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Modifications of Cognitive-Behavioral Therapy for Children and Adolescents with High-Functioning ASD and Their Common Difficulties

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Cognitive-behavioral therapy (CBT) can be broadly conceived as the integration of cognitive and behavioral approaches for making specific targeted changes in thoughts, feelings, or behaviors (Craske, 2010; see also Scarpa & Lorenzi, Chapter 1, this volume, for a description of CBT history, principles, and its application to children and adolescents). The therapeutic approach of CBT is to encourage the person to be more consciously aware of his or her emotional state, to learn to respond more appropriately and effectively to the situation or emotion, and to become more sensitive to how others are feeling. Much of the early work in cognitive therapy focused primarily on adults with depression (e.g., Beck, Rush, Shaw, & Emery, 1979; Ellis, 1962). Since then, however, the incorporation of cognitive with behavioral techniques has been extended to numerous problems, such as anxiety, marital difficulties, substance abuse, eating disorders, attention-deficit/hyperactivity disorder (ADHD), and many others. Morover CBT has been extended downward to work with children and adolescents and is generally thought to be effective if appropriate developmental considerations and modifications are put into place (e.g., parent involvement, use of visuals, incorporation of play; Grave & Blissett, 2004; Ollendick, Grills, & King, 2001).

Typically, because of the focus on measurable change, CBT programs begin with an assessment of the nature and degree of problems associated with specific emotions or behaviors, using self-report scales and a clinical interview. After an adequate assessment of the problem, multiple strategies may be implemented to promote change, including psychoeducation, somatic management via relaxation, cognitive restructuring, problem solving, exposure therapy, and relapse prevention (Velting, Setzer, & Albano, 2004). For example, affective education may be used to increase the person's knowledge of emotions within him- or herself and others. Discussion and activities explore the connection among thoughts, emotions, and behavior, and identify the ways in which the person conceptualizes emotions and perceives various situations. For anxiety-related problems, some clinicians may incorporate behavioral exposures to the feared situation, while also challenging distorted cognitions. If a problem seems related to a behavioral skills deficit (e.g., social skills), education and behavioral rehearsal or role plays may be implemented in order to teach and practice the skill. Finally, to address cognitive biases, cognitive restructuring may be used to correct distorted conceptualizations and dysfunctional beliefs, and to constructively manage emotions. Then, therapist and client may plan a schedule of activities for practicing these new cognitive skills to comprehend and express emotions in real-life situations.

Linking thoughts with feelings and behaviors is often an integral part of CBT, and is often encouraged via Socratic questioning and verbal psychoeducation. Thus, CBT provides an opportunity to learn self-awareness, self-control, and more constructive strategies to repair emotions, as well as to improve social cognition and social competence. Yet self-reflection and reflection on the thoughts and feelings of others is particularly difficult for those with autism spectrum disorders (ASD; Frith & Happe, 1999; Hobson, 2010). They also have limited repertoires of behavioral responses to emotional arousal (Attwood, 2007), and may have language impairments that affect comprehension and self-assessment (American Psychiatric Association, 2013). Based upon the knowledge of some of these deficits in ASD, this chapter focuses on modifications of CBT to improve its accessibility for children and adolescents with ASD. Since the evidence for CBT in the ASD population, especially youngsters, is still emerging and mechanisms are as yet unclear (see, e.g., Lang, Regester, Lauderdale, Ashbaugh, & Haring, 2010; Rotheram-Fuller & MacMullen, 2011), this chapter relies heavily on clinical experiences and observations, while noting appropriate supporting research when applicable.

Multiple cognitive, language, and emotional skills need to be considered when adapting a CBT program for children and adolescents with ASD

(Rotheram-Fuller & MacMullen, 2011). The distinctive learning profile (as described below) associated with ASD, for example, needs to be recognized by the clinician, especially during the affective education and cognitive restructuring components. The therapy session is also affected by the profile of language abilities associated with ASD, especially impaired pragmatic and semantic language abilities. In line with the focus of this book, this chapter refers primarily to working with children and adolescents with ASD who are verbal and cognitively higher functioning. It seems plausible, however, that CBT can also be used with nonverbal people with ASD who have the cognitive capability and a functional communication system that the therapist can use (however, we are aware of no research on this issue). CBT can be implemented in a one-on-one (therapist and child) or group format. Whether the CBT is conducted on an individual or a group basis, there need to be adjustments to the therapy to accommodate the interpersonal and social abilities of the person(s) with ASD, including the explanation of the social conventions and protocol expected in the individual or group social situation. Finally, there needs to be consideration of the sensory profile of the person with an ASD in terms of sensory sensitivity (auditory, olfactory and tactile) to aspects of the therapy environment. Some of the issues to consider in adapting a CBT program are specific to ASD, whereas others may be more generally applicable but especially pertinent to working with someone with ASD. This chapter explores each of these modifications to a conventional CBT program and provides practical advice on other characteristics associated with ASD that can inhibit or enhance the effectiveness of CBT for such children and adolescents.

LEARNING PROFILE ASSOCIATED WITH ASD

Children and adolescents with an ASD have a different and clinically distinctive way of perceiving, thinking, and learning, and tend to perform at the extremes of cognitive ability (Attwood, 2007). Despite having IQs in the normal range, they usually have very uneven cognitive profiles on IQ tests. For the clinician designing a CBT program, information from an evaluation, which may include an assessment of the child's cognitive and processing abilities, can be invaluable in determining learning strengths and weaknesses. For example, if the child or adolescent has relatively advanced verbal reasoning skills and reading comprehension abilities, understanding of the concepts and strategies used in CBT may be improved by the inclusion of relevant literature in the program. When reading a text, there are no interpersonal or conversational skills required, and the child or adolescent

with an ASD may be able to give full cognitive attention to the text. If the child or adolescent has relatively advanced visual reasoning abilities, learning may be facilitated by computer programs, demonstration, observation, and visual imagery, placing less emphasis on conversation. The phrase "a picture is worth a thousand words" may be particularly relevant to such children.

Children or adolescents with ASD can also be very logical in their thinking, and CBT programs help explain to them why we have emotions, how to identify and measure emotions, and how to explore new strategies to communicate and manage emotions. In a review of CBT programs for children with ASD, Rotheram-Fuller and MacMullen (2011), for example, have noted that some programs focus on teaching the child with ASD about the physical symptoms associated with anxiety rather than simply relying on the subjective emotional feeling, in order to help the child concretely identify when he or she is feeling anxious. As noted earlier, using visual aids or hands-on activities can also make discussions more concrete and improve comprehension of the abstract concept of emotions. This approach appeals to the logical, scientific thinking of children and adolescents with ASD (Anderson & Morris, 2006). We now have resources specifically designed to help children and adolescents with ASD learn about emotions in a concrete and logical way to complement the affective educational component of CBT (Attwood, Callesen, & Nielsen, 2008).

It is also important to be aware that children and adolescents with ASD may have difficulty with socioemotional processing, memory for sequential information, and processing information in novel contexts (Baron-Cohen, 2001; Boucher & Lewis, 1989; Hill, 2004). Therefore, the clinician conducting the CBT program should be aware of the time it may take for children with ASD cognitively, rather than intuitively, to process and respond to socioemotional information. It is thus very important that the clinician remain patient, and it may be helpful to supplement verbal with written instructions to aid processing and minimize the need for the child to rely on memory.

ADHD and Executive Function

Extensive research has confirmed that children and adolescents with ASD are at risk of difficulties associated with ADHD (Fein, Dixon, Paul, & Levin, 2005; Goldstein, Johnson, & Minshew, 2001; Sturm, Fernell, & Gillberg, 2004), although by convention the current diagnostic guidelines state that ADHD cannot be diagnosed in the presence of ASD, because the symptoms are assumed to be secondary to the underlying ASD syndrome.

Nonetheless, inattention and hyperactivity–impulsivity may still be present and can cause significant functional impairment in children and adolescents with ASD. Attention difficulties in ASD can include problems with sustaining attention that are similar to those in ADHD; however, children with ASD more often have difficulties with shifting attention. As such, they may be distracted by inner imagination (i.e., daydreaming) or may restrict the focus of their attention. If present, these attentional characteristics obviously affect the content and duration of many of the components of a CBT program. If the child or adolescent shows impulsivity or hyperactivity, these characteristics would also need to be accommodated and can require that the clinician provides more vigilant supervision, especially if the CBT is being conducted in a group format. A targeted behavioral intervention within the therapy session may be helpful, since it has been shown that children with ADHD tend to respond better to frequent schedules of reinforcement (Carlson & Tamm, 2000). For example, the clinician may use within the session a token economy whereby the client can earn tokens (or points, stars, coins, etc.) for following rules and completing activities. Also, stimulant medication is widely used, and often (though not always) is effective in the management of ADHD symptoms (Spencer, Biederman, & Wilens, 2000). A review of the literature for drug therapy in children with ASD recently concluded that atypical antipsychotics may provide substantial benefits, and the stimulant methylphenidate, as well as some other medications, may provide moderate benefits in reducing inattention and hyperactivity (Hazell, 2006). However, this review emphasized that many studies are still equivocal and limited to uncontrolled designs. Therefore, if stimulant medication is helpful for the client being seen, clinical experience has indicated that administering the medication prior to the CBT session can facilitate concentration and cooperation. Any change in medication use, however, should be carefully monitored and discussed with the child's prescribing physician.

Executive functioning deficits that are core to both ASD and ADHD may impact a CBT program. Problems with organizational and planning abilities, working memory, and time management indicate that others, such as the clinician and a parent supervising the between-sessions projects and practice in real-life situations, may have to become "executive secretaries" to minimize impaired executive function (Attwood, 2007). Consistent with educational modifications that have been found to be helpful for children with ADHD (DuPaul & Stoner, 2003), children and adolescents with ASD are more responsive to programs that are highly structured, with short discrete activities and assignments broken down into smaller units, in keeping with the children's attention spans. Other helpful educational

modifications that can be adapted for use in CBT include highlighting relevant information, using graphics or visual aids, clearly posting rules, repeating instructions, and providing a visual schedule. The clinician should regularly monitor and give feedback to maintain attention, and the amount of environmental distractions should be reduced.

One-Track Mind

Another executive deficit that is characteristic of ASD involves a lack of flexibility in thinking and problem solving (Hill, 2008). A metaphor for this learning characteristic is a train on a singular track, representing a "one-track mind." Unfortunately, clinical and teaching experience has indicated that those with ASD are often the last to know and seek help if they are on the "wrong track" and cannot solve a problem. Sometimes referred to as having a problem in set shifting (Ozonoff et al., 2004), they tend to continue using incorrect strategies, not learning from mistakes—that is, they fail to "switch tracks" to get to the destination (i.e., find a solution). The inability to conceptualize an alternative response or strategy clearly influences the progress of a CBT program. It is therefore important that to encourage flexible thinking, the clinician ask, "What else could you do?" and provide multiple-choice options rather than anticipate the generation of spontaneous alternatives. Because cognitive inflexibility may increase with anxiety, clinical experience has suggested that strategies to improve relaxation (e.g., deep breathing, muscle relaxation, positive self-talk) can also be used to facilitate flexible thinking within the CBT session and in real-life practice situations, although research to test this possibility is needed.

Problems with set shifting may also contribute to the often-noted difficulties with generalization of skills learned in therapy to the child's natural settings in daily life (National Research Council, 2001). As such, role plays, behavioral rehearsal, and practice in real-life situations need to be included in the program to a greater extent than might occur with a typical child. In some cases, it might be helpful to begin with a cognitive picture rehearsal (e.g., Groden & LeVasseur, 1995) or social story (e.g., Gray, 1995) to help the child mentally clarify, illustrate, and rehearse the skills in a new situation before practicing *in vivo*.

Fear of Making a Mistake

Attwood (2007) has suggested that the rigidity in children with ASD can be associated with fear of making a mistake. When unsure what to do or

say, the situation may become a trigger for flight, fight or freeze responses. Research on the cognitive abilities of children and adults with ASD has identified a tendency to notice more detail and errors than do typical children (Frith & Happé, 1994). When combined with a fear of appearing stupid and being ridiculed by peers, this can have a significant effect on the ability to learn. We have observed clinically that some children and adolescents with ASD may refuse to attempt a new activity that could result in failure, with the attitude "If you don't try, you don't make a mistake." Another reaction we have observed is to become extremely anxious, which can disintegrate into a feeling of panic or extreme frustration, possibly leading to explosive and agitated behavior. This observation is partially supported by research showing that social anxiety mediates the relationship between ASD features and hostile attitudes in a nonclinical sample of young adults (White, Kreiser, Pugliese, & Scarpa, 2012). Attwood speculates that over the long term, the pervasive fear of failure can lead to a need to be right and a tendency to criticize others in order to feel good about one's own abilities. This is a form of compensation, whereby criticism may be a way of demonstrating intellectual prowess to others as a counterbalance to feeling incompetent and stupid when making a mistake. The sometimes pathological fear of making mistakes (yet avidly pointing out others' mistakes) can affect cooperation and cohesion within the CBT sessions, especially when using a group format. Future research may help to clarify how cognitive biases such as the ones mentioned here can influence self-efficacy, behavior, and social competence in youth with ASD.

It is important that the clinician encourage any suggestion without criticism and adopt a positive approach, implying that a mistake is not a tragedy or sign of mental deficiency. The clinician can model how to handle mistakes by not catastrophizing when a mistake is made, and by reframing how making a mistake provides information that is useful in discovering the elusive solution. In other words, "We learn more from our mistakes than our successes." As noted earlier, people with ASD can be very sensitive to any indication of intellectual impairment and some develop a form of intellectual arrogance as a compensation mechanism. A valuable motivation in a learning situation can be to appeal to intellectual vanity by remarking on the ASD child's or adolescent's intellectual abilities. This verbal encouragement can be a more effective reinforcement than any altruistic desire to please the clinician. Thus, a comment such as "That suggestion demonstrates your amazing intellectual ability" can be a more powerful motivator than "You have just made my day," though the clinician should monitor how the child or adolescent responds to such remarks and only use this strategy if it is helpful in boosting the client's self-concept. Another

useful strategy when encouraging self-control can be to use the self-talk comment, "If I stay calm, I'll find the solution more quickly" or "If I stay calm, I will be smarter."

Consistency and Certainty

Children and adolescents with ASD seem to have a strong desire to seek consistency and certainty in their daily lives; they thrive on routine and predictability. Such insistence on sameness was first described by Kanner (1943). Because of this desire to maintain sameness, they often need careful preparation for unexpected change. Thus, it is very helpful for the child or adolescent to have a schedule of activities for the session, with clear information on the objectives and the duration of each activity (Dalrymple, 1995). There can also be a compulsion for closure (i.e., not being able to change activities or "switch tracks" until the activity is complete to the satisfaction of the child or adolescent). Unfortunately, such children can also be very pedantic, overfocus on detail, and be perfectionistic, thereby resisting a clinician's attempts to hurry up.

Special Interests and Talents

One of the central characteristics of ASD is the development of restricted interests (American Psychiatric Association, 2013). With children and adolescents who have an IQ in the normal range, this can include collecting objects such as rocks or spark plugs; amassing information on topics, such as the life cycle of a butterfly; or having an encyclopedic knowledge of presidents of the United States or television programs, such as *Star Trek* or *The Power Rangers*. This special interest's many functions include feelings of enjoyment or euphoria in acquiring new items or knowledge of a specific theme; intense mental focus acting as a thought blocker for feelings of anxiety, sadness or anger; and acting as a means to demonstrate an admired talent to parents and peers. The interest can be incorporated into a CBT program, for example, as an antidote to feeling sad and as a thought blocker for anxiety. A special interest in a character such as Harry Potter can provide an illustration of how a perceived hero copes with adversity, becoming a model of how to cope with feelings, such as anger, when being bullied and tormented by peers.

The interests and talents associated with ASD can also be used to improve motivation, attention, and conceptualization (Koegel & Koegel, 2006). For example, if the special interest of a child with ASD is weather systems, his or her emotions may be expressed as a weather report. The

special interest can also be used in the affective education component of CBT. A project or field study for an adolescent whose special interest is trains can be to visit a station to observe the emotions of passengers saying farewell, greeting friends and relatives, and waiting for a ticket.

Alexithymia

Research on theory of mind abilities has identified the problems children and adolescents with ASD have in "reading"ional states in themselves and others, which also may be related to the separate skill of facial emotion recognition (Berthoz & Hill, 2005; Tani et al., 2004). Deficits in facial emotion recognition have been found in individuals with ASD, possibly due to decreased functional connectivity among multiple brain regions in response to emotional faces (Harms, Martin, & Wallace, 2010). These authors posit, however, that higher functioning individuals with ASD may use other mechanisms to compensate for their lack of automatic ability to recognize facial emotions. CBT therapists might be able capitalize on this ability by encouraging and teaching children with ASD more cognitive–analytic processing of faces and social situations.

