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Drinking Motives Mediate the Negative Associations between Mindfulness Facets and Alcohol Outcomes among College Students

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Abstract

Mindfulness and drinking motives have both been linked to affect regulation, yet the relationship between mindfulness and drinking motives is poorly understood. The present study examined whether drinking motives, particularly mood regulatory motives, mediated the associations between facets of mindfulness and alcohol-related outcomes among college students ($N = 297$). We found three specific facets of mindfulness (describing, nonjudging of inner experience, and acting with awareness) to have negative associations with alcohol outcomes. Importantly, specific drinking motives mediated these associations such that lower levels of mindfulness were associated with drinking for distinct reasons (enhancement, coping, conformity), which in turn predicted alcohol use and/or alcohol problems. Our findings suggest that drinking motives, especially mood regulatory and negative reinforcement motives, are important to examine when studying the role of mindfulness in college student drinking behavior.

Keywords

mindfulness; drinking motives; alcohol use; alcohol-related problems; college students

Introduction

Mindfulness has been defined as the ability to direct non-judgmental attention to one's present moment experience (Bishop et al., 2004). Rooted in Buddhist traditions, mindfulness meditation is a foundational practice for reducing psychological suffering (Kang & Whittingham, 2010). In the past few decades, a number of contemporary mindfulness-based treatment have been developed and have been shown to be effective in treating a range of clinical disorders (Keng, Smoski, & Robins, 2011), including substance use disorders (for a review, see Chiesa & Serretti, 2013). Trait mindfulness is conceptualized to vary among individuals with or without meditation experience, and has been shown to be positively related to well-being and inversely related to psychological symptoms (Baer et al., 2006; Brown & Ryan, 2003).

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Trait mindfulness has been theorized to be associated with less alcohol use and fewer alcohol-related problems because individuals higher in mindfulness may be more aware of internal/external triggers that lead to drinking (Breslin, Zack, & McMain, 2002), less likely to engage in impulsive drinking-related behavior (Murphy & MacKillop, 2012), and less likely to drink to avoid negative emotions (Bowen, Witkiewitz, Chawla, & Grow, 2011). However, initial studies on the role of mindfulness in college student drinking are mixed. For example, heavy drinking college students had significantly higher scores on the mind/body awareness subscale of the Freiburg Mindfulness Inventory (FMI; Walach et al., 2006) than non-drinkers (Leigh, Bowen, & Marlatt, 2005), and this subscale was positively associated with alcohol use (Leigh & Neighbors, 2009). Leigh et al. (2005) posited that college students higher in the mind/body awareness may be more likely to drink to avoid or intensify physical and emotional sensations as they are more attuned to these sensations. It is possible that heightened awareness alone without an open and non-judgmental attitude may lead to an increased risk for problematic drinking.

However, more recent studies on college student drinking have used the Five-Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006), a trait mindfulness measure that has received greater empirical support than the FMI. The FFMQ is a widely used measure that captures five unique aspects of mindfulness: observing (noticing internal/external experiences), describing (labeling experiences with words), acting with awareness (focusing attention on one's current activity), nonjudging of inner experience (experiencing thoughts/feelings without judging them or criticizing oneself), and nonreactivity to inner experience (allowing thoughts/feelings to come and go without reacting to them or getting caught up in them). Three recent studies on college student drinking found several negative associations between facets of mindfulness and alcohol use/problems. For example, Fernandez, Wood, Stein, and Rossi (2010) found describing and acting with awareness were negatively related to alcohol use, nonjudging of inner experience was negatively associated with alcohol problems, and describing was positively associated with alcohol problems. Eisenlohr-Moul et al. (2010) found an interaction effect such that observing was associated with fewer periods of heavy alcohol use at higher levels of nonreactivity to inner experience. Finally, Murphy and MacKillop (2012) found nonjudging of inner experience was negatively associated with alcohol use/problems, and acting with awareness and nonreactivity were negatively associated with alcohol problems. Inconsistencies across studies may be due to differing data analytic approaches, the use of the FMI versus the FFMQ, or the fact that some studies examined alcohol use but not problems. Altogether, the relationship between mindfulness and alcohol outcomes among college students is still poorly understood.

To further understand the relationship between mindfulness and alcohol use, it is useful to consult the emerging body of literature that has examined the relationship between mindfulness and emotion regulation (Chambers, Gullone, & Allen, 2009). Mindfulness is proposed to improve one's ability to regulate emotions by promoting a healthy relationship with one's emotions such that one neither needlessly attempts to avoid emotions nor overengages with emotions (e.g. rumination and worry; Hayes & Feldman, 2004). Thus, the use of more adaptive emotion regulation strategies may explain the relationship between mindfulness and positive health outcomes (Coffey & Hartman, 2008; Shapiro et al., 2006). Preliminary empirical evidence shows that mindfulness training may enhance the ability to

regulate emotions (Arch & Craske, 2006; Goldin & Gross, 2010; Erisman & Roemer, 2010). Moreover, several studies demonstrate that lower trait mindfulness is associated with difficulties in emotion regulation (Coffey, Hartman, & Frederickson, 2010; Feldman et al., 2007; Hill & Updegraff, 2012; Jimenez, Niles, & Park, 2010).

It is plausible that affect regulation may play a key role in the association between trait mindfulness and college student drinking behavior. Accordingly, we posit that it is important to examine mood-regulatory drinking motives when considering the relationship between trait mindfulness and alcohol outcomes. Motivational models of alcohol use (Cox & Klinger, 1988) posit that drinking motives (or reasons for drinking) are the most proximal antecedents to alcohol use, and research shows that different drinking motives are associated with distinct patterns of alcohol use (Cooper et al., 1992). According to the Cox-Klinger model, drinking motives differ across two primary dimensions: the source of the motivation (internal or external) and type of reinforcement (positive or negative). Internal motives are directly related to affect regulation, whereas external motives are only indirectly related to affect regulation through regulating other incentives (e.g., affiliative incentives may drive drinking to socialize, and socializing may affect mood). Positive reinforcement motives involve drinking to increase the likelihood of a desired outcome, whereas negative reinforcement motives involve drinking to decrease the likelihood of an unpleasant outcome. Enhancement motives are associated with drinking to enhance one's mood, whereas coping motives are associated with drinking to ameliorate one's negative mood. Social motives are associated with drinking to improve social interactions, whereas conformity motives are associated with drinking to avoid negative social interactions (Cooper, 1994; Cooper et al., 1992). Based on many cross-sectional studies (Kuntsche et al., 2005), negative reinforcement motives (coping and conformity) typically predict alcohol problems, even after controlling for alcohol use, whereas positive reinforcement motives predict alcohol use, and are either unrelated (social) or indirectly related to alcohol problems via alcohol use (enhancement).

Given that mindfulness has been linked with affect regulation, trait mindfulness may have unique relationships to affect-regulation drinking motives (coping and enhancement). Individuals lower in mindfulness may have deficits in effective strategies for managing negative affect and may turn to alcohol to cope with their emotions. In the only study to examine the association between trait mindfulness and drinking motives, Leigh and Neighbors (2009) found that mindfulness (as assessed by the FMI) was positively related to drinking to enhance positive emotions, which in turn mediated the positive association between mindfulness and alcohol use among college students, but only for men. The findings from this study are noteworthy, however, the study used a mindfulness measure with less empirical support than the FFMQ, did not examine alcohol problems, did not examine other drinking motives (conformity, social), and found a gender moderation effect that has not been supported by other studies. As no other studies have explored the relationship between mindfulness and drinking motives, the purpose of the present study is to further examine the motivational pathways between mindfulness (as measured by the FFMQ) and alcohol use/problems among college students. We expected that facets of mindfulness would be inversely associated with mood-regulatory motives (i.e., coping and

enhancement), and these motives would mediate the associations between mindfulness facets and alcohol outcomes.

