


A Cognitive-Behavioral Approach for Anxiety in a Preschool-Aged Child With Autism Spectrum Disorder

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Abstract

Empirical support exists for behaviorally oriented psychosocial interventions to reduce functional impairment related to autism spectrum disorder (ASD) symptoms in young children, but little research exists examining the effectiveness of such treatments when applied to preschool-aged children with comorbid anxiety symptoms. With this in mind, the authors report on the case of “Marcus,” a 4-year-old boy with autistic disorder and impairing comorbid anxiety. Marcus participated in 8 weekly sessions of family-based cognitive-behavioral therapy, addressing his fear-based avoidance of social interactions and sensory stimuli, using an anxiety treatment protocol for youth with ASD modified to account for his young age. This protocol consisted of modular components addressing affective education, exposure, cognitive restructuring, and social coaching. At post-treatment assessment, Marcus exhibited markedly decreased impairment, as evidenced by parent responses to clinical interview and rating scales. In addition, Marcus displayed improvement in severity of anxiety symptoms as illustrated by a decrease in his scores on the Pediatric Anxiety Rating Scale from 17 at baseline to 8 at post-treatment. Therapeutic gains were maintained at 4-month follow-up. Implications and clinical considerations are discussed.

Keywords

anxiety, autism spectrum disorder, cognitive-behavioral treatment

I Theoretical and Research Basis for Treatment

Diagnostic Criteria

For many years, the prevalence of autism spectrum disorder (ASD) has risen dramatically, with the most recent American studies suggesting that 1 in 88 children (1 in 58 boys) is diagnosed with ASD (Centers for Disease Control and Prevention, 2012). Defining features of ASD include persistent and pervasive impairments in social communication and interaction as well as restricted

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and repetitive patterns of behaviors, interests, or activities (American Psychiatric Association [APA], 2013). Youth with ASD demonstrate functional impairment in a wide range of areas (Bellini, 2004); however, the degree of such impairment in many youth can be at least partly attributed to the presence and severity of comorbid anxiety (de Bruin, Ferdinand, Meester, deNijs, & Verheij, 2007). Estimates suggest that 50% to 80% of children with ASD experience clinically significant anxiety symptoms (Sukhodolsky et al., 2008), with heightened rates of comorbidity for social phobia (30%), generalized anxiety disorder (GAD; 35%), obsessive-compulsive disorder (OCD; 37%), and separation anxiety disorder (SAD; 38%) being reported (see White, 2009, for a review). Given that anxiety disorders are associated with considerable impairment in neurotypical youth (Essau, Conradt, & Petermann, 2000), it is not surprising that comorbid anxiety in youth with ASD is associated with a more severe level of impairment than observed in non-anxiety disordered youth with ASD (Bellini, 2004). In particular, anxiety has been associated with increased impairment in social (e.g., increased social avoidance, difficulties in developing and keeping friendships) and family domains (e.g., reduced overall family functioning) and with additional co-occurring concerns (e.g., increased externalizing behavior problems, sleep difficulties; Bellini, 2004; Lewin, Wood, Gunderson, Murphy, & Storch, 2011; Ung et al., 2013).

Treatment Options/Recommendations

Cognitive-behavioral therapy in typically developing anxious youth. For treatment of anxiety in neurotypical youth, cognitive-behavioral therapy (CBT) is well established as a first line treatment approach (In-Albon & Schneider, 2007). Although differences exist among various protocols and diagnoses, elements and principles of CBT for youth have much in common across targeted problems. For instance, cognitive-behavioral therapy, regardless of presenting problem, typically includes the use of affective education and exposure as core components (Anderson & Morris, 2006). Similarly, family members are often included in treatment of youth to address developmental barriers and problematic family accommodation (Storch et al., 2007), the result of which includes improved treatment response (Wood, Piacentini, Southam-Gerow, Chu, & Sigman, 2006).

Exposure to anxiety-provoking situations or persons is a cornerstone of CBT for anxiety disorders. Prior to exposure activities, the therapist works with the patient/parent to create an anxiety hierarchy, ranking feared stimuli according to the subjective level of distress resulting to the patient. This hierarchy serves to guide exposure activities as the patient progresses through items of gradually increasing subjective intensity. During these activities, the patient abstains from completing avoidant/escape behaviors (which function to reduce anxiety in the short term but are consequently maintained via negative reinforcement), allowing instead habituation to the increased levels of anxiety. Thus, the relationship between escape/avoidance behavior and anxiety reduction is broken. Beyond behaviorally oriented exposure activities, cognitive (cognitive restructuring) and affective (emotional identification) skills are also built and employed to allow patients to recognize and challenge anxiogenic thoughts and feelings.

