



Published in final edited form as:

*Addict Behav.* 2009 March ; 34(3): 277–280. doi:10.1016/j.addbeh.2008.10.023.

## Child abuse and neglect: Relations to adolescent binge drinking in the National Longitudinal Study of Adolescent Health (AddHealth) Study

**Sunny Hyucksun Shin, MSW, Ph.D.,**

*Assistant Professor, Boston University School of Social Work*

**Erika M. Edwards, MPH, and**

*Project Manager, Boston University Data Coordinating Center*

**Timothy Heeren, Ph.D.**

*Professor, Boston University School of Public Health*

### Abstract

The purpose of this study was to examine the relationship between child maltreatment and adolescent binge drinking. Given that many victimized children have been maltreated in multiple ways, we examine the effects of co-occurrence of multiple types of maltreatment on adolescent binge drinking. We used the National Longitudinal Study of Adolescent Health (AddHealth), which included a nationally representative sample of adolescents ( $n = 12,748$ ). Adolescent binge drinking was defined as five or more drinks in a row at least 2–3 times per month in the past year. Among those reporting any maltreatment, 12.4% reported binge drinking compared to 9.9% among those reporting no maltreatment. Logistic regression models found that child maltreatment is a robust risk factor for adolescent binge drinking controlling for parental alcoholism. In particular, all types of or combinations of types of maltreatment were strongly associated with adolescent binge drinking, controlling for age, gender, race, parental alcoholism and monitoring. Research examining the effect of childhood maltreatment on later alcohol abuse needs to recognize the clustering effects of multiple types of childhood maltreatment on alcohol problems.

### 1. Introduction

Adolescent binge drinking, typically defined as the consumption of five or more alcoholic drinks on a single occasion at least once every 2 weeks (Johnston et al., 2002), is a major public health problem. The National Survey on Drug Use and Health (SAMHSA, 2007) found that among the 10.8 million underage drinkers aged 12 to 20 in 2005, nearly one-fifth (18.8%) were binge drinkers with more males (21.3%) than females (16.1%) reporting participated in heavy episodic drinking in the past 12 months. Not only is adolescent binge drinking prevalent, but excessive consumption of alcohol by adolescents has been associated with a host of immediate and long-term adverse outcomes including obesity and high blood pressure (Oesterle et al., 2004), neurobehavioral and cognitive symptoms (e.g., headaches, difficulty concentrating, trouble remembering, trouble learning; Brook, Finch, Whiteman, & Brook, 2002; Scheier &

---

Correspondence: Sunny Hyucksun Shin, 264 Bay State Road, Boston University, School of Social Work, Boston, MA 02215, Telephone: 617-353-7912, Fax: 617-353-5612, Email: hshin@bu.edu.

**Publisher's Disclaimer:** This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Botvin, 1995), unwanted and unprotected sexual activity (Fergusson & Lynskey, 1996; Smart, 1996; Thakker, 1998), unsafe driving practices and motor vehicle crashes (Copeland, Shope, & Waller, 1996; Oesterle et al., 2004; Zakrajsek & Shope, 2007), poor academic attainment (Hill et al., 2000), and adult alcohol disorder (Schulenberg, 1996).

Since adolescent binge drinking occurs in an extraordinary period when adolescents experience dramatic changes in their bodies, affects, and social environment, a successful examination of adolescent binge drinking must take into account not only excessive drinking itself but its developmental contexts. The first Call to Action against youth alcohol problems made by the Surgeon General stressed that if underage drinking is to be reduced and prevented, it must be understood in its developmental contexts including individual, family, and environmental influences (US DHHS, 2007). Understanding the effects of adverse childhood experiences such as child abuse and neglect on adolescent binge drinking is one example.

Childhood maltreatment has been linked to alcohol abuse and dependence among an adult population (Anda et al., 2002; Dube et al., 2002). In adult literature, a relatively large body of studies has reported that child maltreatment increases an individual's risk for alcohol abuse, although current evidence is not sufficient to support this relationship among male adults who had been victims of childhood maltreatment (Dube et al., 2005; Widom & Hiller-Sturmhofel, 2001). However, few studies have examined the effect of childhood victimization on adolescent binge drinking. Examination of this association is important for understanding the common pattern of alcohol consumption among adolescents with child abuse and neglect. In addition, although researchers and practitioners have long been aware of the co-occurrence of different types of maltreatment on an individual (Banyard, 1999; Bensley et al., 1999; Felitti et al., 1998; McCauley et al., 1997; McGee et al., 1995; Rorty et al., 1994), researchers have rarely examined the joint effect of the co-occurrence of multiple categories of maltreatment on adolescent binge drinking.

Using a nationally representative community sample of adolescents, the current study examines the relations between multiple forms of childhood maltreatment and adolescent binge drinking. The present study will contribute to knowledge about: (1) whether childhood maltreatment is a risk factor for adolescent binge drinking; and (2) how the co-occurrence of multiple categories of maltreatment influences heavy episodic drinking in adolescence.

## 2. Methods

### 2.1. Participants

The Add Health is a national longitudinal study that explored the influence of social environment on health in adolescence (grades 7 through 12). The first wave of data collection was conducted in 1995 with 20,745 adolescents completing in-home interviews (79% response rate). Of these 20,745 adolescents, 18,255 (88%) were interviewed at Wave II in 1996, and 15,197 (73%) were interviewed at Wave III in 2002. The present study uses the 12,748 respondents who were interviewed at all three waves and have a Wave III sampling weight.

### 2.2. Measures

**2.2.1. Binge drinking**—Respondents were asked, “During the past 12 months, on how many days did you drink five or more drinks in a row?” Adolescent binge drinking was defined as consuming five or more drinks in a row at least 2–3 times per month in the past year at Wave I. The reference category included those who drank less frequently or had never consumed a drink of alcohol in their lives (non-binge drinkers).

**2.2.2. Predictor measures**—Three measures of childhood maltreatment are from the Wave III interview. The Add Health used a computer-assisted self-interviewing (CASI) method in all maltreatment questions in order to reflect their sensitive nature. The questions include: (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 slapped, hit, or kicked you?”; and (3) neglect—“how often had not taken care of your basic needs, such as keeping you clean or providing food or clothing or how often had left you home alone when an adult should have been with you?”. All three childhood maltreatment responses were dichotomized (1 for one or more times, 0 for never). These responses were combined into a eight-category variable measuring maltreatment, categorized as: no maltreatment, neglect only, physical abuse only, sexual abuse only, neglect and physical abuse, neglect and sexual abuse, physical abuse and sexual abuse, and all three types. No maltreatment is the reference category.

The present study also included socio-demographic characteristics such age, gender, race/ethnicity, parental education and occupation, and family income, which are known to have influence on adolescent binge drinking. Parental alcoholism was examined by responses to whether the biological mother or biological father “has alcoholism,” and was dichotomized into “yes, at least one biological parent has alcoholism” and “neither parent has alcoholism.” Parental monitoring, measured by whether parents work outside the home or not, was used. Parental alcoholism, education and income were based on parental respondent, not child self-report.

### 2.3. Data analysis

Using chi-square tests, we compared responses to the predictor variables to having experienced any maltreatment versus no maltreatment. Then, we conducted logistic regression analysis to examine the relationship between the six-category maltreatment variable (from the eight-category maltreatment variable, sexual abuse only, sexual and physical abuse, and sexual abuse and neglect were collapsed into one variable because of the small sample size) and adolescent binge drinking, controlling for age at Wave I, gender, race/ethnicity, parental alcoholism, parental education, income, and working outside the home. Parental education and income were excluded from the final model because they are not significantly associated with binge drinking at  $p < 0.20$ . SUDAAN was used for all analyses that were weighted using the grand sampling weight for longitudinal analyses.

## 3. Results

### 3.1. Prevalence of adolescent binge drinking

Table 1 shows the sample characteristics and prevalence of binge drinking. Slightly over one-tenth (11%) consumed five or more drinks in a row at least 2–3 times per month. Adolescents who had been maltreated in childhood were more likely to report binge drinking (12.4%) than those who had not been maltreated (9.9%).

### 3.2. Childhood maltreatment and adolescent binge drinking

First, using logistic regression analysis, the association between exposure to any maltreatment and adolescent binge drinking was examined, controlling for sociodemographic characteristics, parental alcoholism, and parental monitoring. Exposure to any maltreatment was associated with a 1.33-fold (OR 95% CI: 1.13–1.57,  $p < .05$ ) increase in risk for adolescent binge drinking. In addition, using logistic regression analysis, table 2 shows the association between single types of maltreatment and adolescent binge drinking whereas Table 3 shows the relationship between the co-occurrence of multiple categories of maltreatment and adolescent binge drinking, controlling for the same demographic and psychosocial factors. When the traditional

maltreatment classification was used (i.e. an individual is classified as ever experiencing one type of maltreatment), maltreatment was not associated with adolescent binge drinking. However, when the co-occurrence of multiple categories of maltreatment was considered, and maltreatment was classified into six categories, all types or combinations of types of maltreatment were associated with adolescent binge drinking, controlling for age, gender, race, parental alcoholism, and parental monitoring. For example, adolescents with neglect-only had 1.2 times higher odds of reporting binge drinking than those with no maltreatment. Compared to adolescents with no maltreatment, adolescents with sexual abuse had more than 2-fold greater odds of reporting binge drinking. Furthermore, adolescents who had experienced both neglect and physical abuse had 1.3 times higher odds of reporting binge drinking than adolescent with no maltreatment. Finally, compared to adolescents with no maltreatment experiences, adolescents who experienced all types of maltreatment were about 1.8 times more likely to report binge drinking. Age, gender, race/ethnicity, and parental alcoholism were also associated with adolescent binge drinking.

#### 4. Discussion

Research studies identifying risks for adolescent binge drinking have found a myriad of contributors ranging from genetic influences to environmental risk factors (Enoch, 2006). The current study found that childhood maltreatment is a robust risk factor for adolescent binge drinking. However, when the traditional method of maltreatment classification, where an individual is classified as ever experiencing one type of maltreatment, was used, childhood maltreatment was not associated with adolescent binge drinking, whereas childhood maltreatment was strongly associated with adolescent binge drinking when the co-occurrence of multiple categories of maltreatment was included. This finding indicates that further research is warranted to investigate the effects of different types of or combinations of types of maltreatment on adolescent risky drinking.

Given that maltreatment types often co-occur, emerging investigations have examined the cumulative impact of multiple types of childhood maltreatment on a variety of developmental outcomes. These studies have found greater developmental difficulties, including emotional or behavioral problems, and lowered social competence and self-esteem, as the number of maltreatment types increases (Higgins and McCabe, 2000; Lau et al., 2005; Rossman et al., 1998). The current study extends past work by suggesting the effects of multicategory maltreatment on adolescent binge drinking. Given that risk factors are likely to cluster in the same individuals (Masten & Coatsworth, 1998), researchers examining the relationship between childhood maltreatment and risky alcohol use in adolescence should simultaneously consider all types of childhood maltreatment to address the totality of the child's experience.

Not surprisingly, parental alcoholism was strongly associated with adolescent binge drinking. In the final model (Table 3), parental alcoholism was associated with a 1.43-fold (OR 95% CI: 1.30–1.53) increase in risk for subsequent offspring binge drinking in adolescence. In addition, using a nationally representative community sample, we found that childhood maltreatment is associated with adolescent binge drinking, controlling for parental alcoholism. This finding is consistent with prior research (e.g., Dube et al., 2002; Harter, 2000).

This study had several limitations. First, because retrospective reports of childhood maltreatment were used, it is possible that retrospective cognitive interpretations of the tragic events might result in over- or under-reporting of child maltreatment. Second, the Add Health only focused on the parent or caregiver as the source of the maltreatment. In addition, only one aspect of child maltreatment, types of maltreatment, was used. Future studies examining the relationship between child maltreatment and adolescent binge drinking need to include other perpetrators and other aspects of maltreatment such as frequency, severity, and chronicity.

Despite these limitations, this study adds important knowledge to alcohol and maltreatment research. Examining the negative effects of childhood maltreatment on alcohol use and dependence, the co-occurrence of different categories of maltreatment should be considered.

## Acknowledgements

This study is supported by National Institute of Alcohol Abuse and Alcoholism (NIAAA) Grant P60 AA013759. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIAAA or the NIH.

## References

- Anda RF, Whitfield CL, Felitti VJ, Chapman D, Edwards VJ, Dube SR, et al. Adverse childhood experiences, alcoholic parents, and later risk of alcoholism and depression. *Psychiatric Services* 2002;53:1001–1009. [PubMed: 12161676]
- Banyard VL. Childhood maltreatment and the mental health of low-income women. *American Journal of Orthopsychiatry* 1999;69:161–71. [PubMed: 10234382]
- Bensley LS, Van Eenwyk J, Spieker SJ, Schoder J. Self-reported abuse history and adolescent problem behaviors: I. antisocial and suicidal behaviors. *Journal of Adolescent Health* 1999;24:163–172. [PubMed: 10195799]
- Brook JS, Finch SJ, Whiteman M, Brook DW. Drug use and neurobehavioral, respiratory, and cognitive problems: Precursors and mediators. *Journal of Adolescent Health* 2002;30:433–441. [PubMed: 12039513]
- Dube SR, Anda RF, Felitti VJ, Edwards VJ, Croft JB. Adverse childhood experiences and personal alcohol abuse as an adult. *Addictive Behaviors* 2002;27:713–725. [PubMed: 12201379]
- Enoch M. Genetic and environmental influences on the development of alcoholism. Resilience vs. risk. *Annals of the New York Academy of Sciences* 2006;1094(1):193–201. [PubMed: 17347351]
- Fergusson DM, Lynskey MT. Alcohol misuse and adolescent sexual behaviors and risk taking. *Pediatrics* 1996;98:91–96. [PubMed: 8668418]
- Higgins DJ, McCabe MP. Multi-type maltreatment and the long-term adjustment of adults. *Child Abuse Review* 2000;9:6–18.
- Hill K, White HR, Chung I, Hawkins JD, Catalano RF. Early adult outcomes of adolescent binge drinking: Person- and variable-centered analyses of binge drinking trajectories. *Alcoholism, Clinical and Experimental Research* 2000;24(6):892–901.
- Johnston, LD.; O'Malley, PM.; Bachman, JG. Monitoring the future national survey results on drug use, 1975–2001. Vol. I: Secondary school students. Bethesda, MD: National Institute on Drug Abuse; 2002.
- Lau AS, Leeb RT, English D, Graham JC, Briggs EC, Brody KE, et al. What's in a name? A comparison of methods for classifying predominant type of maltreatment. *Child Abuse & Neglect* 2005;29:533–551. [PubMed: 15970324]
- Masten A, Coatsworth J. The development of competence in favorable and unfavorable environments: Lessons from research on successful children. *American Psychologist* 1998;53:205–220. [PubMed: 9491748]
- Oesterle S, Hill K, Hawkins JD, Guo J, Catalano RF, Abbott R. Adolescent heavy episodic drinking trajectories and health in young adulthood. *Journal of Studies on Alcohol* 2004;65(2):204–212. [PubMed: 15151351]
- Rossman BBR, Hughes HM, Hanson KL. The victimization of school-age children. *Journal of Aggression, Maltreatment, and Trauma* 1998;2:87–106.
- Scheier LM, Botvin GI. Effects of early adolescent drug use on cognitive efficacy in early-late adolescence: A developmental structural model. *Journal of Substance Abuse* 1995;7(4):379–404. [PubMed: 8838623]
- Schulenberg J, O'Malley PM, Bachman JG, Wadsworth KN, Johnston LD. Getting drunk and growing up: Trajectories of frequent binge drinking during the transition to young adulthood. *Journal of Studies on Alcohol* 1996;57:289–304. [PubMed: 8709588]

- Substance Abuse and Mental Health Services Administration (SAMHSA). Results from the 2006 National Survey on Drug Use and Health: National Findings (NSDUH Series H-32, DHHS Publication No. SMA 07-4293). Rockville, MD: Office of Applied Studies; 2007.
- Smart RG. Behavioral and social consequences related to the consumption of different beverage types. *Journal of Studies on Alcohol* 1996;57:77–84. [PubMed: 8747505]
- Thakker KD. An overview of health risks and benefits of alcohol consumption. *Alcoholism, Clinical and Experimental Research* 1998;22(Suppl):285.S–298S.
- U.S. Department of Health and Human Services. The Surgeon General's Call to Action To Prevent and Reduce Underage Drinking. U.S. Department of Health and Human Services, Office of the Surgeon General; 2007.
- Widom CS, Ireland T, Glynn PJ. Alcohol abuse in abused and neglected children followed up: Are they at increased risk? *Journal of Studies on Alcohol* 1995;56:207–217. [PubMed: 7760568]
- Widom CS, Hiller-Sturmhofel S. Alcohol abuse as a risk factor for and consequence of child abuse. *Alcohol Research & Health* 2001;25:52–57. [PubMed: 11496967]
- Zakrajsek JS, Shope JT. Longitudinal examination of underage drinking and subsequent drinking and risky driving. *Journal of Safety Research* 2006;37(5):443–451. [PubMed: 17123546]

