CHAPTER 11

# Anxiety and ASD in Schools: School-Related Issues and Individualized Education Programs

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## OVERVIEW

Youth with autism spectrum disorder (ASD) spend a significant amount of their development in educational settings and education law mandates that they be provided an appropriate education. School staff are increasingly challenged to adequately evaluate and treat symptoms of ASD, as well as any number of secondary symptoms. Anxiety is one of the most common co-occurring difficulties of students with ASD. Anxiety-related problems are a significant concern in school settings as they can exacerbate core symptoms of ASD, disrupt learning, and interfere with other interventions (American Psychiatric Association [APA], 2013; White et al., 2014b). Although the large majority of studies involving anxiety and youth with ASD have been conducted in nonschool settings, many have yielded findings that are highly relevant and applicable to schools (Lopata & Thomeer, 2014). This chapter examines anxiety and ASD in school settings, with an emphasis on research studies conducted in school settings or with school-derived samples, when available. Where school-based evidence is limited or nonexistent, data from the broader evidence-base are presented to inform the considerations and practices of educational teams. The chapter begins with an overview of how ASD is defined in clinical and educational settings, followed by a review of anxiety-related problems in youth with ASD in school settings. This is followed by a discussion of school-based assessment of anxiety in students with ASD and finally intervention development, implementation, and monitoring of anxiety symptoms using the Individualized Education Program (IEP).

*Anxiety in Children and Adolescents with Autism Spectrum Disorder.*
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## CLINICAL DIAGNOSIS AND EDUCATIONAL CLASSIFICATION OF ASD

Clinical diagnostic and special education frameworks constitute two important classification systems used to identify students with ASD. Although both identify and characterize ASD features with considerable overlap between them, some differences exist. This is of interest given the increasingly important role of educational professionals in the assessment and treatment of youth with ASD. The *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (*DSM-5*; APA, 2013) represents a significant alteration in the diagnostic framework that in one way moved closer to the special education parameters, but in other ways encompasses a broader range of clinical impact.

The *DSM-5* collapsed the prior diagnostic categories of autistic disorder, Asperger's disorder, and pervasive developmental disorder – not otherwise specified (PDD-NOS) into a single category (autism spectrum disorder; ASD). This reflects the perspective that ASD exists on a continuum (spectrum) with varying degrees of severity and functional impairments (APA, 2013). The diagnostic criteria for ASD also collapsed the triad of features that characterized the prior diagnostic category of autism (i.e., communication, socialization, and circumscribed and repetitive behaviors and interests) into two primary symptom dimensions (i.e., social-communication/interaction and circumscribed and repetitive behaviors and interests) but continues to require a specific number of indicators within each of the two dimensions. The shift to a single *DSM-5* category (ASD) is consistent with the special education classification system which has used and continues to use a single category (i.e., *autism*). Under the educational classification system, *autism* is characterized by impairments in social interaction and verbal and nonverbal communication, and associated features such as repetitive activities and motor movements, behavioral rigidity, and atypical sensory sensitivities/responses (IDEIA, 2004). In contrast to the *DSM-5*, the educational classification scheme does not have specific indicators (or a minimum number of indicators) under each of these features or requires severity indicators or specifiers (for the presence of intellectual and/or language impairment). Another distinction involves the stipulation in the educational classification scheme that eligibility is based on an adverse effect on the student's *educational performance*; this is narrower than the *DSM-5* which considers the impact on a broader range of functional areas

(e.g., social, occupational). One additional difference, of importance to this chapter, is the expanded recognition of comorbid symptoms/disorders (including anxiety) in the *DSM-5* for individuals with ASD. The educational classification system does not address other disorders, whereas the *DSM-5* indicates that these should be diagnosed when present (see APA, 2013 and IDEIA, 2004).

Discrepancies also exist in the national ASD prevalence data. The most recent data from 2010 indicated a national clinical ASD diagnosis prevalence of 1.5% (1 in 68; CDC, 2014), in contrast to a 0.8% (1 in 125) *autism* special education classification rate for that year (National Center for Education Statistics, 2015). The discrepancy may reflect a difference in data collection methods (i.e., CDC surveyed ASD diagnosis among 8-year-olds across 11 sites nationally vs. all students ages 3 to 21 years in school settings); however, it appears more likely to be due to under-classification of *autism* in schools. For example, studies have found that a sizable minority of students diagnosed with ASD do not receive special education services (e.g., 25%, Kaat et al., 2013; 19%, White et al., 2007). Additionally, students with a clinical diagnosis of ASD sometimes receive a different special education classification other than *autism*. The CDC (2014) data indicated that among children with an ASD clinical diagnosis, only 30% to 69% had a special education classification of *autism*. Despite the potential underestimate in the educational classification of *autism*, data suggest significant increases in the prevalence of autism in both educational classification (0.2% in 2002 to 0.8% in 2010) and clinical diagnosis (0.6% in 2002 to 1.5% in 2010).

