Title: Repetitive and Restricted Behaviors in Individuals with ASD and ASD + ADHD

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Introduction: Repetitive and restricted behaviors (RRBs) are a core and defining feature of autism spectrum disorder (ASD) (American Psychiatric Association, 2013). Core symptoms of ASD may be exacerbated in the presence of comorbid disorders. Attention-deficit/hyperactivity disorder (ADHD) is among the most common comorbid psychiatric disorders in ASD, with prevalence estimates ranging from 28.2% to 87% (Ames & White, 2011; Amr et al., 2012; Frazier et al., 2001; Stevens, Peng, & Barnard-Brak, 2016). However, relatively few studies have focused specifically on ASD/ADHD comorbidity. Research has shown that the presence of ADHD in individuals with ASD is associated with increased autistic symptoms and maladaptive behaviors (Sprenger et al., 2013; Yerys et al., 2010) and increased social difficulties (Rao & Landa, 2014). While studies have investigated how ADHD broadly impacts ASD symptoms, no study to date has looked at how ADHD specifically impacts frequency and presentation of RRBs. The present study sought to examine if the presence of ADHD was associated with an increase in the frequency across types of RRBs in individuals with ASD.

Method: The total sample consisted of 390 individuals age 2-14 (M=7) enrolled in a larger study. The ASD group consisted of 269 individuals (82.16% male) and the ASD+ADHD group consisted of 121 individuals (80.99% male). As part of the measurement battery, parents completed the Repetitive Behavior Scale-Revised (RBS-R), and IQ was assessed using the Mullen Scales of Early Learning or the Differential Ability Scales-2nd Edition. The present study examined whether the presence of ADHD was associated with greater symptoms of RRBs. Visual analysis of the RBS-R subscale scores and total score revealed right-skewed distributions and Kruskal-Wallis tests confirmed non-normality of the data. A poisson distribution best fit data and a poisson regression was performed for each dependent variable. The independent variable was diagnosis (ASD or ASD+ADHD), the dependent variables were the total score and various subscale scores on the RBS-R, and covariates included age and IQ.

Results: Controlling for age and IQ, the presence of ADHD was associated with higher RBS-R total score (β=0.01, p<.001), and a greater number of symptoms on the following subscales: stereotyped behavior (β=0.02, p<.01), self-injurious behavior (β=0.06, p<.001), sameness behavior (β=0.01, p<.001), and compulsive behavior (β=0.03, p<.001). Interestingly, the presence of ADHD was associated with fewer symptoms in the area of restricted behavior (β=-0.01, p<.001), and the presence of ADHD was not a significant predictor of ritualistic behavior.

Discussion: These findings suggest that the ASD/ADHD comorbidity may exacerbate the frequency of some types of RRBs observed in ASD, but not necessarily all of them. Although the current study is cross-sectional in nature, future studies should explore directionality and potential causal mechanisms underlying these associations. It is possible that the presence of ADHD may intensify self-regulation difficulties, leading to increased engagement in stereotyped, sameness, and compulsive behavior as a behavioral coping mechanism for this dysregulation. Self-injurious behavior may be increased in the presence of ADHD as impulsivity and inhibition difficulties are amplified. Restricted behavior and ritualistic behaviors appear to be less affected by the presence of ADHD, suggesting that these behaviors may be conceptually and mechanistically distinct. Further exploration of the observed differences in types of RRBs is warranted. It is important to note that the present study was primarily composed of males and it is possible that females with ASD+ADHD display different RRB profiles. This study also did not include older adolescents or adults, who also might display different RRB profiles in the presence of ADHD.

References:


