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Exposure to childhood neglect and physical abuse and developmental trajectories of heavy episodic drinking from early adolescence into young adulthood☆

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ABSTRACT

Background: Although the literature suggests that childhood maltreatment (CM) relates to adolescent heavy episodic drinking (HED), few studies have examined the long-term effects of CM on adolescent HED. This study is the first to examine associations between exposure to CM and trajectories of HED from adolescence to young adulthood for the US population.
Methods: Four waves of data from the National Longitudinal Study of Adolescent Health were used. A total of 8503 adolescents followed from adolescence (7th–12th grades) into young adulthood (ages 24–32) were assessed on CM and past-year HED frequency. Using growth curve modeling, trajectories of adolescent HED were examined, with subtype, frequency, and severity of CM as the primary independent variables. All of our analyses controlled for common risk factors for adolescent HED, including demographics, parental and peer alcohol use, parental education and employment, family income, parent–child relationship, and adolescent depression.
Results: After controlling for potential risk factors, neglect and physical abuse, both individually and in conjunction, were associated with faster increases in HED during adolescence and persistently elevated HED over much of adolescence and young adulthood. The frequency of neglect and physical abuse, individually and in conjunction, was also associated with the trajectory of HED, such that additional instances of these types of maltreatment were associated with faster increases in HED during adolescence and higher rates of peak use during young adulthood.
Conclusion: Child neglect and physical abuse appear to have long-lasting adverse effects on HED beyond adolescence and throughout much of young adulthood.

1. Introduction

Excessive alcohol use such as heavy episodic drinking (HED) is one of the top three preventable causes of death and responsible for more than 79,000 deaths in the U.S. each year (CDC, 2004; Lopez et al., 2006; Mokdad et al., 2004). HED, often defined as drinking five or more drinks in a row for males and four or more drinks in a row for females on one or more occasion, is particularly prevalent and even normative during adolescence and young adulthood. According to the 2009 National Survey on Drug Use and Health (NSDUH), rates of past-month HED were 8.8% for 12–17 year olds and 34% for 18–20 year olds, with peak rates of 46.5% during emerging adulthood (ages 21–25; Substance Abuse and Mental Health Services Administration, 2010). Furthermore, it appears that many young people do not perceive HED as risky or unhealthy. Nearly half of adolescents (ages 12–17; 40.5%) in the 2009 NSDUH reported positive perceptions about daily HED, indicating that they do not consider heavy daily drinking a great risk to their health.

HED in adolescence is enormously concerning because in this critical developmental period, it can interfere with the achievement of key developmental tasks such as forming an identity and preparing for a career (Berk, 2007; Schulenberg and Maggs, 2002). Numerous studies examining the longitudinal course of HED have reported two notable findings. First, HED is a developmental phenomenon, with first HED usually occurring between ages 14 and 18, peaking in emerging adulthood, and declining thereafter (Chassin et al., 2002; Johnston et al., 2009). Second, although a majority of young people moderate or "mature out" of HED beyond emerging adulthood, many individuals continue to drink heavily into adulthood (Jacob et al., 2005; Schulenberg et al., 1996; Windle et al., 2005). The literature reports that about 20–34% of young people remained stable in their HED involvement during young adulthood. This suggests that not all young adults mature out of HED, and that

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some young adults persistently engage in HED or progress to a more severe pattern of HED during young adulthood (Schulenberg et al., 1996).

Since adolescent HED is a major public health problem, a substantial body of literature has been devoted to identifying correlates and predictors of HED in adolescence, suggesting a variety of determinants, ranging from genetic and neurobiological to psychological, environmental, and cultural factors (Begleiter and Porjesz, 1999; Brown et al., 2008; Enoch, 2006; Masten et al., 2009; Zucker et al., 2006). An emerging body of research suggests a strong association between childhood maltreatment (CM) and adolescent HED (Dube et al., 2006; Nelson et al., 2002). CM manifests in multiple forms, including neglect, physical abuse, and sexual abuse (Cicchetti and Valentino, 2006). Although current evidence is not sufficient to support a causal relationship (Schuck and Widom, 2001), many studies have shown cross-sectional relationships between various forms of CM and hazardous drinking among young individuals in the public service systems (Vaughn et al., 2007; Widom and White, 1997), treatment (Clark et al., 2003; Dube et al., 2006), and community samples (Hamburger et al., 2008; Kendler et al., 2000; Molnar et al., 2001). For example, using a nationally representative sample of adolescents ($n = 5513$; grades 7–12), Diaz et al. found that exposure to physical abuse was associated with a 3.25-fold increase in the relative risk of adolescent drinking (Diaz et al., 2002). In addition, using a sample of 842 young adults (ages 18–24) in the National Youth Survey, Lo et al. found that physical abuse was associated with about a 30% increase in the relative risk of HED in young adulthood (Lo and Cheng, 2007). Furthermore, in a retrospective study of 8417 adult health maintenance organization (HMO) members, Dube and colleagues found that neglected children were more likely to engage in early onset alcohol use and adolescent HED (Dube et al., 2006). Although these findings are relatively consistent in portraying maltreated children a population for engaging in early-onset HED or higher levels of HED during adolescence and young adulthood, most previous research has been based on cross-sectional data. The nature of these findings and the typical developmental trajectory of HED suggest the need to examine the effects of CM on the longitudinal course of adolescent and young adult HED, as CM might be a significant factor in predicting continuing HED beyond adolescence.

Previous research has also been limited in that it has not comprehensively investigated the relationship between the various types of CM and HED. There is substantial variation in exposure to various types and combination of types of CM. The literature reports that less than a quarter of maltreated children experience single types of maltreatment whereas 22–55% of victimized children have been abused in multiple ways (Banyard, 1999; McCauley et al., 1997). In our recent cross-sectional study of 12,748 adolescents (ages 13–21), we found that those who reported experiencing both child neglect and physical abuse showed 1.33 times higher odds of reporting alcohol misuse and HED in adolescence than those who reported only a single type of maltreatment and those who did not report any CM (Shin et al., 2009a). Given that risk factors are likely to cluster in the same individuals (Masten and Coatsworth, 1998), separately considering the types of maltreatment experienced by a child may help researchers address the totality of a child's maltreatment experience and its influence on HED trajectories.

Furthermore, although previous research has typically treated CM as a dichotomous variable (i.e., presence or absence) or a single type of CM (e.g., physical abuse vs. no maltreatment), some studies also suggest that the frequency and severity of CM may be equally important in understanding the effect of CM on adolescent HED (Litrownik et al., 2005; Manly et al., 1994; Shin et al., 2009a). Although no previous studies have directly examined whether frequency and severity of CM affect adolescent HED trajectories, previous research has shown that the frequency and severity of CM are related differentially to high-risk behaviors including aggression, emotional and behavioral problems, and trauma-related anger, which are known risk factors for adolescent HED (English et al., 2005b; Litrownik et al., 2005; Manly et al., 1994). Using retrospective reports of CM from 17,337 adult HMO members, the Adverse Childhood Experiences (ACEs) Study also found that those who experienced a greater number of ACEs were more likely to initiate alcohol use in early adolescence than their counterparts (Dube et al., 2006).

Given the limitations of previous research on CM and HED, the present study examined the effects of CM on the longitudinal course of adolescent HED using a large, nationally representative sample. Furthermore, we included characteristics of CM including subtype, frequency, and severity in the prediction of initiation of HED and trajectory of HED over time. In addition, taking advantage of our rich, longitudinal data source, we controlled for several common risk factors that have well-established relationships with adolescent HED, which allowed for a more stringent evaluation of the role of CM in predicting HED trajectories. Given previous research, we hypothesize that maltreated children will be more likely to have higher levels of initial HED and a faster rate of HED. In addition, we expect that children who reported experiencing more persistent or severe CM will have a steeper increase in HED during adolescence and young adulthood.

2. Method

2.1. Participants

Data were drawn from the National Longitudinal Study of Adolescent Health (AddHealth). AddHealth is a national longitudinal study of adolescents (grades 7–12) in the U.S., which used a multistage, stratified, school-based, cluster sampling design of 132 high schools and corresponding feeder middle schools. The first component of the AddHealth was an in-school questionnaire administered to 90,000 seventh through twelfth grade students. Then, 200 students were randomly selected from each high school-middle school pair to participate in an in-home interview. Institutional review board (IRB) approval and informed consent were obtained before data collection. The baseline in-home interview data were collected in 1995 with 20,745 adolescents. Of these adolescents, 88% were interviewed in 1996 and 73% in 2002. Finally, of 15,197 Wave 3 respondents, 80% ($n = 12,157$) were interviewed in 2008. Incorporating up to four waves of data for each adolescent, we analyzed a panel containing 31,073 observations (on average each person contributed 3.7 out of 4 waves of data) based on 8503 respondents (53% girls). The racial/ethnic composition of our sample was as follows: 58% Caucasian, 18% African American, 15% Latino, and 9% Other.

2.2. Measures

2.2.1. Primary outcome. Adolescent HED was assessed at every wave using a hierarchical structure. Participants were first asked how many days (0 'never', 1 '1–2 days', 2 'once a month or less', 3 '2–3 days a month', 4 '1–2 days a week', 5 '3–5 days a week', 6 'every day or almost every day') they drank alcohol in the past 12 months. Those indicating they drank alcohol at least one day in the past 12 months were then asked how many days they drank five or more drinks in a row in the past 12 months using the same scale.

2.2.2. Main predictors. CM was assessed at Wave 3 using respondents' report of abuse or neglect by their parents or other responsible adults who lived with them before they were 6th graders. A computer-assisted self-interviewing (CASI) method, which typically increases reliability in reporting sensitive behaviors such as CM (Turner et al., 1998), was used to assess three CM types. These types included: (1) sexual abuse—"by the time you started 6th grade, how often had one of your parents or other adult caregivers touched you in a sexual way, forced you to touch him or her in a sexual way, or forced you to have sexual relations?"; (2) physical abuse—"how often had he/she slapped, hit, or kicked you?"; and (3) neglect—"how often had he/she not taken care of your basic needs, such as keeping you clean or providing food or clothing or how often had he/she left you home alone when an adult should have been with you?" Our published paper found these retrospective reports to have strong predictive validity (Shin et al., 2009b). Consistent with our previous work (Shin et al., 2009a,b; Shin and Miller, 2012), using responses to these questions, we created a set of mutually exclusive and exhaustive dichotomous variables (1 one or more time, 0 never): no maltreatment; neglect-only; physical-abuse-only; sexual abuse only or in combination with either neglect or physical abuse; neglect and physical abuse; and neglect, physical abuse, and sexual abuse. Although we would have preferred to use an indicator for sexual abuse only, small sample sizes required