



Effects of autistic traits on social and school adjustment in children and adolescents: The moderating roles of age and gender

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ABSTRACT

This study examined the associations between children's and adolescents' autistic-like social deficits and school and social adjustment as well as the moderating roles of age and gender in these associations. The sample consisted of 1321 students (48.7% boys) in Grade 1 to Grade 8 from northern Taiwan. Children's and adolescents' autistic-like social deficits were assessed using the Social Responsiveness Scale (SRS), and their school and social adjustment (i.e., academic performance, negative attitudes toward schoolwork/teachers/classmates, behavioral problems at schools, negative peer relationships, and problems with peers) were assessed using the Social Adjustment Inventory for Children and Adolescents (SAICA). Both measures were completed by the mothers of the participants. Results from the linear mixed models demonstrated that autistic-like social deficits were associated with poor academic performance, negative attitudes toward schoolwork, teachers, and classmates, behavioral problems at schools, negative peer relationships, and problematic peer interactions. Moreover, gender and/or age moderated the associations between autistic-like social deficits and school and social adjustment problems. For example, autistic-like social deficits were more strongly related to negative school attitude, school social problems, and negative peer relationships in boys than in girls. Further, autistic-like social deficits were more strongly related to problems with peers in older girls than in older boys or younger children (regardless of gender). In conclusion, the present study suggests that autistic-like social deficits may place children and adolescents at increased risk for social and school maladjustment and that the extent of maladjustment may vary with the child's age and gender and the domains of adjustment under discussion.

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1. Introduction

Social competence, the ability to integrate social, emotional, and cognitive processes for successful social adaptation, has been emphasized in the conceptual and empirical work of developmental psychopathology as the indicator of optimal developmental outcomes (Brothers, 1990; Sasson et al., 2007; Sasson, Pinkham, Carpenter, & Belger, 2011; Sroufe & Rutter, 1984). A large body of research has demonstrated the link between early social inadequacy or peer difficulties and a wide

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range of maladaptive outcomes, including interpersonal difficulties and, in the extreme, clinically significant behavioral and affective disorders such as anxiety, depression, and delinquency (Craig, 1998; Parker & Asher, 1987; Parker, Rubin, Erath, Wojslawowicz, & Buskirk, 2006). One group of children that is at significantly high risk of peer relationship problems and impaired social functioning, however, is those with autism spectrum disorders (ASDs). This is not surprising given that social impairment, such as lack of social reciprocity, failure to develop age-appropriate peer relationships, and inability to engage in age-appropriate social interaction and conversation, is part of the defining and diagnostic criteria of ASDs (American Psychiatric Association [APA], 2000). Additionally, evidence suggests that children with ASDs do not simply “outgrow” these social impairments; rather, these difficulties persist into adulthood, continuing to negatively impact social and occupational functioning in individuals with ASDs (Rao, Beidel, & Murray, 2008; Venter, Lord, & Schopler, 1992). Therefore, it is important to examine the influence of ASDs and autistic traits on children's and adolescents' school and social adjustment.

ASDs consist of autistic disorder, Asperger's syndrome, and pervasive developmental disorder, not otherwise specified (PDD–NOS). This disorder is one of the most common neurodevelopmental conditions, affecting approximately 0.6–1.6% of the general population (Baron-Cohen et al., 2009), with a male to female ratio of 4.3–1 (Fombonne, 2005, 2009; Lai et al., 2011). ASDs are heterogeneous neurodevelopmental disorders with prominent difficulties in social interaction and communication, along with the presence of restricted interests, difficulties adapting to change, and repetitive/stereotyped behaviors (APA, 2000; Baron-Cohen, 2008).