Cognitive-behavioral therapy in youth with ASD. Given the unique needs of youth with ASD, emerging studies have modified the format of traditional CBT to account for the particular combination of anxiety symptoms and diagnostic indicators displayed within this segment of the population (Reaven, Blakeley-Smith, Culhane-Shelburne, & Hepburn, 2012; Storch et al., 2013). Common modifications include social skills training, the addition of visual aids, and greater parent involvement (Chalfant, Rapee, & Carroll, 2007; Wood, Drahota, Sze, Har, et al., 2009). Recent meta-analyses offer strong empirical support for the efficacy of CBT with modifications in youth with ASD and anxiety (Sukhodolsky, Bloch, Panza, & Reichow, 2013; Ung, Selles, Small, & Storch, 2014). Compared with control conditions, CBT with ASD-specific modifications has

demonstrated significant reductions in parent- and clinician-rated anxiety (Wood, Drahota, Sze, Har, et al., 2009), higher rates of remission of anxiety disorders (Storch et al., 2013), increased adaptive behaviors in response to stressors (Chalfant et al., 2007), improved independent living skills (Sofronoff, Attwood, Hinton, & Levin, 2007), reduced parent-rated autism symptom severity (e.g., social communication, social mannerisms, and so on; Wood, Drahota, Sze, Har, et al., 2009), and improved quality of life for the child and family (Chalfant et al., 2007; Sofronoff et al., 2007). Furthermore, these gains generalize to other functional domains (e.g., school), with teachers also reporting significant reductions in anxiety (Chalfant et al., 2007; Drahota, Wood, Sze, & Van Dyke, 2011). Although long-term follow-up has not been examined, evidence suggests the short-term durability of treatment effects (e.g., Reaven et al., 2012; Storch et al., 2013).

Despite variability between these treatment trials, respondent type (i.e., parent, child, or clinician) and treatment modality (i.e., group therapy vs. individual therapy, inclusion of a parent) do not seem to account for this heterogeneity (Ung et al., 2013). However, only children between 7 to 14 years old have been included in these trials. Parent involvement may actually demonstrate better treatment response in children under 7 years old. Taken as a whole, the current literature suggests the following: (a) Modification to CBT programs for anxiety in youth with ASD should focus upon social, emotional, and cognitive deficits characteristic of ASD core symptoms (e.g., language and cognition skills, motivation, insight/self-awareness; Chalfant et al., 2007; Wood, Drahota, Sze, Har, et al., 2009); (b) when such modifications are in place, CBT shows effectiveness in anxious youth with ASD as compared with waitlist and/or usual treatment (Sukhodolsky et al., 2013; Ung et al., 2014); (c) treatment-related gains among youth with ASD are durable in nature (Reaven et al., 2012; Storch et al., 2013); and (d) with proper design and planning, treatment gains generalize well to settings outside of the treatment locale (Chalfant et al., 2007; Drahota et al., 2011). The modifications used are of relevance to this discussion, as the increased intensity of focus upon building foundational skills is critical to addressing developmental differences between school-age and preschool-age children. The present case study reports on the application of a CBT protocol modified for use with a preschool-age youth presenting with autistic disorder and comorbid anxiety to reduce anxious symptoms and improve psychosocial functioning, with a secondary goal of improving family-based management of core ASD symptoms.

2 Case Introduction

Marcus (fictional name), a 4-year-old Hispanic male, presented to a university medical clinic, specializing in anxiety disorders and related conditions, for a diagnostic evaluation and treatment of “tics” and disruptive behaviors. A polite and inquisitive child, Marcus experienced moderate levels of distress and exhibited mildly disruptive behaviors when faced with social demands involving select novel people (e.g., being questioned by new people, being addressed by wait staff or clerks in the community). In addition, Marcus displayed many diagnostic markers associated with autistic disorder (e.g., limited eye contact, absence of joint attention, late-onset developmental regressions). The presence of multiple motor routines (i.e., leg and ankle extension, yawn-like flexing of the lower jaw), originally diagnosed by the family pediatrician as motor tics, was reported.

