



Efficacy of cognitive behavior therapy-based social skills intervention for school-aged boys with autism spectrum disorders

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ABSTRACT

School-aged children with Autism Spectrum Disorders (ASD) experience significant difficulty with peer interaction. Research to identify the most effective strategies to address this difficulty has increased but more evidence is needed. Cognitive behavior therapy (CBT), which focuses on changing how a person thinks about social situations as well as how he behaves, is a promising approach. This study evaluated the efficacy of a 15 week CBT-based social skills intervention for boys aged 10–12 years diagnosed with an ASD. Boys with average or better IQ and receptive language skills were randomly assigned to either a control ($n=8$) or intervention condition ($n=7$). During intervention, boys attended weekly 2 h long group sessions focusing on self-monitoring skills, social perception and affective knowledge, conversation skills, social problem-solving, and friendship management skills. Comparison of the outcomes using repeated measures analyses indicated that boys receiving the intervention scored significantly better on measures of social perception, peer interaction, and social knowledge than boys who had not received intervention. There were no differences on general measures of socialization. The manualized intervention used in this study shows promise but replication with larger samples is needed.

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1. Introduction

Difficulties engaging in social interaction are a primary concern for children with high-functioning autism (HFA) or Asperger's Syndrome (AS). While they are considered high-functioning by virtue of IQs in the average or above average range, they have social deficits which are primarily centered around social reciprocity, social cognition, and pragmatic language (e.g., Adams, Green, Gilchrist, & Cox, 2002; Church, Alisanski, & Amanullah, 2000; Downs & Smith, 2004). Social difficulties become more evident as they begin school and move towards adolescence when the nuances of social interaction are more demanding. These children initiate fewer social interactions with peers (Orsmond, Krauss, & Seltzer, 2004) and are less socially responsive (Volkmar, 1987). They have difficulty inferring others' emotions and responding appropriately (Koning & Magill-Evans, 2001a; Ozonoff, Pennington, & Rogers, 1990), taking others' perspectives (Rehfeldt, Dillen, Ziomek, & Kowalchuk, 2007), and understanding social rules and conventions of interaction (Church et al., 2000).

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Given the range of social difficulties these children experience, it is important to determine the most pressing areas to target for intervention and to determine which intervention methods are most appropriate for specific children. [Bauminger \(2007a\)](#) suggested that the two main capabilities predicting social competence in middle childhood were conversational skills and cooperative prosocial skills such as sharing feelings and experiences, collaborating, and comforting. Furthermore, she felt that interventions needed “to help these children develop multi-dimensional social competence, integrating behavioral (e.g., social interaction), cognitive (e.g., accurate processing of information, perspective taking, problem-solving) and affective skills (e.g., emotion knowledge) to adapt flexibly to diverse social contexts and demands.” (p. 1594).

Theoretical models help explain the impact of specific difficulties and identify targets for intervention. A model of social information-processing developed by [Crick and Dodge \(1994\)](#) for typically developing children and used with children with other disabilities ([Walz, Yeates, Wade, & Mark, 2010](#)) may be useful for children with an Autism Spectrum Disorder (ASD) ([Embregts & van Nieuwenhuijzen, 2009](#)). The model describes the elements of social interaction as well as the influence of social context and motivation. In the model, an interaction is composed of the following: social messages, conveyed both verbally and nonverbally, are received and interpreted; social goals are clarified; responses are generated; one or more is selected and then enacted. All of these elements are influenced by acquired social rules, social schemas, and social knowledge. Studies of social competence interventions for school-aged children with HFA have examined one or more outcomes that are congruent with the Crick and Dodge model ([Bauminger, 2007a, 2007b](#); [LeGoff & Sherman, 2006](#); [Semrud-Clikeman, 2007](#); [Tse, Strulovitch, Tagalakis, Meng, & Fombonne, 2007](#)) as did the study reported here. Evidence related to the model’s utility is gradually emerging.

Although current research has primarily focused on identifying deficits in enacting social behavior and measuring effects of intervention based on behavioral principles, cognitive behavioral therapy (CBT) is a promising treatment modality that focuses on multiple dimensions of social competence and is congruent with Crick and Dodge’s model. CBT is broadly defined as brief, structured therapy focused on context-driven problem-solving by linking thoughts, feelings and behaviors to develop effective behaviors ([Friedburg & McClure, 2002](#)). It has a primary focus on monitoring and modifying thoughts and beliefs that are unhelpful, negatively affect one’s function, or result in inappropriate or unwanted behavior. It also stresses the importance of understanding context and meaning assignment, the interplay between cognitive systems and emotional and behavioral responses, and the role of “schemas” (beliefs, rules, assumptions about self and others) ([Alford & Beck, 1997](#)). In contrast to behavioral techniques which rely on external factors for behavior change and which are often criticized for failing to generalize gains, cognitive behavioral techniques have a greater focus on internal factors. Generalization through “homework” is emphasized in CBT. It usually takes the form of a “contract” between the therapist and participants to try specific strategies in natural settings, with the expectation that success apart from the therapy context is both internally reinforcing and more likely to produce generalization. CBT focuses on the impact of thoughts on affect and how these factors influence individuals’ perceptions of the social world. This treatment method focuses on how a person’s thoughts, feelings and behaviors influence each other to produce social responses. CBT has been adapted for children with ASD by increasing the structure and predictability, including visual supports and verbal labeling, explicitly drawing attention to important social cues and greater parent involvement ([Beebe & Risi, 2003](#)).

CBT-based social skills interventions have been evaluated for children with ASD ([Bauminger, 2002, 2006, 2007a, 2007b](#); [Crooke, Hendrix, & Rachman, 2008](#); [Laugeson, Frankel, Mogil, & Dillon, 2009](#); [Lopata, Thomeer, Volker, & Nida, 2006](#); [Wood et al., 2009](#)). [Bauminger’s \(2002\)](#) intervention addressed the influence on behavior of teaching emotion recognition/interpretation and social problem-solving; and the relationship of social problem-solving to later social adjustment. In her research, children with HFA provided more relevant social solutions in problem-solving tasks post intervention. [Solomon, Goodlin-Jones, and Anders \(2004\)](#) implemented a “social adjustment curriculum” for 8 to 12 year old boys with HFA which also focused on affective education and a cognitive problem-solving approach and demonstrated clear improvements, particularly on measures of emotion recognition and problem-solving. This focus on social problem-solving and understanding emotions is a consistent theme in subsequent studies using a CBT approach with children with an ASD. Recent studies ([White et al., 2010](#); [Wood et al., 2009](#)) have applied principles of CBT to intervention for anxiety and social interaction. These studies reported significant improvements, usually based on parent- or self-report measures, satisfaction surveys, social knowledge questions, or the assessment of emotion recognition.

To summarize, CBT seems particularly well suited to treatment of social skills in school-aged children with HFA or AS because it addresses generalizability ([Beebe & Risi, 2003](#)); uses a problem-solving, coping approach that reflects how children in general learn to make social responses ([Crick & Dodge, 1994](#)); and uses cognitive strategies to build on the relative strength of children who have IQs in the average or above range. The present pilot study examined the efficacy of a 12 week group CBT-based social skills intervention. It was hypothesized that boys receiving intervention would demonstrate significant improvements compared to those who did not receive intervention on measures of social perception, social problem-solving and knowledge, peer interaction, and general measures of socialization.

2. Methods

2.1. Participants

Participants were recruited through the local autism society newsletter and a local autism clinic database. Inclusion criteria consisted of being male, aged 10 to 12 years, diagnosed with ASD using DSM-IV-TR criteria ([American Psychiatric](#)

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