Although abnormal social reciprocity is the core symptom of ASDs, individuals with ASDs may demonstrate varying degrees of social interaction deficits, which manifest in various domains of social adjustment and relationships with others including peers, family members, teachers, and other adults. For example, previous studies showed that sibling relationships of children with ASDs are characterized by less closeness and a decreased number of interactions (Kaminsky & Dewey, 2001). In addition, parent–child interactions of children with ASDs may be impaired because of their significantly severe emotional and behavioral problems, and parents of children with ASDs are more likely to be overprotecting, controlling, and show less affection than parents of children without ASDs (Gau et al., 2010; Kaminsky & Dewey, 2001). Moreover, previous research found that high-functioning children with ASDs in classroom settings are more often neglected and rejected by others, more likely to be bullied, have fewer friendships and poorer friendship quality, have difficulties initiating and maintaining friendships, and experience more loneliness than their typically developing peers (Bauminger & Kasari, 2000; Bauminger et al., 2008; Humphrey & Symes, 2010; Ochs, Kremer-Sadlik, Solomon, & Sirota, 2001).

The social deficits associated with ASDs affect not only children's social adjustment but also their academic performance. For example, in a recent study, Estes and colleagues reported that school-aged children with ASDs demonstrate significant discrepancies between their actual academic achievement and their potential level of academic achievement predicted from their overall intellectual ability (Estes, Rivera, Bryan, Cali, & Dawson, 2011). Specifically, this research found that within 30 school-aged children with ASDs, decreased social functioning predicted lower academic achievement three years later, after controlling for IQ. These results suggest that improved social functioning may be an important contributor to the variability in academic achievement observed in children with ASDs; thus, social domain should be incorporated into intervention to promote academic achievement in children with ASDs (Estes et al., 2011).

The majority of the past studies examining school and social impairment associated with ASDs have been conducted in clinical population with ASDs. Investigation of the impact of autistic-like social deficits in the general population is of significance because it allows us to understand the effect of autistic trait with mild degree of severity on social functioning. In addition, assessing autistic traits in a dimensional approach, in addition to a categorical approach, will help provide a more comprehensive understanding of autistic characteristics and the associated impairment. Increasing evidence has clearly suggested that ASDs might not be a solely clinical phenomenon; rather, it represents the severe end of a continuum of traits that reflect habitually social, behavioral, and emotional patterns that are stable over time (Constantino, 2011; Constantino & Todd, 2003; Skuse et al., 2009). All individuals have these traits to a varying degree. In other words, autistic traits not meeting the threshold for a clinical diagnosis can be found continuously distributed in the general population (Constantino, 2011). These traits include difficulties with social reciprocity, inappropriate conversational skills, and behaviors that are perceived as bizarre or strange. As a result, research has emerged to investigate autistic traits and their impact on social and school functioning in general populations.

Theory of mind, generally speaking, is the ability to understand mental states, such as beliefs, feelings, and intents, of oneself and others. Deficits in theory of mind have been considered as a key feature of autism (Baron-Cohen, 2001). In general populations, the ability of theory of mind was found to predict preschool-age children's readiness for school and their later peer relations in school and school-age children's social competence (Astington & Pelletier, 2005; Caputi, Lecce, Pagnin, & Banerjee, 2012; Liddle & Nettle, 2006; Slaughter, Dennis, & Pritchard, 2002).

In a school-based sample, Skuse (2010) found that up to one-third of children who were excluded from primary schools have autistic-like behaviors of mild to moderate severity and that exclusion from school was associated with deficits in social-cognitive function of an autistic character in an even higher proportion (up to 70%). These findings indicate that children with subclinical autistic traits may act in the ways that bring them into conflict with teachers and peers and that they might process social information abnormally, in an autistic-like way, and are likely to be excluded from schools for similar reasons as with clinically-diagnosed children with ASDs (Skuse, 2010). In another study, Skuse and colleagues (2009) reported that even subthreshold autistic-like traits were associated with an increased risk of social and behavioral problems. In summary, it seems that not only children with clinical diagnoses of ASDs but also those whose symptoms do not reach the clinical threshold are at risk of social impairment and school adjustment problems. Nonetheless, few empirical studies have

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