## ANXIETY AND ASD IN SCHOOLS

As noted, the *DSM-5* recognizes the presence of co-occurring psychiatric conditions and symptoms in individuals with ASD. Estimates suggest that nearly 70% of those with ASD also have at least one comorbid psychiatric condition (APA, 2013), with anxiety being among the most common (White et al., 2009). It is important to consider that studies of youth with ASD have differed in their measurement of anxiety. The majority of studies have relied on symptom level or severity ratings to evaluate anxiety problems, with fewer studies using formal diagnoses of anxiety disorders. Consistent with Lopata and Thomeer (2014) in their review of anxiety in school settings for students with ASD, this chapter will use the term *anxiety* to refer to anxiety symptoms. Examining comorbid anxiety from

the symptom and severity level perspective is also more consistent with school practices as school-based clinicians do not render psychiatric diagnoses, special education includes only 13 categories, and the staff focuses on treating symptoms. In addition, symptoms at the subclinical level can cause impairment that warrants intervention (Kaat et al., 2013).

*Anxiety in school-based samples with ASD*

Research on anxiety in ASD has increased substantially over the last decade (Reaven et al., 2014) and is largely based on parent-reports and nonschool based samples (Hebron & Humphrey, 2014; Lopata & Thomeer, 2014; van Steensel et al., 2011). Information from these studies provides a broader context for interpreting the available school-based and school-related studies of anxiety in students with ASD. Many nonschool based studies have also examined potential risk factors for anxiety symptoms in this population and yielded mixed findings (Vasa & Mazurek, 2015). A review by White et al. (2009) of 40 studies examining anxiety in youth with ASD yielded prevalence rates of anxiety-related impairment ranging from 11% to 84%. Additionally, although anxiety was common across age and IQ ranges, findings suggested that older age and higher IQ were associated with greater levels of anxiety. van Steensel et al. (2011) conducted a meta-analysis of 31 studies of anxiety in youth with ASD and reported a 40% prevalence rate across studies for a comorbid anxiety disorder or clinically elevated symptoms. Findings from this study indicated that older age and lower IQ were associated with higher rates of overall anxiety; however, the directionality of the trends differed based on the type of anxiety disorder. Higher rates of anxiety were also associated with the use of diagnostic interviews (vs. questionnaires) suggesting that the method for assessing anxiety may affect prevalence and severity estimates.

Anxiety is of interest to educational professionals for many reasons. Anxiety can negatively impact school performance, social relationships, and behaviors of students with ASD (Reaven, 2009). Although clinically-referred samples provide essential information on comorbidity, studies of anxiety in school samples with ASD are needed (Hebron & Humphrey, 2014; White et al., 2009). Teachers and school-based professionals may be especially suited to provide ratings of students' anxiety because they spend extensive time with their students, and they have backgrounds that include training in development, disabilities, and emotional/behavioral problems (Lopata & Thomeer, 2014). Such studies would inform our current estimates of anxiety symptom and comorbidity rates in ASD and provide novel information on the impact of factors

such as informant (e.g., parent vs. teacher) and setting (clinic vs. school) on anxiety prevalence in ASD.

In a study that included teacher ratings of comorbid symptoms in children with ASD evaluated at a developmental disabilities or psychiatric clinic, Weisbrot et al. (2005) found significantly higher levels of teacher-rated anxiety for 6-12-year-olds with ASD compared to a non-ASD clinical group. In addition, the high anxiety children with ASD had a higher mean IQ than the low anxiety children with ASD. Kaat et al. (2013) also found high rates of anxiety when examining impairment, symptom, and diagnostic criteria for teacher ratings of 6-12-year-olds with ASD referred to a developmental disabilities clinic. These studies suggest that teachers also perceive significant anxiety problems in students with ASD being evaluated at specialized clinics.