In addition to deficits in the fundamental processing of emotions, some individuals with ASD may experience characteristics of *alexithymia,* a diminished vocabulary to describe the different levels of emotional experience, especially the more subtle or complex emotions. Affective education within CBT aims to improve the vocabulary of the child or adolescent with ASD to describe emotions, thereby diminishing the effects of alexithymia. One approach is to quantify the degree of expression, such that if the precise word is elusive, the child or adolescent can calibrate and express his or her degree of emotion using a thermometer or numerical rating, thus indicating the intensity of emotional experience.

Converting Thoughts and Emotions to Speech

Clinical experience indicates that some children and adolescents with ASD may have considerable difficulty describing their thoughts and emotions in a face-to-face conversation. Although the person may have acquired, through the affective education component of CBT, a reasonable and precise vocabulary to describe a particular depth of emotion, there can still be considerable difficulty answering questions such as "What were you thinking and feeling?" or providing a coherent and cogent answer to the question "Why did you do that?" This is consistent with reports of poor pragmatics in people with ASD (see below). However, there can be greater

communication of inner thoughts and feelings using communication systems other than a face-to-face conversation. If the explanation is incoherent or elusive, a child can often achieve greater clarity and insight by typing rather than talking. The clinician can request that the explanation be included in an e-mail or text message. Greater insight into inner thoughts and feelings can also be achieved using music; for example, an adolescent may choose a CD track that, through the music or lyrics, explains his or her inner thoughts and emotions. Sometimes, creating a drawing, cartoon, or collage may help to express the inner workings of the mind of the person with ASD.

LANGUAGE PROFILE ASSOCIATED WITH ASD

Although children and adolescents with high-functioning ASD do not necessarily experience a language delay or deficits in verbal speech, they often have difficulties with the pragmatics of language (Twachtman-Cullen, 2000). *Pragmatics* refers to the use of language in social contexts and the ways people produce and comprehend meanings through language (Bishop, 1997). Problems with pragmatics can occur in multiple areas of communication, such as inappropriate initiation (e.g., talking to anyone; talking repetitively about things that others may not be interested in), lack of coherence (e.g., difficulty describing a sequence of events or providing a clear account of an event), stereotyped language (e.g., including overprecise information in the conversation; turning the conversation to a favorite theme), poor use of context (e.g., being overliteral; misinterpreting situations), and difficulty with rapport (e.g., ignoring conversational initiations by others; not using gestures or facial expressions to convey a meaning or to interpret others' feelings) (Bishop & Baird, 2001).

The mere syntax or literal interpretation of language can be confusing or ambiguous, unless one takes the context into account. For example, to say "Flying planes can be dangerous," can mean two different things, depending on the context to which the speaker is referring. By the same token, intonation of voice or emphases on certain words can change the meaning of a sentence. For example, "I never said I liked *him*" means something completely different than "I never said I *liked* him." The main point here is that youth with ASD often do not perceive, appreciate, or accurately interpret how intonation and emphasis affect meaning. They also struggle with literal interpretation, which affects their use and comprehension of idioms, metaphor, and sarcasm. Therefore, it is important that the CBT clinician provide very concrete examples of constructs and double-check

to be sure that the child with ASD has understood the information correctly. This can be done using visual aides to supplement verbal instruction, and hands-on learning such as role plays or real-life practice assignments. Simple metaphors can also be used to make ideas more concrete, as in the metaphor of a toolbox full of tools to "repair" feelings.

In addition, children and adolescents with ASD can vary widely in the amount of language they produce, from being pedantic and providing too much information to the opposite—being overly quiet and not elaborating. They can also display problems with narrative in terms of being able to provide a coherent, sequential, and logical description of events. These styles can make it difficult for them to "get to the point," so that the clinician may find that they go off-topic or on tangents. As such, the CBT therapist may need to remind the client with ASD about the initial topic or question and provide cues to either cut off tangents or help the client expand upon a specific point.

Finally, a key difficulty in ASD involves rapport or social reciprocity, which can impair the "art" of conversation. The child or adolescent with ASD may not engage in social chitchat or the give-and-take of conversation, making it harder for the CBT therapist to sustain the interaction. Shorter sessions or training in conversational skills may be helpful. The clinician also needs to appreciate how direct or "blunt" and honest the child can be, due to difficulties with theory of mind and the social conventions of conversation, and not to be offended by hearing the truth from the ASD client's perspective.

INTERPERSONAL AND SOCIAL ABILITIES ASSOCIATED WITH ASD

Children with ASD display deficits in social skills. Indeed, a core feature described in the current diagnostic crtieria (American Psychiatric Association, 2013) is persistent deficits in social communication and social interaction across contexts including deficits in social–emotional reciprocity, nonverbal communicative behaviors used for social interaction and developing and maintaining relationships appropriate to developmental level. As noted earlier, nonverbal behaviors are often needed to clarify meaning in conversation and to understand the emotions of others. CBT clinicians may need to teach children with ASD "mind reading," that is, the ability to read the nonverbal cues that indicate the emotions or intentions of others, and how to use facial expressions or nonverbal communication to convey emotions. Several computer-assisted programs are now available to help children learn

to read facial expressions in others (e.g., Beaumont & Sofronoff, Chapter 8, this volume; Golan et al., 2010; Hopkins, 2011; LaCava, Golan, Baron-Cohen, & Smith-Myles, 2007; Silver & Oakes, 2001; Tanaka, 2010). However, it should be noted that no study has yet demonstrated that improvement in facial emotion recognition directly affects social competence.

Because of the difficulty with social reciprocity, children and adolescents with ASD may not appear to develop relationships or attachments as easily as other clients; however, it would be wrong to conclude that they are not feeling emotions. Indeed, it is often the case that they feel emotions quite strongly but do not know how to express themselves, or they simply have a limited range of affective display (Ben Shalom et al., 2006). This seemingly aloof attitude can interfere with the therapist–client alliance if the clinician is not aware of this tendency in advance. Many individuals with ASD express their connection with someone through actions rather than words or facial expression. Therefore, the CBT clinician is advised to be mindful of actions that reflect alliance with the the therapist, as well as others, and to teach the client words and expressions (via affective education) that might be more accepted/recognized in the social world.

SENSORY PROFILE ASSOCIATED WITH ASD

Sensory issues in some children with ASD can contribute to emotional dyscontrol. In a recent study of 170 toddlers with ASD, for example, those with high frequencies of sensory symptoms or a mixture of both over- and underresponsivity but low sensory-seeking behavior were rated by parents as having more negative emotionality, anxiety, and depression (Ben-Sasson et al., 2008). Interestingly, Liss, Mailloux, and Erehull (2008) found that overresponsivity to sensory stimulation was related to autistic characteristics in a nonclinical sample of college students and was particularly related to anxiety in individuals who also experienced symptoms of alexithymia (i.e., being unable to identify one's feelings). Therefore, it appears that to have overwhelming sensations and not be able to identify them can increase confusion and anxiety.

Knowledge of the sensory issues that might be occurring in a client is critical for the success of any therapy, including CBT. The clinician needs to arrange the environment in such a way that it is tolerated by the client and promotes comfort. For example, the lighting may need to be dimmed or changed to nonfluorescent. Smells, such as perfumes or deodorants, may need to be minimized. If snacks are provided, texture and taste need to be considered. Therapists may need to ask their clients first, before engaging in

any physical gestures, such patting them on the back for praise, handshakes, tapping their arms to gain attention, or hugs for comfort. Calming music or sounds can be played for clients who are very oversensitive to auditory stimulation. Other clients may be underresponsive to some sensations (e.g., pain), and the clinician may need to find ways to identify whether the client is indeed experiencing sensations that need to be addressed, and to help the client identify and express those experiences (e.g., help-seeking behaviors). The clinician may also need to help the client identify appropriate ways to satisfy sensory needs that are not disruptive or stigmatizing, yet may have a powerful effect in regulating their stress or anxiety. For example, the client may chew gum or manipulate a small object in his or her pocket to receive sensory input.

