Title: Sensory Hyperresponsivity Predicts Future Communication and Social Skill in Infants at Risk for Autism Spectrum Disorder


Introduction: Individuals with autism spectrum disorder (ASD) often show atypical responses to sensory stimuli, even as early as infancy. A pattern of hyperresponsiveness (exaggerated responding to sensory stimuli) is commonly observed in children with ASD. It has been proposed that hyperresponsiveness, especially early in life, may produce cascading effects on broader development in individuals affected by ASD. Past work has shown that other patterns of sensory responsiveness (i.e., hyporesponsiveness and sensory seeking) predict social and communication outcomes in children who are diagnosed with ASD and in infants at high risk for the disorder. However, to date no study has evaluated the extent to which early hyperresponsiveness may be useful for predicting developmental outcomes in children affected ASD. A primary obstacle to this work is our inability to diagnose ASD reliably in the earliest stages of development, especially in infancy. One way to overcome this challenge is to prospectively study infants who are known to be at heightened risk for ASD, such as infant siblings of children diagnosed with ASD (Sibs-ASD). This project specifically sought to determine (a) whether Sibs-ASD differed from infants at relatively lower risk for ASD (Sibs-TD; infants with a typically developing older sibling/s) in early sensory hyperresponsivity and (b) whether early hyperresponsivity predicted future social and/or communication skill.

Method: Sensory hyperresponsiveness of 28 Sibs-ASD, as well as 21 Sibs-TD was assessed at 18 months using the Sensory Experiences Questionnaire. Hyperresponsiveness scores were log10 transformed to correct for a positive skew that was present. Future social and communication ability was assessed 6 months later, when infants were 24 months of age, using the Vineland Adaptive Behavior Scales 2 (VABS-2). An independent samples t-test was used to evaluate mean differences in early hyperresponsivity between Sibs-ASD and Sibs-TD. A series of multiple regression analyses were carried out to examine predictive associations between early hyperresponsivity and future social and communication ability.

Results: Risk groups did not significantly differ in mean sensory hyperresponsivity at 18 months ($p = .45; d = 0.22$). Hyperresponsivity at 18 months, however, was predictive of overall communication and socialization at 24 months (zero-order correlations = -0.33 and -0.34, respectively). Analyses for subscales comprising communication and socialization scores revealed that predictive validity for hyperresponsiveness was strongest for future receptive communication and play skill (zero-order correlations = -0.53 and -0.48, respectively). None of the aforementioned associations varied according to risk group ($p$ values for risk group*predictor product terms in multiple regression models testing moderated effects all > .05).

Discussion: Results provide increased empirical support for the proposal that early sensory differences may produce cascading effects on higher-level abilities, such as communication and social skill, in children diagnosed with, or at high risk for, ASD. Past work suggests that hyperresponsivity may be less useful for predicting ASD and related symptomatology in older children who are diagnosed with ASD. The present findings suggest that this pattern of sensory responsiveness may have greater validity or clinical utility for predicting future developmental deficits in the earlier stages of development. Implications for practice and needs for future research will be discussed.
References/Citations:


