

## Autistic Traits and Multisensory Integration-Using a Size-Weight Illusion Paradigm

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**Abstract :** Objective: A majority of studies suggest that people with Autism Spectrum Disorder (ASD) have multisensory integration deficits. However, normal and even supranormal multisensory integration abilities have also been reported. Additionally, little of this work has been undertaken utilizing a dimensional conceptualization of ASD; i.e., a broader autism phenotype. Utilizing methodology that controls for common potential confounds, the current study aimed to examine if deficits in multisensory integration are associated with ASD traits in a non-clinical population. The contribution of affective versus non-affective components of sensory hypersensitivity to multisensory integration was also examined. Methods: Participants were 147 undergraduate university students in Macau, a Special Administrative Region of China, of Chinese ethnicity, aged 16 to 21 (Mean age = 19.13; SD = 1.07). Participants completed the Autism-Spectrum Quotient, the Sensory Perception Quotient, and the Adolescent/Adult Sensory Profile, in order to measure ASD traits, non-affective, and affective aspects of sensory/perceptual hypersensitivity, respectively. In order to explore multisensory integration across visual and haptic domains, participants were asked to judge which one of two equally weighted, but different sized cylinders was heavier, as a means of detecting the presence of the size-weight illusion (SWI). Results: ASD trait level was significantly and negatively correlated with susceptibility to the SWI ( $p < 0.05$ ); this correlation was not associated with either accuracy in weight discrimination or gender. Examining the top decile of the non-normally distributed SWI scores revealed a significant negative association with sensation avoiding, but not other aspects of effective or non-effective sensory hypersensitivity. Conclusion and Implications: Within the normal population, a greater degree of ASD traits is associated with a lower likelihood of multisensory integration; echoing was often found in individuals with a clinical diagnosis of ASD, and providing further evidence for the dimensional nature of this disorder. This tendency appears to be associated with dysphoric emotional reactions to sensory input.

**Keywords :** Autism Spectrum Disorder, dimensional, multisensory integration, size-weight illusion

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