A small number of studies have evaluated self-reported and teacher-rated anxiety symptoms of students with ASD in public school samples. In a recent study of self-reported anxiety, Hebron and Humphrey (2014) found high-functioning adolescents with ASD (HFASD) in mainstream classrooms reported significantly more anxiety symptoms than comparison adolescents with no disability or a learning disability, with 59% of the HFASD group falling in the clinical range. Teacher ratings of school samples with ASD also reveal significant problems with anxiety. For example, Ashburner et al. (2010) found teacher ratings of anxiety were significantly higher for students (ages 6 to 10 years) with HFASD in mainstream classrooms compared to matched typically-developing controls. Our research team is currently conducting a randomized trial of a comprehensive school-based intervention (i.e., schoolMAX) targeting the social-communication skills of elementary school students with HFASD attending public schools (Institute of Education Sciences Grant R324A130216). Baseline measures of 77 students with HFASD have been collected including a broad clinical rating scale that includes an anxiety symptom scale. Teacher ratings indicated significantly higher anxiety levels for students with HFASD compared to normative estimates ($t[76] = 4.56$; $p < .001$, $d = 1.05$), with 33% of the sample having ratings at or above the at-risk cutoff score.

Although these self-report and teacher rating studies of school samples are informative, the samples are small (*n*s from 22 to 77) and relatively high-functioning. In one of the only large-scale studies, Lecavalier (2006) assessed comorbid symptoms of 3-21-year-olds with ASD (of various ability levels) receiving special education services across 37 school districts.

Teacher ratings of 437 students with ASD indicated prevalence rates (based on items rated to be a moderate problem or a severe problem) of 18% for nervous/tense, 14% for worrying, and 11% for fearful/anxious. Results also indicated that younger age and lower adaptive skills were associated with less anxiety related problems. Together, these school-based studies suggest that anxiety is a common problem in school settings for students with ASD and that age and level of functioning may be implicated. The broader research base also suggests that core impairments of students with ASD can contribute to anxiety (e.g., Mayes et al., 2011). For example, higher parent ratings of restricted, repetitive, and ritualistic behaviors were related to higher levels of anxiety in students with ASD (Rodgers et al., 2012; Stratis & Lecavalier, 2013; Sukhodolsky et al., 2008) and lower levels of social skills/social relationships were associated with higher levels of anxiety (e.g., Chang et al., 2012; Eussen et al., 2012). Anxiety may also serve to exacerbate core ASD impairments (i.e., bidirectional relationship; Mazefsky & Herrington, 2014; White et al., 2009).

*School environments, stress, and anxiety*

A broad range of environmental factors and interpersonal demands within schools appear to run counter to the preferences, traits, and impairments of students with ASD. Few studies have specifically examined school-related factors associated with increased anxiety in students with ASD. In one of the few studies, Hebron and Humphrey (2014) interviewed five adolescents with HFASD about their school experiences and found that problems with understanding social situations, social isolation, bullying, disrupted routines, and chaotic and unstructured environments (e.g., lunchroom, playground) were common and highly anxiety-provoking.

A number of authors have proposed anxiety-inducing factors that are commonly encountered in school environments. These factors reflect three general areas including social demands and exposure, sensory sensitivities, and disruptions to routines. Social demands are pervasive in school settings, ranging from academic instruction (i.e., social-communication) to group projects to adult and peer interactions (Lopata & Thomeer, 2014). These social interactions throughout the school day are likely challenging to students with ASD as a result of social-communication deficits. Prior experiences involving social failures, rejection, teasing, and bullying, as well as self-awareness of their social deficits, may increase anxiety for some students (Chang et al., 2012; Eussen et al., 2012; Schroeder et al., 2014; Szatmari &

McConnell, 2011; White et al., 2014a). In addition, unexpected interactions with unfamiliar peers or adults can increase stress and anxiety (Ashburner et al., 2010). The high level of social exposure in schools may contribute to the development of anxiety or exacerbate anxiety in students with ASD (Mayes et al., 2011). Beyond social demands, sensory-related features of school environments may also be anxiety producing. For example, students with ASD often exhibit hypersensitivity to sensory input (i.e., auditory and visual stimuli; Groden et al., 2006) and many school environments are characterized by loud noise and high activity levels (e.g., cafeteria, hallways, gymnasium; Mazefsky & Herrington, 2014). Loud and unpredictable environments may challenge the sensory tolerances of some students with ASD. The third feature of schools that may be anxiety-provoking involves disruptions to routines. Schools regularly impose changes to students' schedules, environments, and teaching staff (Ashburner et al., 2010). Schools also require multiple transitions across the school day and between years that can be challenging for students with ASD. The beginning of an academic year and the transition to secondary schools constitute significant transition points for students with ASD (Mazefsky & Herrington, 2014; Tsai, 2006; White et al., 2009). These changes and transitions can be difficult owing to the students' preference for structure, consistency, and predictability (APA, 2013; Mazefsky & Herrington, 2014). An inability to manage these stressors and self-regulate (i.e., down-regulate) can cause or exacerbate anxiety in students with ASD (White et al., 2014a; White et al., 2014b).

