33 Somatic Syndromes: Assessment and Treatment for Children and Adolescents

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Introduction: Somatic Syndromes in Youth

Health complaints and somatic symptoms such as headaches, abdominal pain, non-cardiac chest palpitations, musculoskeletal pain, nausea, vomiting, dizziness, and fatigue are common in children and adolescents. Up to one-third of children and adolescents experience recurring and/or chronic functional somatic symptoms (FSS), for which no well-defined physical disorder is identified to explain the symptoms (Campo, 2012; Korterink et al., 2015). Four to 10% of these children will experience persistent symptoms and these can have serious psychosocial implications in the medium to longer-term (Rask et al., 2018). When these symptoms are recurring and increase in intensity, a growing and evolving body of literature has shown that they are related to functional impairment, as well as psychosocial problems, and a reduction in overall quality of life (Kangas et al., 2020). However, the assessment and treatment of debilitating and recurring somatic symptoms in children and adolescents has been hampered by a lack of consensus in definitions and terminology, which has further been impacted by changes across the diagnostic nomenclature for somatic syndromes including the change in focus of somatic criteria stipulated between the fourth and current, fifth editions of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV/TR (1994; 2001); DSM-5/TR; American Psychological Association, 1994, 2001, 2013, 2022) and the criteria for somatization disorder and bodily distress disorder in the International Classifications of Diseases and Related Health Problems codes (ICD-10 and ICD-11; World Health Organization).

The objective of this chapter is to provide an overview of the prevalence and characteristics of somatic syndromes in children and adolescents, and diagnostic and assessment methods used to screen for somatic syndromes in youth, as well as evaluating the current evidence base for psychological interventions for managing somatic symptoms in children and adolescents. First, an overview of common definitions used in this field will be presented, followed by an overview of features characterizing somatic syndromes in children and adolescents. A summary of key components of biopsychosocial conceptual models in this field will also be presented as a heuristic framework to facilitate assessment and treatment evaluations. A review of current, relevant diagnostic frameworks and assessment methods including validated measures used to screen and assess children and adolescents for

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recurring somatic symptoms is then presented. This is followed by a review of the evidence base for the psychological treatment of somatic syndromes in children and adolescents presenting for therapy. The chapter concludes with clinical implications for practitioners working with children and adolescents with somatic syndromes as well as highlighting gaps that need to be addressed in future research to further advance the assessment and treatment evidence-base for somatic syndromes in youth. For the purpose of this chapter, the term "youth" will refer to both children and adolescents.

Prevalence of Somatic Syndromes in Youth

A variety of terms have been used to refer to recurring somatic complaints in youth related to pain and/or discomfort and which have no clear pathophysiology (Campo, 2012; Walker, 2019). These terms include functional somatic syndromes (FSS) (Kangas et al., 2020), medically unexplained symptoms, physically unexplained symptoms, bodily distress syndrome, persistent physical symptoms, and persistent somatic symptoms. More specialized terms have also been used focusing on specific sites (or clusters) of symptoms including functional abdominal pain (FAP); recurrent abdominal pain (RAP); functional gastrointestinal disorders (FGIDs), chronic fatigue syndrome (CFS), and functional intestinal bowel syndrome (functional IBS). The term "functional" in this body of literature is typically used (e.g., FSS, FGIDs, and functional IBS) to denote that no clear pathophysiological cause has been detected to explain the onset and maintenance of symptoms and/or clusters of symptoms.

The DSM-5 (American Psychiatric Association, 2013) introduced the category somatic symptom and related disorders (SSRDs) to capture somatic-related psychological disturbances in individuals across the life span. The DSM-5/TR (2013; 2022) category comprises seven specific types of disorders including somatic symptom disorder (SSD), illness anxiety disorder (formerly known as health anxiety or hypochondriasis), functional neurological symptom disorder (conversion disorder), psychological factors affecting other medical conditions, factitious disorder, other specified somatic symptom and related disorder, and unspecified somatic symptom and related disorder. A common feature across these disorders is the recurrence of somatic symptoms and/or illness anxiety which is associated with heightened, significant distress and impairment in functioning (American Psychological Association, 2013; 2022). Whereas the previous DSM-IV/TR criteria for somatoform disorders (1994; 2001) placed a heavy focus on the centrality of symptoms being unexplained by recognized pathophysiological processes, the DSM-5/TR (2013; 2022) criteria have shifted from an absence of symptoms to the presence of somatic symptoms, notably distressing somatic symptoms associated with maladaptive thoughts, feelings, and behaviors in response to these symptoms. With the introduction of the SSRD category in DSM-5, the term SSRDs has also been used in the literature focusing on youth experiencing recurring somatic syndromes (e.g., Ibeziako et al., 2017; Winarizal et al., 2020). Additionally, the introduction of the Bodily Distress Disorder (BDD) in the International Classification of Diseases (ICD-11; World Health Organization, 2018) further captures a constellation of physical/somatic symptom presentations categorized into one of four groups including cardiopulmonary, gastrointestinal, musculoskeletal, and general symptoms group. Importantly, the interchangeable use of somatic symptom terminologies such as FSS, medically unexplained symptoms, and persistent physical symptoms with diagnostic conditions such as somatic symptom disorder (SSD) and BDD is problematic when assessing children presenting with somatic health complaints (Blake et al., 2018). Due to developmental considerations, some children and adolescents may not necessarily meet all the criteria for any of the DSM or ICD somatic-related disorder codes, although they may still present for treatment due to recurring and distressing somatic symptoms which are causing functional impairment (Kangas et al., 2020). Hence, for the purposes of this chapter the term "somatic

syndromes" will be used to refer to children and adolescents with recurring somatic symptoms (either singular and/or multiple symptoms) which cause significant functional impairment. In line with other researchers (e.g., Brostrom, 2019, Kangas et al., 2020; Walker, 2019), the use of term "somatic syndromes" refers to a dimensional phenomenon, without assumptions referring to any specific organic cause.

Prevalence and Characteristics of Somatic Syndromes in Youth

The prevalence of somatic syndromes in youth is highly variable contingent on the range of terminology and diagnostic frameworks that are used within this field, including the presence of chronic pain (e.g., Rief et al., 2017). The estimated prevalence of FSS has been reported to be between 4% and 30% (Elliott et al., 2020; Geist et al., 2008; Rask et al., 2018), with prevalence rates being lower (between 4% and 10%) for youth whose symptoms contribute to substantial adverse impacts on functionality (Rask et al., 2018). Similarly, using diagnostic frameworks, research has indicated that between 10% and 15% of children and adolescents meet the criteria for SSRDs (Ibeziako et al., 2019; Winarizol et al., 2020). In children, the most common somatic complaints include recurring headaches, abdominal pain, fatigue, and nausea (American Psychiatric Association, 2022; Ng et al., 2016; O'Connell et al., 2020).

Moreover, due to the heterogeneity in symptom presentations, some children may present with only singular site symptoms of pain and/or discomfort (e.g., RAP or headaches), while others may present with multiple symptoms. It is noteworthy that the actual presence of any somatic symptoms is high in childhood. It is therefore important to differentiate between symptom presence per se relative to the recurring, chronicity of symptom presence and intensity, and the impact this has on functioning. The latter denotes the ability to perform activities of daily living expected commensurate with a child's developmental milestones (Winarizol et al., 2020).

There is an increasing body of literature demonstrating that recurring somatic syndromes in youth have a significant impact on functioning. Recurring somatic symptoms are a predictor of school absenteeism (Korterink et al., 2015), decline in academic performance (Janssens et al., 2014), and poor peer and social interactions (Mackner et al., 2012). Repeated school absenteeism and withdrawal from social activities also hinder social maturation including connectedness with same-aged peers (Mackner et al., 2012). It is therefore not surprising that recurring somatic syndromes in youth are associated with a range of emotional problems and have been documented to have a chronic course well into adulthood (Horst et al., 2014). For example, in a 15-year follow-up study, Bohman et al. (2012) found that adolescents with somatic syndromes, particularly abdominal pain were at greater risk of developing depression in adulthood. Moreover, four or more somatic symptoms during childhood predicted more severe mental illness in adulthood including recurrent, chronic depression, and suicidal behaviors.

Understandably, the ambiguity pertaining to the underlying cause of the somatic symptoms, inclusive of the recurring pain, is often highly distressing for both children/adolescents and their parents (Neville et al., 2019) and has been referred to as a "diagnostic vacuum" (Eccleston et al., 2003). These children and adolescents are prone to undergo numerous medical investigations including repeated (and costly) medical consultations to rule out the presence of organic disease with the risk of iatrogenic harm (Kangas et al., 2020; Malas et al., 2017; Neville et al., 2019; Rask et al., 2018). Indeed, in a recent Canadian population-based sample of children and young people with somatic syndromes, Saunders et al. (2020) found this cohort of youth to have a high-frequency use of the health-care system associated with substantial health-care system costs. Importantly, these researchers found that the identification and care for comorbid mental health problems in youth with somatic syndromes were poor.

In particular, studies have shown that 50–80% of children and adolescents with recurring somatic syndromes experience clinically elevated anxiety and/or depression symptomatology (Campo, 2012; Deshplande et al., 2015; Heimann et al., 2018; Winarizol et al., 2020). Unfortunately, the psychological impact of somatic syndromes in youth, for the most part, goes undetected or is minimized (Sood et al., 2016), as the immediate focus for parents/carers is typically to find a "medical" solution for their child's somatic symptoms. Although the causal link between somatic syndromes and psychological problems is not definitively known, it is most likely bi-directional and even multidimensional. Converging neurobiological and psychological research in adult populations with somatic syndromes suggests that anxiety reactions which enhance the central stress regulation system may provide a specific mechanism for elevated visceral sensitivity toward pain and other bodily sensations arising from somatic health complaints (Craske et al., 2011). Research indicates that somatic symptom-specific anxiety is a critical variable contributing to pain sensitivity, hypervigilance of bodily sensations, and poor coping responses (Craske et al., 2011). In one of the first studies investigating fear and avoidance in children with chronic abdominal pain, Flack et al. (2017) found that provocation of proximal (vs. distal) interoceptive sensations elicited greater fear and avoidance responses. These results indicate that children with recurring somatic syndromes have heightened pain perception due to biases in their pain expectations which contributes to exacerbating comorbid anxiety and mood disturbances (and/or vice versa). Moreover, the bi-directional effects of somatic and psychological symptom presentations further attest to shifting from a dualistic explanation of somatic syndromes to a more holistic, biopsychosocial explanation of symptom onset and maintenance.