Method

Participants and Procedure

Participants were recruited from Psychology Department participant pools at a large, southwestern university ($N = 663$) in the United States, and participated for course credit. Given that alcohol-related problems was our outcome, we excluded non-drinkers (i.e., participants who reported drinking 0 drinks during the “typical drinking week”; $n = 363$) and participants who reported drinking ≥ 50 (i.e., 4.79 – 9.77 standard deviations above the mean; $n = 3$), leaving 297 college student drinkers in our sample (see Table 1 for demographics). This study was approved by the IRB at the participating institution.

Measures

Mindfulness was assessed using the 39-item FFMQ (Bear et al., 2006), which assesses observing, describing, acting with awareness, nonjudging of inner experience, and nonreactivity to inner experience (response scale: 1 = Never or very rarely true, 5 = Very often or always true). Drinking motives were assessed using a 28-item modified version (M-DMQ-R; Grant et al., 2007) of the Drinking Motives Questionnaire-Revised (DMQ-R; Cooper et al., 1994), which assesses social, coping with depression, coping with anxiety, enhancement, and conformity motives (response scale: 1 = Almost Never/Never, 5 = Almost Always/Always). We used the social subscale from the DMQ-R as it demonstrated higher internal consistency ($\alpha = .85$, Cooper et al., 1994) than the subscale on the M-DMQ-R ($\alpha = .61-.66$, Grant et al., 2007). A modified version of the Daily Drinking Questionnaire (DDQ; Collins, Parks, & Marlatt, 1985) was used to compute number of drinks consumed during a typical drinking week. Alcohol problems were assessed using a checklist form of the 24-item Brief-Young Adult Alcohol Consequences Questionnaire (B-YAACQ; Kahler, Strong, & Read, 2005).

Results

Descriptive statistics, correlations, and Cronbach's alphas are in Table 2. The strong correlation between coping with anxiety and coping with depression motives ($r = .74$) resulted in neither having unique effects on alcohol outcomes; thus, we computed an overall coping motives subscale by averaging these two subscales.¹ We tested the model shown in Figure 1 using structural equation modeling software (*Mplus* 7, Muthén & Muthén, 1998–2012), and examined the total, direct, and indirect effects of each predictor variable on outcomes using the bias-corrected bootstrap based on 1,000 bootstrapped samples (Efron & Tibshirani, 1993; Fritz & MacKinnon, 2007; Preacher & Hayes, 2004, 2008). Missing data were handled using full information maximum likelihood (Enders, 2001; Enders & Bandalos, 2001).

¹The results were comparable when only coping with anxiety or only coping with depression motives was included in the model. The results were also comparable when running analyses including only the subsample ($N = 297$) that had been assessed on all study variables. These analyses are available from the corresponding author upon request.

We examined drinking motives as mediators of the associations between each facet of mindfulness and alcohol outcomes. As shown in Figure 1, none of the five facets of mindfulness had significant direct effects on alcohol problems. Coping, enhancement, and conformity motives had unique associations with alcohol problems, and enhancement motives had a unique association with alcohol use. Observe and nonreactivity were not significantly related to any of the drinking motives or alcohol outcomes. We also examined the interaction between these two facets based on Eisenhour-Moul et al. (2012), which was not significantly related to any drinking motives or alcohol outcomes (statistics not shown).

Table 3 shows the direct effects of main predictor variables on outcomes. Acting with awareness was associated with lower social, coping, enhancement, and conformity motives. Nonjudging of inner experience was associated with lower coping and enhancement motives. Describing was associated with lower coping and conformity motives

Table 4 shows the total, indirect, and direct effects of mindfulness on alcohol problems. Each of the three facets of mindfulness with direct effects on drinking motives had significant effects through coping motives as well as the double-mediated effect through coping motives via alcohol use (mindfulness → coping motives → alcohol use → alcohol problems). Describing and acting with awareness had indirect effects through conformity motives. Acting with awareness and nonjudging of inner experience had indirect effects through enhancement motives as well as the double-mediated effect through enhancement motives via alcohol use.