Anxiety may manifest in several ways including disclosures of negative cognitions, behaviors, and/or physical symptoms (Mazefsky & Herrington, 2014; White et al., 2014a). For students with ASD and higher cognitive and language abilities, symptoms of anxiety may be accurately reported in self-reports (Hagopian & Jennett, 2014). Still some caution is warranted, as these students often have difficulty labeling and reporting internalized states despite their higher cognitive and language abilities (Rotheram-Fuller & MacMullen, 2011). Anxiety can also manifest in behavioral excesses. The emergence of or increase in problem behaviors such as self-injury, self-stimulation, aggression, tantrums, yelling, crying, or general irritability may be indicators of anxiety in students with ASD (Groden et al., 2006; Mayes et al., 2011; Romanczyk & Gillis, 2006; White et al., 2014a). Increases in the frequency and/or intensity of ASD symptoms such as repetitive behaviors or circumscribed interests (Sukhodolsky et al., 2008; Stratis & Lecavalier, 2013;

White et al., 2014a), or avoidance of settings or individuals (isolation) may also signal anxiety (APA, 2013; White et al., 2014a). Gastrointestinal, sleep, and eating problems, and declines in academic performance have also been linked to anxiety in students with ASD (APA, 2013; Mazurek et al., 2013; Reaven, 2009; Williams et al., 2015). Lastly, anxiety may manifest in other elevated arousal states (e.g., shaking, rapid breathing) or nonverbal behaviors such as facial expressions of distress or fear (Hagopian & Jennett, 2014). While not comprehensive, these noted behaviors reflect a range of possible indicators of anxiety in students with ASD in school settings.

## SCHOOL-BASED ASSESSMENT OF ANXIETY

Assessing anxiety in students with ASD is challenging due to symptom overlap (Kerns & Kendall, 2014; Lecavalier et al., 2014). As such, it is important to consider anxiety symptoms relative to core ASD symptoms, with comorbid anxiety identified if the anxiety symptoms are independent of, and result in additional impairment beyond, the ASD diagnosis (Szatmari & McConnell, 2011). Another barrier to assessing anxiety in the school setting is related to the fact that anxiety disorders are not a distinct special education category and school clinicians generally do not provide *DSM-5* diagnoses. As a result, anxiety-related problems, if identified, would be described in the student's psychoeducational assessment reports and Individualized Education Program (IEP).

Assessment of anxiety is also complex as it is comprised of several interrelated elements including a perceived threat (stimuli), cognitive appraisal, physiological reaction, and behavioral response (White et al., 2014a). Considering how anxiety may manifest in each of these elements is important to detecting anxiety and differentiating it from core ASD features (Mazefsky & White, 2013). Based on the high prevalence of anxiety in ASD, screening for anxiety should be part of all initial and ongoing assessments for students suspected of, or having ASD (Rodgers et al., 2012; Vasa & Mazurek, 2015). Multidisciplinary school teams may be ideally suited to conduct such assessments as they are typically comprised of parents, teachers, and service providers with diverse areas of expertise (e.g., school psychology, speech/language pathology, physical therapy; Lopata & Thomeer, 2014). In addition, they are responsible for conducting comprehensive evaluations that include all areas related to the disability (cognitive, language/communication, academic, social-emotional, and

health/physical; IDEIA, 2004), and they have access to and observe the student with ASD in a variety of natural and demanding settings.

It is important to note that assessing and treating anxiety in students with ASD in school settings follows the same general framework as in clinical settings, only adapted to the expertise and setting characteristics of schools. Assessments for anxiety in students with ASD should involve multiple informants and measures (Mazefsky & White, 2013; White et al., 2009). Initially, it is necessary to assess the student's IQ and language level as these will inform both assessment and intervention techniques (Rotheram-Fuller & MacMullen, 2011; White et al., 2014a). Significant intellectual or language deficits will render some measures and techniques less valid or inapplicable. A multimodal approach can include rating scales, formal clinical interviews, other interviews, and behavioral assessment (observations and physiological indicators; Groden et al., 2006; Mazurek et al., 2013; White et al., 2014a). Although there are a range of instruments available, there is a lack of anxiety measures that have been validated for students with ASD (Kerns & Kendall, 2014).