3 Presenting Complaints

Marcus’s mother, Sandra, reported an unremarkable developmental history until shortly before his second birthday, at which point he displayed decreasing levels of attention to and awareness of verbal communication with his family. At the time of evaluation, in addition to the multiple motor routines, Marcus exhibited a marked aversion to social demands from others (e.g., avoiding eye contact and turning away when questions were asked) and minimal expressive language,

consisting mainly of grunts and repetitive fragmented speech patterns when requesting attention or desired items. By Sandra's report, onset of motor routines was between 12 and 18 months and socially avoidant behaviors between 18 and 24 months. Sandra noted that Marcus's motor routines were associated with the greatest impairment, as they are the most observable to others. Sandra also expressed concern related to the potential for peer teasing as Marcus began his kindergarten year of school but denied any current interpersonal problems related to the routines beyond parental concern. The pediatrician's diagnostic impressions of Marcus's motor routines as tics led to the family being referred to our specialty clinic for further evaluation and treatment.

4 History

At the intake assessment, Marcus was living with his mother, father (Liam), and younger sister in a small, urban city in the Southeastern United States. He was scheduled to begin his kindergarten year in a local public elementary school several weeks after treatment onset. His parents were married with no presenting concerns related to familial stressors aside from those associated with Marcus's behavioral routines. Given Marcus's age and communicative impairment, he was unable to provide responses to most screening items; however, Sandra denied past or present concerns about his mood or substance use and denied any history of psychosis, mania, or suicidal ideation. She did note some limited symptoms of anxiety that were attributed to social stress.

5 Assessment

A comprehensive assessment including semi-structured clinical interviews and parent-report measures was administered to Marcus and Sandra prior to the initiation of treatment to determine the nature and severity of Marcus's presenting symptoms as well as the level of resulting functional impairment (Lewin & Piacentini, 2010). Nature and severity of ASD symptoms was assessed via the Autism Diagnostic Observation Schedule–Module 3 (ADOS; Lord, Rutter, DiLavore, & Risi, 1999), Childhood Autism Rating Scale (CARS; Schopler, Van Bourgondien, Wellman, & Love, 2010), Social Responsiveness Scale (SRS; Constantino, 2002), and Social Communication Questionnaire (SCQ; Rutter, Bailey, Lord, & Berument, 2003). Comorbid diagnoses were determined using the Anxiety Disorders Interview Schedule for *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*; APA, 1994)–Parent Version (ADIS-IV-P; Silverman & Albano, 1996), Pediatric Anxiety Rating Scale (PARS; Research Units of Pediatric Psychopharmacology Group, 2002), Multidimensional Anxiety Scale for Children–Parent (MASC-P; March, 1998), and Childhood Anxiety Impact Scale–Parent (CAIS-P; Langley, Bergman, McCracken, & Piacentini, 2004). With respect to anxiety symptom assessment, the ADIS-IV-P, MASC-P, and CAIS-P have been used with preschool-age youth (Langley et al., 2004), and all instruments have been used among youth with comorbid ASD diagnosis (Storch, Wood, et al., 2012; Wood, Cowan, & Baker, 2002). Presence and severity of internalizing symptoms was determined using the Child Behavior Checklist (CBCL; Achenbach, 2001) and clinician-rated Clinical Global Impression–Severity (CGI-S; National Institute of Mental Health, 1985). All diagnostic impressions were confirmed via clinical interview with the senior author. In addition, the Clinical Global Impression of Improvement (Guy, 1976) was completed at the assessment following treatment termination. Based on the assessment results, Marcus was determined to have a primary diagnosis of autistic disorder with comorbid GAD and social phobia.

6 Case Conceptualization

Overall, Marcus presented as a quiet and gentle child, with few clinically significant problems aside from the motor routines and socially avoidant behaviors. However, Sandra reported distress

related to interference from his avoidant behaviors with respect to interactions with same-age peers and, to a lesser extent, family members. In particular, there was a clear progression from parental frustration (due to lack of compliance with parent-driven social demands), to conflict between parents (associated with differing behavioral expectations), to removal of Marcus by Sandra from the immediate area. The parents reported that Marcus would engage in disruptive behaviors—including physically turning away from others and immediately breaking eye contact to gaze upward or downward—presumably to escape from social situations.

