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An examination of the relationship between communication and socialization deficits in children with autism and PDD-NOS

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ABSTRACT

Autism Spectrum Disorders (ASDs) are characterized by pervasive impairments in repetitive behaviors or interests, communication, and socialization. As the onset of these features occurs at a very young age, early detection is of the utmost importance. In an attempt to better clarify the behavioral presentation of communication and socialization deficits to aid in early assessment and intervention, impairments in these areas were examined among infants and toddlers (17–36 months) with Autistic Disorder (AD), Pervasive Developmental Disorder-Not Otherwise Specified (PDD-NOS), and non-ASD related developmental delay. The *Baby and Infant Screen for Children with aUtism Traits-Part 1 (BISCUIT-Part1)* and the *Battelle Developmental Inventory, 2nd Edition (BDI-2)* were utilized to examine communication and socialization levels, respectively, among these groups. All groups significantly differed on level of socialization impairment with the Autism group displaying the greatest impairment and the non-ASD related developmental delay group evincing the least impairment. In regards to communication deficits, the non-ASD related developmentally delayed group differed significantly in comparison to the Autism and PDD-NOS groups; however, no significant differences were found between children with AD and PDD-NOS. While communication and socialization impairments were found to significantly correlate for all participants with the exception of those with PDD-NOS, these correlations were not found to significantly differ from one another across groups. The implications, limitations, and future directions of these results are discussed.

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In the past decade there has been an increase in the public's interest in Autistic Disorder (AD), more commonly known as autism (Ban Itzchak, Lahat, & Zachor, 2011; Evans et al., 2001; Levy & Perry, 2011; Lord & Luyster, 2006; Matson, Wilkins, & Gonzales, 2008; Suzuki, 2011; Worley, Matson, Sipes, & Kozlowski, 2011). Autism is a neurodevelopmental disorder characterized by pervasive deficits in socialization and communication, as well as the presence of repetitive or restricted behaviors or interests (Horovitz & Matson, 2010; Lugnegård, Hallerbäck, & Gillberg, 2011; Matson, 1994, 2008; Matson, Dempsey, & Fodstad, 2009; Matson, Dempsey, & LoVullo, 2009; Matson, Fodstad, Hess, & Neal, 2009; Meindl & Cannella-Malone, 2011; Worley & Matson, 2011). For purposes of this study, the focus will remain on the former two impairments. Approximately, 25–50% of all children with an ASD diagnosis never develop a functional language (Dawson & Murias, 2009; Howlin, 2006; Rutter, 1978). Many are stigmatized socially as well, particularly those who exhibit stereotypic behavior (Cunningham & Schreibman, 2008; Matson, Shoemaker, et al., 2011; Matson, Kozlowski, et al., 2011; Rivet & Matson, 2011; Smith & Matson, 2010a). Therefore, optimizing skills in communication and socialization is of great importance (Matson, Kozlowski, et al., 2011; Matson, Sipes, et al., 2011).

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Deficits in the area of socialization can be detrimental to a child's quality of life for many reasons, as these children tend to isolate themselves from others and have impaired social relationships (Chan, Hu, Cui, Wang, & McAlonan, 2011; Ghuman, Leone, Lecavalier, & Landa, 2011; Mahan & Matson, 2011b; Matson, Fodstad, & Rivet, 2009; Matson, Matson, & Rivet, 2007; Smith & Matson, 2010c). The three most explicit social impairments of those with ASDs identified by Rutter (1978) include uncooperativeness while playing with other children, the inability to form friendships, and the failure to recognize others' feelings. Communication deficits also lead to negative consequences, such as elevated levels of problem behaviors (Barnes, Dunning, & Rehfeldt, 2011; Beitchman, 2006; Matson & LoVullo, 2008; Smith & Matson, 2010a, 2010b, 2010c; Sturmey, Laud, Cooper, Matson, & Fodstad, 2010a, 2010b). More importantly, Newborg (2005) hypothesizes that children with higher deficits in communication may also exhibit greater socialization deficits, particularly, because the inability to communicate with adults and/or peers can create social strain (Matson, Fodstad, et al., 2009; Matson & Wilkins, 2007; Matson, Wilkins, & Gonzales, 2008).