One type of measure, familiar in schools, for assessing anxiety is rating scales. These are frequently used because they are brief, efficient, and can be completed by individuals from the student's natural environments (e.g., teachers and parents; Norris & Lecavalier, 2010). Although not diagnostic, these scales are commonly used to screen for anxiety symptoms and can contribute to diagnostic decisions. Despite the fact that most anxiety rating scales have not been validated for use with students with ASD, several have been identified as appropriate for these students (see review by Lecavalier et al., 2014); these may represent preferred scales for school evaluators. As noted, parent and teacher rating scales have been used extensively to study and detect anxiety in students with ASD. Discrepancies in informant ratings of anxiety are common and should be expected as teachers and parents are characterizing the students' symptoms in different settings (Stratis & Lecavalier, 2015). School evaluators should examine cross-informant ratings as they may provide important insights into the pervasiveness of symptoms or setting-specific symptoms and contributors (Romanczyk & Gillis, 2006). Rating scales also offer an additional advantage. In contrast to measures based on symptom counts and dichotomous scoring (i.e., present vs. absent), rating scales assess the extent and severity of anxiety in students with ASD (Achenbach, 2011; Gotham et al., 2015). Because some students with ASD may not reach diagnostic criteria for an

anxiety disorder but are still in need of anxiety-reducing intervention (Kaat et al., 2013), continuous-scaled measures such as rating scales can help identify and monitor symptom severity including subclinical symptoms (Lecavalier, 2006; Mazefsky & White, 2013). A focus on symptom severity is also consistent with school practices that regularly assess and treat comorbid symptoms, even in the absence of a diagnosis. When appropriate, self-report rating scales should also be completed. These may be most appropriate for students with HFASD (Mazefsky & White, 2013), but caution is still warranted due to characteristic impairments in identifying and labeling internalized states including anxiety (Rotheram-Fuller & MacMullen, 2011).

Diagnostic clinical interviews are another type of measure that may be employed in school settings to assess for anxiety. Interviews can be conducted with parents and/or teachers to determine whether the student meets criteria for a specific anxiety disorder. While determining a clinical diagnosis is not the focus of school evaluators, these interviews allow for probing that can help differentiate anxiety symptoms from ASD symptoms (Szatmari & McConnell, 2011). These measures are often not feasible in applied settings such as schools because they require a high level of training and expertise (Norris & Lecavalier, 2010) and typically take one to three hours to administer (Mazefsky & White, 2013). In addition, the information they yield is less useful in treatment planning and progress monitoring than other forms of assessment (e.g., observations; Bolton et al., 2012). As a result, school evaluators will most likely rely on other assessment techniques. Informal interviews may also yield useful information. For example, interviews with school staff and parents may help identify anxiety-related symptoms, behaviors, and contingencies that are useful in behavioral assessments. When possible, interviews should be conducted with the students in order to better understand the cognitive aspects of the anxiety problems including cognitive distortions and deficiencies (Bolton et al., 2012; Mazefsky & Herrington, 2014). Understanding the specific cognitions will help inform intervention targets and strategies.

Behavioral assessment plays a critical role in measuring anxiety in all students with ASD, and in particular those with intellectual and language deficits (APA, 2013). Given that assessment techniques for anxiety in typically-developing students (self-reports and interviews) have significant limitations for students with ASD, evaluators commonly rely on behavioral assessments to measure symptoms and circumstances

surrounding them. These assessments can include observations of behaviors and/or physiological measures to operationalize and track anxiety symptoms in order to determine antecedent and consequent variables (Hagopian & Jennett, 2014). As noted, anxiety can manifest in the emergence of a new problem behavior/symptom and/or change in a behavior/symptom relative to baseline. Once the anxiety symptom is operationalized it can be tracked along with antecedents and consequences (Hagopian & Jennett, 2014). This process is familiar to school staff that frequently conduct and collect data as part of functional behavioral assessments (FBAs). The accuracy of behavioral assessments can increase when the student with ASD is observed and tracked across settings (e.g., lunchroom, classroom, playground); this can provide greater specificity in identifying triggers and reactions under different setting demands (Bolton et al., 2012).

