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Polygenic liability for ADHD but not ASD relates to infant temperament

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ABSTRACT:

Temperament in early life can be conceptualised as variability in activity, affectivity, attention, and self-regulation, and is linked to neurobiological systems and later psychopathology. Here, we investigate whether individual differences and developmental trajectories of temperament are an early behavioral manifestation of polygenic liability for autism spectrum disorder (ASD) and ADHD in infants with and without a family history of ASD. Polygenic scores for ASD and ADHD were calculated using PRSice-2 for 236 infants of European ancestry with (FH, n=172) and without (noFH, n=64) a family history of ASD enrolled in a prospective longitudinal study (BASIS). Parent-reported temperament was obtained longitudinally from 10 to 36 months using age-appropriate questionnaires (Infant Behavior Questionnaire-Revised; Early Childhood Behavior Questionnaire; Children's Behavior Questionnaire). Diagnostic assessment for ASD was performed at 36 months. We examined the association between 1) temperament and ASD 2) PGS_{ASD} and PGS_{ADHD} and the domains of surgency, negative affect and effortful control at 36 months, and 3) longitudinal trajectories of temperament domains. The examined temperament domains differed between infants with and without ASD (all p<0.05). Higher PGS_{ADHD} (P_T=0.01), but not PGS_{ASD}, was associated with higher negative affect ($\beta=0.17$, SE=0.06, p=0.004), and lower effortful control ($\beta=-0.13$, SE=0.05, p=0.014) at 36 months. Trajectory analyses show distinct profiles of temperament that will be linked to PGS_{ADHD} in further analysis. Our emerging findings support research linking early temperament with later ASD and indicates negative emotionality and effortful control in infants with a family history of neurodevelopmental disorders relates to ADHD (but not ASD) genetic liability.

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