



Published in final edited form as:

Am J Addict. 2016 April ; 25(3): 184–187. doi:10.1111/ajad.12348.

Brief Report: A Web-Based Pilot Study of Childhood Sexual Abuse, Recent Stressful Events, and Alcohol Use in Women

Carolyn E. Sartor, PhD and Stephanie S. O'Malley, PhD

Department of Psychiatry, Yale University School of Medicine, New Haven, Connecticut

Abstract

Background and Objectives—Childhood sexual abuse (CSA) is a well-documented risk factor for problem drinking, but the possibility that recent stressful events exacerbate risk conferred by CSA has rarely been examined, and the few studies to do so have limited their investigations to negative events. The aim of the current study was to examine the associations between CSA, recent positive and negative stressful events, and women's alcohol consumption.

Methods—Eighty-nine women (42.7% reporting CSA) completed weekly web-based alcohol use surveys and a stressful event inventory assessing negative and positive events over a 12 week period.

Results—Independent of CSA history, experiencing negative events was associated with elevated likelihood of drinking to intoxication.

Discussion and Conclusions—Proximal distressing events are more closely linked than CSA history to short-term drinking patterns.

Scientific Significance—Tracking stressful negative events may be informative for identifying precipitants of heavy drinking.

INTRODUCTION

One in five women has experienced childhood sexual abuse (CSA),¹ a well-documented risk factor for problem drinking.² Children who have experienced abuse are at elevated risk for a range of stressful events later in life.³ Sexually abused girls are two to three times more likely to be sexually assaulted as adults than those without a history of CSA,⁴ and sexual assault – as well as less severe stressors—have been linked to heavy alcohol use.^{5,6}

The increased vulnerability to negative outcomes following stressful events in individuals with a history of child maltreatment, (i.e., “stress sensitization”), first demonstrated for depression, has only recently been examined in alcohol studies, but findings are consistent. Among individuals exposed to stressful events, heavy drinking⁶ and severe alcohol craving³ are more common in those with versus without a history of child maltreatment.

Address correspondence to Sartor, Department of Psychiatry, Yale University School of Medicine, VA CT Healthcare System, 950 Campbell Avenue (151D), West Haven, CT 06516. carolyn.sartor@yale.edu.

Declaration of Interest The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this paper.

The aim of the current study was to examine the relationship between CSA, stressful events, and alcohol consumption in women, using a prospective web-based design. It expands on prior studies by: (i) querying exposure to stressors over a limited period of time (versus past year); and (ii) including positive stressful events – events typically viewed as positive but involve adapting to new circumstances and drawing on emotional or other resources (e.g., completing school) – in addition to negative ones (e.g., physically attacked). This allowed us to assess the relevance of the type of event to its association with alcohol use. We hypothesized that alcohol use would be elevated in women with a history of CSA who experienced either positive or negative stressful events.

METHODS

Participants

The sample was recruited from participants in the Missouri Adolescent Female Twin Study (MOAFTS), a longitudinal study of alcohol and related psychosocial outcomes in women (described in prior publications⁷). A total of 101 women were ascertained based on their CSA history. The final sample was composed of 89 women who had data on CSA status (42.7% with a history of CSA), completed the Stressful Life Event Inventory, and provided data for at least 9 weeks that the weekly survey was administered. The 12 women whose data were not used did not differ from the rest of the sample with respect to demographics or CSA history. Mean age was 31.6 (SD=2.7); 92.4% self-identified as White, 7.6% as African-American.

Procedures

Eligible MOAFTS participants were mailed recruitment letters, then contacted by telephone. Women who agreed to participate (88.9% of those sent letters) were scheduled for an orientation to the web-based survey system and sent a packet containing a consent form and study payment information. A research assistant conducted the orientation over the telephone, first reviewing the consent form and obtaining verbal consent, then e-mailing the participant a link to a blank survey that she opened and went through with the research assistant.

Alcohol use data were collected over a period of 12 weeks (a sufficient timeframe for capturing relatively infrequent severe stressors) using weekly rather than daily assessments to maximize participant retention. On Sunday mornings, participants received an e-mail containing a link to the Diary of Substance Use and Related Behaviors, with the survey's unique code and the participant's unique identifier. In week 12, participants received a link via e-mail to the Stressful Life Event Inventory.

Predictors

CSA status was derived using items from three sections of structured psychiatric interviews (the Semi-Structured Assessment for the Genetics of Alcoholism⁸) conducted with MOAFTS participants: (i) traumatic events (rape, sexual molestation); (ii) childhood experiences (forced sexual contact before age 16 with a family member or with a non family member 5 or more years older); and (iii) health problems (ever forced to have sexual

intercourse). Consistent with prior MOAFTS publications using CSA data, criteria for CSA were met if any sexual abuse question in any wave of data collection was endorsed, with first occurrence before age 16.

