar experiences of both struggle and success. Patients can also accrue ideas for future exposure exercises by seeing what highly craved foods other group members bring in. However, this variety can also serve as a detriment: group members may be easily distracted by the presence and smells of other food items, weakening the immersive experience they have with their own foods. Further, if one member deviates from the exposure exercise instructions and begins eating all of their food, others may be inclined to follow suit. This has proven to be especially true in groups of children and adolescents. The individual format eliminates these distractions and offers the opportunity for you to provide your patient with more personalized support if needed. Therefore, it may be helpful to consider individual characteristics such as age and perceived ability to successfully resist food items when determining which format may be more suitable for your patient. Furthermore, group exposure exercises may require additional facilitation to have the exposure foods ready for each member, and limitations of resources (microwaves, freezers, etc.) may be something to consider.

Integrating BWL and/or CBT Components

Our research has shown that food exposure exercises alone can assist with weight management efforts. Increasing an individual’s ability to resist highly craved foods in the real world can lead to decreases in overeating and binge eating behavior, thereby resulting in the reduced caloric consumption needed for weight loss. However, for patients seeking treatment primarily for weight loss, food exposure exercises can also be performed in conjunction with components of traditional BWL treatments. For patients who are seeking treatment for binge eating, food exposure exercises can be integrated with CBT. Incorporating food exposure exercises can allow for a unique and in vivo learning experience within each of these treatments.

Common Challenges

Many patients struggle with throwing out exposure foods either in session or out of session. It will be beneficial to discuss these thoughts and related feelings and help patients evaluate the truth of these thoughts. Some patients have really resonated with the concept that many of the highly craved foods do not have much nutritional value. One former patient even likened it to why would you want to put trash in your body. With regard to cost, while it may be an initial waste of money to purchase foods to throw most of it out, if your patient modifies habits through exposure exercises and no longer purchases these foods, they will ultimately (1) save more money in the long run by reducing the frequency and amount spent on these foods and (2) save money in the long term on health care related to weight and comorbidities. Thus, some patients come around to the idea that it is a short-term investment for long-term benefits. In the out-of-session exposure exercises context, patients can still experience success without throwing out the food. Some immediately give it to another family member or friend. If this person consumes it immediately (or does not live in the household), then the risk of your patient eating it is gone, and it can thus be as effective. If your patient instead puts it away in the fridge or freezer for “someone else to have,” it may remain a temptation for your patient, and discussions as to whether or not it is in the best interest of your patient to keep it around may be warranted. All of this should be guided on where your patient is at, as we want to help make success as easy as possible for your patients. Ultimately, your patient may benefit from discussions as to whether anyone in the household “needs” to eat these foods and may consider practicing other skills like stimulus control to reduce overeating, and thus the number of times a patient will need to actively resist will decrease.

The key aspect of these food exposure exercises is to learn to inhibit urges. For the learning to occur, your patient must first have awareness. Patients have reported that they feel “keyed up,” nervous, and anxious during exposure exercises. You can explain that these and any other perceptions or feelings are normal and could be their body physiologically reacting to the craved food. This may be the first time they are aware of it. Additionally, some patients report that they have increased cravings when they smell the food and some when they taste it. Tracking these perceptions and feelings is very important. Thus, a related homework for patients may include tracking their thoughts, feelings, and behaviors when they have cravings. Recognizing times when they were successful at resisting overeating or giving into cravings can help increase their self-efficacy. Even identifying times where resistance was attempted but eating occurred can be helpful and serve as a point of reflection. Of course, if these behaviors and experiences are tracked, it will be easier for you to review them at the subsequent sessions, praise success, solidify learning, and introduce alternative coping skills or problem-solving skills as needed to help your patient achieve continued success.

Summary

We have been conducting food exposure exercises that target reducing overeating with hundreds of adults and children over the past 10 years. We have found that using exposure exercises to decrease overeating can be an incredibly life-changing experience for individuals who struggle with overeating, binge eating, or weight. Since this is a relatively new mode for working with individuals who overeat, more research is needed. But clinically, your patients can learn that they can resist foods that they have never resisted in real life, and they can learn to notice and tolerate cravings.

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders (DSM-V)* (5th ed.). Washington, DC. <https://doi.org/10.1176/appi.books.9780890425596>
- Berridge, K., Ho, C., Richard, J., & DiFeliceantonio, A. (2010). The tempted brain eats: Pleasure and desire circuits in obesity and eating disorders. *Brain Research, 1350*, 43–64. <https://doi.org/10.1016/j.brainres.2010.04.003>
- Boutelle, K., & Bouton, M. (2015). Implications of learning theory for developing programs to decrease overeating. *Appetite, 93*, 62–74. <https://doi.org/10.1016/j.appet.2015.05.013>
- Boutelle, K., Knatz, S., Carlson, J., Bergmann, K., & Peterson, C. (2017). An open trial targeting food cue reactivity and satiety sensitivity in overweight and obese binge eaters. *Cogn & Behav Pract, 24*(3), 363–373. <https://doi.org/10.1016/j.cbpra.2016.08.003>
- Boutelle, K., Manzano, M., & Eichen, D. (2020). Appetitive traits as targets for weight loss: The role of food cue responsiveness and satiety responsiveness. *Physiology & Behavior, 244*, 113018. <https://doi.org/10.1016/j.physbeh.2020.113018>
- Boutelle, K., Zucker, N., Peterson, C., Rydell, S., Cafri, G., & Harnack, L. (2011). Two novel treatments to reduce overeating in overweight children: A randomized controlled trial. *Journal of Consulting and Clinical Psychology, 79*(6), 759–771. <https://doi.org/10.1037/a0025713>
- Boutelle, K., Zucker, N., Peterson, C., Rydell, S., Carlson, J., & Harnack, L. (2014). An intervention based on Schachter's externality theory for overweight children: The regulation of cues pilot. *Journal of Pediatric Psychology, 39*(4), 405–417. <https://doi.org/10.1093/jpepsy/jst142>
- Bouton, M. (2011). Learning and the persistence of appetite: Extinction and the motivation to eat and overeat. *Physiology & Behavior, 103*(1), 51–58. <https://doi.org/10.1016/j.physbeh.2010.11.025>
- Brownley, K., Berkman, N., Peat, C., Lohr, K., Cullen, K., Bann, C., & Bulik, C. (2016). Binge-eating disorder in adults: A systematic review and meta-analysis. *Annals of Internal Medicine, 165*(6), 409–420. <https://doi.org/10.7326/M15-2455>
- Carnell, S., Benson, L., Pryor, K., & Driggin, E. (2013). Appetitive traits from infancy to adolescence: Using behavioral and neural measures to investigate obesity risk. *Physiology & Behavior, 121*, 79–88. <https://doi.org/10.1016/j.physbeh.2013.02.015>
- Carnell, S., Haworth, C., Plomin, R., & Wardle, J. (2008). Genetic influence on appetite in children. *International Journal of Obesity, 32*(10), 1468–1473. <https://doi.org/10.1038/ijo.2008.127>
- Carnell, S., & Wardle, J. (2008). Appetite and adiposity in children: Evidence for a behavioral susceptibility theory of obesity. *The American Journal of Clinical Nutrition, 88*(1), 22–29. <https://doi.org/10.1093/ajcn/88.1.22>
- Craske, M., Hermans, D., & Vervliet, B. (2018). State-of-the-art and future directions for extinction as a translational model for fear and anxiety. *Philosophical Transactions of the Royal Society of London. Series B, Biological Sciences, 373*(1742), 20170025. <https://doi.org/10.1098/rstb.2017.0025>

- Craske, M., Kircanski, K., Zelikowsky, M., Mystkowski, J., Chowdhury, N., & Baker, A. (2008). Optimizing inhibitory learning during exposure therapy. *Behav Res & Ther*, *46*(1), 5–27. <https://doi.org/10.1016/j.brat.2007.10.003>
- Craske, M., Treanor, M., Conway, C., Zbozinek, T., & Vervliet, B. (2014). Maximizing exposure therapy: An inhibitory learning approach. *Behav Res & Ther*, *58*, 10–23. <https://doi.org/10.1016/j.brat.2014.04.006>
- Davidson, T., Jones, S., Roy, M., & Stevenson, R. (2019). The cognitive control of eating and body weight: It's more than what you "think". *Frontiers in Psychology*, *10*, 62. <https://doi.org/10.3389/fpsyg.2019.00062>
- Diabetes Prevention Program (DPP) Research Group. (2002). The diabetes prevention program (DPP): Description of lifestyle intervention. *Diabetes Care*, *25*(12), 2165–2171. <https://doi.org/10.2337/diacare.25.12.2165>
- Epstein, L., Valoski, A., Wing, R., & McCurley, J. (1994). Ten-year outcomes of behavioral family-based treatment for childhood obesity. *Health Psychology*, *13*(5), 373–383. <https://doi.org/10.1037/0278-6133.13.5.373>
- Grilo, C., Masheb, R., Wilson, G., Gueorguieva, R., & White, M. (2011). Cognitive-behavioral therapy, behavioral weight loss, and sequential treatment for obese patients with binge-eating disorder: A randomized controlled trial. *Journal of Consulting and Clinical Psychology*, *79*(5), 675–685. <https://doi.org/10.1037/a0025049>
- Hales, C., Carroll, M., Fryar, C., & Ogden, C. (2017). Prevalence of obesity among adults and youth: United States, 2015–2016. *NCHS Data Brief*, *288*, 1–8.
- Kessler, R. C., Berglund, P. A., Chiu, W., Deitz, A., Hudson, J., Shahly, V., ... Xavier, M. (2013). The prevalence and correlates of binge eating disorder in the World Health Organization world mental health surveys. *Biological Psychiatry*, *73*(9), 904–914. <https://doi.org/10.1016/j.biopsych.2012.11.020>
- Llewellyn, C., Cornelia, H., van Jaarsveld, C., Johnson, L., Carnell, S., & Wardle, J. (2010). Nature and nurture in infant appetite: Analysis of the Gemini twin birth cohort. *The American Journal of Clinical Nutrition*, *91*(5), 1172–1179. <https://doi.org/10.3945/ajcn.2009.28868>
- Llewellyn, C., & Fildes, A. (2017). Behavioural susceptibility theory: Professor Jane Wardle and the role of appetite in genetic risk of obesity. *Current Obesity Reports*, *6*(1), 38–45. <https://doi.org/10.1007/s13679-017-0247-x>
- Llewellyn, C., & Wardle, J. (2015). Behavioral susceptibility to obesity: Gene-environment interplay in the development of weight. *Physiology & Behavior*, *152*(Pt B), 494–501. <https://doi.org/10.1016/j.physbeh.2015.07.006>
- Look AHEAD Research Group. (2007). Reduction in weight and cardiovascular disease risk factors in individuals with type 2 diabetes: One-year results of the look AHEAD trial. *Diabetes Care*, *30*(6), 1374–1383. <https://doi.org/10.2337/dc07-0048>
- NICE. (2004). *Core interventions in the treatment and management of anorexia nervosa, bulimia nervosa and related eating disorders (clinical guideline 9)*. National Collaborating Centre for Medical Health.
- Schyns, G., van den Akker, K., Roefs, A., Houben, K., & Jansen, A. (2020). Exposure therapy vs lifestyle intervention to reduce food cue reactivity and binge eating in obesity: A pilot study. *Journal of Behavior Therapy and Experimental Psychiatry*, *67*, 101453. <https://doi.org/10.1016/j.jbtep.2019.01.005>
- Strack, F., & Deutsch, R. (2004). Reflective and impulsive determinants of social behavior. *Personality and Social Psychology Review*, *8*(3), 220–247. https://doi.org/10.1207/s15327957pspr0803_1
- Swinburn, B., Sacks, G., Lo, S., Westerterp, K., Rush, E., Rosenbaum, M., ... Ravussin, E. (2009). Estimating the changes in energy flux that characterize the rise in obesity prevalence. *The American Journal of Clinical Nutrition*, *89*(6), 1723–1728. <https://doi.org/10.3945/ajcn.2008.27061>
- van den Akker, K., Schyns, G., & Jansen, A. (2018). Learned overeating: Applying principles of Pavlovian conditioning to explain and treat overeating. *Current Addiction Reports*, *5*(2), 223–231. <https://doi.org/10.1007/s40429-018-0207-x>

- Velders, P., De Wit, J., Jansen, P., Jaddoe, V., Hofman, A., Verhulst, F., & Tiemeier, H. (2012). FTO at rs9939609, food responsiveness, emotional control and symptoms of ADHD in preschool children. *PLoS One*, *7*(11), e49131. <https://doi.org/10.1371/journal.pone.0049131>
- Wardle, J., Carnell, S., Haworth, C., Farooqi, I., O'Rahilly, S., & Plomin, R. (2008). Obesity associated genetic variation in FTO is associated with diminished satiety. *J Clin Endocrin and Metab*, *93*(9), 3640–3643. <https://doi.org/10.1210/jc.2008-0472>
- Watson, P., Wiers, R., Hommel, B., & de Wit, S. (2014). Working for food you don't desire. Cues interfere with goal-directed food-seeking. *Appetite*, *79*, 139–148. <https://doi.org/10.1016/j.appet.2014.04.005>
- Weisman, J., & Rodebaugh, T. (2018). Exposure therapy augmentation: A review and extension of techniques informed by an inhibitory learning approach. *Clinical Psychology Review*, *59*, 41–51. <https://doi.org/10.1016/j.cpr.2017.10.010>
- World Health Organization. (2020). *Obesity and overweight*. <http://www.who.int/mediacentre/factsheets/fs311/en/>. Accessed March 20, 2021.
- Yager, J., Devlin, M., Halmi, K., Herzog, D., Mitchell, J., Powers, D., & Zerbe, K. (2012). *Guideline watch (august 2012): Practice guideline for the treatment of patients with eating disorders* (3rd ed., pp. 1–18). American Psychiatric Association.

Chapter 17

The Application of Exposure Principles to the Treatment of Depression



Adele M. Hayes, Carly Yasinski, and Elizabeth Alpert

Abstract Exposure-based cognitive therapy (EBCT) applies general principles of system change discovered in the science of complex adaptive systems, which are strikingly similar to principles of change in exposure-based therapies and modern learning theory. We illustrate how exposure principles can extend beyond anxiety and related disorders to treat depression within a cognitive behavioral framework. EBCT targets three key mechanisms that maintain depression: (1) a negativity loop of rumination and overgeneralization, (2) avoidance, and (3) a positive fizzle mechanism that interferes with the detection and processing of positive emotions and ability to sustain them. EBCT is designed to release these lockdown mechanisms and to optimize emotional processing and new learning that can serve inhibitory functions. We describe the theoretical foundations of EBCT to make clear the targets of exposure and then review important issues and adaptations to consider when applying exposure techniques to depression. We briefly review research on the efficacy of EBCT and the process of change. We then present a case example to illustrate EBCT in practice.

