Published in final edited form as:

Addict Behav. 2011 March ; 36(3): 270–273. doi:10.1016/j.addbeh.2010.11.007.

Drinking motives, protective behavioral strategies, and experienced consequences: Identifying students at risk

Megan E. Patrick^a,
University of Michigan

Christine M. Lee^b, and
University of Washington

Mary E. Larimer^b
University of Washington

Abstract

The association between drinking motives and protective behavioral strategies was explored, including whether individuals with different drinking motives were more or less likely to utilize protective behavioral strategies and whether the combination of drinking motives and use of protective strategies may help identify individuals at elevated risk for alcohol-related problems. The final sample included 358 college students (59.2% female; $M=18.47$ years old, $SD=.58$). Individuals who had greater enhancement and social motives for drinking used protective strategies less frequently, controlling for number of drinks per week; those who had greater conformity motives used protective strategies more frequently. Coping motives were not significantly correlated with the mean of protective factors, but were associated with less frequently using individual strategies. Using protective strategies more frequently was associated with consuming fewer drinks and having lower RAPI scores. Interactions of drinking motives with number of protective strategies tended to be non-significant; however, significant interactions indicated that greater coping and conformity motives were especially associated with negative outcomes among individuals who used fewer protective strategies.

Keywords

alcohol use; protective behavioral strategies; motivations; alcohol problems

1.1 Introduction

There is evidence that different motivations for drinking are associated with alcohol use behaviors (e.g., Cooper, 1994; Cooper et al., 1995; Kuntsche et al., 2005; Patrick & Maggs, 2010). For example, those who drink to cope are more likely to show signs of drinking problems, while those who drink for enhancement reasons are more likely to engage in heavy episodic drinking (Cooper, 1994; Cox & Klinger, 1988). These important differences

^aCorresponding Author; University of Michigan, Institute for Social Research, Ann Arbor, MI 48106-1248, USA; meganpat@isr.umich.edu; Telephone 1-734-763-7107; Fax 1-734-936-0043.

^bUniversity of Washington, Department of Psychiatry and Behavioral Sciences, Box 354944, Seattle, WA 98195

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.

have led to calls for more nuanced and targeted approaches based on motivation (e.g., Coffman et al., 2007). Another common target of prevention and intervention programs is protective behavioral strategies, which have been shown to mediate the effectiveness of college student alcohol interventions (Larimer et al., 2007). Using protective behavioral strategies is associated with experiencing fewer alcohol-related negative consequences (Araas & Adams, 2008; Benton et al., 2004; Martens et al., 2007; Ray et al., 2009). However, very little is known regarding what individual motivational factors are associated with use of protective strategies (Martens et al., 2007; Ray et al., 2009).

Despite research supporting the importance of these two constructs for alcohol research, the extent to which drinking motives and protective behaviors are associated is largely unknown. The authors are aware of only one previous study that has assessed the relationship of drinking motives with protective strategies. Martens, Ferrier, and Cimini (2007) tested whether drinking motives were mediated by protective behavioral strategies in predicting alcohol use and alcohol consequences. Both enhancement and social motives were partially mediated by protective behaviors (although coping motives were not related to protective behaviors), suggesting that motives helped explain why students chose to use protective strategies that subsequently affected their experienced consequences. In the current study, we focus on the potential moderating effect of drinking motives on protective behavioral strategies to predict drinking problems. Exploring whether individuals with different drinking motives are more or less likely to utilize protective behavioral strategies, and whether the combination of drinking motives and use of protective strategies may help identify individuals at elevated risk for alcohol-related problems, may support the development of more salient and effective intervention programs. The present study focuses on two research questions. (1) Are enhancement, social, coping, and conformity motives for drinking associated with frequency of using protective strategies? And (2) Do drinking motives moderate the association of protective strategies with different domains of alcohol-related consequences (i.e., abuse/dependence, social, personal consequences)?

1.2 Materials and Methods

1.2.1 Participants and Procedures—Participants included 358 first-year students at a large university in the Northwestern U.S. participating in a pilot study examining brief interventions for college student drinking. Students ($N=3004$) were randomly selected from the Registrar's database and invited to participate in an online survey to determine eligibility for a larger study. Over twelve hundred students ($n = 1247$) completed the screening study (58.1% reported being female; mean age = 18.48, $SD = .63$) and 388 (31.1%) met eligibility criteria (i.e., reported heavy episodic drinking on at least one occasion in the last month [4+ standard drinks for women/5+ for men on one occasion]). Students who met criteria were immediately invited to complete a longer online baseline survey. The final sample for the present study includes 358 students who completed the baseline survey (59.2% female; mean age = 18.47, $SD = .58$). Sample demographic characteristics were 64.1% White, 19.0% Asian, and 16.9% Other.

1.2.2 Measures—Participants were asked to complete the Drinking Motives Questionnaire (based on Cooper, Russell, Skinner, & Windle, 1992) with response options from 1=*never/almost never* to 5=*almost always/always*. Items were coded as Enhancement (5 items, $\alpha=.91$; e.g., because it's exciting), Social (5 items, $\alpha=.94$; e.g., to be sociable), Coping (5 items, $\alpha=.86$; e.g., to forget about your problems), or Conformity (5 items, $\alpha=.87$; e.g., to fit in with a group you like) drinking motives.

Frequency of utilizing Protective Strategies for drinking was assessed with the mean of 10 items ($\alpha=.79$; e.g., use a designated driver) on a scale of 0=*never*, 1=*rarely*, 2=*sometimes*, 3=*usually*, 4=*always*, and 5=*don't drink*.

The 23-item Rutgers Alcohol Problems Index (RAPI) was used to assess alcohol consequences on a scale of 0=*never*, 1=*1–2 times*, 2=*3–5 times*, 3=*6–10 times*, and 4=*more than 10 times* ($\alpha=.94$; White & Labouvie, 1989). In addition, three subscale scores were computed (see Martens et al., 2007): abuse/dependence (12 items, $\alpha=.89$; e.g., kept drinking when you promised yourself not to); personal consequences (7 items, $\alpha=.86$; e.g., neglected your responsibilities); and social consequences (4 items, $\alpha=.80$; e.g., had a fight, argument, or bad feelings with a friend).

Drinks per week were assessed with the Daily Drinking Questionnaire (Collins et al., 1985). Weekly drinking was measured by summing the participants' responses for reported drinking each day of a typical week in the last three months.

1.3 Results

On average, students reported sometimes using protective strategies ($M=2.17$, $SD=.68$). Means and standard deviations of each protective strategy are shown in Table 1. Students in the sample reported drinking a mean of 9.19 ($SD=7.90$) drinks per week and an average RAPI score of 0.37 ($SD=.47$).

The first research question concerned whether drinking motives were associated with frequency of using of protective behavioral strategies. Individuals who had greater enhancement motives and social motives for drinking used protective strategies less frequently, after controlling for number of drinks per week; those who had greater conformity motives for drinking used protective strategies more frequently (see Table 1). Coping motives were not significantly correlated with the mean of protective factors, but were associated with less frequently using individual strategies including choosing not to drink, having a designated driver, and keeping track of drinks (after controlling for drinks per week). Enhancement motives were correlated with less frequently pacing drinks and avoiding drinking games. Social motives were associated with less frequently choosing not to drink, pacing drinks, and avoiding drinking games. Conformity motives were correlated with more frequently setting limits in advance, eating before and/or during drinking, and pacing drinks.

The second research question focused on the potential moderating effect of drinking motives on the relation between protective strategies and drinking consequences. First, in terms of main effects, individuals who had higher RAPI scores overall were less likely to use protective behaviors (Table 1), in particular to choose not to drink, have a designated driver, and keep track of drinks (controlling for drinks per week). These associations indicate that students who use protective strategies more frequently may be more protected from negative alcohol consequences. In multivariate analyses (Table 2), results were similar. Using protective strategies more frequently was associated with consuming fewer drinks and having lower RAPI scores (except abuse/dependence). For drinking motives, when all four types of motives were entered together in the regression models (Table 2), enhancement motives had a unique main effect association with a greater number of drinks per week and coping motives had unique main effect associations with greater alcohol problems on all subscales of the RAPI.

Interactions of drinking motives with number of protective strategies tended to be non-significant. However, a significant interaction of coping motives by protective strategies predicting abuse/dependence indicated that using protective strategies less frequently was

only associated with a greater score on alcohol abuse/dependence consequences among individuals who also had high coping motivations. In addition, conformity motives moderated the effect of protective strategies for social consequences, personal consequences, and RAPI mean. The shapes of these interactions again suggested that individuals with high conformity motives and low protective strategy use were at especially high risk for elevated consequences.