Differentiation of socially mediated anxiety symptoms from core ASD characteristics is difficult and a topic of much debate (e.g., Kerns & Kendall, 2012). The *DSM-5* (5th ed.; APA, 2013) requires that when symptoms of another disorder, including anxiety disorders, are present and met (e.g., social phobia), the disorder is to be diagnosed and considered comorbid to ASD. However, the diagnostic criteria for social phobia state that symptoms must not be better accounted for by ASD. In the case of Marcus, the interference with daily activities due to avoidance of social situations reported by his mother assists in definitive diagnosis of social phobia, particularly when exposure to feared situations initiates a significant increase in physiological symptoms (increased respiration and heart rate, sweating, trembling).

With respect to the motor routines classified as motor tics by the family's pediatrician, observation and clinical judgment revealed that the motor routines were behavioral stereotypies consistent with ASD, differentiated from motor tics based on multiple diagnostic indicators. First, the onset of Marcus's motor routines occurred between 12 and 18 months, as expected of stereotypies (typically prior to age 3), and much earlier than the average onset of motor tics (typically 5-7 years of age). Second, the motor routines were reported as relatively static and well established since their onset, consistent with stereotypies and inconsistent with motor tics, which commonly evolve or progress over time. Third, Marcus's motor routines were not limited only to areas of his body at shoulder level or above (as expected with motor tics) but also involved muscles in his legs, ankles, arms, and hands, a characteristic indicative of motor stereotypies. Fourth, rather than sudden, brief paroxysms indicative of simple motor tics, the motor routines reported and observed were rhythmic in nature and relatively prolonged (i.e., ranging from 2-5 seconds), characteristics more closely aligned to stereotypies. Finally, and perhaps most telling, when Marcus was distracted or interrupted during the course of a motor routine, the routine was observed to terminate immediately, a phenomenon characteristic of stereotypies but extremely unlikely to be observed in the presence of an involuntary neuromuscular impulse.

Regardless of etiology, Sandra expressed concerns regarding the social stigma associated with his stereotypies, particularly given their comorbid presentation with significant anxiety related to social demands from others. Marcus's parents displayed a relatively consistent understanding of how the desire to escape social demands acted to maintain his problematic behaviors. However, deficits in their understanding with respect to how the various core symptoms of ASD manifest (e.g., lack of social engagement, aloofness, behavioral stereotypies, significantly limited social repertoire, poor coping skills) frequently resulted in the parents perceiving such characteristics as reflecting malicious or defiant intent, rather than as significant skills deficits. Thus, the level of familial distress, coupled with knowledge and skills deficits, indicates the need for an intervention that provides psychoeducation to increase the parent's level of knowledge with respect to ASD and anxiety, while remaining primarily focused upon anxiety management techniques and prosocial skill building. Basic functional behavior analysis techniques (i.e., identifying environmental antecedents and consequences) were incorporated with his parents to increase their awareness of setting events and environmental variable triggering and/or maintaining problem behaviors. Emotional identification techniques were included to increase the awareness of increasing anxiety that often intensified his maladaptive behaviors in light of evidence that supports an association between arousal states and disruptive behaviors (Nigg, 2003). Behavioral exposures (see Table 1 for specific examples on a session-by-session basis) were implemented to

Table 1. Treatment Session History.

Number	Session topic	Parent components	Child components
1	Introduction, information	Psychoeducation, treatment plan	Rapport-building, psychoeducation
2	Affective education	Behavioral cues for happiness	Physiological cues for happiness
3	Affective education	Behavioral cues for anxiety	Physiological cues for anxiety
4	Coping	Rewards, coping steps	Coping questions
5	Hierarchy	Generating hierarchy	Rating hierarchy items
6	In vivo exposure, negotiating	Negotiating exposures	Low-level exposure activities (e.g., interacting with strangers)
7	In vivo exposure, negotiating	Negotiating exposures	Moderate-level exposure activities (e.g., task demands from parents)
8	In vivo exposure, termination	Relapse prevention	High-level exposure activities (e.g., task demands from other adults), relapse prevention

build Marcus's self-confidence with respect to managing his anxiety related to social stressors, and other cognitive-behavioral techniques were adapted (e.g., developmental scaling of affective education, use of mother as a "coping coach") to incorporate input from his parents in his anxiety management. Finally, problem-solving techniques were used to teach an effective, step-by-step approach to handling problems that may arise because of anxiety and related avoidance, such as parental conflict or undesirable peer response.