Keywords Depression · PTSD · Exposure · Dynamical systems and psychotherapy · Cognitive behavioral therapy

A. M. Hayes (✉)

Department of Psychological and Brain Sciences, University of Delaware, Newark, DE, USA
e-mail: ahayes@udel.edu

C. Yasinski

Department of Psychiatry and Behavioral Sciences, Emory University, Atlanta, GA, USA
e-mail: charlotte.w.yasinski@emory.edu

E. Alpert

National Center for PTSD, Boston, MA, USA

VA Boston Healthcare System, Boston, MA, USA

Boston University School of Medicine, Boston, MA, USA
e-mail: ealpert@udel.edu

© The Author(s), under exclusive license to Springer Nature Switzerland AG 2022

J. A. J. Smits et al. (eds.), *Clinical Guide to Exposure Therapy*,
https://doi.org/10.1007/978-3-031-04927-9_17

Introduction

Depression is one of the world's leading contributors to global disability, and it is associated with significant suffering and an increased risk of suicide (World Health Organization, 2017). Although some experience a single episode of depression (Monroe & Harkness, 2022), for others the risk of another episode is 40–60% and as high as 90% after the third episode (Eaton et al., 2008; Moffitt et al., 2010; Solomon et al., 2000). On average, individuals with depression will have as many as five to nine episodes over their lifetimes (Burdusa & Iacono, 2007). Once a recurrent or chronic course has set in, the risk of suicide, comorbid psychiatric disorders, and physical and psychosocial disability increases further (Novick et al., 2017; Spijker et al., 2013).

Evidence-based pharmacological and psychosocial treatments for major depressive disorder (MDD) have proliferated, but response rates for the best available treatments are still only about 50% (Cuijpers et al., 2014, 2020; Nemeroff, 2020), with even lower response rates for recurrent and chronic depression (Cuijpers, 2017; Spijker et al., 2013). Further, approximately 25–39% of psychotherapy responders and 61% of medication responders relapse after recovery (Vittengl et al., 2007; Nemeroff, 2020). There is a clear need to improve treatments for depression, especially to reduce its chronicity.

We describe exposure-based cognitive therapy for depression (EBCT; Hayes et al., 2015a, b), a therapy that targets three key mechanisms that maintain depression and is designed to optimize emotional processing and new learning. EBCT incorporates principles of exposure, emotional processing, and inhibitory learning from anxiety and stress-related disorders into a cognitive behavioral framework for treating depression.

Exposure-Based Cognitive Therapy (EBCT): Theoretical Foundations

EBCT is built on a foundation of general principles of change from psychotherapy research and from the science of complex adaptive systems, which has identified general principles of pattern development and change across a variety of systems in nature. We developed the *network destabilization and transition (NDT) model* of therapeutic change (Hayes et al., 2015b) to organize scientific principles of change from three streams of research on (1) factors that maintain depression, (2) processes that induce system change in complex systems and in psychotherapy, and (3) factors that foster resilience and adaptation. The NDT model is the foundation of EBCT, and we have recently expanded it to be more general model of therapeutic change that can be applied across types of therapy and clinical disorders (Hayes & Andrews, 2020). EBCT uses exposure techniques within a cognitive behavioral framework to target multimodal patterns and mechanisms that maintain and lock down these

patterns. EBCT is designed to induce the three types of therapeutic change described in the NDT model.

Principles from the science of complex adaptive systems, particularly dynamical systems theory, can inform our understanding of how a variety of systems in nature become entrenched and how they move from one state to another. In EBCT, depression is viewed as a stuck system and treatment as a catalyst to help patients shift to and maintain a healthier default state. As we have summarized in more detail elsewhere (Hayes & Andrews, 2020; Hayes et al., 2015b), complex adaptive systems tend to settle into patterns (attractors) that maintain stability and become stronger with repetition. The stronger these attractors, the more powerful the pull to return when the system is perturbed or challenged. Factors that maintain system stability deflect or absorb challenges, yet the system must also be flexible enough to adapt and respond to changing circumstances. For change to occur, the processes that keep the system in place must be decreased, old patterns shaken and destabilized, and new patterns developed and strengthened with repetition. There is vacillation between the old and new patterns and risk of return to the old, until the new pattern(s) take(s) hold and can become a new default state. This conceptualization of system change has been applied across a range of systems, from cells and human disease processes to ecosystems and economies, and thus provides a useful framework for conceptualizing and inducing therapeutic change (for more detailed accounts, see Hayes and Andrews (2020); Schiepek et al. (2017); and Tschacher and Haken (2019)). This perspective suggests specific treatment targets and types of change to induce.

Treatment Target: Multimodal Patterns

Attractors are composed of multiple elements that are interconnected, with feedback loops that maintain them. Similarly, psychopathology models of anxiety and related disorders propose that pathological patterns or associative networks maintain these disorders. Exposure-based treatments therefore target fear structures or trauma networks (Foa et al., 2006). A wide range of research suggests that depression similarly involves cross-system rigidity in cognitive, behavioral, emotional, and biological domains (Rottenberg, 2017; Stange et al., 2017). Psychopathology models of depression also propose multimodal networks, interlocks, and schemata (Beck & Dozois, 2011; Borsboom & Cramer, 2013; Hayes et al., 2015b; Teasdale, 1999; Young et al., 2003) or emotional schemes (Greenberg & Watson, 2006). However, most treatments for depression emphasize one particular component, such as cognitions, emotions, behaviors, or interpersonal functioning. EBCT is designed to identify and target depressive networks with multiple components.

Beyond weakening the depressive network, it is essential to exercise and solidify the more adaptive patterns of functioning learned in treatment. EBCT therefore also focuses on developing and strengthening healthy, multimodal patterns of functioning that can inhibit or compete with depressive patterns to help prevent relapse, similar to the ideas of emotional processing and inhibitory learning in exposure

treatments (Craske et al., 2014; Foa et al., 2006; Tolin, 2019) and competitive retrieval in CBT (Brewin, 2006). The overall goal of EBCT is to activate and destabilize the relevant depressive network and develop and exercise a more adaptive network so that it becomes the new default state, or attractor.

Treatment Target: Lockdown Mechanisms

Attractor patterns develop and become stronger with repeated activation. With multiple episodes or chronic depression, the depression pattern takes hold and is hard to shake loose. Those struggling with depression describe feeling as if their mind has been hijacked, as they are pulled into a “vortex” or a “black hole” of negativity. Depressive networks are therefore easily activated and can have a strong pull or “attractor” strength, as they become the default mode of operation (van de Leemput et al., 2014, Wittenborn et al., 2016). Under these conditions, perturbations (e.g., corrective information or experiences that disconfirm depressive expectancies) are likely to be deflected or assimilated rather than to challenge and destabilize existing patterns. Similarly, theoretical conceptualizations outside of dynamical systems theory suggest that depression can be viewed as a tendency to become “stuck in a rut” (Holtzheimer & Mayberg, 2011), which involves persistent difficulty disengaging from negative mood states and updating those mood states when new information is introduced (Joormann & Tanovic, 2015; Koster et al., 2011). In addition, Holtzheimer and Mayberg (2011) emphasize the importance of addressing processes associated with entering and staying in a depressive state, or what we call “lockdown processes.”

Three lockdown processes operate in depression to increase sensitivity and reactivity to stressful life events, prolong negative mood, and interfere with adaptive coping and processing of emotional material. These interconnected processes include what we call (1) *a negativity loop*, (2) *avoidance*, and (3) *a positive fizzle mechanism*. In the *negativity loop*, depressive thoughts not only cycle and recycle with few new insights or perspectives (i.e., rumination; Dalgleish & Werner-Seidler, 2014; Smith & Alloy, 2009; Watkins & Nolen-Hoeksema, 2014), but they also quickly spread by overgeneralizing across people, time, and situations (Williams & Moulds, 2007). This loop of rumination and overgeneralization is easily triggered and captures attention and resources. It is exhausting and often closely associated with avoidance, hopelessness, and, at times, suicidality (Hayes, 2015; Smith & Alloy, 2009; Watkins & Nolen-Hoeksema, 2014).

The repertoire of emotion regulation strategies in depression is similarly rigid and narrow (Aldao et al., 2010; Bullis et al., 2019). Depression is characterized by pervasive *avoidance* and stereotyped behavioral and physiological stress responses that interfere with adaptive flexibility in coping (Rottenberg, 2017; Stange et al.,

2017). Avoidance can help patients disengage from the negativity loop and difficult emotions, but this strategy paradoxically is associated with more intrusive thoughts and unwanted memories, which tend to perpetuate the cycle (Beevers et al., 1999; Dalgleish & Werner-Seidler, 2014). The negativity loop, avoidance, and also impaired executive and control (regulatory) functions interact and become more tightly coupled with repetition and can substantially impair information processing and new learning (Dalgleish & Werner-Seidler, 2014; Farb et al., 2015; Hayes et al., 2015b; Watkins, 2008).

It is not surprising that the negative view of the self and associated experiences become feared. They activate a loop of repetitive negative thinking and behavior that is powerful, consuming, and at times life-threatening. The negative self-schema and related events are thus key targets of exposure. Exposure and emotional processing techniques can be useful to facilitate constructive processing and meaning-making in depression, but the negativity loop and other lockdown processes are so strong that, if not addressed, they can block new learning and inadvertently induce more depression.

A *positive fizzle mechanism* furthers depression by interfering with patients' ability to recognize, process, and sustain positive emotions (Disner et al., 2011; Keren et al., 2018; Pizzagalli, 2014). Positive emotions also tend to be avoided, dampened, or extinguished quickly (Dunn, 2012; Vanderlind et al., 2020). Those who are depressed have difficulty incorporating positive feedback and processing expectancy-disconfirming experiences and the relief that can occur when a negative prediction does not occur (Kube & Glombiewski, 2021; Kube et al., 2020). The positive fizzle mechanism perpetuates the negativity loop and avoidance by interfering with updating and reappraisal processes for both positive and negative material. In the context of treatment, low positivity (anhedonia) predicts longer time to remission and worse functioning over follow-up in both CBT and pharmacotherapy (Khazanov et al., 2020). In addition, these two treatments are less effective at increasing positive emotions than decreasing negative emotions (Dunn et al., 2020). In EBCT, more attention is paid to positive emotions, which are additional targets of exposure in EBCT.

Together these lockdown mechanisms (negativity loop, avoidance, positive fizzle mechanism) decrease flexibility and interfere with the ability to attend to and process potentially corrective information. Furthermore, these mechanisms lead to a low diversity of emotions, or what Rottenberg (2017) describes as a flattened emotional landscape in depression. EBCT uses exposure principles to enhance cognitive and behavioral techniques in the first phase of treatment to loosen the hold of these mechanisms. This is necessary to increase the flexibility and openness needed for new information to penetrate and learning to occur (Brujniks et al., 2019).

The NDT model (Hayes et al., 2015b; Hayes & Andrews, 2020) suggests not only treatment targets based on general principles of system change but also specific operations to mobilize different types of change.

Therapeutic Operation: Lockdown Release

The first component of therapeutic change in the NDT model is to decrease the processes that keep the system stuck. With this opening, patients can begin to develop the adaptive counterparts of the lockdown mechanisms, such as constructive processing, approach and active coping, and the capacity to generate and process positive experiences and emotions. These adaptive processes can increase flexibility and resilience, key components of adaptation and mental health (Kashdan & Rottenberg, 2010; Waugh & Koster, 2015). More emphasis is placed on opening the system for change in EBCT than in exposure-based treatments for anxiety and related disorders because the attentional biases, cognitive rigidity, emotional overload or shutdown, and lack of energy associated with depression interfere with new learning.

Therapeutic Operation: Destabilization and Processing

The second component of therapeutic change in the NDT model is to activate and destabilize the engrained pathological patterns. This is not easy because the patterns that make up the depressive network are often well established and entrenched, much like the attractor described earlier. In our work with depressed patients, we noticed that the profound feelings of defectiveness, worthlessness, and failure that characterize depression are often overwhelming and feared because once activated, they can take over and set off a depressive cascade. Avoidance is often the temporary off switch. This is similar to the cycle of re-experiencing unprocessed material, intrusion, and avoidance that defines post-traumatic disorder (PTSD). Depression has also been conceptualized as a disorder of impaired processing of emotional experiences (Brewin et al., 2010; Dalgleish & Werner-Seidler, 2014; Greenberg & Watson, 2006; Teasdale, 1999; Watkins, 2008). As with PTSD, traumatic and disturbing experiences related to depression play in a loop that spreads and activates old memories and fears, only to be shut down, re-emerge, and repeat. Given the transdiagnostic processes at play, we looked to CBT treatments for PTSD for techniques to interrupt powerful unconstructive processing loops and facilitate constructive emotional processing.

Prolonged exposure (PE; Foa et al., 2007; Foa & Rothbaum, 1998) for PTSD was particularly influential in developing EBCT, as PE not only decreases avoidance but also facilitates the processing of stuck emotional material and changes maladaptive beliefs (Foa et al., 2007). PE therapists repeatedly activate the trauma network, which consists of thoughts, emotions, and behavioral and physiological responses related to the traumatic experiences. A similar *depressive network* is the target of EBCT. After network activation, as in PE, patients in EBCT are exposed to corrective information to induce dissonance, expectancy violation, and destabilization of the pathological depressive network. Patients learn to shift from the negativity loop and avoidance and to tolerate difficult emotions. The goal of both PE and EBCT is

to facilitate *distress tolerance* and *emotional processing* such that patients begin to see their traumatic or depressive experiences in a broader context, correct misconceptions, and make sense of the experiences that contribute to their symptoms (Asnaani et al., 2016; Foa et al., 2006; Hayes, 2015).

Therapeutic Operation: Activate and Strengthen New Learning

The third component of therapeutic change in the NDT model is to develop and elaborate more adaptive patterns that can weaken or inhibit the powerful pull of pathological patterns and prevent relapse. Animal research on extinction learning (e.g., Beckers & Kindt, 2017; Bouton, 2002) and current conceptualizations of exposure therapy for anxiety and related disorders (Craske et al., 2014; Foa et al., 2006; Tolin, 2019) suggest that psychotherapy can promote new learning to weaken, inhibit, or compete with maladaptive associations. This is strikingly similar to the dynamical systems principle of developing a new state, or attractor, that competes with the old and can become a more adaptive default. We propose that a similar pattern of change occurs in CBT for other disorders, including depression (Hayes & Andrews, 2020).

It is critical not only to disrupt unproductive processing in depression but also to unblock and facilitate processing of positive experiences and emotions. Therefore, EBCT applies exposure principles to activate and strengthen positive emotions and to process positive experiences. As with the pathological network, the positive network developed in EBCT should be multimodal, with cognitive, emotional, behavioral, and physiological components that interact and contribute to further growth and resilience. Consistent with general system change and modern learning theory (Asnaani, et al., 2016; Craske et al., 2014), the new pattern must be activated repeatedly to become more established and to prevent return to the well-worn depressive rut, or attractor.

EBCT: Structure and Components

EBCT applies the three components of therapeutic change in the NDT model. It consists of 18–20 weekly sessions of individual therapy and is delivered in three phases: lockdown release, destabilization and emotional processing, and positive growth. Two to three monthly continuation sessions can be offered to solidify new patterns, if necessary. Patients write weekly narratives about their depression throughout the course of treatment. These narratives help them to identify depressive patterns, engage in affect labeling and emotional processing between sessions, and become aware of stuck points and positive change. EBCT is delivered in phases, but it is flexible, as patients might need more or less emphasis on the components in a given phase. For instance, the lockdown release exercises in phase 1 can be

individualized to focus only on the specific skills that a given patient needs. If the patient does not need the preparatory work of phase 1, the exposure and processing in phase 2 can be delivered alone. Phase 3 is important for relapse prevention but also can be tailored to the individual.

Exposure is applied in four ways throughout the course of EBCT: (1) weekly narratives activate the depressive network and help patients process thoughts, feelings, and new information; (2) behavioral activation and mindful breathing exercises teach patients to face difficult emotions without ruminating, overgeneralizing, and avoiding; (3) imaginal exposure exercises activate the depressive network by having patients recount and process core memories related to defectiveness, worthlessness, and failure; and (4) positive exposure exercises that activate positive emotions and associated fear, dread, and avoidance so that patients can learn to process and elaborate positive experiences.

Phase 1: Lockdown Release (Four to Six Sessions)

The first component of the NDT model is to decrease the maintaining factors that keep the depressive network locked in place. Information in the first phase of EBCT is individualized so that early on, patients can recognize when their depressive network gets activated, what triggers it, when maladaptive regulation processes come online, and how to disengage and shift to more adaptive skills. Therapists help patients to map out the network of cognitions, emotions, behaviors, and physiological reactions that are typically activated when the person is most depressed (for an example, see Fig. 17.1).

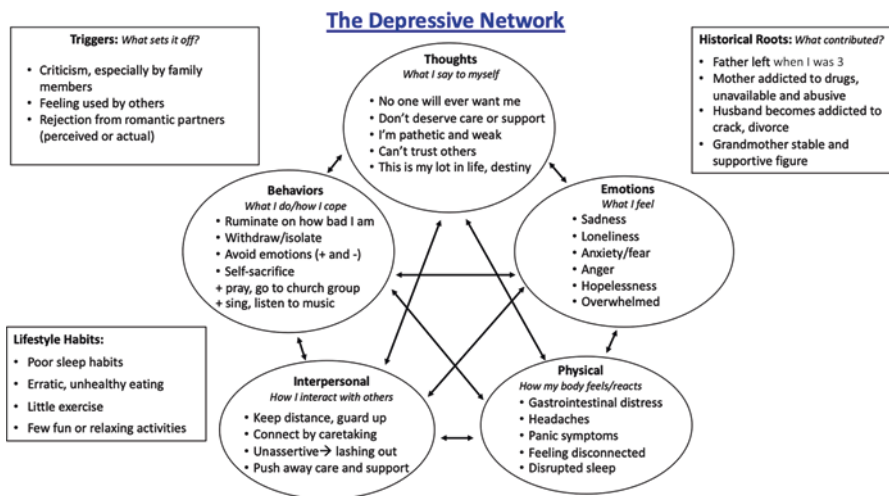


Fig. 17.1 Case example: Latta's individualized depressive network

Patients then learn about the lockdown processes that keep them stuck and vulnerable to depression. They learn about the *negativity loop*, *avoidance*, and the *positive fizzle mechanism* and how each of these maintains and worsens depression. They describe how each lockdown process plays out in their lives, the costs and benefits, and learn how to recognize and shift out of it. They also learn skills to facilitate the more adaptive counterparts of the lockdown processes: constructive processing of emotional experiences, approach and active coping (e.g., problem-solving, mindful breathing), and engaging in and processing positive experiences. Healthy lifestyle habits related to sleep, diet, activity level, and social engagement are also introduced as lifelong self-care practices. The overall goal of the lockdown release phase is to teach healthy life skills to increase flexibility and energy for change, help patients out of depression, and start to build overall health and resilience.

Phase 2: Destabilization and Processing (Six to Eight Sessions)

The second component of the NDT model is to activate and destabilize the pathological patterns. Exposure and cognitive techniques are integral parts of EBCT, as they are among the most powerful tools available to facilitate destabilization, constructive processing of emotional material, and new learning.

The first phase of EBCT teaches distress tolerance and stress management skills to prepare the patient for this second phase. However, it is still critical to assess readiness before beginning. Some guidelines to assess readiness are that the person:

- Does not have active borderline personality disorder (BPD) or psychotic symptoms.
- Does not have an active substance use disorder.
- Is not in crisis (suicidal, homicidal, self-harming) or responding to serious life event that just occurred, such as a divorce, death, or job loss. Here, the goal is to stabilize the person before moving to the destabilizing exposure exercises.
- Is less depressed and better able to control the negativity loop and the tendency to avoid.
- Is better able to tolerate distress and use problem-solving and mindfulness skills.
- Has support during this destabilizing phase of treatment.

As with prolonged exposure, this phase of EBCT can be emotionally intense because it is designed to destabilize old patterns and views of self. Paradoxically, a patient must be stable enough to tolerate destabilization of long-standing patterns. Conditions such as borderline personality disorder and substance use disorders are characterized by high levels of emotional reactivity, instability, and significant problems with distress tolerance, all of which are contraindicated for this phase of EBCT. Psychotic disorders also often involve significant problems with stable living and reality testing, which can make it difficult to move to constructive processing and meaning-making. Theoretically, patients with a history of borderline

personality disorder, substance abuse, or psychosis may be able to benefit from this phase of EBCT after they have responded to specialized treatment for these concerns, as is the case with prolonged exposure for PTSD and comorbid BPD (Harned et al., 2014) and psychosis (Grubaugh et al., 2017). However, we have not yet tested this hypothesis. If the patient is not ready to begin the destabilization and processing phase but does not need a separate specialized treatment, the phase 1 skills can be continued to help stabilize the person. It is also possible to move ahead with the exposure exercises with lower levels of emotional engagement that the patient can tolerate.

The exposure exercises of EBCT apply principles of imaginal exposure from prolonged exposure for PTSD (Foa et al., 2007) with a few adjustments. Patients recall two experiences that they most associate with themes of defectiveness, worthlessness, and failure. These experiences need not be classified as a trauma, as in PTSD, but they should exemplify the kinds of experiences that patients associate with their worst depressive states or episodes. They recall each experience in detail and describe cognitions, emotions, behaviors, and physiological responses, as is done in the multimodal activation of the trauma network in PE for PTSD. These exercises are designed to activate the depressive network and work through the fear of being consumed by the depressive responses. Patients notice the urge to ruminate, overgeneralize, and avoid, and instead, they are taught to turn toward the depression, mindfully and from a slight distance, so that they can observe the depressive network and understand its hold. This is similar to staying with a trauma memory in PTSD to learn to tolerate the distress, put words to feelings, and process and make meaning of what happened (Foa et al., 2007).

The ability to tolerate the fear is an entry point in EBCT, not the final goal. With less fear of the powerful depressive network, patients come face to face with what we view as the core of depression – profound feelings of defectiveness, worthlessness, failure, or an otherwise *unacceptable self*. After patients recount the event in detail, therapists ask a structured set of questions to help them contextualize the experiences, explore this negative view of self, identify inconsistencies and misperceptions, consider multiple perspectives, and construct new meaning. Depression can interfere with new learning and quickly cascade into rumination and hopelessness, so EBCT therapists facilitate constructive processing in a more active and structured way than in PE for PTSD. EBCT exposure exercises are conducted in session and not repeated at home. Weekly narratives facilitate emotional processing between sessions, as in cognitive processing therapy (Resick et al., 2017) and written exposure therapy (Sloan & Marx, 2019) for PTSD. After identifying the themes from the first exposure exercise, patients recall another experience from one of their worst depressive periods and repeat the exposure exercise.

Recent applications of PE for PTSD now place more emphasis on cognitive change and meaning-making than the earlier focus on fear reduction (Brown et al., 2019). EBCT rests on a strong cognitive base, influenced especially by Beck's classic cognitive therapy (Beck et al., 1979) and Young's schema-focused therapy (Young et al., 2003). Because we too view the defective or unacceptable self as a key component of the depression network, the second phase of EBCT focuses on

changing this entrenched negative view of self but doing so through exposure exercises. EBCT applies cognitive change principles, but the techniques differ in form from traditional cognitive therapy. Exposure exercises are used to identify and activate the core negative beliefs rather than using thought records, identifying automatic thoughts and types of cognitive distortions, or introducing formal hypothesis-testing exercises. Instead, patients learn to approach and tolerate the distress associated with network activation and take a more open and decentered view, so that they can explore inconsistencies and more nuanced perspectives of the negative view of self and experiences related to the depression. The patient also notes any positive aspects of the self that become apparent during the exposure and processing.

Another cognitive exercise that differs from classic cognitive therapy and is somewhat similar to schema-focused approaches (Young et al., 2003) involves helping the patient move from a global negative self to a more differentiated and multifaceted view. The exposure exercises reveal what we call different “facets of the self.” These include parts of the self that maintain the depression and other parts that are more healthy but less developed and accessible. The facet that most often overwhelms patients who are depressed is a relentless critic that nitpicks and plays over and over what is wrong with the person. There is often another passive or overly cynical side that too quickly accepts negativity and hopelessness. Another common facet is a self-sabotaging or angry side. In addition, there is often a glimmer of a more healthy side that sees hope, looks out for the person, or can see a different way of life. The therapist and patient map out the facets, the percentage of time they are active, and their functions (for an example, see Fig. 17.3). The next task is to create

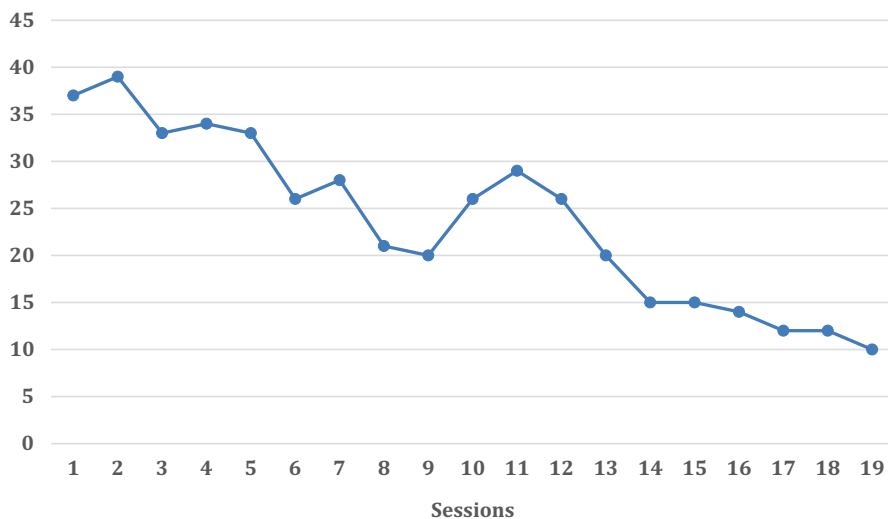


Fig. 17.2 Case example: Latta’s depression scores across the course of treatment. Sessions 9 through 14 occur during the destabilization and processing phase for this patient. Depression is measured by the Inventory of Depressive Symptomatology Self-Report (IDS-SR)

FACET NAME % of time active	DESCRIPTION	FUNCTION	ADJUSTMENTS TO FUNCTION BETTER: <i>Serve a useful function with fewer costs</i>
Mean Mom 90%	Perfectionist, critical, never good enough	Pros: Motivates me to be different and to break the cycle of addiction and negligence, makes me goal-oriented, challenges me Cons: Too mean, never stops, unrealistic, tears me down, demoralizing	Keep the motivation/challenge without being mean/ critical Constructive coach, supportive parent "Look at you, way to go!" "Good try, maybe next time you can..."
Caregiver 95%	Selfless, self-sacrifice, take care of everyone else first	Pros: Good friend, caring person, empathic, kind, trusted Cons: Do not care for self, get used, drained	Balance caring for others and caring for self -Set boundaries for my own wellbeing -Be able to say no sometimes -Care for myself too
Guard Dog 75%	Protect, don't let anyone near me. Grrrrr!	Pros: I know how to protect myself. Lashing out works to get people away Cons: No one can get close, I run off people I care about	Use this when necessary. It is useful when I need to be tough, but don't use it all the time.
Mush 10%	Wants to be loved, emotional, child-like, vulnerable, sensitive HEALTHY POSITIVE "ME"	Pros: Let other people in, love, positive emotions, closer relationships, relief, feels good Cons: Vulnerable, painful, scary, can get let down again	Work on being less guarded, more open/ vulnerable Let this side out more in safe situations (with trusted friends and intimate relationships)

Fig. 17.3 Case example: Facets of Latta’s self-concept and the percentage of time they are active (these are overlapping and need not total 100%). This exercise is used to tune down facets that perpetuate the depressive network and to identify and develop those that can contribute to the positive network and growth

a better balance. This involves tuning down the facets that maintain depression, while also retaining their useful functions, and tuning up the healthier sides and developing them further. Patients practice interacting with their environments from this better balance. They become more aware of the destructive sides so that they can catch them and shift to the healthier side.

