

Early developmental pathways to childhood symptoms of attention-deficit hyperactivity disorder, anxiety and autism spectrum disorder

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Abstract

BACKGROUND:

Children with autism spectrum disorder (ASD) often have co-occurring symptoms of attention-deficit/hyperactivity disorder (ADHD) and/or anxiety. It is unclear whether these disorders arise from shared or distinct developmental pathways. We explored this question by testing the specificity of early-life (infant and toddler) predictors of mid-childhood ADHD and anxiety symptoms compared to ASD symptoms.

METHODS:

Infants (n = 104) at high and low familial risk for ASD took part in research assessments at 7, 14, 24 and 38 months, and 7 years of age. Symptoms of ASD, ADHD and anxiety were measured by parent report at age 7. Activity levels and inhibitory control, also measured by parent report, in infancy and toddlerhood were used as early-life predictors of ADHD symptoms. Fearfulness and shyness measured in infancy and toddlerhood were used as early-life predictors of anxiety symptoms. Correlations and path analysis models tested associations between early-life predictors and mid-childhood ADHD and anxiety symptoms compared to mid-childhood ASD symptoms, and the influence of controlling for ASD symptoms on those associations.

RESULTS:

Increased activity levels and poor inhibitory control were correlated with ADHD symptoms and not ASD or anxiety; these associations were unchanged in path models controlling for risk-group and ASD symptoms. Increased fearfulness and shyness were correlated with anxiety symptoms, but also ASD symptoms. When controlling for risk-group in path analysis, the association between shyness and anxiety became nonsignificant, and when further controlling for ASD symptoms the association between fearfulness and anxiety became marginal.

CONCLUSIONS:

The specificity of early-life predictors to ADHD symptoms suggests early developmental pathways to ADHD might be distinct from ASD. The overlap in early-life predictors of anxiety and ASD suggests that these disorders are difficult to differentiate early in life, which could reflect the presence of common developmental pathways or convergence in early behavioural manifestations of these disorders.