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Longitudinal Bidirectional Effects Between ADHD and Educational Performance in the ABCD Study

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Attention-Deficit/Hyperactivity Disorder (ADHD) is a prevalent neurodevelopmental disorder with significant implications for educational performance. Previous research has established a bidirectional relationship between ADHD symptoms and academic outcomes, but the underlying mechanisms remain poorly understood. This study employs a novel Random Intercept Cross-Lagged Panel Model (RI-CLPM) incorporating instrumental variables and innovation terms to elucidate the longitudinal bidirectional effects between ADHD and educational performance. Using the longitudinal ABCD study data, we examine the reciprocal influences between ADHD symptoms and academic achievement across multiple time points. Innovation terms captured occasion-specific random effects in order to account for the effect of the pandemic. Our findings reveal significant within-wave bidirectional effects, with ADHD symptoms negatively impacting academic performance, and poor academic outcomes exacerbating ADHD symptoms. These results underscore the need for integrated interventions targeting both ADHD symptoms and academic support. The implications for clinical practice and educational policy are discussed, highlighting the importance of early identification and comprehensive treatment strategies. This study contributes to the existing literature by providing robust evidence of the dynamic interplay between ADHD and educational performance.