Phase 3: Positive Growth (Four to Six Sessions)

To prevent return to the well-worn patterns of depression, the third component of the NDT model is to develop and strengthen new, more adaptive networks. The therapist and patient sketch out the healthier view of self that was identified in the destabilization and exposure phase of EBCT. As with the depressive network, patients describe and elaborate this positive view of self and the associated emotions, behaviors, cognitions, and physiological responses that could help to maintain it (for an example, see Fig. 17.4). Therapists explain how the depressive and positive networks can coexist and how to use the positive network to deactivate or disengage from the powerful pull of the depressive network. Patients learn that the depressive pattern may be weakened, but it is still there. It can unexpectedly get triggered and old fragments can appear, even when the person is doing well. Some patients have old depressive thoughts or even suicidal thoughts emerge, although they are no longer depressed and are doing well. We call these “phantom thoughts,” somewhat like the phantom limb phenomenon. Patients learn to note this

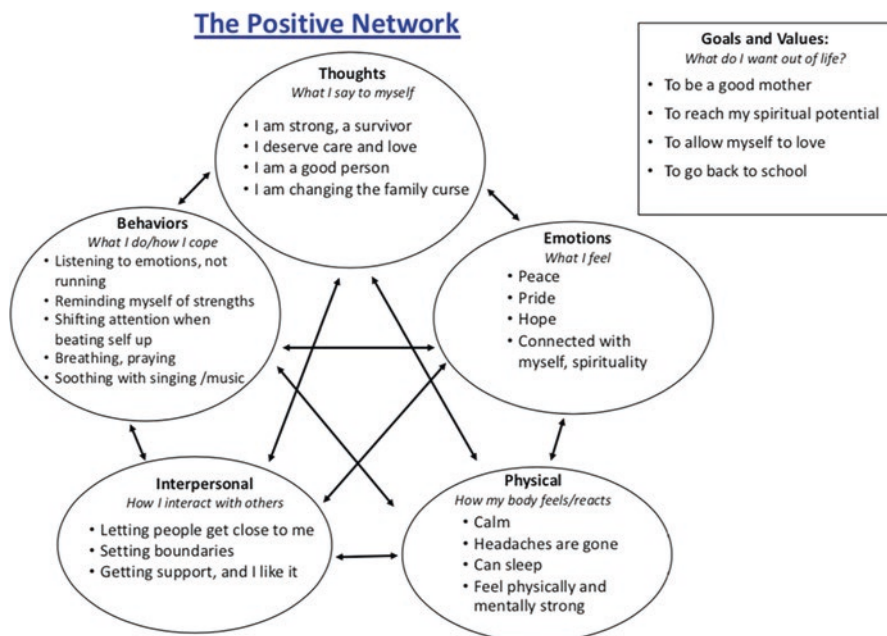


Fig. 17.4 Case example: Latta’s individualized positive network

reactivation but unhook from what was once an automatic cascade into worsening mood. In tandem, patients engage the positive network across a variety of contexts and work through the tendency to avoid or fear these positive experiences. They learn to notice when the depressive network gets triggered and practice shifting out of it. The healthy lifestyle habits and skills learned throughout EBCT are further exercised and solidified. Relapse prevention drills involve identifying depression network triggers, how the patient’s regulation system gets overwhelmed, and how to unhook from the depression network and lockdown mechanisms. In the last sessions, patients identify core values in life and set goals that will help them live in line with those values.

Continuation Sessions (One to Three Monthly Sessions)

If necessary, these sessions help patients continue to practice skills they have learned in treatment, work through issues that arise, and set goals for the next monthly interval. Therapists function more as personal coaches, helping to prevent relapse and encourage movement toward wellness.

Adaptations and Considerations when Applying Exposure Principles to Depression

Exposure techniques in EBCT are interwoven into a cognitive behavioral framework for treating depression. Exposure is therefore one of the several interventions in the treatment, and the *principles* of exposure, emotional processing, and inhibitory learning are applied rather than the exact form of traditional exposure. We highlight below some important considerations and adaptations when applying exposure to the treatment of depression.

The Lockdown

The lockdown processes of depression are often tightly interconnected and block new information and experiences. Incompatible information, expectancy violations, and other challenges are not likely to be received and processed. For this reason, the first phase of EBCT focuses on unlocking the system to reduce the barriers to new learning. This preparatory work is more extensive than in traditional exposure therapies for anxiety and PTSD.

Beyond Fear and Extinction

The treatment of depression involves more than fear reduction and extinction, which were target processes in earlier iterations of exposure-based treatments (Foa & Kozak, 1986). The goals of the exposure components of EBCT are (1) to increase distress tolerance for a range of emotions, including fear, sadness, guilt, shame, and even positive emotions, (2) to destabilize old patterns of depression, and (3) to facilitate processing of core experiences and beliefs that contribute to the person's depression. Emotional processing in EBCT includes being able to decenter from and experience previously overwhelming or avoided emotions and thoughts, put words to feelings, and develop new, more adaptive perspectives, as described in modern presentations of exposure principles (Craske et al., 2014; Foa et al., 2006; Vavrková et al., 2020). EBCT induces expectancy violation, challenges negative beliefs, and facilitates updating and the development of new learning that can serve inhibitory functions.

Exposure to What?

The target of exposure in depression is somewhat different than in anxiety and stress-related disorders. One's emotions and negative view of self are the targets of exposure in EBCT. The experiences recalled for the exposure exercises in the second phase of EBCT are designed to activate the core negative view of the self as defective, worthless, or a failure and the associated negative emotions. The exposure then is to the perceived "unacceptable self" rather than to an external stimulus, trauma memory, or interoceptive cues. Activation and destabilization of this foundational and often long-standing view of self is threatening and disturbing. Patients also engage in exposure and processing of positive emotions and experiences to counter the positive fizzle mechanism. The narratives represent an additional type of exposure, as they are designed to have the patient face difficult thoughts and feelings related to their depression between sessions and to process them by writing. The mindful breathing exercises in the first phase also involve learning to sit with difficult thoughts, emotions, and memories without getting stuck in them or avoiding. Thus, the principles of exposure are similar to those treatments for anxiety and PTSD, but the targets of exposure (emotions and unacceptable self) are somewhat different.

Destabilization Is Difficult

The destabilization and processing phase of EBCT involves activating the depressive network through the exposure exercises, exploring it, and destabilizing it. As with exposure treatments for PTSD, recounting experiences that hit the core sense of self and the world is associated with an increase in distress, but this distress is associated with the empowering process of making contact and staying with difficult emotions and experiences to understand them. When the patient can engage in such a difficult task, anything less disturbing than that is less overwhelming. The transient symptom exacerbation that occurs during this work reflects network activation and provides the opportunity for processing and change, but the patient must be ready for this. The first phase of EBCT is designed to release the lockdown mechanisms and increase distress tolerance skills to prepare for this destabilization, or "painful growth."

This requires the patient and therapist in EBCT to sit with the distress that is part of the destabilization and processing phase and to view this disturbance as part of the growth process, rather than as something to quell. As we describe in the research section, EBCT has been characterized by a cubic pattern of symptom change (for an example, see Fig. 17.2), where the symptoms decrease over phase 1, increase or spike in phase 2, and then decrease again through the last phase of treatment (Hayes et al., 2007; Grosse Holtforth et al., 2012). Transient spikes in depression during the destabilization and processing phase are associated with more emotional

processing, and both spikes and processing predict more improvement in depression (Gómez Penedo et al., 2020; Hayes et al., 2007). This distress before growth is also consistent with the period of increased variability and turbulence that has been found to herald transition as complex adaptive systems move from one state to another (Hayes & Andrews, 2020; Schiepek et al., 2017; Scheffer, 2018). As with other exposure techniques, therapists must understand the role of distress in the change process so that they are not afraid and do not pull back or change course prematurely (Olthof et al., 2020).

Some therapists might also think that those who are depressed are too vulnerable and fragile and can become suicidal if they recall and process experiences central to their depression. However, these thoughts, images, memories, and emotions are already playing on a repeat cycle, churning over and over and haunting the person. These are the same concerns about overwhelming the patient that therapists often have with exposure treatments for PTSD and other disorders (Michael et al., 2020). Yet, once patients can identify, face, and explore their most defective and flawed parts of themselves, a sense of relief and empowerment often follows, and they can start to make sense of the experiences.

Depression Moves Differently than Anxiety or Fear

Because the exposure exercises in the destabilization and processing phase of EBCT involve activating the core unacceptable self, the patient does not experience relief after the first imaginal exposure session. As revealed by the cubic pattern of symptoms that we have reported (Hayes et al., 2007; Grosse Holtforth et al., 2012), patients' depression scores increase over the second phase of EBCT and remain elevated across several weeks (for an example, see Fig. 17.2). They learn to tolerate this distress and apply the skills learned in the first phase of treatment, as they explore and process the experiences that contribute to their profound negative view of self. As mentioned earlier, the target of exposure is the unacceptable view of self, which is very negative, strongly held, and foundational, so relief takes time. Imaginal exposure exercises are not assigned between sessions, and instead patients apply the distress tolerance skills that they have learned and continue to process the material from the session in their weekly narratives.

More Active Processing and Work on the Self

The imaginal exposure sessions in the destabilization and processing phase of EBCT activate the depressive network with the unacceptable self as the core. Recounting the experiences associated with that core is disturbing at a deep level, and the emotions and negative beliefs do not diminish with revisiting exercises alone. Exposure therapies for anxiety and related disorders include a processing

segment of the session, but it is often somewhat brief and unstructured. Corrective information is introduced more behaviorally through the presence of an anxiety-provoking stimulus without a feared outcome occurring. Depression does not extinguish in the same way as fear, and accordingly, the material activated in the exposure sessions in EBCT requires more structured processing. EBCT includes more cognitive therapy exercises to move the person from an undifferentiated unacceptable self to examine parts that they like, parts that they do not like but can change or accept, and parts they wish they had and could begin to develop. EBCT also identifies different facets or sides of the self that maintain depression and other facets that are healthier and could be developed further. In short, the view of self is accessed through imaginal exposure exercises, and cognitive techniques are added to the processing segment of the session to introduce corrective information and help differentiate the monolithic and vague unacceptable self.

More Active Work on Positive Emotion System

As the view of self needs more direct work in depression than in exposure therapies for anxiety and related disorders, the positive emotion and reward processing deficits of depression also need extra attention. The lockdown release exercises help to tune down the positive fizzle mechanism that interferes with the spark and sustain of positive emotions. Exposure exercises are also used to counter avoidance of positive experiences and encourage engagement with positive emotion and increase tolerance of the distress associated with positive emotions. In the positive growth phase of EBCT, therapists actively map out the patient's positive network with its cognitive, emotional, behavioral, and physiological components (for an example, see Fig. 17.4). The patient and therapist design exercises to strengthen and elaborate this positive network so that patients can use it to compete with or inhibit the remnants of the depressive network. With time and repetition, this positive network can become the default state rather than the depressive network.

EBCT: Research on Treatment Outcome and the Process of Therapeutic Change

We next describe research on the efficacy of EBCT and the process of change.

Treatment Efficacy

The initial pilot trial of EBCT (Hayes et al., 2005, 2007) included 33 patients diagnosed with MDD. Of those, 80% had two or more previous episodes, and 67% had three or more episodes. Depressive symptoms decreased significantly with large

effect sizes [Beck Depression Inventory-II, BDI-II (Beck et al., 1996); Cohen's d intent-to-treat (ITT) = 1.73; d completers (29) = 2.32] and a dropout rate of only 11%. Of the completers, 80% showed a 50% or more reduction in depression symptoms. Treatment gains were maintained at 3-month follow-up. Quality of life also improved significantly, with large effects [quality of life inventory, QOL (Frisch et al., 2005); d (ITT) = 0.66; d (comp) = 0.87].

A second trial of EBCT (Andrews et al., 2021) included 64 patients diagnosed with MDD. As in the first trial, 82% of the sample had two or more previous episodes, and 66% had three or more. EBCT was again associated with a significant reduction in depressive symptoms, with large effect sizes [Inventory of Depressive Symptomatology Self-Report, IDS-SR (Rush et al., 2000); d (ITT) = 2.30; d (comp) = 2.43]. In this sample, 81% of completers showed a 50% reduction in depression scores, and treatment gains were maintained at 3-month follow-up. The dropout rate was 13%. Quality of life also improved significantly (QOL; ITT d = 0.89; comp d = 1.05).

EBCT was also piloted in Switzerland using a German translation of the treatment (Grosse Holtforth & Krieger, 2013). This trial (Grosse Holtforth et al., 2012) included 24 patients with MDD, 79% of whom had 2 or more previous episodes of depression. EBCT was again associated with significant improvement in depression [BDI-II; d (ITT) = 1.85; d (comp) = 2.14], and 76% reported clinically significant change (decrease of at least 8 points and post-BDI-II < 20). The dropout rate was 12%.

In an RCT by this same team (Grosse Holtforth et al., 2019), EBCT was compared with a German version of CBT (Hautzinger, 2003). Patients were randomly assigned to receive EBCT ($n = 77$) or CBT ($n = 72$). The EBCT sample had a less severe depression history than in the three previous EBCT trials (33% had two or more previous episodes of depression). Both EBCT and CBT showed significant improvement in depression (BDI-II), with large within-group effect sizes [EBCT-R d (ITT) = 1.77; CBT d (ITT) = 1.95] and very similar effects for the completer sample. Dropout rates for both treatments were also comparable (both <16%). In addition, well-being (WHO-5 Well-Being Index; World Health Organization, 1998) improved significantly, with similar effect sizes in both treatments (EBCT-R d = 0.44; CBT d = 0.40). Symptom relief was maintained over 12 months and again was similar in both treatments. Although EBCT was modified slightly in this trial to include fewer cognitive techniques, no narratives, and a truncated relapse prevention phase, treatment outcomes were comparable to a gold standard treatment for depression, CBT.

The percentages of those with at least 50% improvement in depression scores in the US trials (80% and 81%) or clinically significant improvement in the Swiss trial (76%) are striking. In a recent meta-analysis of 20 RCTs of empirically supported psychotherapies for depression, the average percentage of participants with 50% improvement in depression scores was 48% (CBT = 53%, interpersonal therapy = 46%, other psychotherapies = 44%; Cuijpers et al., 2014). Most patients in our three EBCT trials were in their third episode or more, which suggests that this treatment might be helpful for recurrent depression. An intriguing finding from a

study on pretreatment predictors of outcome in the EBCT and CBT trial (Friedl et al., 2020) was that both recurrent depression and number of previous episodes predicted worse outcomes in CBT, but did *not* predict worse outcomes in EBCT.

