Title: Autism Spectrum Symptomology in Very Preterm Preschoolers

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Introduction: Very preterm (VPT) children (gestational age <32 weeks) have higher rates of autism spectrum disorder (ASD) than full term (FT) children (Joseph, O’Shea, Allred, Heeren, Hirtz, Paneth, Leviton, Kuban, 2017). Previous studies have found elevated symptoms of ASD in VPT children relative to FT controls using parent ratings such as the Social Communication Questionnaire (SCQ) (Johnson, Hollis, Kochhar, Hennessy, Wolke, & Marlow, 2010). However, we know little about the implications of these symptoms for children’s cognitive and behavioral functioning. The aims of this study were to 1) examine the difference between a group of VPT pre-schoolers and FT controls in symptoms of ASD as assessed by the SCQ, and 2) explore associations of these symptoms with measures of behavior, emotion regulation, and cognition.

Method: Parents of 92 four-year-old children (47 VPT and 45 FT) completed the Social Communication Questionnaire (SCQ) to evaluate ASD symptomology. Parents also completed measures of child behavior and emotional dysregulation, including the Conners Early Childhood, Behavior Rating Inventory of Executive Function – Preschool Version (BRIEF-P), and Emotion Regulation Checklist (ERC). The Differential Ability Scales-II (DAS-II) was administered to assess children’s cognitive abilities. Analyses were run with and without the 4 participants in the sample who had an ASD diagnosis (3 VPT and 1 FT). We examined group differences in the SCQ using analysis of variance, controlling for social risk using a previously published composite social risk score (Treyvaud, Anderson, Howard, Bear, Hunt, Doyle, Inder, Woodward, Anderson, 2009). Correlations controlling for group and social risk explored associations of ASD symptoms with parent ratings of behavioral and emotional characteristics and cognitive test scores.

Results: VPT children had significantly more symptoms of ASD as measured by the SCQ than the FT children after controlling for social risk, \( M (SD) = 5.94 (4.45) \) for VPT group vs. 3.58 (2.29) for FT group, \( F(1,89) = 6.71, p = .01 \). VPT children also had higher levels of difficulty on measures of behavior \( (F(1,89) = 8.18, p = .005) \) and cognition \( (F(1,87) = 32.84, p < .001) \). These differences in ASD symptoms, behavior, and cognition were still evident when children with ASD were excluded. In the larger sample, more symptoms of ASD were associated with more behavioral and emotional problems \( (rs = -.24 to -.33, ps < .03) \). In the sample that excluded those with ASD, the patterns of the associations were similar but nonverbal cognition became marginally significant \( (p = .07) \).

Discussion: The findings reveal that young VPT children display more symptoms of ASD compared to FT children. Although SCQ score elevations in VPT children are largely at sub-clinical levels, they are highly associated with other behavioral and emotional problems and cognitive weaknesses. These findings were also evident when excluding the 4 participants who had an ASD diagnosis. Even for VPT children without an ASD diagnosis, higher elevations of autism symptomology are associated with emotional, behavioral and cognitive difficulties. Compared to FT children, VPT children, many of whom do not have a neurodevelopmental diagnosis, exhibit deficits typically associated with neurodevelopmental disorders. Findings indicate that VPT children with more symptoms of ASD, even if not diagnosed with ASD, may benefit from an approach to intervention that targets a wide spectrum of behavioral and cognitive weaknesses.

References:


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