Over the past 30 years there reportedly has been a 16-fold increase in the diagnosis of autism, although this increase may not be completely attributed to a genuine growth in the disorder. Rather, other factors like greater diagnostic precision, more expansive diagnostic criteria, and more public attention to the disorder may be potential causes (Bertoglio & Hendren, 2009; Matson & Kozlowski, 2011). Nevertheless, more children are in need of services and accommodations, thus making early detection and intervention a top priority among today's diagnosticians (Matson & Boisjoli, 2007; Matson, Dixon, & Matson, 2005; Volkmar & Pauls, 2003). While much research has been conducted on the presence of communication and socialization impairments in this population, the amount of literature is much less for younger children, especially for children under the age of 3. This factor may be attributed to the fact that the average age for diagnosis of ASDs is approximately 3–4 years of age, although it is dropping (DeGiacomo & Fombonne, 1998; Matson, 2005). The current study serves as a means to provide such an analysis as all participants were 17–36 months of age. The majority of studies which have been conducted to analyze core ASD symptomatology among this very young population have done so through the utilization of retrospective analyses (e.g., inspecting old home videos; Brown, Dawson, Osterling, & Dinno, 1998; Osterling & Dawson, 1994). The current study is more robust since deficits in communication and socialization were examined using real time, objective measures.

In 2010, Horovitz and Matson found children 17 to 36 months of age with PDD-NOS possess significantly more communication deficits than those with non-ASD related developmental delays. Children with a diagnosis of Autistic Disorder were found to display significantly more deficits in communicative skills than children with PDD-NOS and non-ASD related developmental delay. The current study extends the Horovitz and Matson (2010) study and adds additional children to the sample. The updated sample included newly recruited participants and only children that have been administered the *Battelle Developmental Inventory, 2nd Edition (BDI-2)*. Additionally, the present study examines not only the presence of communication deficits but the presence of socialization impairments and the relationship of the deficits seen in these two areas.

Since Kanner's (1943, 1944) original description, many researchers have conducted studies in an attempt to better define the three core features of ASD on an individual basis (Kanai et al., 2011; Sipes, Matson, Worley, & Kozlowski, 2011; Tseng, Fu, Cermak, Lu, & Shieh, 2011). However, understanding the relationship between the core features of autism is equally important when attempting to detect them among young children. For a diagnosis of AD, all three core features must be present to a large degree, which suggests there are strong associations between these symptoms (Dworzynski, Happé, Bolton, & Ronald, 2009; Kuenssberg & McKenzie, 2011; Matson, Matson, & Beighley, 2011). Some, however, have questioned these associations. For instance, family studies have found that relatives of those with autism often display milder forms of communication and socialization deficits without having repetitive and restricted behaviors and interests (Bishop et al., 2004; Piven, Palmer, Jacobi, Childress, & Arndt, 1997). More recently, Dworzynski et al. (2007) found significant correlations between communication and socialization impairments among children of this ASD population; however, there was no significant correlation between communication impairment and repetitive and restricted behaviors and interests. Elsewhere, Howlin and Moore (1997) state that communication and socialization deficits are the first signs suggesting a child is developing atypically.

The aim of the current study was to build upon these abovementioned findings. Fortunately, due to recently developed instruments, screening for autism and other developmental delays has proved to be less problematic than in the past. The *Baby and Infant Screen for Children with aUtism Traits-Part 1 (BISCUIT-Part 1)* has recently been designed to aid in the early detection of ASDs among children from 17 to 37 months of age (Matson, Wilkins, Sevin, et al., 2008). Conversely, the *BDI-2* (Newborg, 2005) is intended to identify developmental skills of children from birth to 7 years 11 months. This study aimed to utilize two portions of these two measures (the communication domain of the *BISCUIT-Part 1* and the Personal-Social domain of the *BDI-2*) in establishing if a relationship exists, and if so determining where the correlation lies between the level of communication deficits and the level of socialization deficits among those with diagnoses of AD, PDD-NOS, and non-ASD related developmental delays.

First, it was hypothesized that the autism group would have significantly greater levels of impairment in communication and socialization than the PDD-NOS and non-ASD related developmental delay groups. Those with PDD-NOS were also expected to show significantly greater levels of deficits in these areas compared to the non-ASD related developmental delay group. Second, it was also thought that correlations between level of communication deficit and socialization impairment would be significant for the AD group; however, it was believed that non-significant differences would be found for the PDD-NOS and non-ASD related developmental delay groups. Finally, in comparison of these correlations for each diagnostic group, it was hypothesized that significant differences would be found between the communication–socialization (C–S)

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