



Published in final edited form as:

*Addict Behav.* 2009 December ; 34(12): 1065–1068. doi:10.1016/j.addbeh.2009.06.008.

## Alcohol Use Motives among Traumatic Event-Exposed, Treatment-Seeking Adolescents:

### Associations with Posttraumatic Stress

Laura J. Dixon<sup>1</sup>, Ellen W. Leen-Feldner<sup>1,\*</sup>, Lindsay S. Ham<sup>1</sup>, Matthew T. Feldner<sup>1</sup>, and Sarah F. Lewis<sup>2</sup>

<sup>1</sup>University of Arkansas

<sup>2</sup>Center for Research, Assessment, and Treatment Efficacy

### Abstract

The current study evaluated the linkage between posttraumatic stress symptoms and alcohol use motives among 49 traumatic event-exposed adolescents ( $M_{age} = 16.39$  years). It was hypothesized that posttraumatic stress symptom levels would be positively associated with coping-related drinking motives specifically (cf., social, enhancement, or conformity motives) and that coping-related drinking motives would evidence associations with the hyperarousal and reexperiencing posttraumatic stress symptom types. Findings were consistent with hypotheses, suggesting traumatic event-exposed adolescents may be using alcohol to manage posttraumatic stress symptoms.

### Keywords

Adolescent; trauma; posttraumatic stress; alcohol motives

---

Traumatic event exposure is common among youth (Copeland, Keeler, Angold, & Costello, 2007) and is linked with an array of negative mental health consequences (Stevens, Murphy, & McKnight, 2003). Although a growing body of adolescent work has substantiated a linkage between traumatic event exposure and alcohol use (Blumenthal et al., 2008), very little is understood about the mechanisms underlying this association. Given the importance of such information for the development of sophisticated interventions (Gottfredson & Wilson, 2003), the objective of the current study was to evaluate alcohol use motives in relation to posttraumatic stress symptoms among a treatment-seeking sample of traumatic event-exposed adolescents.

One factor that appears important for understanding alcohol use behavior among traumatic event-exposed youth is motives for drinking (e.g., Cooper, 1994). Four motives are conceptualized to be involved in drinking behavior: coping (e.g., to reduce internal negative affective states), conformity (e.g., to reduce external negative social outcomes), enhancement (e.g., to increase internal positive states), and social (e.g., to increase positive external

---

© 2009 Elsevier Ltd. All rights reserved.

\*Corresponding Author: University of Arkansas, Department of Psychology, 216 Memorial Hall, Fayetteville, AR 72701, Telephone: 479-846-2487, Fax: 479-846-3219, E-mail: eleenfe@uark.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.

outcomes). From a theoretical perspective, “drinking to cope” is conceptualized as efforts to escape or avoid negative affective states, such as sadness, anxiety, and anger (e.g., Cooper, Russell, & George, 1988). Anxiety researchers have suggested that alcohol may be used to avoid or reduce the symptoms of posttraumatic stress following traumatic event exposure, a strategy that is negatively reinforcing, thereby maintaining alcohol use (e.g., Kushner, Abrams, & Borchardt, 2000; Stewart, 1996; Stewart, Pihl, Conrod, & Dongier, 1998). In support of this perspective, evidence suggests adults may drink to cope with an array of posttraumatic stress symptoms, including sleep difficulties (Nishith, Resick, & Mueser, 2001), negative affect (Miranda, Meyerson, Long, Marx, & Simpson, 2002; Stewart, Conrod, Samoluk, Pihl, & Dongier, 2000), and specific symptoms related to traumatic-event exposure and PTSD (e.g., Kayson et al., 2007), including intrusions/reexperiencing (McFall, Mackay, & Donovan, 1992; Read, Brown, & Kahler, 2004; Stewart, Mitchell, Wright, & Loba, 2004) and hyperarousal (McFall et al., 1992; Stewart et al., 2004).

The current study sought to build on the existing literature by evaluating the relation between posttraumatic stress levels and alcohol use motives among treatment seeking adolescents who were exposed to at least one traumatic event. Based on extant theoretical and empirical work (e.g., Stewart, 1996), it was hypothesized that, after controlling for the theoretically-relevant variables of age, gender, and past-month alcohol use frequency, posttraumatic stress symptom levels would be positively associated specifically with coping-related drinking motives; posttraumatic stress symptom levels were not expected to be associated with conformity, enhancement, and social drinking motives. In addition, coping-related motives were expected to relate positively to reexperiencing and hyperarousal symptom types.