ADDITIONAL ASPECTS THAT MAY BE HELPFUL IN A CBT PROGRAM

A Workbook

CBT programs may benefit from a workbook in which participants record information and include any visual representations or supplemental information that may assist the client. By the same token, recording information in a workbook must be kept to a minimum due to the recognition that children and adolescents with ASD often have poor handwriting skills and prefer to listen, watch, and do rather than write. If there is a genuine aversion to writing, the clinician conducting the program can listen to the participant's spoken comments and answers, and write them in the workbook.

Between-Session Projects

Between each CBT session, a project can be completed that provides more information for the clinician and applies strategies in real-life situations. This information is usually discussed at the start of the subsequent session. Children with ASD often have an aversion to the concept of homework from negative school experiences (indeed, many neurotypical children also dislike homework), so the clinician conducting the CBT program needs to emphasize the importance of completing the project, and together with parents, clearly encourage children or adolescents to do so. There also needs to be good collaboration between home and school with regard to the CBT intervention goals (e.g., learning to identify and express emotions). It is important that teachers be aware of the program and the ways they can contribute to the child's knowledge base on achieving the target goals.

They can also help with the successful implementation and generalization of strategies.

Selection of Group Participants

If the program is using a group format, there may need to be careful selection of group participants. We recognize that children and adolescents with ASD are at risk of additional diagnoses or problematic behaviors, including externalizing behaviors such as impulsivity, hyperactivity, and oppositionality. Such challenging behaviors can impact the cohesion of the group. It is also important to consider the personality of each participant and his or her emotional and intellectual maturity, in order to maximize group cooperation, mutual support, and the possibility of the development of friendships within and after the group sessions. If a group format is used with children, the leaders should carefully consider the leader-to-participants ratio to allow effective monitoring and facilitation of group interactions and attention. The ratio can be adjusted, as needed, for children or adolescents who may be less hyperactive and more compliant in a small-group setting or those who may have more behavioral difficulties or be in a large-group setting.

The most recent prevalence study in the United States estimated that the ratio of boys to girls with an ASD is 5:1 (Centers for Disease Control, 2012). Should a girl with ASD be the only female in the group, she might feel uncomfortable and self-conscious. The strategies used in CBT are usually gender-neutral but there may be situations, such as being bullied by girls rather than boys, that require gender-specific strategies. Clinical experience has indicated that there can be advantages in having groups specifically for girls, if this is at all possible.

Time with Parents after Each Session

Researchers have noted the importance of including parents in CBT programs for children with ASD (see Reaven & Blakely-Smith, Chapter 5, this volume). It is helpful to set aside time at the end of each session to exchange information with the parents regarding their children's responses and abilities during the activities, to explain the project, and to seek information on particular issues that may be addressed in a subsequent session. Because criticism from family members may increase children's symptoms (Greenberg, Seltzer, Hong, & Orsmond, 2006), thus undermining success of the CBT program, it is also essential that family members be encouraged to respond positively and appropriately to the children's new abilities

and understanding of emotion management, and to facilitate the successful application of strategies discovered during the program in real-life situations. Clinical experience has indicated that some family members of people with ASD may also have problems communicating emotion; thus, group discussion with parents may encourage solutions to problems experienced by other family members that have a positive influence on the emotional atmosphere at home and, consequently, the emotional equilibrium of the child or adolescent with ASD.

CONCLUDING COMMENTS

The modifications of CBT for children and adolescents with ASD are only minor adjustments and sometimes reflect good practice for any CBT program, regardless of the diagnosis of the client. However, clinical experience has indicated that the content and style of the therapy need to accommodate the unusual profile of abilities associated with ASD that is incorporated into the diagnostic criteria and recognized by clinicians who specialize in this area. It is also important to identify the personality of the person with ASD and how he or she has adapted to being different from peers. Some internalize their confusion and differences, tend to be socially withdrawn, and are too shy and reticent to interact with the clinician. In contrast, others may be intensely active and intrusive in social interactions, often unaware of social conventions and the potential to annoy others, including the clinician. However, the logical, practical, and structured approach of CBT suits the "mind-set" of those with higher-functioning ASD and may therefore be considered the therapy of first choice for clinicians working with clients with ASD who are not cognitively impaired and can benefit from addressing cognitive biases, deficits in affective knowledge, and social–behavioral competence.

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