

Childhood Predictors of Adolescent Substance Use in a Longitudinal Study of Children With ADHD

Brooke S. G. Molina
Western Psychiatric Institute and Clinic and
University of Pittsburgh School of Medicine

William E. Pelham, Jr.
State University of New York at Buffalo

Children diagnosed with attention-deficit/hyperactivity disorder (ADHD; $n = 142$) were prospectively monitored into adolescence (17–18 years old) to evaluate their risk for elevated substance use relative to same-aged adolescents without ADHD ($n = 100$). Probands reported higher levels of alcohol, tobacco, and illicit drug use than did controls. Group differences were apparent for alcohol symptom scores but not for alcohol or marijuana disorder diagnoses. Within probands, severity of childhood inattention symptoms predicted multiple substance use outcomes; childhood oppositional defiant disorder/conduct disorder (ODD/CD) symptoms predicted illicit drug use and CD symptoms. Persistence of ADHD and adolescent CD were each associated with elevated substance use behaviors relative to controls. Further study of the mediating mechanisms that explain risk for early substance use and abuse in children with ADHD is warranted.

Attention-deficit/hyperactivity disorder (ADHD) is one of the most commonly diagnosed mental health disorders of childhood, occurring in 3% to 5% of school-age children (Barkley, 1998). In recent years, a focus on risk for substance use and substance use disorder (SUD) in this population has become a matter of public and scientific debate (National Institutes of Health, 2000). Well-known longitudinal studies of children with ADHD have examined rates of substance use and SUD by adolescence (e.g., Barkley, Fischer, Edelbrock, & Smallish, 1990; Biederman et al., 1997; Claude & Firestone, 1995; Gittelman, Mannuzza, Shenker, & Bonaguidi, 1985; Hartsough & Lambert, 1987; Loney, Kramer, & Milich, 1981; Mannuzza et al., 1991; Milberger, Biederman, Faraone, Chen, & Jones, 1997). These studies represent important initial efforts toward understanding risk for early substance use and SUD in this population, but more research is needed to explain

discrepant findings. For example, in the Milwaukee study of 123 adolescents with childhood hyperactivity, statistically significant group differences were found for cigarettes, alcohol, and marijuana, but Bonferroni corrections relegated two findings to statistical nonsignificance (Barkley et al., 1990). In the Berkeley sample of 54 adolescents with pervasive hyperactivity, Hartsough and Lambert (1987) reported group differences for cigarette use but not for alcohol or for other nonalcohol drugs. In the Boston study of 128 adolescents with childhood ADHD, SUDs were not significantly higher in the proband group (Biederman et al., 1997), but in the New York study of 101 adolescents with childhood hyperactivity, higher rates of drug (but not alcohol) dependence were found (Gittelman et al., 1985). On the surface, these discrepancies are puzzling. However, when the average age of the adolescents is considered, as well as the manner in which substance use/SUD was assessed, a need for further study becomes evident.

Most of the longitudinal research on childhood ADHD and later substance use/SUD has been conducted secondary to the initial goal of studying the long-term course of ADHD. Consequently, the detailed substance use assessment that is common in longitudinal studies of childhood ADHD. The result may be missed group differences in substance use behaviors prognostic of later abuse or dependence. Several methodological limitations have been noted in existing studies. First, diagnosing substance abuse or dependence in adolescence when rates of disorder have not yet reached their peak can miss emerging problems (e.g., Biederman et al., 1997; Gittelman et al., 1985; Mannuzza et al., 1991) that may be more appropriately measured as continuous variables. Second, for substances widely experimented with in adolescence (e.g., alcohol, cigarettes, marijuana), analysis of frequency or quantity of use, including heavy use, rather than any use over the lifetime or dependence, is more important and relevant toward development of later problematic use. Finally, age of first substance use is also a well-established predictor of later problematic substance use (Grant & Dawson, 1997; Robins & Przybeck, 1985) that has not

Brooke S. G. Molina, Western Psychiatric Institute and Clinic and Departments of Psychiatry and Psychology, University of Pittsburgh School of Medicine; William E. Pelham, Jr., Department of Psychology, State University of New York at Buffalo.

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Correspondence concerning this article should be addressed to Brooke S. G. Molina, Western Psychiatric Institute and Clinic, 3811 O'Hara Street, Pittsburgh, Pennsylvania 15261. E-mail: molinab@msx.upmc.edu