## Method

### Participants

Forty-nine participants were drawn from a larger study of treatment-seeking adolescents between the ages of 14 and 17 years ( $M_{age} = 16.39$ ;  $SD = .84$ ) enrolled in group-based residential therapy. Participants were selected from a larger sample of 191 participants if they reported both exposure to a Diagnostic and Statistical Manual - Fourth Edition [DSM-IV; American Psychiatric Association (APA), 1994]-defined traumatic event and having used alcohol at least once. The majority of participants were European American (93.8%).

All participants reported having had an alcoholic beverage in the past year. The mean age of first alcoholic drink was 12.03 years ( $SD = 2.90$ ). Approximately 70% of participants reported *current* alcohol use (i.e., within the past month; Johnston, O'Malley, Bachman, & Schulenberg, 2008); the mean frequency of alcohol use in the past month was 6.42 days ( $SD = 7.53$ ) and participants reported binge drinking (i.e.,  $\geq 5$  drinks in a row) an average of 4.20 days ( $SD = 6.84$ ) in the past month.

### Measures

Traumatic event exposure was indexed using the PTSD Module of the Anxiety Disorders Interview Schedule-Child Version (ADIS-C; Silverman & Albano, 1996). This instrument allows for the assessment of DSM-IV-defined traumatic events by evaluating whether the respondent experienced real or perceived threat to their physical integrity as well as a subjective experience of fear, helplessness, or horror (APA, 1994). Specifically, participants were first asked whether they had experienced events from nine traumatic event categories (e.g., physical assault). If so, they were then queried about their subjective response to the event (i.e., presence of fear, helplessness, or horror). Participants who endorsed both of these questions were identified as traumatic event exposed.

The 17-item *Child PTSD Symptom Scale* (CPSS; Foa, Johnson, Feeny, & Treadwell, 2001) was used to measure posttraumatic stress symptom levels. This scale indexes the frequency of PTSD symptoms in relation to the most distressing event reported during the ADIS-C interview. Internal reliability for the present sample was  $\alpha = .86$ .

Alcohol use was measured with the alcohol-related items from the well-established *Youth Risk Behavior Survey* [YRBS; Centers for Disease Control and Prevention (CDC), 2004]. This questionnaire measures drinking status (i.e., “have you ever had an alcoholic drink”), age of initial use, current use, and use within the past month. Furthermore, a single continuous question was drawn from the well-established *Adolescent Alcohol and Drug Involvement Scale* (AADIS; Moberg & Hahn, 1991). This question asks participants to rate past-year alcohol use from 0 (*never used*) to 7 (*several times a day*).

Alcohol use motives were measured by the *Drinking Motives Questionnaire - Revised* (DMQ-R; Cooper, 1994). This 20-item self-report measure contains questions that measure each of 4 drinking motives: coping, conformity, enhancement, and social motives. Internal reliabilities for the present sample were good (coping:  $\alpha = .92$ ; social:  $\alpha = .89$ ; enhancement:  $\alpha = .87$ ; conformity:  $\alpha = .87$ ).

## Procedure

Data for the current study were drawn from a larger prospective study. The baseline (pre-treatment) questionnaire packet included all measures for the current study with the exception of the ADIS-C/CPSS which was administered at a subsequent assessment due to time constraints. The self-report indices were completed by participants in a private space with a trained researcher on hand to answer any questions. Interviews were administered by trained research personnel. Participants were compensated using a lottery system as well as a weighted compensation schedule across assessments and were fully debriefed upon study completion.

## Results

### Descriptive Data and Zero Order Relations

Table 1 includes means, standard deviations, and inter-correlations for the continuous primary predictor and criterion variables. There were no gender differences on the DMQ-R scales or in the drinking-related variables. Significant gender differences were observed for CPSS scores, with girls ( $M = 11.17$ ;  $SD = 8.22$ ) endorsing significantly greater posttraumatic stress symptom levels compared to boys ( $M = 5.62$ ;  $SD = 8.64$ ).

### Primary Hypothesis Tests

Hierarchical regression analysis was utilized to address study hypotheses with covariates entered at level one and CPSS scores entered at level two (see Table 2). As predicted, after accounting for the effects of past month alcohol use, age, and gender, CPSS scores were significantly associated with Coping motives ( $\Delta R^2 = .17$ ;  $\beta = .43$ ;  $sr^2 = .17$ ). Also as expected, this association was not significant for any of the other drinking-related motives. Next, to evaluate the unique variance accounted for by the Coping motives scale after controlling for the other drinking motives subscales, an additional analysis was undertaken where the Conformity, Enhancement, and Social scale scores were entered at level two, after the covariates of gender, age, and past-month alcohol use at level one. Results indicated that a significant unique association remained between CPSS scores and Coping motives ( $\Delta R^2 = .07$ ,  $\beta = .33$ ,  $sr^2 = .07$ ,  $p < .05$ ), even in this conservative evaluation.

