ADHD severity as it relates to comorbid psychiatric symptomatology in children with Autism Spectrum Disorders (ASD)

Rosleen Mansoura,*, Allison T. Dovib, David M. Lanec, Katherine A. Lovelanda, Deborah A. Pearsona

a Department of Psychiatry & Behavioral Sciences, McGovern Medical School, University of Texas Health Science Center at Houston, United States
b Department of Educational Psychology, University of Houston, United States
c Departments of Psychology and Statistics, Rice University, United States

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ABSTRACT

Comorbid diagnoses identified in pediatric samples have been correlated with a range of outcomes, including greater levels of emotional, behavioral, and educational impairment and the need for more intensive treatment. Given that previous research has documented high levels of comorbid Attention-Deficit/Hyperactivity Disorder (ADHD) in children with Autism Spectrum Disorders (ASD), this study closely examines the relationship between parent-reported ADHD symptoms (i.e., Conners’ Parent Rating Scale, Revised [CPRS–R]) and the prevalence of additional comorbid psychiatric diagnoses in a pediatric ASD sample (n = 99). Regression analyses revealed that greater severity of ADHD symptomatology was significantly related to a greater number of comorbid psychiatric diagnoses, as identified using the Diagnostic Interview for Children and adolescents, 4th Edition (DICA–IV). Additionally, more severe ADHD symptoms were also associated with higher levels of symptom severity on Child Behavior Checklist (CBCL) syndrome subscales. Interestingly, increasing severity of ASD symptomatology, as measured by the Autism Diagnostic Interview, Revised (ADI–R), was not associated with a higher prevalence of comorbid psychiatric diagnoses or CBCL syndrome severity. Our study concluded that higher levels of ADHD severity—not ASD severity—were associated with a higher prevalence of comorbid psychiatric symptomatology in school-age children with ASD. These findings may encourage clinicians to thoroughly assess ADHD symptomatology in ASD children to better inform treatment planning.

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1. Introduction

Autism Spectrum Disorder (ASD) is a lifelong developmental disorder characterized by deficits in social communication as well as restricted, repetitive patterns of behaviors. The current Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM–5) (APA, 2013) formulation of ASD encompasses many children formerly characterized as having Autistic Disorder (AD), Asperger’s Disorder, and Pervasive Developmental Disorder–Not Otherwise Specified (PDD–NOS) in the DSM-
IV-TR (APA, 2000). ASD is a neurodevelopmental disorder with recent rates estimated to be as high as 1% in the pediatric population (Baird et al., 2006). Given its prevalence and pervasive nature, it is common for individuals with ASD to experience coexisting psychiatric conditions (e.g., Simonoff et al., 2008). Although the core features of ASD can be impairing and pervasive, the co-occurrence of other psychiatric conditions can further undermine the individual’s functioning and quality of life (Loveland & Tunali-Kotoski, 2005; Pearson et al., 2006). Identification of these comorbid conditions is critical, as these conditions can often be targeted effectively by psychiatric and psychosocial interventions.

A growing body of research strongly suggests that the prevalence rate of psychiatric comorbidity in individuals with ASD is higher than it is in the general population (e.g., Brereton, Tonge, & Einfeld, 2006; Gadow, DeVincent, Pomeroym, & Azizian, 2004; Joshi et al., 2010). Previous research suggests that 70% of children with ASD meet criteria for one comorbid psychiatric disorder, while 40% meet criteria for two or more comorbid diagnoses (APA, 2013; Abdallah et al., 2011; Leyer et al., 2006; Simonoff et al., 2008). Psychiatric conditions that are particularly common in children with ASD include Attention-Deficit/Hyperactivity Disorder (ADHD), mood disorders, and anxiety disorders. Prevalence rates of ADHD symptoms in ASD range from 28.2–87% (Ames & White, 2011; Amr et al., 2012; Frazier et al., 2001; Ponde, Novaes, & Losapio, 2010; Sinzig, Walter, & Doepfner, 2009; Simonoff et al., 2008); prevalence rates of mood disorders comorbid with ASD have been estimated to range from 2 to 57% (Amr et al., 2012; Matson & Nebel-Schwalm, 2007; Mazefsky, Folstein, & Lainhart, 2008; Whitehouse, Durkin, Jacquet, Ziatas, 2009); and prevalence rates for anxiety disorders in ASD range from 15.7–84.1% (Mannion, Leader, & Healy, 2013; Muris, Steerneman, Merckelbach, Hollin, & Meesters, 1998). This emerging body of literature suggests that children and adolescents with ASD are at very high risk for developing a range of psychiatric concerns.

