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Relationship Between Sensory Sensitivity, Anxiety, and Gender in Adolescents with Autism Spectrum Disorder

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Introduction: According to the DSM-V, sensory sensitivity is a symptom of Autism Spectrum Disorder (ASD) (American Psychiatric Association, 2013) as a restrictive and repetitive behavior. Males with ASD typically display more stereotyped behaviors while females typically display more sensory challenges (Lai, 2020). In addition, higher sensory hypersensitivity has been reported in women with ASD compared to neurotypical females (Taylor, 2020). Previous research has shown a positive correlation between stress and sensory sensitivity measured by the Short Sensory Profile (SSP) (Corbett, 2016). Further, prior research suggests association between anxiety and sensory sensitivity in ASD (Green, 2010). Importantly, many females with ASD are diagnosed with comorbid mood disorders such as anxiety (Kirsch, 2019). Although more neurotypical females than males are diagnosed with mood disorders, autistic girls are more likely to be diagnosed with mood disorders than typically developing females (Kirsch, 2019). In this project, the relationship between sensory sensitivity and anxiety was examined across diagnosis (ASD and TD) and biological sex (female and male).

Methods: The study included 244 participants between 10 to 13 years (average age of 11.55 years), consisting of 79 female (44 non-ASD, 35 ASD) and 165 male (60 non-ASD, 105 ASD) participants. Sensory sensitivity was measured by the SSP and anxiety was measured by the Multidimensional Anxiety Scale for Children Parent (MASC-P). Linear regressions were used to determine correlations between sensory sensitivity and anxiety. T-tests were used to test significance in sensory sensitivity and in anxiety in autistic and neurotypical females.

Results: Autistic females demonstrated significantly more sensory sensitivity ($t=-2.661$, $p=0.01$) and parent reported anxiety ($t=8.72$, $p<0.001$) than their gender-matched female TD peers. However, there was no significant correlation between sensory sensitivity and parent-reported anxiety in autistic females ($R=-0.13$, $p=0.45$). There was a significant correlation between sensory sensitivity and parent-reported anxiety in TD females ASD ($R=-0.59$, $p<0.001$), males with ASD ($R=-0.47$, $p<0.001$), and males without ASD ($R=0.50$, $p<0.001$).

Discussion: The results highlight significant sensory sensitivity in both females and males with ASD. While females with ASD evidence higher parent-reported anxiety, there was a lack of association with sensory sensitivity as was present in the males with ASD. Notable variability was observed in the females emphasizing the unique and complex phenotype of autistic females. Elevated sensory sensitivity and elevated anxiety in autistic females was in line with prior research; however, most demonstrating correlation between sensory sensitivity and anxiety was conducted using both sexes; therefore, such findings may be largely due to male participants. Future research with large samples in females presenting with sensory sensitivity and anxiety would be useful in understanding how they present in autistic females.

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