Finally, the associations between coping-related motives and each of the posttraumatic stress symptom clusters were evaluated. Here, DMQ-R-Coping subscale scores related significantly to reexperiencing ( $r = .29$ ), hyperarousal ( $r = .30$ ), and avoidance ( $r = .45$ ) symptoms of PTSD.

## Discussion

As expected, posttraumatic stress symptom levels related positively to coping-related drinking motives. This medium-sized effect (Cohen, 1988) was significant after accounting for past-month alcohol use, age, gender, as well as other drinking motives. Further, a specificity effect was observed, such that symptoms were unrelated to conformity, enhancement, or social drinking motives. These data are consistent with the “self-medication” hypothesis, suggesting that youth exposed to a traumatic event may utilize alcohol to cope with negative affect in the context of posttraumatic stress symptoms (e.g., Stewart, 1996). Also, these findings may help to explain the associations observed in prior studies of traumatic event exposure, posttraumatic stress symptoms, and elevated alcohol use/problems among adolescents (see Blumenthal et al., 2008, for a review). Indeed, available work suggests that of the four drinking motives examined here (coping, enhancement, social, and conformity), coping and enhancement-related motivations are most consistently linked to excessive alcohol use among adolescents (e.g., Kuntsche, Stewart, & Cooper, 2008) and coping motives show a *particular* linkage with alcohol-related problems (Kuntsche et al., 2005). Thus, coping-related drinking motives may represent an important factor that promotes the development of problematic alcohol use among traumatic event-exposed adolescents. Importantly, problematic alcohol use *per se* was not the focus of the current investigation; extending the current work to samples of substance dependent/abusing adolescents represents an important research objective.

Positive associations also were observed between coping-related drinking motives and each of the symptom clusters of PTSD. Adult work has similarly found that coping-related motives are related to reexperiencing and hyperarousal symptoms (e.g., McFall et al., 1992), suggesting traumatic event-exposed individuals may use alcohol specifically to deal with re-living the event (e.g., flashbacks; nightmares) as well as psychophysiological hyperarousal. As an illustrative example, alcohol has initial suppression effects on rapid eye movement sleep and, as such, may have effects on nightmare frequency and dream recall (Brower, 2001; Gross, Goodenough, Hastey, & Lewis, 1973). Consistent with this perspective, Nismith and colleagues (2001) found that among female rape victims with PTSD coping-related drinking motives related specifically to sleep-related issues, and concluded that these women “may drink alcohol to regulate negative affect related to their sleep disturbances and nightmares” (p. 476).

A significant positive association also was observed between coping-related drinking motives and avoidance symptoms. Although Stewart and colleagues (2004) found *severity* of avoidance symptoms was related to drinking to cope, a non-significant association was observed for frequency of avoidance symptoms in that study. On the one hand, it seems motivation to avoid the affective, behavioral, and cognitive symptoms of posttraumatic stress (e.g., by not spending time in places where there is a high likelihood of exposure to reminders of the event) would be associated with the utilization of alcohol to escape or reduce negative affective states. In this sense, the current findings are not surprising. On the other hand, the current sample consisted of traumatic event-exposed youth varying in posttraumatic stress symptom levels, rather than a sample of youth meeting diagnostic criteria for PTSD, as is the case with much of the prior work in this area (e.g., Sharkansky et al., 1999). It is possible that relatively constrained variance in terms of avoidance symptoms among samples with PTSD reduced the likelihood of observing relations between drinking motives and avoidance symptoms. In order to better understand this issue, the current design needs to be extended to samples comprised exclusively of youth with PTSD.

Limitations of the current study include restrictions on sample generalizability, the correlational design that precludes causal inferences, and the fact that cell sizes did not allow for evaluation of specific trauma types. These issues will need to be addressed in future work. Nonetheless, the current study represents an important contribution to the extant literature in that it suggests posttraumatic stress symptoms evidence a unique association with coping-related drinking motives among adolescents.

