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Household chaos and childhood ADHD symptoms: a gene–environment correlation study

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ABSTRACT:

Environmental risk factors associated with ADHD include prenatal maternal smoking and aspects of the home environment (e.g. chaotic household). However, such risk factors may be more likely to occur when parents have higher genetic risk for ADHD. This study investigates gene-environment correlation (rGE) by assessing the association between maternal ADHD genetic risk and household chaos, and by examining joint effects of household chaos and ADHD genetic risk on level and longitudinal change in ADHD symptoms across childhood. Participants were from the Environmental Risk (E-Risk) Longitudinal Twin Study, a population-based birth cohort of 2,232 twins. ADHD was assessed at ages 5, 7, 10, and 12. Household chaos was rated by research workers at ages 7, 10 and 12, and by moms and children at age 12. Sensitivity analysis to estimate the extent of rGE was assessed using *GSens*. Research-worker-reported household chaos was significantly predicted by maternal ADHD PRS. Maternal ADHD PRS was also significantly associated with baseline levels of offspring ADHD symptoms, but not with change in symptoms over time. Household chaos was significantly associated with baseline ADHD symptoms and with a slower rate of improvement in symptoms from childhood to adolescence. We found evidence of passive and active rGE via associations between mother's and offspring's ADHD PRS and household chaos. Children with high levels of both ADHD genetic risk and household chaos had the most elevated course of ADHD symptoms from early childhood to adolescence compared to those with either high genetic or environment risk alone.

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