Physiological measures can also be used to assess anxiety. These may be particularly useful given the cognitive, language, and/or self-report limitations of students with ASD (Hagopian & Jennett, 2014; Kerns & Kendall, 2014), as well as potential problems with operationalizing anxiety behaviors. Common indicators can include salivary cortisol, heart rate, blood pressure, and skin conductance (Mazurek et al., 2013; Romanczyk & Gillis, 2006). Given significant variability in physiological arousal and anxiety within and/or across individuals with ASD (Romanczyk & Gillis, 2006), and the fact that normative comparisons are often unavailable (Lopata & Thomeer, 2014), these measures may be most useful when comparing the student's physiological responses to baseline levels (Groden et al., 2006). As part of an FBA, school evaluators can measure the student's reactive arousal and the circumstances under which it occurs across a range of settings (Mazurek et al., 2013; White et al., 2014a). Because physiological devices may cause stress and anxiety for the student with ASD (Hagopian & Jennett, 2014) evaluators should select the one that is most tolerable (Lopata & Thomeer, 2014). Many devices may not be feasible in schools due to practical limitations (e.g., cost, time, expertise), however, advances in technology (e.g., online applications) may make measuring physiological reactions increasingly available, affordable, and easy to do.

Findings from the comprehensive assessment may be delineated in several different educational reports (psychoeducational report, FBA, etc.), but the specific assessment results (scores, frequency counts, etc.) are reported on the student's IEP (IDEIA, 2004). For more details on the assessment of anxiety in children with ASD, please see Chapter 5 in this book.

## INTERVENTION DEVELOPMENT, IMPLEMENTATION, AND MONITORING USING THE IEP

Special education programming is guided by an IEP which serves as the official record of the student's assessment results, present levels of performance (PLEP), measurable goals and objectives, and special education supports and services (IDEIA, 2004). Of relevance to this chapter, the IEP includes results of the anxiety (and IQ and language) assessment, including the student's associated performance levels which serve as the entry point for the intervention and baseline for measuring progress. It also includes the goals of the school intervention and a description of the program supports (i.e., anxiety-targeted intervention).

Although the student's IEP addresses academic, and developmental and functional needs (e.g., social, management, physical), anxiety will most likely be addressed using techniques that fall under the social (skills development) and management (structure/rules, exposures, and reinforcement) domains. The diverse expertise of school intervention teams, coupled with the range of authentic environments appear to make schools ideal for treating anxiety in students with ASD, yet there is a dearth of school-based models (Lopata & Thomeer, 2014). In the only identified school study, Reaven et al. (2014) described results of a pilot feasibility trial of a school adaptation of the Face Your Fears program for children with HFASD. Multidisciplinary school teams of youth with ASD and their parents reported positive views of the training and curriculum (which included behavioral rehearsal, roleplay, and exposure hierarchies). The findings suggested that such a program is feasible in school settings but no studies were identified showing efficacy. As such, the following should be considered as guidelines, informed by the broader treatment research on anxiety in youth with ASD.

A multimodal intervention approach is warranted given the multiple and interrelated components that comprise anxiety and the features of ASD (Hagopian & Jennett, 2014; White et al., 2013b). These interventions should target anxiety symptoms, as well as social and adaptive skills (Green & Wood, 2013). Although these treatments follow the same progression as for non-ASD students (assessment, psychoeducation, cognitive restructuring, and exposure; Moree & Davis, 2010), some of the techniques are modified (based on the unique features of ASD and functional level of the student) and supplemental instruction is often provided (Sukhodolsky et al., 2013). Results of the comprehensive assessment yield

a disorder-specific hierarchy that delineates the specific ASD-related deficits and anxiety features to be targeted in the intervention (Moree & Davis, 2010). The intervention procedures are developed by the student's IEP and intervention team including the parent(s)/caregiver(s) and then communicated to the student's broader educational team.

Initially, training is provided to the intervention team. Team members may consist of professionals (teachers, school psychologists, counselors, speech/language pathologists, etc.) and paraprofessionals (one-to-one aides, classroom assistants, etc.) that work directly with the student and it is likely that many do not have experience in anxiety treatments for students with ASD (Reaven et al., 2014). Beyond presenting the intervention procedures, trainings can be used to increase shared responsibility, coordination, and generalization (Wood et al., 2009). Given the multicomponent nature of the treatment, feasibility may be increased by having all members of the team trained in the full intervention but assigning an individual treatment element(s) to different members. This requires coordination but it may increase implementation fidelity by decreasing the burden on any individual member (Lopata & Thomeer, 2014). Regardless of the procedures or functional level of the student with ASD, all will benefit from high levels of structure and predictability during the intervention (White et al., 2013a).