**Table 1**  
Childhood maltreatment and sample characteristics

	Total	Any maltreatment n=6729	No maltreatment n=6019
Sex ***			
Male (n=5867)	49.6	52.1	46.9
Female (n=6881)	50.4	47.9	53.1
Age *			
12–14 (n=3622)	34.6	36.1	32.9
15–17 (n=7159)	49.6	48.9	50.3
18–21 (n=1964)	15.8	15.0	16.8
Race/Ethnicity **			
Non-Hispanic White (n=6778)	68.2	67.0	69.6
Black (n=2501)	15.4	14.8	16.0
Hispanic (n=2007)	11.9	12.8	10.9
Asian (n=824)	3.2	3.9	2.5
Other (n=161)	1.3	1.5	0.9
Parental income <sup>a</sup> , *			
0 – 21,999 (n=2301)	23.8	24.7	22.8
22,000 – 39,999 (n=2434)	25.2	26.1	24.3
40,000 – 59,999 (n=2387)	25.1	25.2	25.0
≥ 60,000 (n=2578)	25.9	24.0	27.9
Parental education			
Not a high school graduate (n=1837)	16.1	16.0	16.2
HS graduate/GED (n=3182)	31.8	31.4	32.3
Technical school or some college (n=3224)	29.2	30.5	27.7
At least a college graduate (n=2730)	22.9	22.2	23.8
Parental respondent works outside home			
Yes (n=8142)	73.4	74.0	72.7
No (n=2870)	26.6	26.0	27.3
Parental alcoholism ***			
Yes (n=1572)	16.8	19.1	14.3
No (n=8454)	83.2	80.9	85.8
Consume five or more drinks in a row at least			
2–3 times per month ***	11.2	12.4	9.9
Yes (n=1362)	88.8	87.6	90.1
No (n=11386)			

<sup>a</sup>N=9700 (does not include refused or missing)

\*  $p < .05$ ,

\*\*  $p < .01$ ,

\*\*\*  $p < .001$ . *P*-values based on within subgroup analyses.

**Table 2**  
 Multivariable adjusted odds ratios (OR) and 95% confidence intervals (CI) for adolescent binge drinking using single types of maltreatment

	Consume five or more drinks in a row at least 2–3 times per month OR (95% CI)
Maltreatment	
No maltreatment	1.00
Any neglect	1.15 (0.96, 1.37)
Any physical abuse	1.19 (0.96, 1.47)
Any sexual abuse	1.42 (0.89, 2.25)
Age at Wave 1	
18–21	1.0
15–17	0.57* (0.46, 0.70)
12–14	0.16* (0.11, 0.22)
Sex	
Female	1.0
Male	1.87* (1.52, 2.29)
Race/Ethnicity	
Non-Hispanic White	1.0
Black	0.51* (0.33, 0.79)
Hispanic	0.86 (0.63, 1.18)
Asian	0.43* (0.21, 0.91)
Other	0.73 (0.33, 1.62)
Parental alcoholism	
No	1.0
Yes	1.42* (1.29, 1.53)

\*  $p < .05$



**Table 3**  
Multivariable adjusted odds ratios (OR) and 95% confidence intervals (CI) for adolescent binge drinking using multiple types of maltreatment

	Consume five or more drinks in a row at least 2–3 times per month OR (95% CI)
Maltreatment	
No maltreatment	1.0
Neglect only	1.24* (1.00, 1.51)
Physical abuse only	1.34* (1.02, 1.76)
Sexual abuse	2.26* (1.15, 4.43)
Neglect and physical abuse	1.33* (1.00, 1.77)
Neglect, physical, and sexual abuse	1.79* (1.15, 2.78)
Age at Wave 1	
18–21	1.0
15–17	0.57* (0.46, 0.70)
12–14	0.16* (0.11, 0.22)
Sex	
Female	1.0
Male	1.88* (1.53, 2.31)
Race/Ethnicity	
Non-Hispanic White	1.0
Non-Hispanic Black	0.52* (0.34, 0.79)
Hispanic	0.87 (0.63, 1.18)
Asian	0.43* (0.21, 0.91)
Other	0.73 (0.32, 1.64)
Parental alcoholism	
No	1.0
Yes	1.43* (1.30, 1.53)

\*  $p < .05$