The Process of Change

The EBCT outcome studies were also designed to examine the process of change and components of the NDT model. We demonstrated that key inhibitors of change (unproductive processing and avoidance) decreased significantly over the course of EBCT and that mindfulness, a healthier form of engagement with thoughts and emotions, increased significantly (Kumar et al., 2008). Avoidance also decreased significantly in the Swiss trials (Grosse Holtforth et al., 2012, 2019) and self-efficacy increased (Gómez Penedo et al., 2020). In addition, more improvement in avoidance and self-efficacy predicted lower depression scores over the 12-month follow-up (Gómez Penedo et al., 2020). These findings suggest that EBCT decreases factors that maintain and worsen depression, the first component of the NDT model. This opening can then allow for an increase in more adaptive factors – mindfulness and self-efficacy.

The second component of the NDT model suggests that destabilizing the depressive network with corrective information can move patients from unproductive processing and avoidance to more constructive processing, a key hypothesized mechanism of change. EBCT is characterized by a cubic pattern of depression symptom change (symptom decrease-increase-decrease) and with spikes and more cognitive-emotional processing during the destabilizing and processing phase of treatment (Hayes et al., 2007; Grosse Holtforth et al., 2012). More processing in the second phase of EBCT (measured using both observational coding and self-report measures) predicted more improvement in depression at outcome (Grosse Holtforth et al., 2012; Hayes et al., 2007) and at 12-month follow-up (Gómez Penedo et al., 2020). More processing also predicted improvement in general well-being (Grosse Holtforth et al., 2012). In the RCT comparing EBCT to traditional CBT (Gómez Penedo et al., 2020), an interesting finding was that more cognitive restructuring in both treatments predicted more improvement in depression at post-treatment and follow-up, but more emotional processing was only a significant predictor in EBCT. Thus, the period of disturbance in phase 2 of EBCT seems to facilitate processing, which then predicts better outcomes at the end of treatment and over the follow-up.

The third component of the NDT model highlights the importance of not only reducing pathological networks but also developing patterns of adaptive functioning. As reviewed earlier, EBCT was associated with improvement in mindfulness, self-efficacy, cognitive restructuring, constructive processing, general quality of life, and well-being (Grosse Holtforth et al., 2012; Gómez Penedo et al., 2020; Hayes et al., 2007; Kumar et al., 2008).

In summary, the research on EBCT to date suggests that it is a promising treatment for depression. It helps to reduce the unproductive processing loops and

avoidance of depression and to increase mindfulness, constructive processing of depressive material, cognitive change, and quality of life variables. Because EBCT is based on core principles of general system change and learning, it also might help to address comorbid conditions, especially PTSD. EBCT further shows promise as a treatment for recurrent and persistent forms of depression.

EBCT in Practice: Case Example

The background description of this case is presented in some detail so that we can illustrate how the therapist depicted the patient's personalized depressive network, with cognitive, emotional, behavioral, and physiological nodes. This depressive network is used throughout EBCT and is used to develop the patient's competing positive network in the later sessions.

When Latta began treatment, she was a 35-year-old African American woman who was divorced, with two children from that marriage. She was employed as a teacher's aide and was living in poverty. She never knew her father, who abandoned the family when she was 3 years old. Her mother had been addicted to alcohol and crack cocaine for as long as she could remember. She neglected the children and constantly told Latta that she was worthless and would not amount to anything. Since the age of 14, Latta raised herself and her younger sister and reported chronic feelings of defectiveness, abandonment, and betrayal. She learned that she could count on no one. There was also no room for her emotions or distress because she was caring for everyone else, and no one was there for her. Latta presented to treatment with major depressive disorder and reported four previous episodes, each preceded by an interpersonal loss. She also reported panic attacks but did not meet criteria for panic disorder. She had been prescribed antidepressants but was still clinically depressed.

Latta's most recent depressive episode was precipitated by her divorce from her husband of 10 years. Her husband began smoking crack with her mother and also became addicted. This reactivated her feelings of abandonment, betrayal, and sense that this was her destiny or lot in life. Latta also criticized herself for repeating the pattern, exposing her children to an addicted parent. She felt like a bad mother, defective, and unlovable. She was left alone to care for her children, with little money to support them. She was also supporting her mother, who had been living with her for 2 years.

Latta coped with these chronic feelings of defectiveness, abandonment, and betrayal by trying to avoid these feelings, pushing others away, trying not have emotional needs, and at times lashing out at others. She frequently ruminated about what was wrong with her because no one wanted her, not even her parents. These thoughts would cycle over and over, sometimes with images and old memories. She tried to stop this by avoiding other people and her own thoughts, emotions, and needs. This chronic emotional suppression took its toll physically in the form of panic attacks and gastrointestinal distress. She had developed a tough exterior and

gave the impression that she did not need others. She was guarded with others because relationships meant more burden and responsibility and the possibility of abandonment yet again. She vacillated between what she called “going emotionally numb and distant” and “feeling like a helpless child.” The helpless state was terrifying, and this is when she would lash out at others and isolate, often staying in her house or bed for days. It was difficult for her to relax or to have fun because it felt self-indulgent, and there were too many problems and responsibilities. She also did not deserve to have fun. It was very difficult for her to ask for or receive help or care. Offers of help and support from members of her church would make her feel weak and like a failure, which in turn would trigger fears of abandonment. In the 3 years since her divorce, several men were interested in dating Latta, but she quickly pushed them away to avoid getting hurt again. It is not surprising that Latta was difficult to engage in therapy, as she was quite guarded and had adopted an angry and defensive demeanor to protect herself.

After gathering this information, the therapist created a graphic representation of Latta’s depressive network, including the cognitive, emotional, behavioral, and physiological components (Fig. 17.1). Her unhealthy lifestyle habits depleted her energy and worsened her depression. The therapist noted how rumination about her unacceptable self and being forever stuck in the family curse set off avoidance, which then resulted in a flood of negativity and more avoidance in a vicious cycle. The avoidance of positive emotions further depleted her energy and worsened the depressive symptoms.

This depiction of the patient’s personalized depressive network helps them to concretely understand the patterns and vicious cycles that maintain their depression. Patients also identify the historical roots or learning history that contributed to the development of this network. The key events in Latta’s history were abandonment by her father, negligence and abuse by her mother, and divorce from her husband of 10 years. She did have one positive influence, her grandmother, who believed in her and always thought that Latta might break what they referred to as the family curse.

Phase 1: Lockdown Release

As with most people struggling with depression, all three of the lockdown processes were relevant to Latta. She learned about each of these processes, how they expressed themselves in her life and what triggered them, and then learned healthy alternatives. She became aware when her *negativity loop* was set off, usually when she thought she was a bad mother or that her destiny was a life of misery and caring for others who take advantage of her. She learned the early warning signs that a ruminative loop was starting and was able to unhook from it with breathing exercises, distraction, and physical exertion that quieted her mind. Her *avoidance* was pervasive and most often activated by strong emotions and intimacy. She learned to identify her urge to avoid and instead to do the opposite. She also engaged in exposure exercises to interact with others and to let them in to some extent and breathe through

the urge to put up her guard or run away. She also used her mindful breathing exercises to sit with distress without shutting down or otherwise avoiding. Latta used the problem-solving skills that she learned to counter the negativity loop and avoidance. She also had a strong aversion to positive emotions, which she viewed as weakness, a luxury that she did not deserve, and a sign that something bad was coming. The *positive fizzle mechanism* was strong, and she therefore could not allow herself to have fun or relax. Positive experiences could not get in or quickly converted to negative perceptions and emotions. The therapist and Latta designed exercises to spark positive emotions and have her recognize the urge to dampen them and instead turn into and savor them. Latta's lifestyle habits were also not healthy. She was getting too little sleep, not eating well, and not exercising regularly. Together, these habits were wearing her down, and she had less energy, cognitive capacity, and patience for stressful life events. These unhealthy lifestyle habits are also targets of the first phase of EBCT.

As seen in Fig. 17.2, Latta's depression scores decreased steadily over the first phase of treatment. She was stronger, had more energy, and was more open. She was also better able to regulate the three lockdown mechanisms and tolerate emotions (both negative and positive). These are all indicators of readiness for phase 2.

Phase 2: Destabilization and Processing

Consistent with our research on the process of change in EBCT (Gómez Penedo et al., 2020; Grosse Holtforth et al., 2012; Hayes et al., 2007), Latta's depression scores spiked and then decreased over this phase of treatment (see Fig. 17.2), as she described two events that captured the key themes related to her unacceptable self: maltreatment and abandonment. The imaginal exposure exercises served to activate these depressive memories, and she was able to tolerate the difficult emotions, process the experiences, and see the situations and herself in a different light and from a broader perspective. As mentioned earlier, depression moves more slowly than anxiety and fear, but as the processing occurred, her depressive symptoms decreased and continued to do so over the last phase of treatment.

The first event that Latta recalled was when she caught her husband smoking crack with her mother. That memory from the previous year was very vivid and symbolized to her the vicious cycle of poverty and addiction that she feared she was destined to live. She had tried so hard to make a different life for herself, but after 10 years of marriage and two children, she felt as if she was living the life she remembered as a child. She felt like a failure and abandoned, again. As she processed this event, she felt pain and disappointment and cried for the first time since that event. She was able to realize the power of addiction and how she was not responsible for the behavior of her husband or her mother. Their behavior did not make her a bad mother, as she had thought. In fact, she filed for divorce soon after that incident to keep her children away from that lifestyle. She got her mother out of her home, and Latta asked her sister to care for her mother. Latta set limits,

protected her children, and asked for help, all positive steps that she had not remembered.

In the second exposure, Latta recalled a similar event that occurred when she was about 14 years old. Her mother was in the living room getting high with a boyfriend and told Latta that she was a loser and would never amount to anything. She also added that she wished Latta had never been born. Her mother was negligent and emotionally abusive throughout Latta's childhood and adolescence. Latta recalled this event and this time in her life, and with a more full picture and context, she realized more clearly that her mother's behavior was not her fault. She felt sad and even felt compassion for herself. At 14, she was caring for herself and her sister and managing the household. She also remembered her grandmother, who was always kind to her and told her that she was a strong child and that she would build a better life for herself. Latta realized that she was indeed very strong and capable, and if she were surrounded by healthier people, she could probably realize her potential. Although Latta feared these disturbing memories, when she revisited them, she saw the characters and events in a different light. She had experienced a sad childhood, but her strength and ability to see a different path became more apparent.

The last part of phase 2 involves identifying the different facets of the self to strengthen what is functional about each facet and tune down what perpetuates depression. The exposure exercises often reveal a positive side of the self, even if only a glimmer. The goal of this exercise is to spotlight that positive facet and develop it further. Latta had one facet of herself that she called Mean Mom, which relentlessly criticized her. This facet often set off the negativity loop, especially rumination. Another facet was the Guard Dog, a side that protected her when she was fending for herself but also kept others away so they would not disappoint or hurt her. The Caregiver took on all responsibility but at the expense of her own self-care and needs. Another side, Mush, was the part of herself who had deep emotions and the ability to connect but that she viewed as weak and vulnerable. As seen in Fig. 17.3, the therapist helped Latta to map out each of the facets, how active they were, their pros and cons, and how they could be adjusted to foster growth rather than feed her depression. The exposure exercises and the cognitive work in the facets exercise provide material to develop the positive network in phase 3.

Phase 3: Positive Growth

The last phase of EBCT involves integrating the changes made since the beginning of treatment to develop the patient's positive network, which includes healthy and growth-oriented views of self and associated emotions and physiological reactions, coping and emotion regulation strategies, and interpersonal functioning. Latta's positive network is depicted in Fig. 17.4. She described her core healthy self as a survivor, strong, and competent, with a softer side that she could share with people she trusted and who might be good for her. She developed a more diverse repertoire of emotion regulation strategies and event processing skills, and her emotions and

body felt more vital and healthy. The therapist compared the positive network with the depressive network and explained that the depressive network was quieter and weaker but it was still there and could be activated. The positive network was newly developed and had to be exercised regularly to be able to compete with or inhibit the depressive network. This metaphor was very helpful, as she could now recognize the depressive network and practice unhooking from it and switching to the positive. This is the essence of relapse prevention.

Latta and the therapist designed exercises to have her engage with her environment from the healthy core self. Another exercise in this phase of treatment is to identify important values and help the patient set goals to move toward those. One exposure exercise involved allowing a man who had been pursuing her for over a year to take her out for coffee. She had been pushing him away because he seemed to be a person who could be good for her. That was frightening. She moved into her fear of intimacy and eventually began dating him. Latta also wanted to get a better paying job, and she began taking classes at the local community college to start working toward a nursing degree. That also was something she had wanted but avoided for fear of failure.

By the end of phase 3, Latta's depression had decreased significantly, and she was no longer depressed. She and her therapist worked over two continuation sessions to solidify the gains that she had made and strengthen the positive network. She had several opportunities to work through the urge to avoid, as she challenged herself and her tendency to dismiss or extinguish positive emotions, especially related to her romantic relationship. She began to live her life from this healthy core self and positive network and eventually remarried and continued to work toward a college degree. Latta's ambition encouraged her children, who wanted to pursue a similar path rather than the path of most of their family. The depressive network continued to get triggered, but Latta learned to unhook from it and stay in what was becoming her new steady state, the positive network.

Conclusion

EBCT applies general principles of system change discovered in the sciences of complex adaptive systems, which are strikingly similar to principles of change in exposure-based therapies and modern learning theory. We illustrate how exposure principles can extend beyond anxiety and related disorders to depression and highlight the central importance of disturbance before change, emotional processing, and new learning that can serve inhibitory functions. Funding This treatment development work was supported in part by grants from the National Institute of Mental Health (NIMH: R01-MH086558, R21-MH062662) awarded to Adele M. Hayes.