To date, studies targeting anxiety in ASD have used cognitive behavioral treatments (CBT) for students with HFASD. These treatments target maladaptive cognitive processing and reactions (thoughts, emotions, and behaviors) by teaching adaptive coping skills that alter the students' cognitive distortions (appraisals) and lower arousal levels so that they can gradually and successfully confront the feared stimulus (Green & Wood, 2013). Results of several studies have supported the efficacy of CBT for reducing anxiety in youth with HFASD (e.g., Reaven et al., 2012; Wood et al., 2009). A recent meta-analysis evaluating the efficacy of CBT for anxiety in youth with HFASD indicated large reductions in anxiety for those receiving treatment (relative to control conditions) based on clinician ($d = 1.21$) and parent ratings ($d = 1.19$; Sukhodolsky et al., 2013). These treatments provide a framework and adaptations that can be applied to school interventions for anxiety in students with ASD.

One component of a school intervention should involve remediation of ASD-related impairments (social, perspective taking, emotion recognition, etc.); this can be done prior to addressing the anxiety or concurrently (Moree & Davis, 2010; White et al., 2013a; Wood et al., 2009).

School clinicians (e.g., school psychologists, counselors) are well-qualified and regularly conduct such skills groups. Developing these skills will help the students better understand their cognitive distortions, as well as assist with their coping responses during exposure exercises.

The second component consists of psychoeducation and cognitive restructuring in which the student is taught about anxiety, how cognitive distortions affect emotions and behavioral reactions (avoidance), and adaptive coping strategies to confront the feared stimulus (Moree & Davis, 2010; White et al., 2013a). School clinicians are also qualified to conduct this portion but should adapt the traditional approach to take into account features of students with ASD. Concrete and visual techniques, hands-on activities (e.g., cartoons, worksheets, stress thermometers), simplified instruction, and a focus on physiological sensations have been recommended to accommodate the students' concrete learning style and increase their understanding of the link between distorted cognitions, physiological reactions, and behaviors (Green & Wood, 2013; Moree & Davis, 2010). Cognitive restructuring is achieved by challenging distortions and replacing them with adaptive self-statements (Bolton et al., 2012). In addition, the student is taught practical problem-solving skills and arousal reduction techniques (relaxation; deep breathing, muscle relaxation) and when to apply them (Groden et al., 2006; Reaven et al., 2012).

Once the student has developed these coping strategies, graded exposures are used to confront the anxiety-provoking stimulus in order to achieve habituation (White et al., 2013a). To the extent possible, these exposures should be conducted daily *in vivo* with escape prevention (Wood et al., 2009; Reaven, 2009). Classroom teachers and/or aides may be ideally suited for these trials because they are with the student throughout the day. As such, they can conduct planned exposures, but also assist the student when unplanned exposures occur (Lopata & Thomeer, 2014). The assigned staff member can rehearse the coping strategy (cognitive and arousal reduction) with the student prior to the exposure, as well as provide prompts and model the strategy during the exposure (Hagopian & Jennett, 2014; Rotheram-Fuller & MacMullen, 2011). Relaxation strategies can be antecedent- (prior to the event) or response-targeted (in response to the exposure; White et al., 2014a), and/or practiced daily to reduce general stress (Groden et al., 2006). Another important technique to use is reinforcement. School staff should reinforce the student for making approach behaviors, using coping strategies, completing exposures (Hagopian & Jennett, 2014), and using other

social and adaptive skills across the school day (Lopata & Thomeer, 2014; Rotheram-Fuller & MacMullen, 2011). Parents can also conduct exposure trials outside of school using the same coping and reinforcement strategies. This may help generalize skills across settings. It is important for school teams and parents to ensure that movement along the graded hierarchy is contingent upon successful completion of the prior trial (Hagopian & Jennett, 2014). Lastly, self-monitoring skills should be developed to increase the student's sense of control (Bolton et al., 2012).