## Acknowledgments

The authors would like to thank the study participants, Aspen Education Group, and several key research personnel, including Dr. Sheneen Daniels, Carolina Barreto, Hillary Farrell, Sara Goodrum, Taylor Sorrows, Ilene Thompson, Megan Trammell, and Jennifer White, without whom this study could not have been completed.

## References

- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. Vol. 4th ed.. Author; Washington, DC: 1994.
- Blumenthal H, Blanchard L, Feldner MT, Babson KA, Leen-Feldner EW, Dixon L. Traumatic event exposure, posttraumatic stress, and substance use among youth: A critical review of the empirical literature. *Current Psychiatry Reviews* 2008;4:228–254.
- Brower KJ. Alcohol's effects on sleep in alcoholics. *Alcohol Research & Health* 2001;25:110–125. [PubMed: 11584550]
- Center for Disease Control and Prevention. Youth Risk Behavior Survey. 2004 [Accessed on 3 March 2006]. Available at: [www.cdc.gov/yrbss](http://www.cdc.gov/yrbss)
- Cohen, J. Statistical power analysis for the behavioral sciences. Vol. 2nd. ed.. Academic Press; New York: 1988.
- Cooper ML. Motivations for alcohol use among adolescents: development and validation of a four-factor model. *Psychological Assessment* 1994;6:117–128.
- Cooper M,L, Russell M, George WH. Coping, expectancies, and alcohol abuse: A test of social learning formulas. *Journal of Abnormal Psychology* 1988;97:218–230. [PubMed: 3385075]
- Copeland WE, Keeler G, Angold A, Costello EJ. Trauma events and posttraumatic stress in childhood. *Archives of General Psychiatry* 2007;64:577–584. [PubMed: 17485609]
- Foa EB, Johnson KM, Feeny NC, Treadwell KRH. The Child PTSD Symptom Scale: A preliminary examination of its psychometric properties. *Journal of Clinical Child Psychology* 2001;30:376–384. [PubMed: 11501254]
- Gottfredson DC, Wilson DB. Characteristics of effective school-based substance abuse prevention. *Prevention Science* 2003;4:27–38. [PubMed: 12611417]
- Gross MM, Goodenough DR, Hastey J, Lewis DR. Experimental study of sleep in chronic alcoholics before, during, and after four days of heavy drinking, with a nondrinking comparison. *Annals of the New York Academy of Sciences* 1973;215:254–265. [PubMed: 4350941]
- Johnston, LD.; O'Malley, PM.; Bachman, JG.; Schulenberg, JE. Monitoring the Future national survey results on drug use, 1975-2007. Volume I: Secondary school students. National Institute on Drug Abuse; Bethesda, MD: 2008. p. 707NIH Publication No. 08-6418A
- Kaysen D, Dillworth TM, Simpson T, Waldrop A, Larimer ME, Resick PA. Domestic violence and alcohol use: Trauma-related symptoms and motives for drinking. *Addictive Behaviors* 2007;32:1272–1283. [PubMed: 17098370]
- Kuntsche E, Knibbe R, Gmel G, Engels R. Why do young people drink? A review of drinking motives. *Clinical Psychology Review* 2005;25:841–861. [PubMed: 16095785]
- Kuntsche E, Stewart SH, Cooper L. How stable is the motive-alcohol use link? A cross-national validation of the Drinking Motives Questionnaire Revised among adolescents from Switzerland, Canada, and the United States. *Journal of Studies on Alcohol and Drugs* 2008;69:388–396. [PubMed: 18432381]
- Kushner MG, Abrams K, Borchardt C. Anxiety disorders co-occurring with alcohol or drug use disorders: A review of major perspectives and findings. *Clinical Psychology Review* 2000;20:149–171. [PubMed: 10721495]