Biopsychosocial Conceptual Framework for Somatic Syndromes in Youth

Over the past four decades, the child and adolescent literature for somatic syndromes have paralleled the adult literature in terms of moving from biomedical, dualistic explanations to more holistic biopsychosocial models (Chalder & Willis, 2017; Walker, 2019). To this end, recent biopsychosocial models incorporate specific individual theoretical frameworks (including social learning theory, attachment and family system theories), to conceptualize biological/genetic, child, parent/carer, family, and environmental variables related to predisposing, precipitating, and perpetuating mechanisms for the manifestation of somatic syndromes in children and adolescents (e.g., see Beck, 2008 and Kangas et al., 2020 for reviews). In particular, social learning theory (SLT) is a common conceptual framework within this field highlighting the role of parental/carer modeling behaviors.

In accord with SLT, studies have shown that parental factors including parental styles, appraisals and behaviors toward their child's somatic responses, parental emotion regulatory strategies, and emotional well-being can have a negative reinforcing effect on their child's coping repertoire and contribute to maintaining somatic syndrome responses and functional impairment. Specifically, research has shown that parental maladaptive modeling of somatic behavior is related to somatic syndromes in youth (Elliott et al., 2020; Rousseau et al., 2014). Parents' own catastrophizing of their child's somatic symptoms has been associated with elevated pain symptoms in their child (Wilson et al., 2014). Parental responses including over-protectiveness, reassurance seeking, and reduced child autonomy and decreases in participation in somatic-inducing activities have also been related to an increased functional disability including distress in children with somatic syndromes (Caes et al., 2011; Palermo et al., 2014). Poor emotional regulatory skills among parents have also been associated with heightened somatic complaints in children (Horwitz et al., 2015). Furthermore, maternal communication and modeling of pain management strategies have been found to influence adolescents' pain management choices (Elliott et al., 2020; Hatchette et al., 2008). In fact, a growing body of research has demonstrated the intergenerational transmission of pain (Stone et al., 2018), illness-

beliefs (Ramchandani et al., 2011), and sick-role behaviors (e.g., Elliott et al., 2020). Parents' own health including chronic pain experiences and associated emotional distress have also been linked with somatic syndromes including chronic pain in youth (Cordts et al., 2019; Elliott et al., 2020).

Collectively, these findings support the proposition that parental modeling of their own health-related behaviors and emotion-regulatory strategies influence the maintenance and potential exacerbation of somatic reactions and associated dysfunction in children and adolescents with recurring somatic syndromes. This attests to the importance of actively involving parents in psychological interventions for youth with somatic syndromes.

Research has further shown that a child's intrapersonal vulnerability factors as well as environmental/contextual variables may also predispose and precipitate the development and maintenance of chronic somatic syndromes in youth (Kangas et al., 2020). For example, early childhood trauma and adversity have been associated with somatic syndromes in children including SSRDs (American Psychiatric Association, 2022). As aforementioned, iatrogenic factors may also play a pivotal role in perpetuating maladaptive somatic reactions in youth by way of parents/carers seeking repeated medical consultations for reassurance as well as in the hope of finding an underlying organic, "medical" cause for their child's symptoms (Kangas et al., 2020; Neville et al., 2019; Sood et al., 2016). Unfortunately, repeated medical tests can lead to false-positive diagnosis and/or inappropriate interventions that do not necessarily alleviate the somatic responses including pain (Rask et al., 2018). Explicit focus on finding underlying medical causes is increasingly being recognized as a hindrance in identifying in a timely manner comorbid mental health problems in youth with somatic syndromes (Saunders et al., 2020).

In terms of intrapersonal vulnerability factors, a child's interoceptive and stress sensitivity may also play a role. A child's temperament including less adaptive coping styles (e.g., Walker et al., 2007) and emotion-regulatory behaviors (e.g., Jungmann et al., 2022) may further exacerbate their heightened interoceptive and stress sensitivity (e.g., Cappucci & Simons, 2015) and lower thresholds of pain (e.g., Bruehl et al., 2010). To this end, a child's appraisals of their somatic symptoms may also facilitate the chronicity of their symptoms. Research has shown that both child and maternal pain catastrophizing is associated with greater somatic symptoms even in pain-free children (Van Lierde et al., 2020).

In summation, this body of literature attests to the role of biopsychosocial mechanisms in the onset and maintenance of somatic syndromes in youth. This conceptual framework, therefore, has utility in informing assessment and treatment interventions for children and adolescents referred to psychological clinics in hospital, community, and private practice settings.

Screening and Assessing Youth with Somatic Syndromes

Given the various terminology and nomenclature used in the pediatric field for referring to and classifying somatic syndromes, this has resulted in a lack of universal consensus of international guidelines for assessment instruments and diagnostic frameworks to use when screening youth who present to clinical settings with somatic complaints (Ibeziako et al., 2019; Kangas et al., 2020; Walker, 2019). This lack of consensus is further reflected in the recent findings of a scoping review conducted by Winarizal et al. (2020) to identify outcome measures used to index functional recovery in youth (0–24 years) with SSRDs presenting to clinical/health services. Based on 16 studies, Winarizal et al. (2020) found that only six of these studies used validated measures, a further three of the studies used a combination of measures and clinical notes, while the remaining seven trials relied solely on clinical notes to monitor and index functional recovery.

Winarizal et al. (2020) identified a total of eight validated measures used to assess functional recovery (defined as the ability to perform activities of daily living concordant with an individual's developmental age), in youth presenting with SSRDs. The majority of measures included multidimensional elements of functioning (overlapping with domains from multidimensional quality-of-life, or QoL, scales), which included the Strengths and Difficulties Questionnaire (SDQ: Goodman et al., 2003) (measuring physical, emotional, social cognition, behavioral, academic, leisure/social activities, and impact on family functioning), Child Health Questionnaire (CHQ; Raat et al., 2002) (measures physical, mobility, emotional, social cognition, behavioral, academic, leisure/social activities, and impact on family functioning), and Columbia Impairment Scale (CIS; Attell et al., 2020) (measures emotional, social cognition, behavioral, academic, leisure/social activities). A further common measure identified in this review is the Functional Disability Inventory (Claar & Walker, 2006; Walker & Greene, 1991). However, the FDI was a unitary measure, and in contrast to the SDQ, CHQ, and CIS, it does not include items on emotional well-being. A noteworthy outcome from Winarizal et al.'s (2020) scoping review is that none of the scales identified were specifically designed to measure functional recovery in youth recovering from SSRDs. Yet as these scholars acknowledge, this in part could reflect the relative infancy of the SSRD category in DSM5/TR (American Psychiatric Association, 2013, 2022).

Despite the lack of consensus of assessment instruments in this field, there is increasing recognition for the need to conduct a comprehensive and multifaceted assessment when screening and assessing children and adolescents presenting with somatic health complaints. To aid assessment, adapting a biopsychosocial framework has utility to ensure that both the child's psychological and physical functioning is considered and that specific disorders are ruled out through applications of differential diagnostic considerations (Blake et al., 2018; Kangas et al., 2020).

In psychological settings, it is recommended that a case formulation approach is adopted. The clinical interview is recommended to be supplemented by using relevant modules from validated structured diagnostic interviews (where appropriate), and to also consider potential comorbid affective and mood disorders, particularly given the high rates of comorbidity in this cohort of youth which tend to be minimized or go unrecognized (e.g., Campo, 2012; Heimann et al., 2018; Korterink et al., 2015; Saunders et al., 2020). It is further recommended that validated self-report measures are also administered to index the severity of somatic symptom presentations including presence and frequency of pain, and the impact these symptoms have on functioning, illness appraisals, parenting behaviors, and comorbid anxiety and/or depressive symptoms. In Table 33.1, a summary of commonly used measures to assess these multidimensional domains of symptoms and functioning including parenting responses in the pediatric somatic syndrome literature is outlined. In particular, the CSSI and FDI are two of the most frequent measures utilized in clinical trials to monitor somatic symptom presence, intensity, and impact on functioning. Moreover, parallel versions are used to index both the child's response and their parent/guardians' perception of the child's symptoms. As further outlined in Table 33.1, pain symptoms should also be considered when screening youth with somatic presentations, including pain scales to measure intensity and severity of pain, as well as coping styles, especially if the pain is a primary and/or chronic complaint. This latter recommendation aligns with the Initiative on Methods Measurement and Pain Assessment in Clinician Trials (IMPACCT: McGrath et al., 2008).

Psychological Clinical Assessment: Case Formulation

Table 33.2 presents a framework to aid clinicians in assessing children who present with somatic health complaints in clinical settings. A comprehensive case formulation is recommended including

Table 33.1 Summary of clinician interviews and common self-report measures for assessing somatic syndromes and psychological comorbidities in youth

	Clinician scale/interview	**Description**
Clinician-administered – scales and interview(s)	Children's Global Assessment Scale (CGAS: Shaffer et al., 1983)	The CGAS is a 0–100 metric used by clinicians to measure the children and adolescents' (6–17 years) global level of functioning across multiple domains over typically a 2-week period
	Anxiety Disorders Interview Schedule (ADIS-C/P) for Diagnostic and Statistical Mental Disorders (DSM) – Child and Parent version	The ADIS-C/P is the most widely used structured diagnostic interview to assess anxiety and related disorders in youth
	The Kiddie Schedule for Affective Disorders and Schizophrenia (K-SADS) – DSM5 (Kaufman et al., 2016)	The K-SADS is a validated semi-structured interview to assess anxiety, mood, disruptive-related disorders, and other DSM-5 conditions in children aged 6–18 years. The questions are semi-structured which give several prompt options in how to ask requisite questions to children and their parents.
Domain	**Measures**	**Description**
Somatic symptom – presence and severity	Children's Somatic Symptom Inventory (CSSI: Walker & Garber, 2018; Walker et al., 2009). (Formerly known as Children's somatization Inventory; CSI)	The CSSI is a 24-item scale that assesses the presence and severity of a broad range of somatic symptoms reported to be bothersome to children and adolescents (8–17 years) over a 2-week period (e.g., headaches, abdominal pain, sore muscles)
		Parallel parent-proxy version available
Pain – severity and coping	Faces Pain Scale – Revised (FPS-R: Hicks et al., 2001)	The FPS-R is a visual scale to index the sensation and severity of pain as depicted on 6 varied facial expressions based on a 0–10 metric scale. Suitable for ages 4–16 years
	Pain Response Inventory for Children (PRI: Walker et al., 1997).	The PRI is a 60-item multidimensional scale that assesses children's coping responses across 3 domains: Active, Passive, and Accommodative (8–18 years)
	The Pain Catastrophizing Scale – Child Version (PCS-C: Crombez et al., 2003)	The PCS-C is a 13-item self-report scale that measures children's catastrophizing reactions to pain across 3 domains: rumination, magnification, and helplessness. Suitable for ages 8–17 years
		Parallel parent-proxy version available
Functional	Functional Disability Inventory (FDI: Claar & Walker, 2006; Walker & Greene, 1991)	The FDI is a 15-item self-report scale that measures children's difficulties (aged 8–17 years) in performing regular activities of daily living across 4 domains, home, school, social, and recreational, over a 2-week period (e.g., eating regular meals, watching TV; attending school)
Health/illness appraisals	Childhood Illness Attitudes Scale (CIAS; Wright & Asmundson, 2003)	The CIAS is a 35-item self-report measure to assess children's (8–15 years) attitudes, including fears and beliefs about illness behaviors and health anxiety
Anxiety	The Spence Children's Anxiety Scale (SCAS) (Spence, 1998)	The SCAS is a validated and widely used measure to assess anxiety symptom severity in children aged 7–17 years, across 7 domains (comprising a total of 44 items including several filler items). Clinical cut-off scores are available
		There is a parent-proxy version available
	Screen for Child Anxiety Related Disorders (SCARED) (Birmaher et al., 1999)	The SCARED is a validated measure to assess anxiety symptom severity in children aged 7–17 years across 5 domains including Significant School Avoidance subscale
		There is a parent-proxy version available

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Table 33.1 (continued)

Depression	The Revised Child Anxiety and Depression Scale – Child (RCADS) (Chorpita et al., 2000)	The RCADS is a validated measure to assess anxiety and depressive symptom severity in children 7–17 years including five anxiety subscales and a major depressive disorder (MDD) subscale. Clinical cut-off scores are available
		There is a parent-proxy version available
Quality of Life (QoL)	KIDSCREEN-27 (Ravens-Sieberer et al., 2014)	The KIDSCREEN-27 is a 27-item self-report multidimensional QoL measure that assesses children's (8–18 years) subjective health and well-being including parent relations, social support, and school functioning
	The Pediatric Quality of Life Initiative (PEDS QL) (Varni et al., 1999)	The PEDS QL is a self-report multidimensional QoL measure that assesses children's (5–18 years) physical and emotional well-being, social, and school functioning
		There is a parent-proxy version available.
Parenting	Adult Response to Children's Symptoms (ARCS) (Van Slyke & Walker, 2006)	The ARCS is a 29-item scale that measures parents'/carers' responses to the child's pain in 3 domains: (1) Protective; (2) Minimizing symptoms; and (3) Encouraging and monitoring of symptoms

Table 33.2 Summary of topics when conducting an assessment case formulation for youth with somatic syndromes

Referral	Establish the reason for referral (source)
Evaluation of current somatic symptoms and functioning relative to medical history and current physical well-being	Single or multi-sites symptoms
	Intensity and frequency of symptoms; duration, and trigger cues (including recovery from illness, physical injury, trauma, etc.)
	Medical consultations (timeline) including tests; other allied health consultations (e.g., physiotherapy, nutritionist, gastroenterologist, etc.); and frequency of health-care usage due to symptom complaints
	Interventions received to date (including medication and non-pharmacotherapy treatments)
	Current medical status including the presence of any chronic conditions (e.g., asthma and diabetes), and whether exacerbations of symptoms worsen somatic health concerns
	Family history of somatic conditions
Psychological functioning	Current psychological functioning including concurrent anxiety, mood and/or behavioral disorders, as well as other somatic-related problems (e.g., illness anxiety disorder). Onset and duration of problems including trigger cues (e.g., negative life events and ongoing stressors)
	Screening for psychiatric history including interventions
	Family psychiatric history
Social and academic functioning	Impact of symptoms on functioning including engaging in social, peer and family activities; regular school attendance and academic performance (versus school refusal and school absenteeism and withdrawal from social/peer activities)
Parental/carer behaviors	Parenting attitudes and responses to child's symptoms – monitoring for negative reinforcement of illness/sick role behaviors, over-protectiveness

establishing reasons for the referral and whether the child and their parents/carers elicit any reluctance to seeking professional support from psychological services. In line with pediatric psychological assessments, it is also recommended that both the child and parent should be assessed in relation to the child's symptom presentation. In particular, the child's onset and duration of somatic health complaints need to be determined, as well as whether any triggers precipitate the onset of ongoing symptoms. It is also useful to determine whether the child reports primarily one somatic complaint (e.g., recurring headaches) or multiple symptoms (e.g., combined headaches and nausea, dizziness). Using a dimensional (continuum) perspective for evaluating presence, severity, and diagnostic status of symptom presentation, given that a proportion of children may not necessarily meet full diagnostic criteria for somatic syndromes (Rask et al., 2018), it is important to determine symptom frequency and duration, and whether the constellation of symptoms actually meet criteria for SSRDs in line with DSM-5/TR (American Psychiatric Association, 2013, 2022), particularly Somatic Symptom Disorder (SSD). Illness Anxiety Disorder (IAD), formerly known as health anxiety needs to also be considered and ruled out. A summary of the core criteria for SSD relative to IAD is summarized in Table 33.3. Although both conditions include heightened levels of anxiety about one's health and are also associated with health/illness-related behaviors, they differ primarily in relation to the presence and recurrence of somatic symptoms. Notably, a core, essential criterion for SSD is the presence and persistence of at least one or more somatic symptoms resulting in distress and significant impairment in functioning for a 6-month duration (American Psychiatric Association, 2022). In contrast, somatic symptoms are not a core feature of IAD; and even if present, they are only mild in intensity. Indeed, given the central feature of IAD is the fear of illness, there is ongoing debate as to whether IAD would have been better classified under the anxiety category of disorders in DSM-5. It is also noteworthy that children with chronic medical conditions (e.g., asthma and diabetes) can meet the criteria for SSD. The latter needs to be considered if the somatic symptoms are disproportionate and excessive to common symptoms associated with the child's chronic health condition

When assessing children for the presence and impact of somatic syndromes, it is important to identify what type of medical and allied health consultations and tests the child has received prior to seeking psychological assistance and whether the child has been recommended any interventions including pharmacological treatments by other providers for managing the symptoms. It is also useful to gage what the child and their parent/carer attributes the symptoms to as this will also facilitate determining whether the child meets criteria for an SSRD, particularly SSD as well as helping incorporate misappraisals of typical physiological sensations into the treatment formulation.

As discussed, given the high psychological comorbidity with somatic syndromes, it is also important for clinicians to assess for comorbid anxiety and mood disorders, including psychiatric history. The impact of both somatic symptoms and any comorbid psychological problems need to be determined in the context of academic, social, and general functioning. For example, is school absenteeism a problem since the onset of somatic problems? And/or what impact has this had on the child's academic performance? Related to this, it is useful to establish if the family reinforces and/or even models sick-role behaviors as this can inadvertently perpetuate symptoms and would need to be factored into the treatment formulation. The assessment should also be supplemented with relevant diagnostic and/or validated self-report instruments (e.g., measures outlined in Table 33.1). These measures also have utility in monitoring treatment progress and determining treatment outcomes if the child is recommended to receive psychotherapy to facilitate the managing of their somatic symptoms.

Table 33.3 Differentiating between somatic symptom disorder and illness anxiety disorder in children and adolescents presenting with recurring somatic complaints

Somatic Symptom Disorder (SSD) [3 criteria and 3 types of specifiers]	Illness Anxiety Disorder (IAD) [6 criteria and 2 specifiers]
Criterion A: *[Presence of distressing somatic symptoms causing impairment]*	**Criterion A**: *[Fear and worry of illness]*
One or multiple distressing somatic symptoms resulting in significant disruption to activities of daily living	Preoccupation with thinking one has or will develop a serious, undiagnosed medical illness
Somatic symptoms can be specific (e.g., localized pain) or more diffuse (e.g., fatigue)	Anxiety arises due to meaning/attributions arising from any sensations experienced (typically benign and normal physiological sensations such as orthostatic dizziness)
Criterion B: *[Impact of symptoms on thoughts, feelings, and behaviors]*	**Criterion B**: *[No or minimal somatic symptoms]*
This criterion pertains to the persistent and disproportionate thoughts, feelings, and/or behaviors the child experiences in relation to their somatic symptoms or associated health concerns. They need to experience at least one of the following three sets of symptoms to meet criterion B:	Typically somatic symptoms are NOT present – or if present, they are only mild in intensity
[1] Child reports persistent, excessive, and maladaptive thoughts/appraisals about the seriousness of their somatic symptoms	If individual does have an existing medical condition (or family history of serious medical conditions), the preoccupation of developing a serious illness is excessive and/or disproportionate to risk
The child may misinterpret the bodily symptoms associated with somatic sensations as unduly threatening to their health	
[2] Child reports persistent elevated levels of anxiety related to their somatic symptoms and/or health	
[3] The child spends excessive time and energy on these symptoms	
Criterion C: *[Duration of symptoms]*	**Criterion C**: *[Excessive anxiety about health]*
Symptoms persist typically for more than 6 months	The idea of having or developing a serious illness is associated with high levels of anxiety
However, symptoms may fluctuate during this time, although the state of being symptomatic is persistent	Sensitive to health-related cues: for example, media stories about serious illness
Specifiers:	**Criterion D**: *[Impact on functioning]*
[1] *With predominant pain*: (Previously pain disorder) – relevant for children whose symptoms primarily involve pain	Excessive health-related behaviors for reassurance seeking (e.g., repeatedly scanning body for signs of illness; repeated medical consultations; checking Internet health sites, etc.) and/or displays maladaptive avoidance (e.g., avoiding health checks, medical/hospital settings, and medical programs)
[2] *Persistent*: Specify if the course of symptoms is persistent and symptoms are severe over more than a 6-month period.	
[3] *Current severity*: [three levels]	
Mild: Only one of the three symptoms for Criterion B is met	
Moderate: At least two (or three) of the symptoms for Criterion B are met	
Severe: Same as moderate, plus the presence of multiple somatic complaints (or at least one very severe symptom persisting over 6 months)	
Caveats:	**Criterion E**: *[Duration criteria]*
Symptoms may or may not be associated with a medical condition. That is, SSD with a concurrent medical condition (e.g., asthma) are not mutually exclusive	Preoccupation with illness anxiety present for at least 6 months, although specific fear of illness may change over this timeframe

(continued)

Table 33.3 (continued)

Somatic Symptom Disorder (SSD) [3 criteria and 3 types of specifiers]	Illness Anxiety Disorder (IAD) [6 criteria and 2 specifiers]
Associated features:	**Criterion F**: *[Differential diagnostic considerations]*
Associated typically with high levels of medical care utilization for same set of symptoms	Fear and preoccupation with illness are not better accounted by other mental health disorders including SSD
Heightened attention to somatic bodily sensations, which may be accompanied by catastrophizing interpretations, intolerance of bodily complaints, and illness-related worry	
Behavioral features may include repetitive bodily checking, avoidance of activities (e.g., peer invitations, school absenteeism, physical and family activities), reassurance from parents/carers and medical providers. Reassurance from even medical providers may be short-lived. Although these features are more pronounced in severe levels of SSD	
Due to the nature of somatic health complaints, individuals/families typically present initially to medical health services. Referral to mental health providers may initially be met with surprise or even reluctance and/or refusal (American Psychiatric Association, 2022)	**Specifiers**:
	[1] *Care-seeking type*: Frequent use of medical/health-care providers including repeated tests/examinations. May consult multiple providers.
	[2] *Care-avoidant type*: Medical care rarely used or avoided.

NB: Criteria and characteristics summarized for SSD and IAD are based on the current DSM-5/TR (American Psychiatric Association, 2022)

Treatment Interventions for Somatic Syndromes in Children and Adolescents

Given the lack of consensus on terminology and diagnostic screening frameworks for somatic syndromes in youth, the evidence-base has to date been informed by trials investigating the effects of psychological treatments targeting children and adolescents with a specific constellation of symptoms (e.g., recurrent abdominal pain), to more heterogeneous somatic clusters including recurring pain. Over the past two decades there has been a consistently, growing body of psychological-based treatment trials testing predominantly cognitive-behavioral therapy (CBT) approaches in managing somatic syndromes in youth samples. This has culminated in an increasing number of systematic reviews and meta-analyses in this field. In this section, synthesis and evaluation of the most up-to-date systematic and meta-analytic reviews will be presented which have focused on testing the efficacy of psychological treatments for managing somatic syndromes (including recurrent pain) in youth and which have been published in peer-reviewed journals.

Evaluation of Psychotherapy Interventions for Somatic Syndromes in Youth

A total of six published reviews were identified as summarized in Table 33.4. There were two systematic reviews (SR) (Holsting et al., 2021; O'Connell et al., 2020), and four meta-analytic (MA) reviews (Abbott et al., 2017; Bonvanie et al., 2017; Fisher et al., 2018, 2019). Whereas one of the MA reviews focused explicitly on samples experiencing recurrent abdominal pain (RAP; Abbott et al., 2017), the other five reviews focused on samples with a mixed array of somatic presentations using the terms, FSS (Bonvanie et al., 2017); chronic and recurrent pain (Fisher et al., 2018, 2019); persistent physical symptoms (Holsting et al., 2021); and medically unexplained symptoms (O'Connell et al., 2020).

Table 33.4 Summary of methods from the systematic and meta-analytic reviews evaluating psychological treatments for somatic-related syndromes including chronic pain for children and adolescents

Reference	Aim of review and type	Review criteria (inc. definitions and end search date)	Total studies included and sampling details	Type of psychological Treatments
Abbott et al. (2017)	Evaluate evidence for the effectiveness of psychosocial Txs for children with recurrent abdominal pain (RAP)	Restricted to RCTs focusing on children and adolescents aged 5–18 years with RAP (defined as min. 3 pain episodes interfering with normal activities over a 3-month period) or abdominal pain-related functional gastrointestinal disorder – based on Rome III criteria (comprising abdominal migraine; IBS; functional dyspepsia, and FAPS)	*K* = 18 RCTs (from 26 papers); pooled sample of *N* = 928	Intervention ranged: 1–12 weeks, with most between 4 and 6 weeks
	[NB: Update on Huertas-Ceballos (2008) Cochrane review]	Any psychosocial Tx compared to a control condition (inc. active condition)	Mean age range: 9.4–14.9 years	Categorized into 4 groups:
	Type: MA (Cochrane)	Primary outcomes: Tx success (dichotomous – Yes/No); Pain intensity, duration, and frequency	More girls in every trial	(1) *CBT*: *K* = 10 (all family-based, involved both parent and child; although parental role varied); *K* = 7 in-person and 3 at home (with 1 facilitated via website access)
		Secondary outcomes: School performance, social or psychological functioning, quality of life (QoL)	Majority recruited via pediatric gastroenterology or pain clinics	*K* = 2 group based & *K* = 8 individual
		Searches until June 9, 2016	Studies conducted across six countries with *K* = 8 from the United States	*K* = 9 had a homework component
				Duration range: 3–8 weeks; 30–90 min in length
				Components inc. coping and distraction strategies; relaxation; identify and change pain cognitions; modifying family responses to illness and wellness behaviors
				Control conditions inc. *K* = 4 WLC; *K* = 3 usual care; *K* = 3 usual care with psychoeducation
				(2) *Hypnotherapy* (inc. guided imagery which comprises physical relaxation and behavior modification via imagery)
				K = 4 studies
				Sample size range: 22–52 participants
				(3) *Yoga*
				K = 3 studies
				Sample size range: 25–69
				(4) *Written self-disclosure*
				K = 1 study with *N* = 63 children with RAP

Bonvanie et al. (2017)	(1) Test effectiveness of psychological treatments (Tx) on symptom (Sx) load & disability in children with FSS	RCT min. </ = 10 individuals per group at end of Tx	*K* = 27 original studies with *N* = 22 inc. in MA	15/27 CBT (mode of delivery & Tx duration variable)
	(2) Test potential moderators of Tx effects	Any type of Psych. Tx including CBT, ACT, relaxation, coping skills training, psychoeducation, etc.	12/27 FAP	14/27 in-person therapy (hospital clinics) and 8/27 home based
			6/27 CFS	
			4/27 tension headache	
			2/27 fibromyalgia	
			3/27 mixed pain	
	Type: SR and MA	FSS defined as "physical symptoms not fully explained by a well defined medical psychiatric or somatic illness" (p. 273). Hence excluded samples with pain (e.g., arthritis and migraines)	Sx duration range: 7–44 months	
		Searches until December 2015	6–18 years (7/27 studies 6–12 years)	
			Control groups = 7/27 wait-list (WL); 9/27 care-as-usual (CAU); 7/27 placebo; and 4/27 active Tx	
Fisher et al. (2018)	Updated Cochrane MA review (from Eccleston et al., 2014) to test the efficacy of psychological Tx for chronic and recurrent pain in children and adolescents. Primary outcomes comprised pain intensity and disability	RCTs with min. 10 or > participants in each condition based on in-person or via phone Tx (excluded Internet and smartphone Tx)	*K* = 47 studies comprising 2884 individuals	"Credible Psychological" Tx is defined as Tx based on extant psychological theory or framework
	Secondary aim was to test the effects on anxiety and depressive Sx, and adverse events	Participants aged <18 years with chronic pain Sx (min. 3 months duration)	*K* = 25 trials inc. <20 individuals per condition. (Mean sample size = 36)	Three types: (1) Behavioral = relaxation, biofeedback; (2) Cognitive or CBT = coping skills; (3) Problem-solving Tx – involved delivery of skills to the family/parents
		Categorized pain via (1) headache conditions or (2) mixed pain (non-headache) conditions inc. abdominal pain, musculoskeletal pain, disease-free pain)	M sample size for all trials at end of Tx = 68	Control conditions inc. TAU (*K* = 8), active (*K* = 27) or WL (*K* = 12)
		Searches until May 1, 2018	Mean sex = 66% female samples	Variable settings inc. clinic (*K* = 23); clinic or home (*K* = 8); home (*K* = 5); inpatient (*K* = 1); school (*K* = 3); unclear (*K* = 7)
			Sample mean age = 12.65 years (*K* = 44)	Average Tx length 5–7 h
			K = 30 trials recruited from hospitals and clinic settings	
			K = 23 headache sample; *K* = 10 abdominal pain; *K* = 2 combo abdominal pain and/or IBS; *K* = 2 fibromyalgia; *K* = 2 temporomandibular disorders; *K* = 3 sickle cell disease pain; *K* = 2 IBS; *K* = 3 mixed pain conditions inc. headache	

Reference	Aim of review and type	Review criteria (inc. definitions and end search date)	Total studies included and sampling details	Type of psychological Treatments
Fisher et al. (2019)	Companion Cochrane review to Fischer et al. (2018) with the aim to evaluate the efficacy of psychotherapy Tx delivered remotely via technology such as the Internet, computer programs, and smartphone applications using combined SR and MA	RCTs with min. 10 or > participants in each condition delivered remotely via technology	*K* = 10 (*N* = 697) comprising *K* = 4 headache samples; *K* = 1 juvenile idiopathic arthritis; *K* = 1 sickle cell disease; *K* = 1 IBS; *K* = 3 headache and mixed pain conditions	Focused on psychological Tx based on existing psychological models or frameworks. All studies identified were CBT-based
		Control conditions inc. WL, TAU, or active control. Equivalence trials were excluded	*K* = 8 recruited samples via hospitals and clinics	Type of technology used: *K* = 7 used Internet delivery; *K* = 1 smartphone; *K* = 2 CD-Rom
		Participants aged <18 years with chronic pain Sx (min. 3 months duration)	All trial samples diagnosed with primary condition by a medical profession	*K* = 8 used active control comparisons inc. TAU vs. *K* = 2 WL condition
		Categorized pain via (1) headache conditions or (2) mixed-pain (non-headache) conditions inc. abdominal pain, musculoskeletal pain, disease-free pain	Retention rate across trials by post-Tx 84% (*N* = 830 to *N* = 697); with more females (66%)	
		Searches until May 1, 2018	Mean age = 13.2 years.	
O'Connell et al. (2020)	Evaluate efficacy of psychological Txs for mental health problems in children and adolescents with 'medically unexplained symptoms' (MUS) based on SR only method	Restricted to RCTs including children and adolescents up to the age of 18 years	*K* = 18 trials with sample sizes ranging between 20 and 273	Psychological Txs defined as those specifically designed to change psychological processes conceptualized to underlie distress and suffering and could inc. CBT (variants – BT and CT), psychodynamic Tx
		MUS is defined as "any physical symptom causing distress or impeding function which was not accounted for through medical examination" (p. 275)	Mean age range between 11.1 and 15.83 years (and full range between 7 and 18 years)	Type of interventions inc. both in-person and group CBT, self-directed CBT, "Lightening Process" group therapy (inc. osteopathy, life coaching, and neurolinguistics), and biofeedback
		Search end date January 2018	More females in sample compositions	
			K = 6 trials inc. stringent diagnostic criteria for mental health conditions	
Holsting et al. (2021)	Evaluate therapeutic approach, content and efficacy on symptom burden, and psychosocial outcomes of self-help interventions (SHI) for persistent physical symptoms in young people using WHO definition (with mean age of 10–24 years) based on SR only method	Samples comprised mean age between 10 and 24 years	*K* = 11 studies (20–260 sample size range), based on European or US samples	SHI targeting individuals (may inc. parents) based on non-pharmacotherapy or non-medical Txs.
		Persistent physical symptoms defined on a continuum including individuals experiencing non-specific symptoms (e.g., abdominal pain); or an FSS or SSRDs in line with DSM-5 or Somatoform disorders in ICD-10/DSM-IV for a minimum of at least 3 months	Sample mean age 11–15 years, with full range between 6 and 18 years	SHI is defined as "stand-alone treatment delivered through online programs, written manuals, or audio files conducted with minimal support" (p. 2); although inc. programs that had standardized contacts with therapist/health-care professionals for (non-therapeutic) instructions
		Searches between January 24 and 27, 2020	Mean Sx duration range from 7 months to 4 years	
			Female sample composition ranged between 46% and 90%	
			Psychotherapy approaches inc. CBT, relaxation training, hypnotherapy, and written disclosure	
			K = 3 inc. parental support, and *K* = 2 based on the Internet and smartphone applications	

Note: *ACT* Acceptance and Commitment Therapy, *CBT* Cognitive Behavior Therapy, *inc*. including/includes, *CFS* Chronic Fatigue Syndrome, *FAP* functional abdominal pain, *FSS* functional somatic symptoms, *IBS* irritable bowel syndrome, *K* = number of studies, *MA* meta-analyses, *min*. minimum, *Psych*. psychological, *QoL* quality of life, *RAP* recurrent abdominal pain, *RCT* randomized controlled trial, *sig*. significant, *SMD* standardized mean difference, *SR* systematic review, *Sx* symptom(s), *TAU* treatment as usual, *Tx* treatment(s) or therapy, *WHO* World Health Organization, *WL* wait-list

Three of the MA reviews are based on the most recently updated Cochrane review focusing on testing the efficacy of RAP (Abbott et al., 2017) and chronic and persistent pain (Fisher et al., 2018, 2019). The latter are companion Cochrane reviews, given that the Fisher et al. (2018) review focuses on testing the efficacy of psychological treatments conducted in-person or via the telephone (excluding the Internet and smartphone) for chronic pain in youth, whereas the Fisher et al. (2019) review focuses on testing the efficacy of psychotherapy trials delivered remotely via technology which they defined as the Internet, computer programs, and smartphone applications.

In the Cochrane MA review focusing on children and adolescents (aged 5–18 years) with RAP (defined as experiencing three pain episodes over a 3-month interval), Abbott et al. (2017) identified 18 randomized controlled trials (RCTs) with a pooled sample of 928 youth, with a mean age range between 9.4 and 14.9 years. Four types of therapies were evaluated. A majority of trials were based on CBT interventions ($K = 10$, 55%) which included components such as relaxation, coping and distraction strategies, cognitive reappraisal, as well as modifying responses to illness and wellness behaviors. The other three types of interventions tested comprised hypnotherapy ($K = 4$) which included relaxation and imagery techniques, yoga ($K = 4$) and one trial focused on written self-disclosure. A summary of the key findings for this review is outlined in Table 33.5.

Overall, Abbott et al. (2017) found some short-term significant effects in relation to CBT-based "therapy success" (defined as pain-free or reduction in pain symptoms). However, these effects were not maintained at medium or longer-term follow-up. Similarly, no significant, robust effects were found for pain intensity, pain-related functioning, school performance, or overall quality-of-life (QoL). For the hypnotherapy trial, the findings revealed significant effects for therapy success, reduction in pain intensity and frequency, although mixed effects were found for QoL, while no significant effects were documented for school performance/absences. Similar results emerged for the yoga trials. Specifically, one of the studies reported therapy success up to one-year follow-up, while all three studies reported a significant decline in pain intensity post-therapy. However, no significant effects were reported for improvement in pain frequency, school performance, or overall QoL. Finally, Abbott et al. (2017) identified one trial testing the effects of written disclosure, although no significant effects were reported for pain outcomes including QoL.

It is noteworthy that the trials included in the Abbott et al. (2017) Cochrane MA review were evaluated to be of low-grade quality, including very small sample sizes. Overall, the evidence for the effects of non-pharmacotherapy interventions for managing RAP in youth is weak. There is some preliminary support for CBT and hypnotherapy interventions in reducing pain symptoms in the shorter-term, although there is a paucity of evidence for longer-term maintenance. In terms of the CBT studies identified in Abbott et al.'s review, there was high variability in specific therapy components as well as format (see Table 33.4), thus making comparisons between CBT studies difficult in order to determine which components and types of format(s) are more conducive to better outcomes for youth with RAP.

In a separate review, Bonvanie et al. (2017) extended their criteria to evaluate the effectiveness of psychological interventions on symptom load and disability in youth aged 6–18 years with FSS (defined as "physical symptoms not fully explained by a well-defined medical psychiatric or somatic illness"; p. 273). Bonvanie et al. (2017) identified 27 studies of which 22 trials were included in their MA review. Comparable to Abbott et al.'s (2017) MA, a majority of trials identified ($K = 15/27$; 56%) were CBT-based interventions. Bonvanie et al. (2017) reported pooled moderate to small significant effects for the psychotherapy trials in reducing symptom load ($g = -.61$) and disability ($g = -.42$) post-therapy, with significant, yet smaller effect sizes reported at follow-up for both symptom load ($g = -.38$) and disability ($g = -.31$). Notably, these researchers found pooled significant moderate effect for reducing school absence at post-therapy ($g = .51$). Given the heterogeneity of trial therapy

Table 33.5 Summary of key findings from the systematic and meta-analytic reviews evaluating psychological treatments for somatic-related syndromes including chronic pain for children and adolescents

Reference	Key findings	Limitations
Abbott et al. (2017)	*CBT vs. control*	Paucity of studies assessing RAP sub-groups via ROME III criteria
	K = 4 inc. Tx success (defined as pain-free or Sx reduction) with a pooled sample of *N* = 175	Small sample sizes and very small number of studies assessing non-CBT Tx
	The pooled odds ratio (OR) for Tx success = 5.67 (significant but of low quality)	Overall relatively weak evidence based on Txs of primarily short-duration in length. Preliminary support for CBT and hypnotherapy in reducing short-term pain Sx; with paucity of evidence for long-term maintenance
	K = 3 of 4 studies reported Tx success at follow-up, with pooled OR = 3.08 (*N* = 139 pooled sample) – suggesting insufficient evidence for the effect of CBT on medium-term Tx success (Low grade pooled sample) – suggesting insufficient evidence for the effect of CBT on medium-term Tx success	High variability in measures used between studies
	K = 7 (*N* = 405 pooled sample) tested pain intensity post-Tx. Non-significant pooled standardized mean difference (SMD) = −.33 (with low-grade quality)	High variability in Tx components and format – inc. CBT-based Txs
	K = 4 (*N* = 301 pooled sample) tested medium-term follow-up on pain intensity. Non-significant pooled SMD = −.32 (with low-grade quality)	Due to high variability between Txs no combined global analysis conducted
	K = 3 (*N* = 308 pooled sample) tested longer-term follow-up on pain intensity. Pooled SMD (non-significant) = −0.04 (with low-grade quality)	Due to low volume of RCTs – mechanisms of effects unknown
	K = 1 study (*N* = 104) assessed pain duration with no significant outcome for CBT vs. active control	
	K = 1 study (*N* = 16) assessed school performance with no significant effect found	
	K = 3 (*N* = 200 pooled sample) tested social/psychosocial (internalizing Sx) outcomes with no study finding a sig. effect	
	K = 3 tested effects on QoL (*N* = 136). Pooled SMD for both physical (0.71) and psychosocial (SMD = 0.43) QoL was non-sig. with low-grade quality	
	K = 4 tested functional impairment in daily living due to pain (*N* = 176). Pooled SMD (−.57) was non-sig. with low-grade quality	
	Hypnotherapy vs. controls	
	K = 4 tested Tx success with the pooled being significant at OR = 6.78, although with low grade (due to small sample sizes)	
	K = 4 tested pain intensity (*N* = 146). The pooled SMD = −1.01 was significant, although low-grade quality	
	K = 4 tested pain frequency (*N* = 146). The pooled SMD = −1.28 was significant, although low-grade quality	
	K = 2 tested school performance/absences and both found no significant effects with comparison conditions	
	K = 2 tested QoL with mixed effects (only 1 study reported sig. effect)	
	Yoga vs. Controls (based on K = 3 studies (N = 122))	
	K = 1 tested Tx success with significant effects found at 1-year follow-up	
	K = 3 tested pain intensity, with pooled SMD = −.31, and low-grade quality, with no evidence supporting yoga post-Tx	
	K = 1 tested pain frequency and no sig. effect was found	
	K = 1 tested school performance and reported sig. effects for school absenteeism, post-Tx and 12 months follow-up	
	K = 2 tested QoL (*N* = 53) with non-sig, pooled SMD = −.32, with low-grade quality	
	Written Self-Disclosure vs. Controls (based on K = 1 study (N = 63))	
	No sig. effect for pain duration & frequency post-Tx, although frequency was lower by 3 months follow-up	
	No sig. effects for QoL	
	No adverse effects reported for any type of Tx	

Bonvanie et al. (2017)	Compared with WL, CAU, and placebo controls, Psych Tx had sig. effect on:	Heterogeneity in Tx types and dosage, functional Sx types, yet small no. of studies inc. in MA
	Symptom load post-Tx ($K = 21$; $g = -.61$ [CI: −.87 −.35]; and at follow-up ($K = 16$; $g = -.38$ [CI: −.63 – −.12]	Many measures used were not previously validated
	Disability post-Tx ($K = 14$; $g = -.42$ [CI: −.67 – −.16]; and at follow-up ($K = 8$; $g = -.31$ [CI: −.56 – −.07]	Funnel plots indicated publication bias (hence effect sizes may be overestimated)
	School absence post-Tx ($K = 74$; $g = -.51$ [CI: −.92 −.11]	Lacked detail of type of intervention components included
	Effect estimate for Psych Tx was highest for children with fatigue	
	Neither age nor Tx dose did not significantly influence outcomes	
Fisher et al. (2018)	Headache samples – Headache Frequency Post-Tx & follow-up	Overall low quality studies
	$K = 15$ ($N = 644$) – Risk Ratio (RR) = 2.35 indicating sig. reduction in headache frequency post-Tx, although low-grade quality. At follow-up $K = 5$ ($N = 223$) – with RR = 2.73, sig decline in pain, although low-grade quality	Did not conduct sub-group analyses according to type of control condition (ie whether differences emerged between active vs. WL control conditions)
	$K = 13$ ($N = 437$) comprise samples of <20 per arm (RR = 2.86, sig decline in headache frequency post-Tx). At follow-up $K = 4/5$ trials had <20 participants per arm with sig. decline in pain (RR = 3.49)	Lack of consensus on outcome measures used
	$K = 2$ ($N = 207$) comprised samples of >20 per arm (RR = 1.88, sig decline in headache frequency)	
	Headache samples – Disability Post-Tx & follow-up	
	$K = 6$ ($N = 446$), with no sig improvement in disability (SMD = −.26), with low-grade quality. $K = 3$ ($N = 209$) reported beneficial reduction in disability at follow-up (SMD + −0.37, medium effects), although low quality	
	$K = 4$ ($N = 61$) had small sample sizes (<20 per arm), with no sig. improvement in disability (SMD = 0.04)	
	$K = 2$ (>20 per arm), with medium beneficial effects in reducing disability (SMD = −0.35). $K = 2$ ($N = 185$) also had a medium effect on disability at follow-up (SMD = −0.36)	
	Headache samples – Depression Post-Tx & follow-up	
	$K = 6$ ($N = 400$), with no beneficial effects post-Tx (SMD = −0.08), with low-grade quality. Same non-sig. outcome for studies with < or > 20 participants per arm. At follow-up, $K = 3$ ($N = 228$), no sig. effects (SMD = −0.05), with low-grade quality	
	Headache samples – Anxiety Post-Tx & follow-up	
	$K = 7$ ($N = 439$), with no beneficial effects (SMD = −0.11), with low quality. Same non-sig. outcome for studies with < or > 20 participants per arm. At follow-up, $K = 4$ ($N = 271$), no sig. effects (SMD = −0.12), with low-grade quality	
	Mixed Pain/ Non-Headache samples – Pain Intensity Post-Tx & follow-up	
	$K = 16$ ($N = 1210$) – moderate beneficial effects in reducing pain intensity post-Tx (SMD = −0.43), although low-grade quality	
	$K = 7$ ($N = 250$) had <20 people per arm and had large effects in reducing pain intensity [post-Tx (SMD = −0.83). $K = 9$ trials ($N = 960$) had >20 people per arm, and only found small but non-beneficial effects in reducing pain intensity at post-Tx (SMD = −0.20)	
	At follow-up $K = 9$ ($N = 833$) – No sig reduction of pain intensity (SMD = −0.08), with low quality	
	$K = 2$ ($N = 53$) with small samples (<20 per arm) at follow-up found beneficial effects in reducing pain intensity (−0.94); whereas $K = 7$ ($N = 780$) with larger samples (>20 per arm) had no beneficial effects in reducing pain intensity (SMD = 0)	
	Mixed Pain/ Non-Headache samples – Disability Post-Tx & follow-up	

(continued)

Table 33.5 (continued)

	$K = 14$ ($N = 2610$) – small effects in reducing disability post-Tx (SMD = −0.34), with low-grade quality	
	$K = 6$ ($N = 213$) had <20 people per arm, showing large beneficial effects in reducing disability (SMD = −0.72). $K = 8$ ($N = 1013$) had >20 people per arm and showed only small beneficial effects (SMD = −0.20)	
	$K = 9$ ($N = 935$) showed small beneficial effects in reducing disability at follow-up (SMD = −0.27), although low quality. $K = 2$ ($N = 53$) had <20 per arm and did not find sig. reduction in disability at follow-up (SMD = −1.17); whereas $K = 7$ ($N = 882$) with >20 people per arm, showed small sig. beneficial effects in reducing disability at follow-up (SMD = −0.20)	
	Mixed Pain/ Non-Headache samples – Depression Post-Tx & follow-up	
	$K = 8$ ($N = 757$) – no sig. beneficial effects in reducing depression post-Tx (SMD = −0.05), although low-grade quality. Same non-sig. outcome for studies with < or > 20 participants per arm. At follow-up, $K = 7$ ($N = 667$), no sig. effects (SMD = 0.09), with low-grade quality. Same non-sig. outcome for studies with < or > 20 participants per arm at follow-up.	
	Mixed Pain/ Non-Headache samples – Anxiety Post-Tx & follow-up	
	$K = 8$ ($N = 957$) – small sig. beneficial effects in reducing anxiety post-Tx (SMD = −0.16), although low-grade quality	
	$K = 7$ ($N = 851$) had > 20 people per arm and found small sig. effects post-Tx (SMD = −0.17)	
	At follow-up, $K = 8$ ($N = 975$), no sig. effects (SMD = 0.01), with low-grade quality. Same non-sig. outcome for studies with >20 participants per arm at follow-up	
Fisher, et al. (2019)	Headache Samples:	Overall very low quality of studies
	Headache Severity Post-Tx & follow-up:	Adverse effects and satisfaction with Tx inconsistently evaluated
	$K = 7$ ($N = 379$) found sig. beneficial effects of at least 50% reduction of headache pain severity at post-Tx (RR = 2.02), and the effect was maintained at follow-up (RR = 1.76) based on $K = 4$ studies ($N = 230$); although the quality of studies was low	
	Headache Disability Post-Tx & follow-up:	
	$K = 5$ ($N = 440$) found no sig. reduction in disability post-Tx (SMD = −0.16) or at follow-up (SMD = −0.16) ($K = 3$, $N = 341$); with the quality of studies evaluated as low	
	Depression in Headache Samples Post-Tx & follow-up:	
	$K = 4$ ($N = 442$) found no sig. reduction in depression post-Tx (SMD = −0.04) or at follow-up (SMD = 0.03) ($K = 2$, $N = 320$); with the quality of studies evaluated as very low	
	Anxiety in Headache Samples Post-Tx & follow-up:	
	$K = 3$ ($N = 380$) found no sig. reduction in anxiety post-Tx (SMD = −0.08) or at follow-up (SMD = −0.01) ($K = 3$, $N = 360$); with the quality of studies evaluated as very low	
	Mixed Pain Samples – Pain Intensity Post-Tx & follow-up:	
	$K = 5$ ($N = 501$) found no sig. reduction in pain intensity post-Tx (SMD = −0.90) or at follow-up (SMD = −0.41) ($K = 2$, $N = 3041$); with the quality of studies evaluated as very low	
	Mixed Pain Samples - Disability Post-Tx & follow-up:	
	$K = 3$ ($N = 363$) found no sig. reduction in disability post-Tx (SMD = −0.28) and only $K = 1$ trial evaluated follow-up effects. Study quality was very low	
	Depression in Mixed Pain Samples Post-Tx & follow-up:	
	$K = 2$ ($N = 317$) found no sig. reduction in depression post-Tx (SMD = 0.04) and only $K = 1$ trial evaluated follow-up effects. Study quality was very low	
	Anxiety in Mixed Pain Samples Post-Tx & follow-up:	
	$K = 2$ ($N = 370$) found no sig. reduction in anxiety (SMD = 0.53), evaluated of low quality	