Stressful events were assessed using the Stressful Life Event Inventory, a 34-item measure composed of all 17 items referring to stressful events during adulthood in the Life Stressor Checklist-Revised (LSC-R),⁹ 15 items from the Psychiatric Epidemiology Research Interview Life Events Scale,¹⁰ and two additional items (partner/spouse lost job, involved in serious accident). Participants reported the number of times and the dates on which each event occurred during the 12-week period. Events were categorized (by the authors based on the conceptual content) as negative (25 events, e.g., sexually assaulted, lost job) or positive (9 events, e.g., got married, made major purchase such as a house).

Outcomes

Mean weekly frequency of alcohol use, mean drinks consumed on weekday (Sunday through Thursday) and weekend (Friday and Saturday) drinking days, any drinking to intoxication, and maximum drinks consumed in one day (max drinks) during the 12 week period were derived from the Diary of Substance Use Behaviors and Environments. This 13 item measure was created for the current study to collect day by day reports of alcohol use (i.e., number of drinks consumed and drinking to intoxication), cigarette smoking, marijuana use, exposure to environments where these substances are commonly used, and context of use (i.e., places and people present).

Data Analysis

Frequency, quantity consumed on weekdays and weekend days, and max drinks variables were log transformed (due to skewness) and analyzed using multiple regression analyses. Due to the low frequency of drinking to intoxication, drinking to intoxication was analyzed as a dichotomous variable using logistic regression analyses. Interaction effects were tested by entering interaction terms representing CSA history by event exposure (dichotomously coded) into models. Analyses were adjusted for age, marital status, level of education, and household income. The clustered sandwich estimator was applied to adjust for the non-independence of observations in twins.

RESULTS

Stressful Events and CSA History

Over the 12 week period, 48.3% of participants reported experiencing one or more stressful events (27.2% negative, 35.9% positive). As seen in Table 1, neither the proportion of women endorsing events nor the number of separate events reported differed by CSA status for either event type.

Patterns of Alcohol Use by CSA History and Stressful Event Exposure

No differences in likelihood of using alcohol (any, weekdays, or weekends) by exposure to negative events, positive events, or CSA history were observed, with the exception of CSA and any alcohol use. Women with a history of CSA had a reduced likelihood of consuming

any alcohol during the study period (OR=.11, 95%CI:.02-.96 in the unadjusted model). As seen in Table 1, in adjusted models (based on drinkers), neither CSA nor exposure to positive events were associated with any of the alcohol outcomes, but exposure to negative events was associated with drinking to intoxication (OR=4.28, 95%CI:1.54-11.87). No interactions between CSA and positive events or CSA and negative events were significant.

DISCUSSION

The current web-based study characterized short-term patterns of alcohol use in women in relation to CSA history and current stressful events. Capturing stressful events over a limited period of time allowed for a more nuanced examination of the joint effects of CSA and proximal stressors on alcohol use than prior studies in this area. The incorporation of positive events into the stressful event measure created the opportunity to assess the specificity of changes in drinking behaviors to negative events versus stressful events more generally.

We did not observe either heavier alcohol use or higher exposure to stressful events in women with a history of CSA, as have prior studies of child maltreatment.^{2,3} This may be due to a diminishing impact of CSA associated risk over the approximately 20 years since first CSA exposure (which may not have been observed if the sample had been ascertained on severe abuse history). Furthermore, we did not find evidence for stress sensitization. Rather, results indicated that negative events are associated with potentially risky alcohol use independent of CSA history. Taken together, our findings support two primary conclusions: first, proximal stressful events are more closely linked than distal risk factors to patterns of alcohol consumption and second, this association is specific to distressing events – not just any event that involves significant adjustment to new circumstances.

Limitations

First, as this was a pilot study, we conducted a substantial number of analyses and did not adjust for multiple testing, so findings should be viewed as suggestive. Second, statistical power was limited due to the relatively small sample size. Additional associations may be detectable with larger samples. Third, although participants were cued with start and end dates of the 12 week study period, more frequent administration of the Stressful Life Event Inventory would increase confidence in the accuracy of participant recall of stressful events. Fourth, as the primary measures were created for the purposes of this study, we do not have test-retest reliability or validity data on them.

CONCLUSIONS SCIENTIFIC SIGNIFICANCE, AND FUTURE DIRECTIONS

Distressing events are common and are associated with short-term drinking patterns, even in the absence of a childhood trauma consistently associated with problem drinking. Tracking alcohol use and concurrent stressful negative events may be informative in clinical settings for identifying situations that precipitate problem drinking.

Acknowledgments

This research was supported by National Institute on Alcohol Abuse and Alcoholism (NIAAA) grant AA017921, awarded to Dr. Carolyn E. Sartor, and NIAAA grant AA014715, awarded to Dr. Stephanie S. O'Malley.

The authors wish to thank Kelly Monroe, Marissa Rhea, Pamela Gilmore, James Serati, Dejan Jovanovic, Michelle Loxley, Michelle Rogers, and Nancy Barnett for their assistance in participant recruitment, data collection and data management.