Although evidence has supported the use of CBT with students with HFASD, little is known about how to treat anxiety in lower-functioning students with ASD (LFASD; White et al., 2009). Significant cognitive and/or language deficits will likely require a more behaviorally-based approach as these students may be confronting anxiety-inducing stimuli with less cognitive understanding and fewer cognitive strategies than students with HFASD (Lopata & Thomeer, 2014). Despite these barriers, school clinicians may attempt to teach strategies using pictures that depict adaptive coping techniques (approach behaviors, deep breathing, etc.) and positive outcomes (Groden et al., 2006). Arousal reduction strategies (deep breathing, relaxation) can also be taught and practiced daily to reduce general stress and anxiety, and used before and/or during an exposure (Groden et al., 2006; White et al., 2014a). Even in the absence of cognitive understanding of anxiety, students with LFASD can benefit from exposure to reduce anxious avoidance (Hagopian & Jennett, 2014). Given the impairments of students with LFASD, exposure and reinforcement will be critical and can be provided by teaching and support staff (due to their contact with the student across the school day). Prompting, modeling, and reinforcement are used during the gradual exposure exercises (Rotheram-Fuller & MacMullen, 2011; Vasa & Mazurek, 2015) and staff must ensure the student's anxiety levels are kept low to ensure habituation (Hagopian & Jennett, 2014). School staff should reinforce the student for confronting the feared stimulus and use highly desirable reinforcers to counter the negatively reinforced avoidant behavior (Hagopian & Jennett, 2014). Daily *in vivo* exposures with escape prevention should be attempted (Wood et al., 2009; Reaven, 2009). Lastly, parents should conduct exposure trials outside of school to increase generalization. For more details on CBT approaches for children with ASD, including common modifications, group and individual programs, see Chapters 6-8 in this book.

The students' IEPs should contain specific goals and objectives related to anxiety reduction. These goals will be derived from the comprehensive assessment and will serve as the basis for progress monitoring throughout

the intervention (Hagopian & Jennett, 2014; Mazefsky & White, 2013). Progress monitoring indicators will vary across students but should involve multiple measures and methods (Moree & Davis, 2010; Rotheram-Fuller & MacMullen, 2011). Although progress monitoring efforts may be hindered by the previously noted lack of reliable and valid measures of anxiety for students with ASD (White et al., 2013a), the meta-analysis by Sukhodolsky et al. (2013) suggested that parent and clinician rating scales were sensitive to changes in anxiety levels for students with HFASD. The continuous-scaling of rating scales also makes them useful indicators of symptom severity (Achenbach, 2011) and allows for evaluation of change in anxiety levels over time. Despite these positive features and indications, the treatment sensitivity of these rating scales for students with LFASD is unknown. Behavioral observations are another progress monitoring option and may be especially applicable as they are often used in the assessment process and are familiar to school staff. If using behavioral observations, the target behaviors must be clearly operationalized and checks of reliability (interrater) should be conducted (Bolton et al., 2012). Physiological measures can also be used to measure reductions in stress and anxiety during exposure trials. These measures avoid many of the limitations of other types of measures and may be more valid; however, they require staff expertise with the measure(s) and tolerance on the part of the student with ASD. If using physiological measures, stress and anxiety responses to a feared stimulus should be compared to baseline levels away from the stimulus (Groden et al., 2006). These measures may be less accessible and feasible in school settings (Lopata & Thomeer, 2014) but may become increasingly applicable with improvements in technology and online applications. A final consideration involves the proximity of the outcome indicator to the skills/responses targeted by the intervention. Proximal measures (e.g., direct observations of approach behaviors without avoidance) may be more sensitive and effective in determining treatment effects compared to broad-based measures which may fail to detect improvements and clinically meaningful changes (Bolton et al., 2012; Wood et al., 2009).

## CONCLUSION

Prevalence data indicate a substantial increase in the number of students with ASD, a significant portion of which also experience problems with anxiety. In contrast to clinical settings, schools have access to and are

responsible for serving all students with ASD. As such, schools are a critical resource for identifying and treating anxiety in this population. School evaluators have professional training and experiences that allow them to conduct comprehensive assessments of anxiety, ASD symptoms, and intellectual and language functioning. In school settings, anxiety interventions for students with ASD are formalized in the students' IEPs. Along with assessment results, the IEP delineates the goals of the anxiety-reducing intervention and the support services to meet those goals. School intervention teams are uniquely suited to implement anxiety interventions for students with ASD as they are multidisciplinary and have access to the students across the school day and under real-world demands. Despite these advantages, no school-based anxiety treatment model for students with ASD has been validated and controlled trials are needed (White et al., 2009). Until then, school staff may be best served by adapting outpatient strategies that have been shown to be effective into comprehensive school-based models.

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