7 Course of Treatment and Assessment of Progress

Marcus was seen in 8 weekly sessions, ranging from 35 to 70 min in duration, during a 3-month time period. Treatment was provided by a specialist-level therapist (JMN) receiving weekly supervision by a licensed clinical psychologist (ABL, EAS). The first session focused on rapport-building, psychoeducation about common core symptoms of ASD and of anxiety disorders, rationale for treatment, and generation of a preliminary treatment plan. The active treatment phase was conducted across all 8 sessions (see Table 1 for the treatment outline). Treatment comprised the following components: affective education and emotional identification, to increase the parents' level of knowledge with respect to ASD and anxiety as well as to increase Marcus's level of awareness of anxiety which exacerbated his inappropriate behaviors; coping skill development and practice, used to provide an effective and consistent approach to handling problems related to anxiety and avoidance; identification and ranking of rewards, to decrease the likelihood of Marcus avoiding exposure activities; generation and population of an anxiety hierarchy, to further clarify potential items of concern which triggered and/or maintained problem behaviors; and active exposures, to build Marcus sense of confidence in his ability to manage anxiety related to social stressors. Treatment was designed such that all components were introduced and practiced within session as well as assigned for independent parent facilitation at home.

Affective education was provided with the aim of increasing Marcus's awareness of anxiety and its impact upon his disruptive behaviors. Developmentally appropriate diagrams (cartoons) were used to depict characters in various mood states, and scaffolding was used to facilitate Marcus's ability to identify emotions of others based on facial and body cues (happiness, sadness, anger, fear). In addition, physical cues typically elicited by difficult situations were discussed (e.g., racing heart, shaking hands, upset stomach) to introduce the concept of using physical cues as a signal of increasing and/or impending anxiety. Marcus did well with

identifying basic emotions (happy, sad, scared, mad), successfully identifying 45 of 48 faces at introduction of the activity. However, Marcus struggled with more complex emotions (e.g., disgusted, nervous, confused, frustrated), successfully identifying 6 of 52 faces. Marcus initially displayed significant difficulty in associating physical cues with his subjective level of anxiety; however, as the feelings thermometer was introduced and “calibrated” in preparation for constructing Marcus’s anxiety hierarchy, Marcus began to indicate awareness of unexpected sensations in his stomach (i.e., verbalization of “tummy funny”) immediately prior to engagement in motor stereotypy.

A coping plan was provided with the aim of providing a simple but consistent method for handling problems related to anxiety and avoidance. Given Marcus’s level of development and cognitive functioning, two modifications were made to the more traditional teaching of coping skills. First, the level of involvement by the mother was greatly increased, allowing her to serve as a “Coping Coach” for Marcus. This provided assurance that Marcus would be able to access the necessary components of the coping plan when needed. Second, the coping plan was scaled downward developmentally and personalized to match Marcus’s day-to-day routines and style of communication. More specifically, the various steps associated with traditional problem-solving algorithms were condensed and streamlined into a series of four questions for Marcus to answer. First, the need to identify the presence of an anxiogenic stimulus was addressed through the question “Is this good or bad?” This afforded Marcus an opportunity to delay his learned avoidant response long enough to rate the level of threat a situation was perceived to hold. Marcus experienced near-immediate success with answering this question, as evidenced by providing answers (e.g., “good,” “bad”) congruent with affective and behavioral responses to various stimuli. Second, if he perceived the situation to be anxiogenic (i.e., “bad”), the feared consequence was identified and/or specified via asking “What might happen to me?” This question was designed to elicit the exact consequence believed to be imminent, something with which Marcus struggled when queried directly by the clinician. Marcus initially experienced difficulty with multiple versions of this question, typically providing either no response or “Don’t know” when asked. However, when the therapist and parent worked to generate a menu of potential responses based on Marcus’s history of behaviors, Marcus showed an increasing ability to select potential consequences appropriate to a proffered stimulus. For example, he accurately described a negative parental response (“Daddy angry”) as the consequence of turning away from a task demand. In an effort to reality-test the feared consequence in a developmentally appropriate manner, the third question to be asked was “What happened last time?” This question was used to determine the perceived likelihood of the feared consequence as well as to allow an intuitive path to exposure-based activities. Given Marcus’s level of functioning, it is perhaps not surprising that he struggled to verbalize prior experiences with a given stimulus. Therefore, involvement by the mother was increased at this point, in that she was better able to decipher the context for the verbalized fragments given by Marcus in response to this question. The final question—“What can I do after this?”—was designed to shift Marcus’s focus from the immediate situation to the desired future (i.e., post-exposure) consequences. Marcus initially experienced difficulty with providing appropriate responses to this question, often saying “Don’t know” or remaining silent when asked. Interestingly, after exposure activities were commenced, Marcus increasingly displayed greater understanding of the concept, as evidenced by verbalizing desired rewards or situations he perceived as following completion of the feared activity.

The concept of using rewards to increase target, low-rate behaviors (e.g., difficult or non-preferred tasks including homework and exposure activities) was introduced to Marcus’s parents by reviewing the advantages and disadvantages of using rewards or privileges. Given Marcus’s displayed range of functioning, a point system was eschewed in favor of using specific daily items or routines which Marcus historically had found rewarding. The parents were observed to negotiate quite often with Marcus during periods of task demands and/or avoidant behaviors, in

an effort to increase his compliance. The importance of setting clear and concrete expectations for Marcus prior to such situations was expressed, and in-session guidelines were generated and implemented by the therapist as an exemplar for the parents. In addition, the role of immediate reinforcement in strengthening the salience of a given reward with respect to non-desired or feared situations was discussed. After these concepts were introduced to the parents, the mother generated and implemented a chart-based visual guideline system in Marcus's home, providing repeated prompting and redirection to these guidelines as necessary. Furthermore, multiple discrete items and events rewarding to Marcus were identified and delivered in response to his compliance with parent tasking.

Prior to beginning exposure activities to address anxiogenic situations or activities with Marcus, it was necessary to assist the parents in determining specific routines or events that Marcus found distressing, all of which were listed on an anxiety hierarchy. The concept of the hierarchy was introduced to the parents, tying the previously discussed coping plan to various "real-life" situations Marcus encountered at home and in the community. Although the rationale for exposures was covered in great detail with the parents, Marcus was not involved in the initial psychoeducation or planning of exposures given Marcus's chronological age and developmental level. The feelings thermometer, used to rate subjective level of distress or anxiety, was adjusted to greatly reduce its complexity. The result was a simple vertical line, with a smiling and happy face at the bottom, a neutral or unsure face at the line's midpoint, and a frightened and/or anxious face at the top. Due to the difficulty Marcus displayed in expressing his level of enjoyment or anxiety associated with a given activity or stimuli, the thermometer was calibrated as follows. The therapist joined Marcus while he was engaged in play activities, asking Marcus whether he was having fun while simultaneously presenting the thermometer in his field of view and indicating the smiling face. Similarly, when Marcus displayed behaviors associated with avoidance in response to anxiogenic stimuli within the confines of the clinic, he was again presented the adjusted thermometer while being prompted with developmentally appropriate and personally relevant words (e.g., "yucky," "don't like"). Marcus appeared to grasp the concept of the thermometer, repeating the word fragments initially. He also began to initiate responses while indicating the corresponding face on the thermometer. Marcus showed increasing utilization of fragmented verbalizations and pointing to the emotional thermometer, while displaying a decreasing frequency of stereotypy.

Exposure with response prevention was provided with the aim of increasing Marcus's level of self-confidence and decreasing avoidance in response to anxiogenic stimuli. The rationale for exposure activities was introduced to Marcus through developmentally appropriate questions and examples (i.e., his fears were "playing tricks on you"). This represented an area of particular difficulty for Marcus, due in large part to concreteness secondary to his young age and ASD. However, increasing Sandra's level of active participation in various role-play activities facilitated Marcus's increased understanding of habituation to anxiety. Initial exposures focused on social avoidance of unfamiliar people. Marcus experienced near-immediate success with low-level exposures, in that his reported level of anxiety was observed to peak and quickly diminish to near-baseline for each discrete exposure activity. Marcus responded positively to rewards administered immediately following each exposure activity. As the intensity of exposure activities was increased, Marcus displayed an interesting pattern of response: For the first exposure attempt at a new intensity, he initially engaged in avoidant behaviors despite seemingly adequate preparations; on the next one to two attempts, he would comply slowly and with minor crying (tears without verbalization); on all future attempts, he would comply with no observed negative response. Note that this pattern appeared to be linked to activity novelty and intensity, rather than setting and/or personnel, as he progressed through habituation regardless of the person(s) involved, questions asked, and settings encountered. At the end of treatment, the clinician reviewed the entire protocol with Marcus and his mother, discussing what had gone well in

treatment, how Marcus could apply these techniques to novel situations in the future, and how his mother could assist in monitoring his progress. The overarching premise was to facilitate Sandra's application of the cognitive and behavioral principles underlying the protocol as necessary in the future.

At post-treatment assessment, although the motor stereotypies were not directly quantitatively assessed, Sandra remarked that the frequency of Marcus's engagement in motor stereotypies had decreased from multiple occasions daily to less than once per week at post-treatment. Furthermore, Sandra observed that when such behaviors occurred, they were attributable to unexpected and sudden increases in environmental or social stressors. By the end of 8 sessions, Marcus's SRS total score indicated non-significant reductions (T -score >90 at pre-treatment, 87 at post-treatment) in social response deficits commonly associated with ASD. However, significant changes in Marcus's behaviors and social interactions at home and in the community were reported by Sandra, wherein she observed that Marcus was more likely to respond verbally and to mind appropriately. Marcus's GAD and social phobia were considered to have remitted, as suggested by clinician ratings on the ADIS-IV-P. This was supported by Sandra rating the impairment associated with his anxiety (on the CAIS-P) to have decreased from "significantly impairing" to "not impairing" from pre- to post-treatment. These gains extended to overall anxiety (as reflected by the reduction in Marcus's PARS score from 17 to 8 and reductions in the total and subscale scores on the MASC-P) and broad-band internalizing issues as evidenced by significant reduction in CBCL T -scores from pre- to post-treatment on the withdrawn/depressed (70 to 54), anxious/depressed (62 to 53), and overall Internalizing (65 to 50) problem scales. Clinician-rated impairment also reflected improvement in overall functioning from pre- to post-treatment (CGI-Improvement of 5, "much improved").

8 Complicating Factors

Certain aspects of treatment were complicated by Marcus's developmental level. In particular, the cognitively loaded portions of treatment—including association of physiological changes with cognitive processes, identification of negative cognitions, and generation of calming thoughts—were observed to be particularly difficult for Marcus to grasp and use. This phenomenon is commonly reported when attempting psychosocial treatment of youth with ASD (Nadeau et al., 2011; Selles, Ung, Nadeau, & Storch, 2014). This concern was addressed via two distinct strategies: reduced cognitive loading and increased parent training and involvement. First, the cognitive components were reviewed and analyzed for developmental scaling to match Marcus's individual needs and abilities. Examples include reduction of coping plan steps to developmentally appropriate questions as well as streamlining and scaling of the feelings thermometer to incorporate pictures instead of words/numbers. Second, for those cognitive tasks which could not be scaled sufficiently downward to meet Marcus's developmental level, the parents were trained to use questions and activities which facilitated completion of exposures and behavioral replacement. Examples of this include use of simple questions prompting Marcus's progression through the coping plan steps as well as recognizing behaviors displayed by Marcus in response to environmental stimuli that indicated the need for, and appropriateness of, exposure activities to facilitate habituation to anxiety.

Beyond factors endemic to Marcus's developmental level, the variation in belief structures held, and parenting styles used, between Marcus's parents in respect to his motor routines and escape-related behaviors had led to a maladaptively skewed conceptualization of his ASD, anxiety, and avoidance. As a result, the delivery of various treatment components was not as naturally intuitive for Marcus and his parents and required greater psychoeducation and parent training than may otherwise be necessary. First, special care was required in helping Marcus's parents identify problematic parental behaviors and their consequences. In particular, his parents were

taught to recognize and reduce inconsistencies in parental responding and provision of reassurance, which had led to reinforcement of problematic behaviors. Second, extensive training on implementing positive consequences was provided to Marcus's parents to encourage reinforcement of prosocial, rather than problematic, behaviors.

9 Access and Barriers to Care

A number of barriers to treatment exist among youth with ASD, many of which are attributable to the observation that dissemination of information and psychological treatments considerably lag research development. First, parents may misinterpret their child's problematic symptoms, particularly as youth with ASD typically have poor insight and difficulty distinguishing core symptoms of ASD from comorbid symptoms (Sofronoff & Beaumont, 2009). Second, pediatricians, family doctors, psychiatrists, or private practitioners may not be knowledgeable about the presenting problem or available and appropriate treatment providers, such that patients may be misdiagnosed, mistreated, or referred for alternative services. Third, the number of clinicians specifically trained to deliver CBT for anxiety in youth with ASD is highly limited. As a result, many families may seek appropriate care but are unable to access it, particularly when considering the preschool-age population.