1.4 Discussion

An individual's motives for drinking may in part determine which protective strategies they are likely to use. Consistent with previous research, we found that enhancement and social motives were inversely related to protective strategies (Martens et al., 2007). Contrary to Martens et al. (2007), we also found a significant negative association between coping and protective motivations. Furthermore, students with conformity motives (not included in Martens et al., 2007) were more likely to use protective strategies to reduce their BAC, perhaps because they were motivated by appearing to match their peers' behavior rather than seeking the physiological effects of alcohol (e.g., for excitement [enhancement], social facilitation [social], or mood regulation [coping]).

In the current study, protective behavioral strategies were, in fact, associated with fewer alcohol-related problems after controlling for the amount of alcohol consumed. This supports the importance of these strategies for public health promotion. In addition, the fact that students who drank heavily and had more problems were less likely to use protective behavioral strategies highlights a potential target for future intervention programs. A particular challenge for prevention and intervention programs is to provide guidance regarding protective behavioral strategies that will be more likely to be adopted by individuals who intend to consume alcohol, possibly with the intention of becoming drunk or intoxicated. Many of the currently recommended protective strategies are designed to promote moderate alcohol use, which may not be of interest to some students. Therefore, the challenge of prevention programming is to promote increased safety in a context of sometimes extreme heavy drinking, where students purposely drink to become intoxicated (Leigh & Lee, 2008).

Moderation effects indicated that protective behaviors seemed to be especially important for reductions in negative consequences among individuals with greater coping and conformity motives. In particular, individuals with high coping motives who did not employ protective strategies were most likely to evidence abuse/dependence problems and those with high conformity motives who did not employ protective strategies were at risk for elevated levels of negative social and personal consequences of alcohol use. Incorporation of potential risks for problems based on drinking motives may be useful in prompting interest in use of specific strategies. For example, those who drink to conform to others might be particularly interested in strategies which would limit the risk of negative social problems.

Limitations include the cross-sectional nature of the data and relatively small sample of first-year college students who screened for heavy episodic drinking. Longitudinal investigations of the associations between alcohol use, motivations, and protective strategies are needed. Interestingly, examination of the individual protective behavior strategies suggests that several items are not related to motivations or consequences (e.g., switching between alcoholic and non-alcoholic drinks). Future research could explore additional strategies which might be helpful for reducing risky alcohol use and negative consequences. The present study suggests that prevention and intervention programs should consider both motives for use and utilization of protective strategies when identifying students at greatest risk for alcohol-related problems.

Acknowledgments

Funding for this study was provided by a grant from the National Institute on Alcohol Abuse and Alcoholism (U01AA014742 to M. Larimer). The content here is solely the responsibility of the authors and does not necessarily represent the official views of the sponsors.

References

- Araas TE, Adams TB. Protective behavioral strategies and negative alcohol-related consequences in college students. *Journal of Drug Education* 2008;38:211–224. [PubMed: 19157041]
- Benton SL, Schmidt JL, Newton FB, Shin K, Benton SA, Newton DW. College student protective strategies and drinking consequences. *Journal of Studies on Alcohol* 2004;65:115–121. [PubMed: 15000510]
- Coffman D, Patrick ME, Palen L, Rhoades BL, Ventura A. Why do high school seniors drink? Implications for a targeted approach. *Prevention Science* 2007;8:241–248. [PubMed: 17963040]
- Cooper ML. Motivations for alcohol use among adolescents: Development and validation of a four-factor model. *Psychological Assessment* 1994;6:117–128.
- Cooper ML, Frone MR, Russell M, Mudar P. Drinking to regulate positive and negative emotions: A motivational model of alcohol use. *Journal of Personality and Social Psychology* 1995;69:990–1005. [PubMed: 7473043]
- Cooper ML, Russell M, Skinner JB, Windle M. Development and validation of a three-dimensional measure of drinking motives. *Psychological Assessment* 1992;4:123–132.
- Cox WM, Klinger E. A motivational model of alcohol use. *Journal of Abnormal Psychology* 1988;97(2):168–180. [PubMed: 3290306]
- 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]
- Larimer ME, Lee CM, Kilmer JR, Fabiano PM, Stark CB, Geisner IM, et al. Personalized mailed feedback for college drinking prevention: A randomized clinical trial. *Journal of Consulting and Clinical Psychology* 2007;75:285–293. [PubMed: 17469886]
- Leigh, BC.; Lee, CM. What motivates extreme drinking?. In: Martinic, M.; Measham, F., editors. *Swimming with crocodiles: The culture of extreme drinking*. New York: Routledge; 2008. p. 53–78.
- Martens M, Ferrier AG, Cimini MD. Do protective behavioral strategies mediate the relationship between drinking motives and alcohol use in college students? *Journal of Studies on Alcohol and Drugs* 2007;68:106–114. [PubMed: 17149524]
- Patrick ME, Maggs JL. Profiles of motivations for alcohol use and sexual behavior among first-year university students. *Journal of Adolescence*. 2010 in press. 10.1016/j.adolescence.2009.10.003
- Ray AE, Turrissi R, Abar B, Peters K. Social-cognitive correlates of protective drinking behaviors and alcohol-related consequences in college students. *Addictive Behaviors* 2009;34:911–917. [PubMed: 19540676]
- White HR, Labouvie EW. Toward the assessment of adolescent problem drinking. *Journal of Studies on Alcohol* 1989;50:30–37. [PubMed: 2927120]