References

- Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review, 30*, 217–237. <https://doi.org/10.1016/j.cpr.2009.11.004>
- Andrews, L. A., Golino, H., Christensen, A. P., & Hayes, A. M. (2021). *The language of depression: Dynamic exploratory graph analysis of text in exposure-based therapy for depression*. Manuscript submitted for publication.
- Asnaani, A., McLean, C. P., & Foa, E. B. (2016). Updating Watson & Marks (1971): How has our understanding of the mechanisms of extinction learning evolved and where is our field going next?. *Behavior Therapy, 47*, (5), 654–668. <https://doi.org/10.1016/j.beth.2016.02.003>.
- Beck, A. T., & Dozois, D. J. A. (2011). Cognitive therapy: Current status and future directions. *Annual Review of Medicine, 62*, 397–409. <https://doi.org/10.1146/annurev-med-052209-100032>
- Beck, A., Rush, A. J., Shaw, B., & Emery, G. (1979). *Cognitive therapy of depression*. Wiley. <https://doi.org/10.1046/j.1440-1614.2002.t01-4-01015.x>
- Beck, A. T., Steer, R. A., & Brown, G. K. (1996). *Manual for the Beck depression inventory-II*. Psychological Corporation.
- Beckers, T., & Kindt, M. (2017). Memory reconsolidation interference as an emerging treatment for emotional disorders: Strengths, limitations, challenges, and opportunities. *Annual Review of Clinical Psychology, 13*, 99–121. <https://doi.org/10.1146/annurev-clinpsy-032816-045209>
- Beevers, C. G., Wenzlaff, R. M., Hayes, A. M., & Scott, W. D. (1999). Depression and the ironic effects of thought suppression: Therapeutic strategies for improving mental control. *Clinical Psychology: Science and Practice, 6*, 133–148. <https://doi.org/10.1093/clipsy.6.2.133>
- Borsboom, D., & Cramer, A. O. (2013). Network analysis: An integrative approach to the structure of psychopathology. *Annual Review of Clinical Psychology, 9*, 91–121. <https://doi.org/10.1146/annurev-clinpsy-050212-185608>
- Bouton, M. E. (2002). Context, ambiguity, and unlearning: Sources of relapse after behavioral extinction. *Biological Psychiatry, 52*(10), 976–986. [https://doi.org/10.1016/s0006-3223\(02\)01546-9](https://doi.org/10.1016/s0006-3223(02)01546-9)
- Brewin, C. R. (2006). Understanding cognitive behaviour therapy: A retrieval competition account. *Behaviour Research and Therapy, 44*(6), 765–784. <https://doi.org/10.1016/j.brat.2006.02.005>
- Brewin, C. R., Gregory, J. D., Lipton, M., & Burgess, N. (2010). Intrusive images in psychological disorders: Characteristics, neural mechanisms, and treatment implications. *Psychological Review, 117*, 210–232. <https://doi.org/10.1037/a0018113>
- Brown, L. A., Belli, G. M., Asnaani, A., & Foa, E. B. (2019). A review of the role of negative cognitions about oneself, others, and the world in the treatment of PTSD. *Cognitive Therapy and Research, 43*, 143–173. <https://doi.org/10.1007/s10608-018-9938-1>
- Brujiniks, S. J. E., DeRubeis, R. J., Hollon, S. D., & Huibers, M. J. H. (2019). The potential role of learning capacity in cognitive behavior therapy for depression: A systematic review of the evidence and future directions for improving therapeutic learning. *Clinical Psychological Science, 7*(4), 668–692. <https://doi.org/10.1177/2167702619830391>
- Bullis, J. R., Boettcher, H., Farchione, T. J., & Barlow, D. H. (2019). What is an emotional disorder? A transdiagnostic mechanistic definition with implications for assessment, treatment, and prevention. *Clinical Psychology: Science and Practice, 26*(2), e12278. <https://doi.org/10.1111/cpsp.12278>
- Burcusa, S. L., & Iacono, W. G. (2007). Risk for recurrence in depression. *Clinical Psychology Review, 2*(8), 959–985. <https://doi.org/10.1016/j.cpr.2007.02.005>
- Craske, M. G., Treanor, M., Conway, C., Zbozinek, T., & Vervliet, B. (2014). Maximizing exposure therapy: An inhibitory learning approach. *Behaviour Research and Therapy, 58*, 10–23. <https://doi.org/10.1016/j.brat.2014.04.006>
- Cuijpers, P. (2017). Four decades of outcome research on psychotherapies for adult depression: An overview of a series of meta-analyses. *Canadian Psychology/Psychologie Canadienne, 58*, 7–19. <https://doi.org/10.1037/cap0000096>

- Cuijpers, P., Karyotaki, E., de Wit, L., & Ebert, D. D. (2020). The effects of fifteen evidence-supported therapies for adult depression: A meta-analytic review. *Psychotherapy Research, 30*(3), 279–293. <https://doi.org/10.1080/10503307.2019.1649732>
- Cuijpers, P., Karyotaki, E., Weitz, E., Andersson, G., Hollon, S. D., & van Straten, A. (2014). The effects of psychotherapies for major depression in adults on remission, recovery and improvement: A meta-analysis. *Journal of Affective Disorders, 159*, 118–126. <https://doi.org/10.1016/j.jad.2014.02.026>
- Dalgleish, T., & Werner-Seidler, A. (2014). Disruptions in autobiographical memory processing in depression and the emergence of memory therapeutics. *Trends in Cognitive Science, 18*, 596–604. <https://doi.org/10.1016/j.tics.2014.06.010>
- Disner, S. G., Beevers, C. G., Haigh, E. A. P., & Beck, A. T. (2011). Neural mechanisms of the cognitive model of depression. *Nature Reviews Neuroscience, 12*(8), 467–477. <https://doi.org/10.1038/nrn3027>
- Dunn, B. D. (2012). Helping depressed clients reconnect to positive emotion experience: Current insights and future directions. *Clinical Psychology and Psychotherapy, 19*, 326–340. <https://doi.org/10.1002/cpp.1799>
- Dunn, B. D., German, R. E., Khazanov, G., Xu, C., Hollon, S. D., & DeRubeis, R. J. (2020). Changes in positive and negative affect during pharmacological treatment and cognitive therapy for major depressive disorder: A secondary analysis of two randomized controlled trials. *Clinical Psychological Science, 8*, 36–51. <https://doi.org/10.1177/2167702619863427>
- Eaton, W. W., Shao, H., Nestadt, G., Lee, H. B., Bienvenu, O. J., & Zandi, P. (2008). Population-based study of first onset and chronicity in major depressive disorder. *Archives of General Psychiatry, 65*(5), 513–520. <https://doi.org/10.1001/archpsyc.65.5.513>
- Farb, N. A. S., Irving, J. A., Anderson, A. K., & Segal, Z. V. (2015). A two-factor model of relapse/recurrence vulnerability in unipolar depression. *Journal of Abnormal Psychology, 124*(1), 38–53. <https://doi.org/10.1037/abn0000031>
- Foa, E. B., & Kozak, M. J. (1986). Emotional processing of fear: Exposure to corrective information. *Psychological Bulletin, 99*, (1), 20–35. <https://doi.org/10.1037/0033-2909.99.1.2>
- Foa, E. B., Hembree, E. A., & Rothbaum, B. O. (2007). *Prolonged exposure therapy for PTSD: Emotional processing of traumatic experiences: Therapist guide*. Oxford University Press. <https://doi.org/10.1093/med:psych/9780195308501.001.0001>
- Foa, E. B., Huppert, J. D., & Cahill, S. P. (2006). Emotional processing theory: An update. In B. O. Rothbaum (Ed.), *Pathological anxiety: Emotional processing in etiology and treatment* (pp. 3–24). The Guilford Press.
- Foa, E. B., & Rothbaum, B. O. (1998). *Treating the trauma of rape: Cognitive-behavioral therapy for PTSD*. The Guilford Press.
- Friedl, N., Berger, T., Krieger, T., Caspar, F., & Grosse Holtforth, M. (2020). Using the personalized advantage index for individual treatment allocation to cognitive behavioral therapy (CBT) or a CBT with integrated exposure and emotion-focused elements (CBT-EE). *Psychotherapy Research, 30*, 763–775. <https://doi.org/10.1080/10503307.2019.1664782>
- Frisch, M. B., Clark, M. P., Rouse, S. V., Rudd, M. D., Paweleck, J. K., Greenstone, A., & Kopplin, D. A. (2005). Predictive and treatment validity of life satisfaction and the quality of life inventory. *Assessment, 12*, 66–78. <https://doi.org/10.1177/1073191104268006>
- Gómez Penedo, J. M., Coyne, A. E., Constantino, M. J., Krieger, T., Hayes, A. M., & Grosse Holtforth, M. (2020). Theory-specific patient change processes and mechanisms in different cognitive therapies for depression. *Journal of Consulting and Clinical Psychology, 88*(8), 774–785. <https://doi.org/10.1037/ccp0000502>
- Greenberg, L. S., & Watson, J. C. (2006). *Emotion-focused therapy for depression*. American Psychological Association. <https://doi.org/10.1037/11286-000>
- Grosse Holtforth, M., Hayes, A. M., Sutter, M., Wilm, K., Schmied, E., Laurenceau, J. P., & Caspar, F. (2012). Fostering cognitive-emotional processing in the treatment of depression: A preliminary investigation in exposure-based cognitive therapy. *Psychotherapy and Psychosomatics, 89*, 259–260. <https://doi.org/10.1159/000336813>

- Grosse Holtforth, M., & Krieger, T. (2013). Expositionsbasierte kognitive therapie bei depressionen. *Nervenheilkunde*, *2014*(4), 252–258.
- Grosse Holtforth, M., Krieger, T., Zimmermann, J., Dörig, N., Meisch, L., Hayes, A. M., ... Zimmermann, J. (2019). A randomized-controlled trial of cognitive – Behavioral therapy for depression with integrated techniques from emotion-focused and exposure therapies. *Psychotherapy Research*, *29*, 30–44. <https://doi.org/10.1080/10503307.2017.1397796>
- Grubaugh, A. L., Veronee, K., Ellis, C., Brown, W., & Knapp, R. G. (2017). Feasibility and efficacy of prolonged exposure for PTSD among individuals with a psychotic spectrum disorder. *Frontiers in Psychology*, *8*, 977. <https://doi.org/10.3389/fpsyg.2017.00977>
- Harned, M. S., Korslund, K. E., & Linehan, M. M. (2014). A pilot randomized controlled trial of dialectical behavior therapy with and without the dialectical behavior therapy prolonged exposure protocol for suicidal and self-injuring women with borderline personality disorder and PTSD. *Behaviour Research and Therapy*, *55*, 7–17. <https://doi.org/10.1016/j.brat.2014.01.008>
- Hautzinger, M. (2003). *Kognitive verhaltenstherapie bei depressionen: Behandlungsanleitungen und materialien* (6th ed.). Beltz PVU.
- Hayes, A. M. (2015). Facilitating emotional processing in depression: The application of exposure principles. *Current Opinion in Psychology*, *4*, 61–66. <https://doi.org/10.1016/j.copsyc.2015.03.032>
- Hayes, A. M., & Andrews, L. A. (2020). A complex systems approach to the study of change in psychotherapy. *BMC Medicine*, *18*(1), 197. <https://doi.org/10.1186/s12916-020-01662-2>
- Hayes, A. M., Feldman, G. C., Beevers, C. G., Laurenceau, J. P., Cardaciotto, L. A., & Lewis-Smith, J. (2007). Discontinuities and cognitive changes in an exposure-based cognitive therapy for depression. *Journal of Consulting and Clinical Psychology*, *75*(3), 409–421. <https://doi.org/10.1037/0022-006X.75.3.409>
- Hayes, A. M., Ready, C. B., & Yasinski, C. (2015a). Application of exposure and emotional processing theory to depression: Exposure-based cognitive therapy. In N. C. Thoma & D. McKay (Eds.), *Working with emotion in cognitive-behavioral therapy: Techniques for clinical practice* (pp. 121–145). The Guilford Press.
- Hayes, A. M., Yasinski, C., Barnes, J. B., & Bockting, C. L. H. (2015b). Network destabilization and transition in depression: New methods for studying the dynamics of therapeutic change. *Clinical Psychology Review*, *41*, 27–39. <https://doi.org/10.1016/j.cpr.2015.06.007>
- Holtzheimer, P. E., & Mayberg, H. S. (2011). Stuck in a rut: Rethinking depression and its treatment. *Trends in Neuroscience*, *34*, 1–9. <https://doi.org/10.1016/j.tins.2010.10.004>
- Joormann, J., & Tanovic, E. (2015). Cognitive vulnerability to depression: Examining cognitive control and emotion regulation. *Current Opinion in Psychology*, *4*, 86–92. <https://doi.org/10.1016/j.copsyc.2014.12.006>
- Kashdan, T. B., & Rottenberg, J. (2010). Psychological flexibility as a fundamental aspect of health. *Clinical Psychology Review*, *30*, 467–480. <https://doi.org/10.1016/j.cpr.2010.03.001>
- Keren, H., O'Callaghan, G., Vidal-Ribas, P., Buzzell, G. A., Brotman, M. A., Leibenluft, E., ... Stringaris, A. (2018). Reward processing in depression: A conceptual and meta-analytic review across fMRI and EEG studies. *The American Journal of Psychiatry*, *175*(11), 1111–1120. <https://doi.org/10.1176/appi.ajp.2018.17101124>
- Khazanov, G. K., Xu, C., Dunn, B. D., Cohen, Z. D., DeRubeis, R. J., & Hollon, S. D. (2020). Distress and anhedonia as predictors of depression treatment outcome: A secondary analysis of a randomized clinical trial. *Behaviour Research and Therapy*, *125*, 103507. <https://doi.org/10.1016/j.brat.2019.103507>
- Koster, E. H. W., De Lissnyder, E., Derakshan, N., & De Raedt, R. (2011). Understanding depressive rumination from a cognitive science perspective: The impaired disengagement hypothesis. *Clinical Psychology Review*, *31*(1), 138–145. <https://doi.org/10.1016/j.cpr.2010.08.005>
- Kube, T., & Glombiewski, J. A. (2021). How depressive symptoms hinder positive information processing: An experimental study on the interplay of cognitive immunisation and negative mood in the context of expectation adjustment. *Cognitive Therapy and Research*, *45*(3), 517–528. <https://doi.org/10.1007/s10608-020-10191-4>