- McFall ME, Mackay PW, Donovan DM. Combat-related posttraumatic stress disorder and severity of substance abuse in Vietnam veterans. *Journal of Studies on Alcohol* 1992;53:357–363. [PubMed: 1619930]
- Miranda R Jr, Meyerson LA, Long PJ, Marx BP, Simpson SM. Sexual assault and alcohol use: Exploring the self-medication hypothesis. *Violence and Victims* 2002;17:205–217. [PubMed: 12033555]
- Moberg DP, Hahn L. Adolescent Drug Involvement Scale. *Journal of Adolescent Chemical Dependency* 1991;2:75–88.
- Nishith P, Resick PA, Mueser KT. Sleep difficulties and alcohol use motives in female rape victims with posttraumatic stress disorder. *Journal of Traumatic Stress* 2001;14:469–479. [PubMed: 11534879]
- Read JP, Brown PJ, Kahler CW. Substance use and posttraumatic stress disorders: Symptom interplay and effects on outcome. *Addictive Behaviors* 2004;29:1665–1672. [PubMed: 15451135]
- Sharkansky EJ, Brief DJ, Peirce JM, Meehan JC, Mannix LM. Substance abuse patients with posttraumatic stress disorder (PTSD): Identifying specific triggers of substance use and their associations with PTSD symptoms. *Psychology of Addictive Behaviors* 1999;13:89–97.
- Silverman, W.; Albano, A. *The Anxiety Disorders Interview Schedule for DSM-IV: Child and parent versions*. Physiological Corporation; San Antonio, TX: 1996.
- Stevens SJ, Murphy BS, McKnight K. Traumatic stress and gender differences in relationship to substance abuse, mental health, physical health, and HIV risk behavior in a sample of adolescents enrolled in drug treatment. *Child Maltreatment* 2003;8:46–57. [PubMed: 12568504]
- Stewart SH. Alcohol abuse in individuals exposed to trauma: A critical review. *Psychological Bulletin* 1996;120:83–112. [PubMed: 8711018]
- Stewart SH, Conrod PJ, Samoluk SB, Pihl RO, Dongier M. Posttraumatic stress disorder symptoms and situation-specific drinking in women substance abusers. *Alcoholism Treatment Quarterly* 2000;18:31–47.
- Stewart SH, Mitchell TL, Wright KD, Loba P. The relations of PTSD symptoms to alcohol use and coping drinking in volunteers who responded to the Swissair Flight 111 airline disaster. *Journal of Anxiety Disorders* 2004;18:51–68. [PubMed: 14725868]
- Stewart SH, Pihl RO, Conrod PJ, Dongier M. Functional associations among trauma, PTSD and substance-related disorders. *Addictive Behaviors* 1998;23:797–812. [PubMed: 9801717]

**Table 1**  
**Descriptive Data and Zero-Order Correlations between Predictor and Criterion Variables among Traumatic Event-Exposed Youth**

	Mean (SD)	1	2	3	4	5	6	7
1. Age (years)	16.39 (.84)	-	.00	.03	-.27	.11	.08	-.10
2. CPSS	7.55 (8.82)		-	.41**	.15	.11	-.17	-.03
3. DMQ-R - Coping	2.67 (1.25)			-	.18	.55***	.33*	.25
4. DMQ-R - Conformity	1.71 (.88)				-	.00	.15	.05
5. DMQ-R - Enhancement	3.66 (1.15)					-	.73***	.40***
6. DMQ-R - Social	3.41 (1.13)						-	.28*
7. Days drank alcohol in past month	6.42 (7.53)							-

Note.  $n = 49$ . CPSS: Child PTSD Symptom Scale (Foa et al., 2001); DMQ-R: Drinking Motives Questionnaire - Revised (Cooper, 1994); days drank in past month was indexed using the question from the YRBS; Youth Risk Behavior Survey (CDC, 2004).

\*  $p < .05$

\*\*  $p < .01$



**Table 2**  
**Individual Variable Contributions Predicting Motives for Drinking**

	Coping			Enhancement			DMQ-R			Social		
	$\Delta R^2$	$\beta$	$sr^2$	$\Delta R^2$	$\beta$	$sr^2$	$\Delta R^2$	$\beta$	$sr^2$	$\Delta R^2$	$\beta$	$sr^2$
Step 1	.07			.18*			.07			.10		
Past month alcohol use		.24	.05		.42**	.17		.02	.00		.31	.09
Age		.03	.00		.16	.02		-.26	.06		.12	.01
Gender		.11	.01		-.04	.00		.00	.00		-.09	.00
Step 2	.17**			.02			.03			.02		
Past month alcohol use		.27*	.07		.43**	.18		.04	.00		.30	.08
Age		.05	.00		.16	.02		-.25	.06		.12	.01
Gender		-.02	.00		-.09	.00		-.06	.00		-.04	.00
CPSS		.43**	.17		.15	.02		.18	.02		-.14	.01

Note.  $n = 49$ ,  $\beta$  = standardized beta weight; Past month alcohol use indexed using the question from the YRBS: Youth Risk Behavior Survey (CDC, 2004); DMQ-R: Drinking Motives Questionnaire - Revised (Cooper, 1994); CPSS: Child PTSD Symptom Scale (Foa et al., 1996).

\*  
 $p < .05$

\*\*  
 $p < .01$