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Social competence with an unfamiliar peer in children and adolescents with high functioning autism: Measurement and individual differences

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ABSTRACT

Children and adolescents with high functioning autism (HFA) display heterogeneity in social competence, which may be particularly evident during interactions with unfamiliar peers. The goal of this study was to examine predictors of social competence variability during an unfamiliar peer interaction. Thirty-nine participants with HFA and 39 age-, gender- and IQ-matched comparison participants were observed during dyadic laboratory interactions and detailed behavioral coding revealed three social competence dimensions: *social initiative*, *social reciprocity*, and *social self-monitoring*. Participants with HFA displayed higher social initiative but lower reciprocity than comparison participants. For participants with HFA, theory of mind was positively associated with observed initiative. For COM participants, social anxiety was negatively associated with reciprocity. However, for HFA participants, there was a quadratic relation between parent-reported social anxiety and observed reciprocity, demonstrating that low and high levels of anxiety were associated with low reciprocity. Results demonstrated the utility of our behavioral coding scheme as a valid assessment of social competence for children and adolescents with and without HFA. The curvilinear association between social anxiety and reciprocity highlights the importance of examining nonlinear relations in individuals with HFA, and emphasizes that discrete profiles of social anxiety in individuals with HFA may necessitate different treatment options.

1. Introduction

Despite having average or above average IQ, individuals with high functioning autism (HFA) display a striking discrepancy between cognitive and social abilities that significantly impairs their quality of life (Howlin, 2005; Kenworthy, Case, Harms, Martin, & Wallace, 2010; Shipman, Sheldrick, & Perrin, 2011). Social competence is particularly critical throughout late childhood and emerging adolescence, as typically and atypically developing individuals learn to independently navigate a less structured social environment than that of earlier childhood (Parker, Rubin, Erath,

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Wojslawowicz, & Buskirk, 2006; Rao, Beidel, & Murray, 2008). During this transition, individuals must learn to flexibly implement social skills in unfamiliar contexts, such as new classrooms, the workplace, and romantic relationships (Warnes, Sheridan, Geske, & Warnes, 2005). For children with HFA transitioning to adolescence, navigating novel social environments is particularly challenging given the core social deficits associated with the diagnosis in addition to common co-occurring elevations in social anxiety (Bellini, 2006), which may be intensified during novel experiences and may further impact the quantity and quality of social interactions.

The goals of this study were to develop a coding system to quantify individual differences in social behavior during a laboratory peer interaction paradigm and to examine social cognitive and affective predictors of individual differences. Specifically, we examined diagnostic group differences between HFA and COM participants in dimensions of observed social competence and differential associations between those observed behaviors and independent assessments of theory of mind and social anxiety.

1.1. Social skills and social competence

Social skills are discrete behaviors that individuals use to initiate and maintain positive social interactions, such as eye contact, sharing ideas, and conversational turn-taking (Kwon, Kim, & Sheridan, 2012; Phillips, 1978). Children with HFA are reported by their parents and observed at home and at school to have difficulty with several social skills, including establishing and maintaining eye contact, initiating and sustaining conversation, and displaying appropriate positive affect (Jones & Schwartz, 2009; Luteijn, Luteijn, Jackson, Volkmar, & Minderaa, 2000; Matson & Wilkins, 2007; Stichter et al., 2010). Social competence refers to the ability to spontaneously apply discrete social skills in novel interactions in a flexible and adaptive manner (Lillvist, Sandberg, Björck-Äkesson, & Granlund, 2009). Social competence is a prerequisite for children to achieve interpersonal success as they transition into adolescence (Elliott & Gresham, 1987) and is a core component of adaptive functioning throughout the lifetime.

Children and adolescents with HFA have specific social skills and competence challenges (Stichter et al., 2010; Stichter, O'Connor, Herzog, Lierheimer, & McGhee, 2012) that we aimed to capture with our observational paradigm. The tasks in our paradigm were designed to elicit three specific domains of social competence supported by previous literature (Gresham & Elliott, 1990): *social initiative*, the tendency to make social approaches to a peer, such as offering or seeking information (Rydell, Hagekull, & Bohlin, 1997); *social reciprocity*, the give-and-take quality of a social interaction (Jung, 1990); and *social self-monitoring*, the ability to attend to, and modify, one's own behavior during a social interaction (Harchik, Sherman, & Sheldon, 1992). Self- and parent-reported social competence dimensions of social initiative, reciprocity, and self-monitoring have been found to be lower in children and adolescents with autism than in typically developing individuals (Maestro et al., 2005; Russell & Jarrold, 1998), and specifically in those with high functioning autism (Attwood, 2000).

One factor that may be related to social competence deficits in children and adolescents with autism, and individual differences in the severity of these deficits, is difficulties with theory of mind. Theory of mind, or the ability to assign mental states to others, allows people to explain and predict others' behavior (Bretherton & Beeghly, 1982; Miller, 2006). Theory of mind is positively associated with reports of children's social skills in both typical and atypical development (Lerner, Hutchins, & Prelock, 2011; Watson, Nixon, Wilson, & Capage, 1999), suggesting that theory of mind and social competence deficits may be intricately related.

A second factor that may be associated with deficits in social competence in autism, and particularly for older and higher functioning children with autism, is social anxiety. Social anxiety is performance-related distress that involves a fear of negative evaluation in social situations and anticipated feelings of humiliation (Mancini, Ameringen, Bennett, Patterson, & Watson, 2005). For children with HFA, awareness of social and behavioral differences inherent to the diagnosis may serve to increase anxiety in social situations (Henderson et al., 2013). Parent- and self-reports indicate that children and adolescents with HFA demonstrate elevated, and often clinically significant, levels of social anxiety (Kim, Szatmari, Bryson, Streiner, & Wilson, 2000; Kuusikko et al., 2008). Further, social anxiety has been found to be negatively related to social skills in typically and atypically developing children (Chang, Quan, & Wood, 2012; Erath, Flanagan, & Bierman, 2007).

Although negative correlations between anxiety and social competence have been identified (e.g., Erath et al., 2007; Chang et al., 2012), there is also evidence for nonlinear associations. Bellini (2004) reported a curvilinear association, resembling an inverted U, between social anxiety and social skills (both self-reported) in high functioning adolescents with autism. Both low and high levels of social anxiety were associated with low social skills, while a moderate amount of social anxiety was associated with better social skills. This evidence of quadratic relations between anxiety and social competence guided our approach in this study.

1.2. Measuring social competence

Given that social competence involves one's unprompted implementation of context-appropriate social skills, behavioral observations may be particularly informative. In vivo observations provide a rich index of spontaneous behaviors in social situations that may not be fully captured by parent- or teacher-reports (Roberts, Tsai, & Coan, 2007). Informant report provides important information, but is potentially subject to bias (Wilson, Pianta, & Stuhlman, 2007), particularly for parents of children and adolescents with autism who may not fully understand their children's perspectives on day-to-day experiences (Sheldrick, Neger, Shipman, & Perrin, 2012). Furthermore, as children transition to adolescence and spend more