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Dynamic Growth of ADHD Symptoms in Youth: Estimating Variance Components of Latent Growth Factors and their Associations with Genetic Liabilities to Substance Use and Abuse

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Attention-deficit/hyperactivity disorder (ADHD) is a neurodevelopmental disorder that affects a significant number of children and adolescents. It is also associated with drug use and initiation. Understanding the trajectory of ADHD symptoms over time and the impact of genetic liability to substance use/abuse is crucial for effective intervention and treatment strategies. The purpose of this study was to estimate the variance components of latent growth curve factors in the dynamic growth of ADHD symptoms in youth and their associations with Polygenic Risk Scores (PRS) of substance use and abuse.

Data for this study were obtained from the Adolescent Brain Cognitive Development (ABCD) Study ®, collected at multiple time points from baseline to wave 5. ADHD symptoms were assessed using standardized measures, and latent growth curve modelling was employed to estimate the trajectory of ADHD symptoms over time. PRS for substance use or dependency for several substances (including alcohol, cannabis, and opioids) were computed using publicly available Genome-Wide Association Study summary statistics.

The variance components analysis revealed that both genetic and environmental factors contribute to the dynamic growth of ADHD symptoms. We include PRS in the latent growth analysis to assess the impact of genetic liability to substance use/abuse on ADHD symptomatology.

These findings highlight the importance of considering both genetic and environmental factors in understanding the trajectory of ADHD symptoms in youth. The identification of specific genetic and environmental influences on ADHD symptom development can inform the development of targeted interventions, risk stratification, and prevention strategies.