O'Connell et al. (2020)	Descriptive evaluation due to SR-only method	Quality of studies were evaluated as low overall
	CBT – Child-only therapist delivered: *K* = 3 trials. *K* = 2 comprised individual CBT for headache samples and neither found sig. between group effects on mental health outcomes (only within group effects found). *K* = 1 trial based on CBT-group-based program and also did not find a sig improvement in depression and anxiety measures; although a sig., reduction in headache scores was found	No MA, quantitative synthesis due to heterogeneity of methods, inc. Tx methods and samples
	CBT – Child & Parent Therapist Directed: *K* = 7 trials, of which 6 found sig. between group differences for mental health outcomes	
	K = 4 trials based on anxiety Sx – and all 4 trials reported sig. reductions in anxiety at post-Tx relative to controls. However, Tx effects only sig. maintained for 2/4 trials at follow-up due to control groups improving or receiving WL condition	
	K = 3 of 5 trials assessing depression found sig. reductions at post-Tx, and although effects were maintained, only 1/3 of trials were sig. at follow-up, as control conditions also improved for the other 2 trials	
	K = 1 trial assessed emotional behavioral functioning and reported sig. greater improvements in Tx condition between baseline and 24 months follow-up, but not between baseline and 12-month follow-up	
	K = 6 assessed physical health outcomes and 4/6 reported sig. improvements post-Tx and/or follow-up, inc. pain and functional somatic Sx complaints	
	CBT-self-directed: *K* = 4, with 3 trials finding no sig. between group differences on mental health outcomes (only within group differences). Only *K* = 1 found sig. reduction in depression and pain-related anxiety but not general anxiety at post-Tx, but not sig. at follow-up as control group also improved by 6-month follow-up	
	Only K = 1 trials reported sig. differences in pain intensity	
	Lightening Process therapy: *K* = 1 trial which combined therapy with specialist medical care. Sig. reductions reported for depression, anxiety, physical function, and fatigue scores post-Tx and effects maintained at 12-month follow-up. Although 6 months improvement occurred for anxiety, physical functioning, and fatigue but not depression	
	Biofeedback: *K* = 3 trials – none found sig. differences in mental health outcomes when controlling for baseline levels, although all 3 trials found sig. improvements on physical outcomes inc. pain and headache post-Tx	

(continued)

Table 33.5 (continued)

Holsting et al. (2021)	Descriptive evaluation due to SR-only method	SR only results
	K = 5 trials based on CBT-SHI. 3/5 trials reported no sig. effects (based on headache, abdominal pain, and chronic fatigue samples)), while 1 trial reported a sig. reduction in headache frequency and intensity post-Tx, but effects not maintained at 6-month follow-up, and a further trial found sig. reduction in abdominal pain frequency post-Tx but not for pain intensity	Method quality of studies was relatively low grade given heterogeneity in methods inc. measures used, intervention content, duration, and therapy framework used
	K = 2 trials focused on relaxation training – SHI with mixed effects found. With *K* = 1 finding no sig improvement in headache frequency or intensity post-Tx, but a sig. decline occurred in frequency at 2- and 5-month follow-up. In a further *K* = 1 trial, sig. decline in headache frequency and intensity found at post-Tx, but not in terms of a number of headache episodes relative to control condition	Minimal studies assessed broader functioning inc. school absence (*K* = 2); physical functioning (*K* = 3); anxiety and depressive comorbid Sx
	K = 2 hypnotherapy-SHI trials also found mixed effects. In 1 trial, non-inferior effects were found between active condition and control condition for abdominal pain. In a further trial, the active control condition reported sig. greater improvement in pain frequency and intensity reduction post = TX, but by 12-month follow-up the active condition was relatively comparable in Tx success (62.1% in SHI condition vs. 71% in individual hypnotherapy via therapist)	
	K = 2 used written disclosure SHI method with mixed effects. *K* = 1 found no sig. difference in gastrointestinal pain frequency at 3 months, although sig. decline in pain frequency in SHI condition by 6-month follow-up. In second trial, no sig. difference in headache frequency found between conditions at post-Tx	

Note: *ACT* ACCEPTANCE and Commitment Therapy, *CBT* Cognitive Behavior Therapy, *inc.* including/includes, *CFS* Chronic Fatigue Syndrome, *FAP* functional abdominal pain, *FSS* functional somatic symptoms, *IBS* irritable bowel syndrome, *K* number of studies, *MA* meta-analyses, *min*. minimum, *Psych*. psychological, *QoL* quality of life, *RAP* recurrent abdominal pain, *RCT* randomized controlled trial, *sig*. significant, *SMD* standardized mean difference, *SR* systematic review, *Sx* symptom(s), *TAU* treatment as usual, *Tx* treatment(s) or therapy, *WHO* World Health Organization, *WL* wait-list

components, it is not clear which therapy components contributed to better outcomes, as moderator analyses were not conducted due to methodological variability. However, Bonvanie et al. (2017) reported that neither therapy dosage nor age significantly influenced outcomes; although they did report that stronger effects were found for samples that included youth with fatigue symptoms.

In the third review, Fisher et al. (2018) conducted an updated Cochrane review to evaluate the efficacy of psychotherapy interventions (excluding Internet or smartphone therapies) for youth (less than 18 years of age) experiencing chronic and recurrent pain (with a minimum of 3 months duration). A secondary aim was to also test the efficacy of these trials in reducing comorbid anxiety and/or depressive symptoms. Fisher et al. (2018) identified 47 trials with a pooled sample of 2884 youth. They categorized pain samples into two groups of studies: (1) headache conditions and (2) mixed-pain (predominantly non-headache) conditions including RAP, FAP, and musculoskeletal pain. A majority of trials comprised cognitive and/or behavioral-based therapy components including coping skills, problem-solving, and relaxation training.

For the headache trials, Fisher et al. (2018) found that the psychotherapy interventions contributed to a significant reduction in headache frequency post-therapy and at follow-up. However, no significant improvement in disability post-therapy was found. Similarly, no significant reductions in depression or anxiety symptoms were found post-therapy or at follow-up (see Table 33.5). For the mixed-pain conditions, moderate beneficial effects were found in reducing pain intensity symptoms post-treatment, but these effects were not maintained at follow-up. Significant small effects in reducing disability were however found both post-therapy and at follow-up. Additionally, small significant effects were also found in reducing anxiety post-therapy, although no significant effects were found at follow-up. Moreover, no significant effects in a decline in depressive symptoms were found at post-therapy or follow-up.

Comparable to the Abbott et al. (2017) Cochrane MA review, the overall quality of studies was evaluated to be low or very low in the Fisher et al. (2018) Cochrane review. Moreover, most of the trials included youth samples with recurring headaches and the therapeutic approaches were predominantly CBT-based. Overall, the findings from the Fisher et al. (2018) review indicate that in the short-term, CBT-based interventions may have utility in facilitating the reduction of pain intensity, disability, and potential comorbid anxiety symptoms. However, further research is warranted to determine what therapy components are instrumental for facilitating the maintenance of effects in the medium to longer term for youth with recurring somatic pain.

As aforementioned, Fisher et al. (2019) conducted a companion Cochrane MA review to examine the efficacy of psychotherapy interventions delivered remotely via technology for youth experiencing chronic and recurring pain with a minimum of 3 months duration. Comparable to the Fisher et al. (2018) review, Fisher et al. (2019) evaluated the studies according to two categories: (1) headache samples and (2) mixed pain (predominantly non-headache) samples. A total of 10 trials were evaluated which comprised CBT-based approaches. Specific details of results according to pain severity, intensity, and disability and concurrent anxiety and depressive symptom outcomes are outlined in Table 33.5. The findings showed that CBT-based therapies delivered remotely using e-health and smartphone approaches may help reduce headache pain severity post-therapy but these effects are not necessarily maintained at follow-up. Moreover, this field in terms of remote technology interventions is very much in its infancy, as reflected by the small number of RCTs included in this review ($K = 10$). Notably, there is a current lack of evidence for the remote delivery of CBT in reducing pain intensity and disability due to pain symptoms as well as concurrent anxiety and depressive symptoms in youth with recurrent pain presentations. Importantly, comparable to the other MA reviews (Abbott et al., 2017; Fisher et al., 2018), the Fisher et al. (2019) review also accentuates the need to improve the quality of trial methodology in this field.

O'Connell et al. (2020) conducted the first systematic review (SR) to evaluate the efficacy of psychological therapies for mental health problems in youth (7–18 years) with medically unexplained symptoms (which they defined as "any physical symptom causing distress or impeding function which was not accounted for through medical examination" (p. 275)). They included 18 RCTs which were predominantly CBT-based (K = 14, 78%; see Table 33.4). Once again, comparable to the previous reviews in this field, O'Connell et al. (2020) also noted that the quality of the studies was low. Moreover, given the heterogeneity of methodology including treatment types, dosage, and measurement variability, they did not conduct a MA, but rather provided a qualitative (descriptive) evaluation of pooled findings, with key results summarized in Table 33.5. In summary, none of the three child-only therapist-delivered CBT programs found improvements in anxiety or depressive symptoms. For the CBT trials which were both child and parent-directed approaches (K = 7), all four trials that included anxiety outcomes reported significant reductions post-therapy, although only two of these four trials found these effects were maintained at follow-up relative to the control conditions. Similarly, three of the five CBT, child- and parent-directed approaches found a significant reduction in depressive symptoms post-therapy, although these effects were only maintained for one of these trials at follow-up. For the most part, non-significant effects were found for improvements in mental health outcomes for CBT self-directed approaches. Only one of these four trials reported a significant decline in depression and pain-related anxiety but not for general anxiety post-therapy.

O'Connell et al. (2020) also identified three biofeedback trials, although all three studies did not find significant differences in mental health outcomes. These researchers also identified one trial, referred to as the "Lightening Process Therapy" which combined psychotherapy with medical care for youth with CFS (n = 100). For this latter trial, significant reductions were found for both anxiety and depression symptoms post-therapy and which were maintained at 12 months follow-up.

Overall, the findings from the O'Connell et al. (2014) review indicate some provisional evidence for in-person CBT-based approaches which include both child and parent components in reducing comorbid anxiety and/or depressive symptoms in the short-term for youth with somatic syndromes. However, a noteworthy outcome from this review was that the overall improvement in mental health functioning was not necessarily related to the concurrent improvement in physical symptoms including pain intensity. This outcome further attests to the need for a more integrative biopsychosocial therapeutic approach for youth with somatic syndromes experiencing comorbid anxiety and/or depressive symptoms, particularly given that until recently, mental health symptoms have for the most part been overlooked or at most considered as secondary outcomes in this population (Kangas et al., 2020; Saunders et al., 2020).

In the final, the most recent review identified, Holsting et al. (2021) evaluated the efficacy of self-help psychological-based interventions for youth (6–18 years) with persistent physical symptoms which they defined on a continuum perspective (ranging from non-diagnostic FSS to SSRDs; see Table 33.4). Holsting et al. (2021) identified 11 trials comprising five self-help CBT-based interventions, two relaxation trials, two self-help hypnotherapy trials, and two written self-help disclosure trials. Comparable to O'Connell et al.'s (2020) review, Holsting et al. (2021) did not conduct a MA due to the heterogeneity in methods including measures used, intervention frameworks, and content and duration of therapy. Overall, mixed effects were found across the four broad categories of interventions identified in Holsting et al.'s (2021) review in terms of pain symptom frequency and intensity, as summarized in Table 33.5. Again, comparable to the other reviews, Holsting et al. (2021) also found the quality of self-help interventions to be low; hence, there is only provisional evidence at best in using self-help psychotherapy interventions to assist youth in managing their somatic syndromes. Importantly, most of the self-help interventions involved some level of therapist/professional guidance either in-person, by phone or via email, with a paucity of trials identified using solely Internet media.

Clinical and Research Implications

The findings from the recent treatment outcome reviews indicate that the majority of trials are predominantly CBT-based interventions, with a smaller proportion of studies testing other forms of interventions including hypnotherapy, yoga, biofeedback methods, and written disclosure. The evidence indicates that CBT-based approaches should be considered as part of a multidisciplinary care plan to facilitate children and adolescents presenting with distressing somatic complaints to mental health services. Specifically, there is evidence to show that CBT approaches can help reduce pain intensity and disability in the short term, as well as facilitate the management of comorbid anxiety symptoms. However, there is mixed evidence for the co-management of depressive symptoms for youth with somatic syndromes. Moreover, the medium- to longer-term effects of CBT-based approaches is lacking for managing both primary somatic symptoms, as well as comorbid anxiety and/or mood problems in youth, and the impact this has on broader functioning including academic performance and peer relations. These latter outcomes are likely due to several reasons. First, psychological interventions have not conventionally been the first line of treatment for this population. In line with recent stepped-care approaches proposed to manage somatic syndromes in youth (e.g., Rask et al., 2018), the first step has typically involved children and adolescents being referred to primary care/medical settings. Management of somatic syndromes is also managed in pediatric specialist settings, while mental health referrals are not typically activated unless children and adolescents present with more severe and chronic levels of somatic symptoms and are typically comorbid with anxiety and/or depression. Hence, it is not unusual for some children and their parents to have some initial reservations when being referred to mental health settings (Kangas et al., 2020) including fear of stigmatization (e.g., Hulgaard et al., 2020), and considering the problem from a biomedical perspective (Neville et al., 2019).

A further reason for the lack of medium to long-term effects for the utility of CBT-based approaches is that there has been a lack of consensus on what the core therapy components comprise for managing somatic syndromes in youth presenting with various symptom profiles (inclusive of single-site versus multi-site health complaints). This is further reflected in the diversity of specific cognitive and/or behavioral strategies used across CBT trials in the reviews summarized in this chapter (see Table 33.4). To this end, common components have included relaxation training, distraction strategies, coping and problem-solving training, cognitive reappraisal techniques, as well as targeting modification of illness and sick-role behaviors in children and their parents through behavioral (including exposure) methods. However, given the heterogeneity in methods including primary and secondary outcome measures, no meta-analytic review to date has been able to conduct analyses to determine which specific components are deemed most essential in reducing pain and somatic discomfort. Indeed, there is also a paucity of programs to date that have been specifically designed for youth with somatic syndromes to also target comorbid anxiety and/or depressive symptoms (Kangas et al., 2020). Hence, there is a vital need for future trials to conceptually design and test transdiagnostic frameworks in the concurrent management of both somatic and comorbid mental health problems in youth experiencing distressing chronic somatic syndromes.

The evidence further shows the importance of including parents/carers in therapy, as the O'Connell et al. (2020) review revealed that combined child and parent-directed CBT approaches were more effective in reducing pain intensity and disability than child-only-directed approaches. This latter outcome further supports the biopsychosocial framework for somatic syndromes (e.g., Kangas et al., 2020), where parents and family members may inadvertently influence the perpetuation of symptoms through negative reinforcement and/or overprotective behaviors. Hence, the inclusion of a parent-focused module may be a crucial factor in enhancing the efficacy of psychological interventions for managing somatic syndromes in youth. Although there are a few studies that have included parental-

specific modules, the focus has primarily been on operant techniques to facilitate parents to encourage the use of more proactive and less illness-related behaviors in their children (Palermo et al., 2014).

For parental interventions to make an additive contribution to the efficacy of psychological interventions, these interventions need to clearly target mechanisms associated with somatic syndromes in youth. To this end, recently, Stone et al. (2018) tested an integrative conceptual model based on social learning theory for the intergenerational transmission of chronic pain between parents and adolescents aged 11–17 years using baseline parent-adolescent dyadic measures followed by a 7-day diary assessment. This is one of the first studies to simultaneously evaluate adolescent perceptions of parental pain behaviors and parental reinforcement as prospective predictors of adolescent daily pain severity and functional impairment. Parental modeling of pain-related behaviors was found to have the strongest relation to adolescent daily pain severity and functional impairment, while adolescents were found to be cognizant of parental pain behaviors. These findings accentuate the importance of children's appraisal of parental health-related behaviors (Stone et al., 2018). Notably, these results attest to the important role parents have in hindering versus facilitating their child's management and recovery from recurring somatic complaints contingent on their own health-related behaviors, illness perceptions, and emotion-regulatory strategies. This further highlights that parental interventions need to target the modeling of adaptive parental health-related behaviors and emotion-regulatory strategies. Yet there is a notable paucity of such interventions in this field (inclusive of pediatric chronic pain) (Stone et al., 2018).

The findings from the treatment reviews further revealed that interventions delivered with minimal therapist guidance and/or remotely using e-health technology are very much in their infancy. For adolescents, online therapies may be a fruitful avenue to test future research given adolescents may be more adept and likely to engage with e-technological-based interventions. Additionally, future research is warranted in testing interventions beyond traditional CBT-based approaches including third-wave, mindfulness-based interventions.

A consistent outcome from the treatment reviews is that for the most part, the quality of the trials was deemed low grade. This attests to the importance of improving the methodological rigor of trials in this field, including using larger scale studies, including longer-term follow-up periods to monitor maintenance effects, as well as clearly differentiating between primary and secondary outcome measures, and using appropriate measures to test symptom and functional recovery.

Concluding Comments

Over the past decade, there is a continuing growth of research which has focused on the symptom profile, course, and management of recurring somatic complaints in youth. However, the lack of consensus and consistency in terminology, assessment tools, and diagnostic nomenclature has contributed to a notable absence of international clinical guidelines for clinicians working with this population. Yet there is increasing acknowledgment that a collaborative multidisciplinary health-care approach is needed for health-care professionals including psychologists working with children and adolescents with recurring somatic syndromes (e.g., Ibeziako et al., 2019; Rask et al., 2018). This body of literature highlights the importance of clinicians to regularly screen for comorbid mental health problems given that a considerable proportion of youth with somatic syndromes is also experiencing undetected elevated anxiety and/or depressive symptoms. A case-formulation approach using the proposed biopsychosocial framework is also recommended, along with using a CBT-based intervention approach which includes both children and parented-directed components. Early interventions may also have utility given untreated somatic syndromes in youth increase the probability of experiencing a more chronic course of comorbid psychopathology well into adulthood. This necessitates a shift from medi-

calizing the presence of recurring somatic health complaints in youth to acknowledging the mid-body connections. To this end, psychologists have an instrumental role in the multidisciplinary care of somatic syndromes in children and adolescents.

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