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## An examination of social interaction profiles based on the factors measured by the Screen for Social Interaction



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### ABSTRACT

Deficits in the capacity to engage in social interactions are a core deficit associated with Autistic Disorder (AD) and Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS). These deficits emerge at a young age, making screening for social interaction deficits and interventions targeted at improving capacity in this area important for early identification and intervention. Screening and early intervention efforts are particularly important given the poor short and long term outcomes for children with Autism Spectrum Disorders (ASDs) who experience social interaction deficits. The Screen for Social Interaction (SSI) is a well-validated screening measure that examines a child's capacity for social interaction using a developmental approach. The present study identified four underlying factors measured by the SSI, namely, Connection with Caregiver, Interaction/Imagination, Social Approach/Interest, and Agreeable Nature. The resulting factors were utilized to compare social interaction profiles across groups of children with AD, PDD-NOS, children with non-ASD developmental and/or psychiatric conditions and typically developing children. The results indicate that children with AD and those with PDD-NOS had similar social interaction profiles, but were able to be distinguished from typically developing children on every factor and were able to be distinguished from children with non-ASD psychiatric conditions on every factor except the Connection with Caregiver factor. In addition, children with non-ASD developmental and/or psychiatric conditions could be distinguished from typically developing children on the Connection with Caregiver factor and the Social Approach/Interest factor. These findings have implications for screening and intervention for children with ASDs and non-ASD psychiatric conditions.

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Deficits in social interaction abilities are considered a key characteristic associated with Autism Spectrum Disorders (ASDs) and are the most powerful criteria to use when making a diagnosis of an ASD. Social interaction problems in children with developmental disabilities are among the earliest observable areas of deficit and can be observed as early as 18–36 months of age in children with ASDs, making them an ideal target for early identification and intervention

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(Mundy, Burnette, & Volkmar, 2005). One fundamental aspect of social interaction is joint attention. It is thought that deficits in joint attention, which occur in children with ASDs and are observable by one year of age, have far reaching effects since such deficits may not allow the child to receive important social information which disrupts the child's cognitive and behavioral development (Dawson et al., 2004; Sigman, Mundy, Sherman, & Ungerer, 1986; Ventola et al., 2007).

Social interaction impairments in children with ASDs may impact the parent child relationship and interactions, peer interaction and interaction with others. Specifically, children with ASDs are less likely than typically developing children to respond to parental attempts to initiate joint attention and this denies the parent and the child an opportunity to engage in communication exchanges (Meindl & Cannella-Malone, 2011). Children with ASDs have also been found to request help from their caregivers less frequently than typically developing children. When children with ASDs do request help from a caregiver they are more likely to do so by guiding the parents' hand to the desired object rather than employing more typical requesting behaviors (Volkmar, Klin, Marans, & McDougle, 1996). Additionally, children with ASDs have also been found to display a restricted range of facial expressions (Lord, Storoschuk, Rutter, & Pickles, 1993; Noterdaeme, Sitter, Mildenberger, & Amorosa, 2000). Finally, a great deal of research has identified that children with ASDs are significantly less likely to use and understand gestures compared to typically developing children and children with similar linguistic and intellectual functioning (Cox et al., 1999; Lord et al., 1993; Mundy, Sigman, Ungerer, & Sherman, 1986; Ventola et al., 2007).

Children with ASDs have been found to have impaired peer relationships as well. For example, children with ASDs experience difficulty choosing appropriate subject matter to speak about and may unexpectedly switch topics rather than engage in typical back and forth dialog (Bellini & Hopf, 2007; Loveland, Tunali, Mcevoy, & Kelley, 1989; Tager-Flusberg & Anderson, 1991). Compared to typically developing children and children with language and global developmental delays, fewer children with ASDs were found to have his or her own friends (Bartak, Rutter, & Cox, 1975; Knott, Dunlop, & Mackay, 2006). Children with ASDs have been found to be less interested in other children and have fewer interactions with other children (Stone & Caro-Martinez, 1990; Ventola et al., 2007). Hauck, Fein, Waterhouse, and Feinstein (1995) found that children with ASDs make one-third fewer attempts to initiate peer interactions than verbally-matched children with intellectual disabilities. Furthermore, children with ASDs have been found to be significantly less likely to respond to other children's attempts to initiate interactions (Landa, Holman, & Garrett-Mayer, 2007; McHale, 1983).

Pretend play skills are also significantly impaired in children with ASDs in comparison to typically developing children and children with developmental delays (Baron-Cohen, Cox, Baird, Swettenham, & Nightingale, 1996; Charman et al., 1998; Cox et al., 1999; Landa et al., 2007; Lord, Rutter, & Le Couteur, 1994; Lord, Storoschuk, et al., 1993; Noterdaeme et al., 2000). Such deficits may include a tendency to become overly engrossed with a particular aspect of a toy, such as spinning a tire, rather than using toys to engage in functional or symbolic play (Stone, Lemanek, Fishel, Fernandez, & Altemeir, 1990; Volkmar et al., 1996). Children with ASDs have been found to be more socially avoidant from a very young age which denies the child the opportunity to collaboratively create opportunities to learn from interactions with others (Johnson & Munakata, 2005; Klin, Jones, Schultz, & Volkmar, 2003; Mundy & Neal, 2000; Volkmar, Klin, Schultz, & State, 2009).

The importance of addressing deficits in social interaction capacity in children with ASDs and developmental disabilities is apparent. An inadequately developed capacity to engage in social interactions in children with ASDs may lead to rejection by the child's peer group, and without such a capacity, children are more likely to exhibit poorer adaptive functioning, learning, and overall adjustment (Ghuman, Peebles, & Ghuman, 1998; Kister & Gatlin, 1989). Furthermore, individuals with ASDs who lack an adequately developed capacity for engaging in social interactions are more likely to experience difficulty obtaining and retaining employment and less job success (Burt, Fuller, & Lewis, 1991; Hanley-Maxwell, Rusch, Chadsey-Rusch, & Renzaglia, 1986). Individuals with disabilities who continue to exhibit social deficits over time have a greater risk of poorer long-term outcomes, including a lower rate of high school graduation, and a higher probability of involvement with the juvenile justice system (Kupersmidt, Coie, & Dodge, 1990) and have a greater risk of manifesting mental health problems later in life (Bellini, 2006; Cowen, Pederson, Babigan, Izzo, & Trost, 1973).

Identifying and targeting specific social deficits is an essential element of effective interventions for children with various ASDs and developmental disabilities (Bellini & Hopf, 2007). Gresham, Sugai, and Horner (2001) hypothesized that one reason many social interventions aimed at improving social functioning of children with ASDs have had weak treatment effects may be due to not matching specific areas of deficit with intervention approaches. Kozlowski, Matson, and Belva (2012) concluded that "different lines of research point to the need to refine the characterization of social dysfunction in Autism and to capture essential elements of socialability that may be disrupted to differing degrees in individuals with prototypical as well as the broader manifestation of this condition" (p. 895). Thus, the present research is aimed at examining the factor structure of the Screen for Social Interaction (SSI) and using the identified factors to characterize and compare social interaction profiles of young children with Autistic Disorder (AD), Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS), children with non-ASD developmental and/or psychiatric conditions, and typically developing children.

## 1. Method

### 1.1. Measure

The Ghuman–Folstein Screen for Social Interaction (SSI) is a screening tool aimed at examining a child's capacity for reciprocal social interaction in a variety of situations (Ghuman, Leone, Lecavalier, & Landa, 2011; Ghuman, Peebles, et al.,

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