Fourth, motivation for treatment among youth with ASD is often low, particularly in the case of low insight, where youth do not see their behavior as problematic. Fifth, families may have limited resources (e.g., time, money, transportation) to seek and continue treatment, an issue potentially exacerbated among families of youth with ASD, where youth may already be receiving other developmentally related interventions (e.g., physical/occupational therapy, speech pathology).

Marcus's case demonstrates a number of these barriers to treatment; however, in our case, our clinic's specialization in tic disorders, in addition to anxiety and ASD, garnered his referral to our clinic. From there, our clinicians' knowledge regarding comorbid anxiety in youth with ASD, as well as currently supported treatment approaches and training in the area allowed for an appropriate treatment to be developed and delivered. Despite the barriers to treatment with which they were faced, Marcus and his mother were committed to attending weekly sessions and were able to effectively balance therapy homework with Marcus's entry into a kindergarten classroom as well as with the parents' work and home scheduling demands, demonstrating that this type of intervention is feasible with preschool-aged clients.

10 Follow-Up

A 4-month follow-up assessment was completed to determine the maintenance of post-treatment gains. The majority of gains made during treatment were successfully maintained at follow-up, and functional impairment, in home as well as school, appeared minimal. Specifically, remission of GAD and social phobia diagnoses were maintained, while a continued reduction in anxiety symptoms was evidenced by the decline in his PARS score from 8 at post-treatment to 3 at 4-month follow-up. The responses of Marcus's mother to individual PARS items suggest that Marcus experienced a low frequency of anxiety symptoms, mild discomfort associated with anxiety symptoms, and no avoidance or interference related to anxiety symptoms. With respect to core symptoms of ASD, responses of Marcus's mother on the SRS reflected improvement in social awareness, social communication, social motivation, and autistic mannerisms. Of interest, Marcus's mother did not endorse improvement on the SRS with respect to social cognition, a construct assessing Marcus's ability to interpret social cues once they are perceived. However, it is worth mentioning that this category represents an aspect of reciprocal social behavior that is cognitively weighted; the remaining SRS categories measure sensory (social awareness), motoric

(social communications), empathic orientation (social motivation), and stereotyped/restricted behaviors and interests (autistic mannerisms) aspects of social reciprocity. Given Marcus's developmental profile and young age, it is not surprising to observe that he struggles with cognitively loaded constructs.

I I Treatment Implications of the Case

Anxiety is increasingly recognized as a significant concern in youth with ASD, and multiple case studies and clinical trials have suggested CBT to be an efficacious treatment (see Selles & Storch, 2013 for a review). The present case study supports these findings by offering evidence for the use of a modular CBT intervention modified to target effective anxiety coping strategies in young children with ASD and comorbid anxiety. Multiple strategies were employed during the course of treatment, with initial strategies reviewed in subsequent sessions and coping skills reiterated throughout. Each skill was presented as a part of a "tool kit" that could be utilized in response to social demands and other sources of distress. The results suggest that techniques shown effective for anxiety among youth with ASD can successfully be modified to suit the developmental and individual needs of preschool-aged children.

I2 Recommendations to Clinicians and Students

Given the single case nature of the present study, it should be noted that successful treatment response may not be demonstrated among all young children with anxiety and ASD. Unlike other youth, Marcus and his family presented with a number of unique clinical characteristics that may have been essential to his improvement. For example, positive response to praise, malleable insight, and high level of parental support likely contributed significantly to Marcus's treatment success. In addition, Marcus experienced interference from his escape-related behaviors within his familial relationship, and parent concerns related to interference from his motor routines in future peer-based relationships, but no such experience within other interpersonal areas. This allowed for a shorter and more focused intervention than may be indicated in individuals with broader symptom interference.

Although Marcus experienced comorbid symptoms, he did not exhibit clinically significant disruptive behaviors (e.g., irritability, lability, physical aggression). To establish the essential skills to conduct cognitive-behavioral therapy, greater treatment modifications and more therapeutic time may be necessary for cases with significant behavioral dysregulation and/or poor coping techniques.

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