- Kube, T., Schwarting, R., Rozenkrantz, L., Glombiewski, J. A., & Rief, W. (2020). Distorted cognitive processes in major depression: A predictive processing perspective. *Biological Psychiatry*, 87(5), 388–398. <https://doi.org/10.1016/j.biopsych.2019.07.017>
- Kumar, S., Feldman, G., & Hayes, A. (2008). Changes in mindfulness and emotion regulation in an exposure-based cognitive therapy for depression. *Cognitive Therapy and Research*, 32, 734–744. <https://doi.org/10.1007/s10608-008-9190-1>
- Michael, S. T., Blakey, S. M., Sherrill, A. M., & Aosved, A. C. (2020). Exposure therapy training and supervision: Research-informed strategies for addressing barriers to adoption and dissemination. *Training and Education in Professional Psychology*, 15, 97–105. <https://doi.org/10.1037/tep0000304>
- Monroe, S. M., & Harkness, K. L. (2022). Major depression and Its recurrences: Life course matters. *Annual Review of Clinical Psychology*, 18, 329–357. <https://doi.org/10.1146/annurev-clinpsy-072220-021440>
- Moffitt, T., Caspi, A., Taylor, A., Kokaua, J., Milne, B. J., Polanczyk, G., & Poulton, R. (2010). How common are common mental disorders? Evidence that lifetime prevalence rates are doubled by prospective versus retrospective ascertainment. *Psychological Medicine*, 40(6), 899–909. <https://doi.org/10.1017/S0033291709991036>
- Nemeroff, C. B. (2020). The state of our understanding of the pathophysiology and optimal treatment of depression: Glass half full or half empty? *American Journal of Psychiatry*, 177, 671–685. <https://doi.org/10.1176/appi.ajp.2020.20060845>
- Novick, D., Montgomery, W., Vorstenbosch, E., Moneta, M. V., Dueñas, H., & Haro, J. M. (2017). Recovery in patients with major depressive disorder (MDD): Results of a 6-month, multinational, observational study. *Patient Preference and Adherence*, 11, 1859. <https://doi.org/10.2147/PPA.S138750>
- Olthof, M., Hasselman, F., Strunk, G., van Rooij, M., Aas, B., Helmich, M. A., Schiepek, G., & Lichtwarck-Aschoff, A. (2020). Critical fluctuations as an early-warning signal for sudden gains and losses in patients receiving psychotherapy for mood disorders. *Clinical Psychological Science*, 8, 25–35. <https://doi.org/10.1177/2167702619865969>
- Pizzagalli, D. A. (2014). Depression, stress, and anhedonia: Toward a synthesis and integrated model. *Annual Review of Clinical Psychology*, 10, 393–423. <https://doi.org/10.1146/annurev-clinpsy-050212-185606>
- Resick, P. A., Monson, C. M., & Chard, K. M. (2017). *Cognitive processing therapy for PTSD: A comprehensive manual*. The Guilford Press.
- Rottenberg, J. (2017). Emotions in depression: What do we really know? *Annual Review of Clinical Psychology*, 13, 241–263. <https://doi.org/10.1146/annurev-clinpsy-032816-045252>
- Rush, A. J., Carmody, T., & Reimitt, P.-E. (2000). The inventory of depressive symptomatology (IDS). *International Journal of Methods in Psychiatric Research*, 9, 45–59.
- Scheffer, M., Bolhuis, J. E., Borsboom, D., Buchman, T. G., Gijzel, S. M., Goulson, D., ... & Olde Rikkert, M. G. (2018). Quantifying resilience of humans and other animals. *Proceedings of the National Academy of Sciences*, 115(47), 11883–11890. <https://doi.org/10.1073/pnas.1810630115>
- Schiepek, G. K., Viol, K., Aichhorn, W., Hütt, M.-T., Sungler, K., Pincus, D., et al. (2017). Psychotherapy is chaotic—(not only) in a computational world. *Frontiers in Psychology*, 8, 379.
- Sloan, D. M., & Marx, B. P. (2019). *Written exposure therapy for PTSD: A brief treatment approach for mental health professionals*. American Psychological Press.
- Smith, J. M., & Alloy, L. B. (2009). A roadmap to rumination: A review of the definition, assessment, and conceptualization of this multifaceted construct. *Clinical Psychology Review*, 29(2), 116–128. <https://doi.org/10.1016/j.cpr.2008.10.003>
- Solomon, D. A., Keller, M. B., Leon, A. C., Mueller, T. I., Lavori, P. W., Shea, M. T., Coryell, W., Warshaw, M., Turvey, C., Maser, J. D., & Endicott, J. (2000). Multiple recurrences of major depressive disorder. *American Journal of Psychiatry*, 157(2), 229–233. <https://doi.org/10.1176/appi.ajp.157.2.229>

- Spijker, J., van Straten, A., Bockting, C. L. H., Meeuwissen, J. A. C., & van Balkom, A. J. L. M. (2013). Psychotherapy, antidepressants, and their combination for chronic major depressive disorder: A systematic review. *The Canadian Journal of Psychiatry/La Revue Canadienne de Psychiatrie*, *58*, 386–392. <https://doi.org/10.1177/070674371305800703>
- Stange, J. P., Alloy, L. B., & Fresco, D. M. (2017). Inflexibility as a vulnerability to depression: A systematic qualitative review. *Clinical Psychology: Science and Practice*, *24*(3), 245–276. <https://doi.org/10.1111/cpsp.12201>
- Teasdale, J. D. (1999). Emotional processing: Three modes of mind and the prevention of relapse in depression. *Behaviour Research and Therapy*, *37*(Suppl. 1), S53–S77. [https://doi.org/10.1016/S0005-7967\(99\)00050-9](https://doi.org/10.1016/S0005-7967(99)00050-9)
- Tolin, D. F. (2019). Inhibitory learning for anxiety-related disorders. *Cognitive and Behavioral Practice*, *26*(1), 225–236. <https://doi.org/10.1016/j.cbpra.2018.07.008>
- Tschacher, W., & Haken, H. (2019). *The process of psychotherapy*. Springer.
- van de Leemput, I. A., Wichers, M., Cramer, A. O., Borsboom, D., Tuerlinckx, F., Kuppens, P., ... Scheffer, M. (2014). Critical slowing down as early warning for the onset and termination of depression. *Proceedings of the National Academy of Sciences of the United States of America*, *111*(1), 87–92. <https://doi.org/10.1073/pnas.1312114110>
- Vanderlind, W. M., Millgram, Y., Baskin-Sommers, A., Clark, M. S., & Joormann, J. (2020). Understanding positive emotion deficits in depression: From emotion preferences to emotion regulation. *Clinical Psychology Review*, *76*, 11. <https://doi.org/10.1016/j.cpr.2020.101826>
- Vaverková, Z., Milton, A. L., & Merlo, E. (2020). Retrieval-dependent mechanisms affecting emotional memory persistence: Reconsolidation, extinction, and the space in between. *Frontiers in Behavioral Neuroscience*, *14*, 12. <https://doi.org/10.3389/fnbeh.2020.574358>
- Vittengl, J. R., Clark, L. A., Dunn, T. W., & Jarrett, R. B. (2007). Reducing relapse and recurrence in unipolar depression: a comparative meta-analysis of cognitive-behavioral therapy's effects. *Journal of Consulting and Clinical Psychology*, *75*, (3), 475. <https://psycnet.apa.org/doi/10.1037/0022-006X.75.3.475>
- Watkins, E. R. (2008). Constructive and unconstructive repetitive thought. *Psychological Bulletin*, *134*, 163–206. <https://doi.org/10.1037/0033-2909.134.2.163>
- Watkins, E. R., & Nolen-Hoeksema, S. (2014). A habit-goal framework of depressive rumination. *Journal of Abnormal Psychology*, *123*, 24–34. <https://doi.org/10.1037/a0035540>
- Waugh, C. E., & Koster, E. H. W. (2015). A resilience framework for promoting stable remission from depression. *Clinical Psychology Review*, *41*, 49–60. <https://doi.org/10.1016/j.cpr.2014.05.004>
- Williams, A. D., & Moulds, M. L. (2007). The impact of ruminative processing on the development of intrusive memories. *Behaviour Change*, *24*(2), 55–69. <https://doi.org/10.1375/bech.24.2.55>
- Wittenborn, A. K., Rahmandad, H., & Hosseinichimeh, N. (2016). Depression as a systemic syndrome: Mapping the feedback loops of major depressive disorder. *Psychological Medicine*, *46*(3), 551–562. <https://doi.org/10.1017/S0033291715002044>
- World Health Organization. (1998). *Wellbeing measure in primary health care/the Depcare project*. WHO Regional Office for Europe.
- World Health Organization. (2017). *Depression and other common mental disorders: Global health estimates*. <https://apps.who.int/iris/bitstream/handle/10665/254610/WHO-MSD-MER-2017.2-eng.pdf>
- Young, J. E., Klosko, J. S., & Weishaar, M. E. (2003). *Schema therapy: A practitioner's guide*. The Guilford Press.

Index

A

Activity, Balance, Learning, and Exposure (ABLE), 245

Acute shortness of breath, 188

Alcohol, 88, 90, 92, 99–101

Alcohol use disorders (AUD), 88, 100, 101

A Matter of Balance, 245

American Psychiatric Association (APA), 52, 68

Anorexia nervosa (AN), 278, 288

Anxiety and Related Disorders Interview Schedule for DSM-5 (ADIS-5), 53

Anxiety disorders, 2, 25

agoraphobia, 46, 47

anxiety-related problems, 43

behavioral components, 37, 38

benefit, 43

with cardiovascular disease, 162

cardiovascular somatic symptoms, 173–175

causes of, 163

chest pain dilemma matrix, 171

conceptualizing, 164, 166

model of, 168–170

patient with, 167–168

planning exposure therapy, 171, 172, 175–178

potential drug side effects, 165–166

prevalence of, 164

steps to, 170, 171

types of, 162, 163

cognitive behavioral model, 44

cognitive processes, 36, 37

disorder-specific approaches, 40–42

disorder-specific group, 44

exposure therapy, 38

fear, 35

imaginal exposure, 38

interoceptive exposure, 38, 43

panic disorder, 46, 47

perfectionism, 42

physical arousal sensations, 47

physiological components, 37

posttreatment and symptoms, 45

social components, 47

transdiagnostic

approach, 38–42

CBT protocols, 46

and disorder-specific approaches, 38

exposure-based strategies, 45

group, 44, 45

uncertainty, 42

worry vs. panic disorder, 35

Anxiety-related disorders (ARD), 88

Anxiety sensitivity, 36

Anxiety Sensitivity Index, Third Edition, 47, 54

Anxious Thoughts Inventory, 54

Appraisal of Social Concerns, 22

Arrhythmias, 176

Asthma

adjunct psychosocial treatments

for comorbid anxiety and, 190

for comorbid asthma, 191

and anxiety, 187, 188

disease processes, 184

dyspnea and, 188

hospitalized patient with severe respiratory distress, 193

exposure therapy, 194, 195

- Asthma (*cont.*)
 learning, 194
 psychoeducation and treatment rationale, 193
 hyperventilation/hypercapnia, 189
 outpatient asthma patient with comorbid panic symptoms, 192, 193
 and psychological distress, 186, 187
 Asthma Control Test (ACT), 185
 Attentional bias to threat, 36
 Autism spectrum disorder (ASD)
 anxiety
 in adults, 120, 121
 caregiver involvement, 112, 114
 CBT, 117
 in children, 119
 contingent reinforcement, 114, 115
 teaching strategies, 115, 116
 treatment planning, 118, 119
 definition, 110
 OCD, 110, 111, 116, 120
 Avoidance behaviors, 246
 Avoidant restrictive food intake disorder (ARFID), 278
- B**
Back on Your Feet, 245
 Beck Depression Inventory-II (BDI-II)
 score, 254
 Behavioral activation (BA), 79
 Behavioral susceptibility theory (BST), 301
 Behavioral therapy, 222
 Behavioral weight loss (BWL) programs, 300
 Beta2-adrenergic agonists, 187
 Binge-eating
 behaviors, 279, 281–284, 290, 291
 exposure exercises for, 299–302, 306, 312, 314
 Binge-eating disorder (BED), 278
 Body image, 281, 284, 292–294
 Body mass index (BMI), 63
 Body Sensations Questionnaire, 54
 Borderline personality disorder (BPD)
 DBT
 to achieve readiness, 136
 for improving quality of life, 139
 PE for PTSD, 137, 138
 determining readiness, 127, 128, 133
 exposure exercises, 132
 non-fear emotions, 135
 optimizing emotional engagement, 130, 131, 134
 structuring treatment, 129, 130, 133, 134
 targeting non-fear emotions, 131, 132
 treatment approach, 128
 Brief cognitive screens, 243
 Brief Psychiatric Rating Scale (BPRS), 147
 Bronchoconstriction, 187, 189, 191
 Bulimia nervosa (BN), 278
- C**
 Cannabis use disorder, 101–103
 Capnometry-assisted respiratory treatment (CART), 191
 Cardiovascular disease (CVD), 241
 anxiety disorders with, 162
 cardiovascular somatic symptoms, 173–175
 causes of, 163
 chest pain dilemma matrix, 171
 conceptualizing, 164, 166
 model of, 168–170
 patient with, 167–168
 planning exposure therapy, 171, 172, 175–178
 potential drug side effects, 165–166
 prevalence of, 164
 steps to, 170, 171
 types of, 162, 163
 Chest pain, 176
 Chest pain dilemma matrix, 170
 Childhood, anxiety disorders
 CBT, 222
 exposure exercises
 guidance for planning, 226
 guidelines for, 228
 implementing exposure to violate expectations, 227
 exposures to dark, 232
 exposure to effectiveness of CBT, 223
 exposure with scary characters from film and stories, 233
 fear hierarchy, 231
 KibA program, 225, 226
 massed versus graduated exposure, 223
 prevalence rates, 222
 psychoeducation, 229
 relapse prevention and wrap-up, 234
 self-efficacy, 224, 225
 Children cope with fear (KibA) program, 225
 Choking, 176
 Chronic obstructive pulmonary disease (COPD), 189, 241
 Cognitive and behavioral techniques, 83

Cognitive behavioral interventions, 9
 Cognitive behavioral therapy (CBT), 45, 52,
 110, 117, 121, 222, 320–323,
 334, 335
 EDs (CBT-ED), 278, 280
 in pregnant women, 203–206, 214
 Cognitive behavioral treatments (CBT), 4, 240
 Cognitive decline, 247
 Cognitive model, 71
 Cognitive processes, 36, 37
 Cognitive processing therapy (CPT), 7
 Cold, 176
 Comorbid anxiety disorder, 110–112, 117, 118
 Consultation, 112
 Corticosteroids, 186, 187
 Cue exposure, 290
 Cue exposure-based extinction training (CET),
 270, 271

D

DBT Prolonged Exposure (DBT PE)
 treatment, 133
 Depression
 anxiety, 68
 BA, 79
 chronicity, 71, 72
 cognitive work, 80
 discounting the positive, 82
 emotional responsivity, 71
 engagement, 73
 exposure principles
 active processing and work on self, 332
 beyond fear and extinction, 330
 destabilization and processing phase of
 EBCT, 331, 332
 lockdown processes, 330
 positive emotion system, 333
 target of exposure, 331
 habituation/extinction, 72
 imaginal vs. in vivo exposure, 77
 impact on homework, 75, 76
 impact on processing, 73, 74
 inhibit negative information, 81
 modifying exposures, 83
 motivation, 77, 78
 motivational interviewing, 78
 multiple factors, 68
 negative attributional styles, 81, 82
 negative events, 80
 negatively interpreting ambiguity, 81
 patient's depression scores, 327
 patient's individualized positive
 network, 329

 primacy, 70
 process of treatment, 69
 psychoeducation, 78, 79
 severity, 70, 71
 suicidality, 72, 76, 77
 treatment outcome, 68
 Depressive network, 319, 320, 322, 324, 326,
 328, 329, 332, 333, 336, 337, 340
 Desirable difficulties, 5
 Diagnostic and Statistical Manual of Mental
 Disorders, Fifth Edition (DSM-5),
 35, 52, 68, 278
 Dialectical behavior therapy (DBT), 132, 133
 Disorder-Specific Intolerance of Uncertainty
 Scale, 54
 Distress tolerance, 5, 36
 Drugs, 88
 Drug use disorders (DUD), 88
 Dynamical systems theory, 319, 320, 323
 Dyspnea, 177, 184, 186, 188, 189, 191,
 193, 195

E

Eating disorders (EDs)
 CBT-ED, 278
 evidence-based approaches, 278
 exposure therapy
 beliefs and emotions, 280
 body-focused exposure, 284
 body image exposure, 292–294
 cue exposure, 284, 290–292
 emotional and interpersonal exposure,
 289, 290
 family-based treatment, 280
 food and eating, 285
 food exposure therapy, 284
 physical safety and nutrition, 280
 positive treatment outcomes, 284
 rationale for, 282
 weight and fear of weight
 gain, 287–289
 mandatory refeeding, 279
 Emotional avoidance, 126
 Emotional engagement, 130
 Emotion dysregulation, 134
 Empathy, 78
 Exercise-based exposure, 175
 Exposure-based cognitive therapy (EBCT)
 activate and strengthen new learning, 323
 continuation sessions (one to three monthly
 sessions), 329
 destabilization and processing (six to eight
 sessions), 322, 325, 328, 338, 339

- Exposure-based cognitive therapy (EBCT) (*cont.*)
 - lockdown mechanisms, 320, 321
 - lockdown release (four to six sessions), 322, 324, 337
 - multiple modal patterns, 319
 - positive growth (four to six sessions), 328, 339, 340
 - treatment efficacy, 333, 336
 - Exposure-based intervention, 119
 - Exposure exercises, 132, 246
 - food cue responsiveness, 301, 302
 - food selection, 305
 - procedural guidelines, 306, 307
 - psychoeducation session prior to, 303, 305
 - ROC program, 302
 - sessions
 - common challenges, 313
 - ending the session, 310
 - exposure practice, 309
 - first exposure exercise, 308
 - group or individual, 312
 - integrating BWL/CBT
 - components, 312
 - out-of-session exposure exercises, 311, 312
 - post-processing, 309, 310
 - pre-processing, 308
 - subsequent exposure exercise
 - work, 311
 - treatment of overeating, binge eating, obesity, 300, 301
 - Exposure therapy
 - age-related changes, 26
 - applications, 25
 - assessment, 21, 22
 - case formulation, 11, 12
 - exposure success, 12
 - intervention selection, 10, 11
 - treatment progress, 13
 - asthma, 26
 - BRAVE model, 13, 14
 - cardiovascular disease, 26
 - case formulation, 21, 22
 - CBT, 4
 - challenges, 26
 - clinical populations, 2, 25
 - comorbid cardiovascular disease, 26
 - efficacy
 - anxiety-related problems, 6
 - childhood anxiety disorders, 8, 9
 - GAD, 8
 - illness anxiety disorder, 7
 - OCD, 7
 - panic disorder, 6, 7
 - PTSD, 7
 - quality of life, 6, 9
 - social anxiety, 8
 - specific phobias, 6
 - exposure lists, 16
 - fear-based disorders, 26
 - fear reduction, 5, 6
 - flooding and implosive therapy, 3, 4
 - homework, 19, 20
 - intervention targets, 9, 10
 - maximizing generalization, 18, 19
 - mechanisms, 9, 10
 - mental health comorbidities, 25
 - new-employee orientations, 20
 - personalization, 2
 - practice modalities, 14, 15
 - principles, 9
 - prioritize initial success, 16, 17
 - progression, 24
 - psychological treatment, 2
 - PTSD and comorbid psychotic disorder, 144, 145
 - psychosis severity and functional indicators, 149, 150
 - recommendations, 150–154
 - tolerance and satisfaction, indicators of, 149
 - trauma exposure, assessment of, 145–148
 - treatment on symptoms, impact, 148, 149
 - SD, 3
 - selection of targets
 - and exercises, 22–24
 - social anxiety disorder, 20
 - stressors, 26
 - supportive coach, 17, 18
 - traditional application, 2
 - Extinction learning, 291
- F**
- Falling, 243
 - Family-based treatment (FBT)
 - programs, 300
 - Fear-based disorders, 11, 12
 - Fear hierarchy, 246
 - Fear of falling, 243
 - Fear of suffocation, 184, 187
 - Flushing, 177
 - Food cue responsiveness (FR), 301, 302

G

Generalized anxiety disorder (GAD), 8, 68, 88, 202, 240, 244
 Global Initiative for Asthma (GINA), 186
 Group vs. individual therapy, 206
 Guilt, 131, 132, 135, 137, 138

H

Health anxiety
 assessment, 52
 behavioral component, 52
 cognitive behavioral therapy, 52
 cognitive techniques, 52
 common behaviors, 56
 COVID-19, 63
 exposure therapy techniques, 64
 external/internal trigger, 55
 functional assessment, 54, 55
 health-related uncertainty, 52
 heart attack, 63
 hypochondriasis, 52
 measures, 53, 54
 medical condition, 52
 patient socialization, 56–58
 safety behaviors, 64
 somatic symptom disorder, 52
 substantive distress and impairment, 52
 treatment
 cognitive behavioral intervention strategies, 59
 components, 59
 fear of bodily sensations and changes, 62
 safety behaviors, 60, 61
 use of cognitive restructuring, 62
 worry, 59, 60
 worry, 64
 Health Cognitions Questionnaire, 54
 Health-related uncertainty, 52, 54, 61–64
 Heart rate variability (HRV), 190
 Heat, 176
 Hyperventilation/hypercapnia, 177, 189–191, 193–195
 Hypochondriasis, 52
 Hypothalamic-pituitary-adrenal (HPA) axis, 186–187
 Hypoventilation training, 193

I

Illness anxiety disorder, 7
 Illness Attitudes Scale (IAS), 53

Imaginal exposure, 7, 8, 15, 177, 240, 245, 247
 Impact of Events Scale-Revised (IES-R), 254
 India's hotspots, 213
 Inhibitory learning, 5, 280, 302
 Injection Phobia Scale–Anxiety (IPSA), 205
 Intangible rewards, 114
 Integrative testimonial therapy (ITT), 240
 Interoceptive exposure, 6, 7, 11, 12, 15, 18, 26, 62, 193
 Interpersonal encounters, 289
 In vivo exposure, 6, 245, 247

L

Life review therapy (LRT), 248, 249

M

Major depressive disorder (MDD), 318
 Motivational enhancement therapy (MET), 98
 Multidimensional Inventory of Hypochondriacal Traits (MIHT), 54
 Myocardial infarction, 168

N

Narrative exposure, 240, 242, 247–250, 253, 254
 National Comorbidity Survey (NCS), 68
 National Comorbidity Survey Replication (NCS-R), 68
 Negative body image-related behaviors, 278
 Negative interpretation biases, 36
 Negative reinforcement, 37
 Negative thoughts, 246
 Network destabilization and transition (NDT) model, 318, 319, 321–325, 328, 335
 Non-fear emotions, 131, 135, 139
 Non-suicidal self-injury (NSSI), 126–128, 133, 134, 136

O

Obesity, exposure exercises for, 299–302
 Obsessive-compulsive disorders (OCD), 2, 7, 88, 110, 111, 120, 202, 206, 209
 Older adults
 activating and practicing resources, 244
 anxiety reactions, 242
 assessment, 251
 case history, 251

- Older adults (*cont.*)
- characteristics and consequences for
 - exposure therapy, 241
 - chronicity of anxiety disorders, 244
 - cognitive changes, 242
 - exposure sessions, 252
 - fear and anxiety, 243
 - fear of falling, 245, 247
 - general adaptations to exposure
 - therapy, 245
 - narrative exposure, 253, 254
 - patient and therapist relationship, 252
 - psychoeducation about exposure
 - therapy, 252
 - PTSD, 247
 - narrative exposure, 248, 250
 - prolonged exposure, 247
 - therapeutic rationale, 251
 - treatment results, 254
- Online therapy, 207
- Other specified feeding and eating disorders (OSFED), 278
- Overeating, exposure exercises for, 299–302, 304, 305, 307, 313, 314
- P**
- Palpitations, 176
- Panic Attack Treatment in Comorbid Heart Diseases (PATCHD), 172
- Panic disorder, 6, 39, 186–193, 202
- Paresthesias, 177
- Partial pressure of CO₂ (PCO₂), 186
- Patient's depression scores, 327
- Perfectionism, 37
- Phobias, 243
- Physical decline, 247
- Physiological arousal, 241, 242, 244, 245, 247, 251
- Positive and Negative Symptom Scale (PANSS), 147
- Positive fizzle mechanism, 321, 338
- Positivity effect, 242
- Posttraumatic stress disorder (PTSD), 2, 7, 68, 88, 101–103, 144, 145, 240, 244, 247, 248, 252, 322, 326, 330, 331, 336
- assessment and treatment
 - recommendations, 151
 - pregnant women, 212, 213
 - psychosis severity and functional
 - indicators, 149, 150
 - recommendations, 150–154
 - tolerance and satisfaction,
 - indicators of, 149
 - trauma exposure, assessment of, 145–148
 - treatment on symptoms, impact, 148, 149
- Pregnant women
- delivering therapy with, 203
 - exposure therapy
 - assessment, 207, 208
 - efficacy, 204
 - group *vs.* individual therapy, 206
 - online therapy, 207
 - safety, 203, 204
 - time-intensive therapy, 206
 - timing of treatment, 205
 - treatment, 208
 - OCD, 209
 - in pregnant women, 209
 - PTSD, 212
 - treatment goals, 210
- Prolonged exposure, 247
- Psychoeducation, 112, 193, 252
- Psychological disorders, 10
- Psychological intervention, 58
- Psychotherapy, 318, 323
- Psychotic disorder
- assessment of trauma exposure and
 - PTSD, 145–148
 - exposure therapy, recommendations for
 - application, 150–154
 - and PTSD treatment on symptoms,
 - 148, 149
- Pulse oximeters, 192
- R**
- Randomized controlled trials (RCTs), 133
- Reassurance questionnaire (RQ), 54
- Refeeding, 279
- Refusal skills training, 266
- Regulation of Cues (ROC) program, 299, 302
- S**
- Safety behaviors, 37
- Satiety responsiveness (SR), 301, 302
- Schizoaffective disorder, 129
- Self-disgust, 131, 132, 135, 137, 138
- Self-injurious behaviors, 11
- Self-medication, 91
- Separation anxiety, 227
- Setbacks, 246
- Severe respiratory distress, 193, 195
- Shame, 131, 132, 135, 137, 138

- Short Health Anxiety Inventory (SHAI), 53
Situational exposures, 15, 177
Social anxiety, 8, 110, 111, 119
Social anxiety disorder (SAD), 39, 68, 202
Social phobia, 227, 243
Specific phobia (SP), 68
Stomach pooch, 283
Strategies for Increasing Independence, Confidence and Energy (STRIDE), 245
Strength and vulnerability integration (SAVI), 242
Stress inoculation training (SIT), 7
Subjective units of distress (SUDS)
 assessment, 12
Substance craving, 265, 266, 271
Substance use disorders (SUDs)
 adapting fear exposure for, 264, 268
 alcohol and drugs, 88
 anxiety, 95, 96
 anxiety-related conditions, 88
 anxiolytic effects, 89
 assessment, 90
 AUD, 99–101
 clinicians, 90
 co-occurring SUDs, 262
 cue exposure, 269–271
 decision-making, 91, 92
 exposure-based treatment programs, 89
 exposure interventions, 89
 exposure sessions, 98
 exposure therapy, 98, 262
 extended-release injectable naltrexone, 272
 fear exposure
 behavioral therapy, 267
 pharmacotherapy, 267
 function, 90, 91
 integrated treatment approaches, 89
 interoceptive exposures, 268, 269, 273
 learning and memory, 88
 managing cravings, urges and relapse, 92, 93
 managing motivation issues, 98
 marginalization, 97
 marginalized populations, 88
 mental health treatment activities, 88
 multiple psychiatric conditions, 88
 patient prepare, 93, 94
 postexposure plans, 95, 96
 posttreatment, 98
 psychedelic substances, 89
 psychoeducation, 272
 PTSD, 262
 refusal skills, 266
 safety and efficacy of fear exposure in, 263
 score, 254
 session construction, 94, 95
 state-dependent learning, 88
 stigma, 97
 substance craving, 265, 266
 treatment, 97, 98
Systematic desensitization (SD), 3
- T**
Tangible rewards, 114
Time-intensive therapy, 206
Traumatic History Questionnaire (THQ), 145
Treatment readiness, 129
Triggers, 246
- U**
Uncontrollable weight gain, 288
Unified Protocol for Transdiagnostic Treatment of Emotional Disorders, 41, 45
- V**
Veterans, 240
- W**
Weight gain, 280, 283, 288, 289
Whiteley Index (WI), 53
Worry, 243