REFERENCES

1. Molnar BE, Buka SL, Kessler RC. Child sexual abuse and subsequent psychopathology: Results from the National Comorbidity Study. *Am J Public Health*. 2001; 91:753–760. [PubMed: 11344883]
2. Kendler KS, Bulik CM, Silberg J, et al. Childhood sexual abuse and adult psychiatric and substance use disorders in women: An epidemiological and cotwin control analysis. *Arch Gen Psychiatry*. 2000; 57:953–959. [PubMed: 11015813]
3. Kim JH, Martins SS, Shmulewitz D, et al. Childhood maltreatment, stressful life events, and alcohol craving in adult drinkers. *Alcohol Clin Exp Res*. 2014; 38:2048–2055. [PubMed: 24961735]
4. Arata CM. Child sexual abuse and sexual revictimization. *Clin Psychol-Sci Pr*. 2002; 9:135–164.
5. Boden JM, Fergusson DM, Horwood LJ. Associations between exposure to stressful life events and alcohol use disorder in a longitudinal birth cohort studied to age 30. *Drug Alcohol Depend*. 2014; 142:154–160. [PubMed: 25001278]
6. Keyes KM, McLaughlin KA, Koenen KC, et al. Child maltreatment increases sensitivity to adverse social contexts: Neighborhood physical disorder and incident binge drinking in Detroit. *Drug Alcohol Depend*. 2012; 122:77–85. [PubMed: 21981990]
7. Waldron M, Bucholz KK, Lynskey MT, et al. Alcoholism and timing of separation in parents: Findings in a midwestern birth cohort. *J Stud Alcohol Drugs*. 2013; 74:337–348. [PubMed: 23384382]
8. Bucholz KK, Cadoret R, Cloninger CR, et al. A new, semi-structured psychiatric interview for use in genetic linkage studies: A report on the reliability of the SSAGA. *J Stud Alcohol*. 1994; 55:149–158. [PubMed: 8189735]
9. Wolfe, J.; Kimerling, R. Gender issues in the assessment of posttraumatic stress disorder. In: Wilson, J.; Keane, TM., editors. *Assessing Psychological Trauma and PTSD*. Guilford; New York: 1997. p. 192-238.
10. Dohrenwend B, Krasnoff L, Askenasy A. Exemplification of a method for scaling life events: The PERI Life Events Scale. *J Health Social Behav*. 1978; 19:205–229.

TABLE 1

Exposure to negative and positive stressful events during the 12 week study period by childhood sexual abuse (CSA) history and drinking behaviors by CSA history and stressful event exposure

	Negative and positive stressful event exposure by CSA history						CSA history, stressful event exposure, and drinking behaviors ^{a,b}			
	Any negative event		Number of negative events (among those reporting any)		Any positive event		β (RSE) [95%CI for β]		OR (RSE) [95%CI]	
	%	OR (RSE) [95%CI]	Mean (SD)	t ₍₂₃₎ =54 p=0.59	%	OR (RSE) [95%CI]	Mean drinks on weekday drinking days ^c (n=73)	Mean drinks on weekend drinking days ^d (n=80)	Maximum drinks in one day (n=83)	Became intoxicated (n=83)
CSA	26.32	.86 (.39) [1.35, 2.10]	2.10 (1.37)		36.84	1.06 (.52) [1.41, 2.79]	.22 (.16) [-1.30, .35]	.18 (.25) [-1.33, .68]	.16 (.23) [-1.29, .61]	2.00 (1.41) [.50, 7.99]
No CSA	29.41		1.73 (1.79)		35.29		.14 (.13) [-1.13, .41]	.10 (.15) [-1.21, .41]	.00 (.23) [-1.47, .47]	7.64* (6.55) [1.42, 41.01]
CSA × Negative event							.10 (.24) [-1.38, .57]	-.24 (0.38) [-1.01, .53]	.41 (.39) [-1.37, 1.20]	.24 (.31) [.02, 3.06]
CSA							-.32 (.16) [-1.36, .30]	.05 (.22) [-1.39, .49]	.10 (.24) [-1.37, .58]	1.20 (.81) [.32, 4.50]
Positive event							-.46 (.37) [-1.21, .29]	-.12 (.18) [-1.47, .24]	-.22 (.21) [-1.65, .20]	.94 (.64) [.25, 3.58]
CSA × Positive event							.53 (.60) [-1.68, 1.74]	.13 (.27) [-1.41, .67]	.40 (.33) [-1.25, 1.06]	1.06 (1.02) [.16, 6.93]

OR, odds ratio; RSE, robust standard error; CI, confidence intervals.

^a Adjusted for age, marital status, level of education, and household income.;

^b Among participants who endorsed alcohol use during the study period.;

^c participants who endorsed alcohol use on weekdays during the study period.;

^d Among participants who endorsed alcohol use on weekends during the study period.;

* p<.05.