Prior to the release of the DSM-5, there was much controversy regarding whether clinicians should diagnose ADHD in individuals with ASD. In fact, the diagnosis of ADHD was prohibited in the presence of an ASD diagnosis in the previous version of the DSM (DSM-IV-TR). Some clinicians felt that symptoms of ADHD were just a “part of autism.” Interestingly, a body of research has identified overlapping features in ASD and ADHD. For example, there are shared genetic factors as well as common cognitive and executive functioning features (Gargaro, Rinehart, Bradshaw, Tonge, & Sheppard, 2011; Jang et al., 2013; Reiersen & Todd, 2008; Taurines et al., 2012). Rommelse, Geurts, Franke, Buitelaar, and Hartman (2011)’s recent review suggested substantial shared endophenotypes, such as behavior concerns, emotional regulation issues, and poor social awareness of behavioral consequences.

Although ASD and ADHD may share overlapping cognitive and behavioral features, many recent studies have supported ASD and ADHD as two distinct syndromes that may co-occur. In fact, within the diagnostic criteria for both disorders, there are few to no overlapping symptoms (Ghanizadeh, 2010). Additionally, the treatment approach for the core symptoms of ADHD is distinct from the treatment approach for the core symptoms of ASD. For instance, although stimulant medications have been effective in treating ADHD symptoms in children with ADHD and ASD (e.g., inattentiveness, hyperactivity), their symptoms of ASD remain unchanged (Hazell, 2007; Pearson et al., 2013; Santosh, Baird, Pituarattian, Tavare, & Gringas, 2006). Overall, the distinct characteristics and unique treatment approaches support the utility of separate ASD and ADHD diagnostic models, as is currently the case in the DSM-5.

There is also evidence that comorbid ADHD presents additional risk beyond that contributed by ASD alone. For instance, Jang et al. (2013) determined that children with both ASD and ADHD had higher rates of other comorbid symptoms (e.g., conduct problems) compared to children with either ASD or ADHD alone. Additionally, ADHD symptoms have been found to further impair overall psychiatric and functioning in children with ASD (Frazier et al., 2001; Gadow, DeVincent, & Pomeroym, 2006; Goldstein & Schwebach, 2004; Lecavalier, Gadow, DeVincent, & Edwards, 2009; Yoshida & Uchiyama, 2004). ADHD symptoms comorbid with ASD place children at a higher risk for psychiatric hospitalization (Frazier et al., 2001), predict more difficulties with general life functioning (Goldstein & Schwebach, 2004; Ogino et al., 2005; Yerys et al., 2009), and are positively correlated with receiving mental health services (Bryson, Corrigan, McDonald, & Holmes, 2008). Previous research also suggests that comorbid ADHD may exacerbate externalizing behavior problems within the pediatric ASD symptom profile (Yerys et al., 2009). Other studies have found that children with both ASD and ADHD appear to have greater deficits in their ability to recognize facial affect than children who meet diagnostic criteria for either ASD or ADHD alone (Sinzig, Morsch, & Lehmkuhl, 2008, Tye et al., 2013). Furthermore, Ames and White (2011) found that those with ASD and ADHD had greater difficulty with inhibitory control and regulating impulsivity leading to increased deficits in social interaction relative to those with only ASD.

Although this emerging literature strongly suggests that ADHD and ASD each contribute risk for suboptimal functioning and life outcomes, relatively little is known about the relationship of ADHD to the development of specific comorbid psychiatric syndromes in persons with ASD. Additionally, it is of interest to know whether children with ASD who have more severe symptoms of ADHD are at higher risk for comorbid psychiatric symptomatology than are children with ASD who have milder presentations of ADHD symptoms. Thus, the first goal of this study was to examine the prevalence of various comorbid psychiatric disorders—including disruptive behavior disorders, mood disorders, anxiety disorders, elimination disorders, and eating disorders—in children with ASD. Based on previous research, we hypothesized that greater ADHD severity in those with ASD would lead to a greater incidence of co-morbid psychiatric disorders (e.g., ADHD, social phobias, obsessive compulsive disorder, generalized anxiety disorder). The second goal of this study was to determine whether higher severity of ADHD symptomatology in children with ASD is associated with greater levels of psychiatric symptoms and syndrome severity. We expected higher levels of ADHD symptom severity in children with ASD would be highly correlated with greater levels of psychiatric symptoms and syndrome severity than those children with ASD demonstrating lower levels of ADHD.
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