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Diagnostic, developmental, and health effects on parasympathetic regulation and reactivity in youth with autism spectrum disorder

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Increasing evidence suggests individuals with autism spectrum disorder (ASD) demonstrate atypical autonomic regulation; however, research remains inconsistent. The current study examined parasympathetic regulation and response (respiratory sinus arrhythmia; RSA) to the Trier Social Stress Test (TSST), a social evaluative threat paradigm, in a large, well-characterized sample of youth, ages 10-13 years, with ASD (n=138) or typical development (TD; n=103). Linear mixed effects models examined the effects of baseline RSA, time, age, sex, pubertal stage, BMI, and diagnosis. Diagnosis, age, pubertal development, and body mass index (BMI) were hypothesized to be associated with ANS function. A base model with no covariates demonstrated youth with ASD had significantly lower RSA on average relative to those with TD. When including covariates, elevated BMI was associated with decreased parasympathetic regulation and the strength of the diagnosis effect was reduced. As lower parasympathetic regulation may increase susceptibility for a number of conditions, such as anxiety or depression, it will be important to further elucidate the link between BMI and the ANS, especially in ASD. Findings further emphasize the need to account for relevant covariates when examining autonomic response in ASD, as these related variables may be contributing to noted inconsistencies in the literature.

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