Table 1

Partial correlations of protective strategies with drinking motives and RAPI mean scores (controlling for drinks per week)

Protective Strategies	M(SD)	Motivations				RAPI
		Enhancement	Social	Coping	Conformity	
Switch between alcoholic and non-alcoholic beverages	2.06(1.25)	.02	.03	.03	.10	-.01
Determine, in advance, not to exceed a set number of drinks	2.04(1.29)	-.04	-.03	-.03	.15**	-.02
Choose not to drink alcohol	1.86(0.87)	-.09	-.18**	-.16**	.08	-.14*
Use a designated driver	3.49(0.96)	-.05	-.06	-.16**	.04	-.18**
Eat before/during drinking	2.99(0.92)	-.004	.03	-.05	.13*	-.07
Have a friend let you know when you've had enough	2.14(1.35)	-.002	-.04	.002	.09	-.03
Keep track of how many drinks you were having	2.97(1.13)	-.08	-.09	-.13*	-.05	-.14**
Pace your drinks to 1 or fewer per hour	1.31(1.10)	-.15**	-.16**	-.06	.11*	-.08
Avoid drinking games	1.70(1.34)	-.16**	-.22***	-.06	.04	-.06
Drink an alcohol look-alike (non-alcoholic beer, punch), juice or water	1.14(1.18)	-.10	-.06	.09	.09	.03
Mean of all protective factors	2.17(0.68)	-.11*	-.13*	-.08	.13*	-.11*

 $p < .001$,

**
 $p < .01$,

*
 $p < .05$

Table 2

Regressions predicting drinking behaviors and consequences by drinking motives, protective strategies, and their interactions

	RAPI Subscales			
	Drinks per week	Abuse/Dep	Social	Personal
	β (SE)	β (SE)	β (SE)	β (SE)
<i>Step 1</i>				
Drinks per week	---	.47(.003)*** $\Delta R^2=.22$ *** $\Delta R^2=.33$ ***	.49(.003)*** $\Delta R^2=.24$ *** $\Delta R^2=.33$ ***	.62(.003)*** $\Delta R^2=.39$ *** $\Delta R^2=.57$ ***
<i>Step 2: Motives</i>				
Enhancement (Enh)	.24(.53)*** $\Delta R^2=.10$ ***	-.07(.03)*** $\Delta R^2=.07$ ***	-.06(.04)*** $\Delta R^2=.04$ ***	-.06(.03)*** $\Delta R^2=.05$ ***
Social (Soc)	.10(.59)	-.10(.03)***	-.04(.04)	-.09(.03)***
Coping (Cop)	-.01(.61)	.30(.03)***	.19(.04)***	.27(.03)***
Conformity (Conf)	.02(.69)	.03(.04)	.06(.04)	.05(.03)
<i>Step 3</i>				
Protective Strategies (Prot)	.48(.03)*** $\Delta R^2=.03$ ***	.48(.03)*** $\Delta R^2=.003$	.48(.03)*** $\Delta R^2=.02$ ***	.48(.03)*** $\Delta R^2=.01$ ***
<i>Step 4: Interactions</i>				
Enh $\times$ Prot	-.09(.80)	-.06(.03)*** $\Delta R^2=.01$	-.13(.04)*** $\Delta R^2=.02$	-.12(.04)*** $\Delta R^2=.02$ ***
Soc $\times$ Prot	-.003(.89)	.06(.04)	.06(.05)	.03(.04)
Cop $\times$ Prot	.14(.81)	.13(.04)	-.03(.06)	.05(.04)
Conf $\times$ Prot	-.07(.87)	-.24(.04)*** $\Delta R^2=.04$	.004(.05)	-.02(.05)
			-.15(.06)***	-.14(.05)***

 $p < .001$,

**
 $p < .01$,

*
 $p < .05$;

Coefficients shown are from the step on which the variables were entered; β =standardized beta, SE=standard error