Discussion

The present study sought to examine whether drinking motives, particularly mood regulatory motives, mediated the relationship between mindfulness and alcohol outcomes. Consistent with our expectations, we found that the mood regulatory motives of coping and enhancement significantly mediated the negative associations between facets of mindfulness and alcohol outcomes. However, we also found that conformity motives were a significant mediator of mindfulness facets and alcohol outcomes. More specifically, our results indicated that describing, nonjudging of inner experience, and acting with awareness had unique effects on drinking motives and alcohol outcomes. Whereas acting with awareness was negatively related to all drinking motives, nonjudging of inner experience was related to mood-regulatory motives (coping, enhancement), and describing was only related to negative reinforcement motives (coping, conformity). Drinking motives fully mediated the negative associations between distinct coping, and conformity), but not social motives. Though the acting with awareness facet was negatively associated with social motives, this motive was not associated with alcohol outcomes.

Consistent with prior research (Fernandez et al., 2010; Murphy & Mackillop, 2012), nonjudging of inner experience was negatively associated with alcohol problems. We also found that nonjudging of inner experience was negatively related to mood-regulatory motives (enhancement and coping). These results suggest that being judgmental of one's internal mood state may be related to problematic drinking aimed at increasing positive affect or decreasing negative affect, which may increase problematic drinking through

negative and positive reinforcement. These findings are consistent with other research demonstrating that observing one's thoughts and feelings without judging them reduces the link between automatic alcohol approach motivation, an important alcohol use risk factor, and problematic drinking (Ostafin & Marlatt, 2008). Moreover, Witkiewitz and Bowen (2010) found that participating in a mindfulness-based intervention attenuates the relationship between depression and craving, which in turn predicts reductions in substance use.

Contrary to a past finding that the describing facet was positively related to alcohol problems (Fernandez et al., 2010), we found that describing was negatively related to alcohol problems. Our study also reveals that describing may be an important protective factor against problematic drinking given that this mindfulness facet was significantly related to alcohol problems via risky drinking motives. The ability to identify or label internal experiences may disrupt the effect of implicit alcohol motivations on drinking behavior. Wiers et al. (2006) posit that automatic cognitive processes perpetuate addictive behaviors and that making automatic thoughts explicit may reduce problematic substance use. In fact, Ostafin, Bauer, and Myxter (2012) recently found that mindfulness training in college students decouples the relationship between automatic alcohol motivation and heavy drinking. Moreover, using ecological momentary assessment, Kashdan, Ferrisizidis, Collins, and Muraven (2010) demonstrated that underage social drinkers drank less alcohol if they were better at differentiating their emotions while experiencing negative affect. Thus, accurately describing one's emotions may prevent one from drinking to cope with negative affect.

Similar to Murphy and MacKillop (2012), we found that acting with awareness was negatively related to alcohol problems. We also found that acting with awareness was significantly related to alcohol problems via risky drinking motives. These results suggest that individuals who act with awareness may be more focused on their current activity at drinking events (e.g., talking with friends), may be less caught up in their thoughts/feelings, and may thus be less likely to drink in reaction to internal thoughts/feelings related to risky motives. Individuals who lack the ability to act with awareness may also be more likely to engage in impulsive behaviors while drinking that lead to alcohol-related problems. In fact, Murphy & MacKillop (2012) found that impulsivity fully mediated the relationship between mindfulness facets (assessed with the FFMQ) and alcohol outcomes. Future studies should consider examining both impulsivity and drinking motives when studying the relationship between mindfulness and alcohol outcomes.

Similar to several studies that have used the FFMQ (Eisenlohr-Moul et al., 2010; Fernandez et al., 2010; Murphy & MacKillop, 2012), we found that the observing facet of mindfulness was unrelated to alcohol outcomes. These collective findings suggest that observing may not be an important factor in problematic drinking among college students. Similar to other studies (Eisenlohr-Moul et al., 2010; Fernandez et al., 2010), we did not find an association between nonreactivity and alcohol outcomes. However, Murphy and MacKillop (2012) did find that nonreactivity was negatively related to alcohol problems. Altogether, the importance of nonreactivity in problematic drinking among college students is still unclear.

Given the cross-sectional nature of the data, we are unable to demonstrate temporal precedence and/or make causal inferences. Longitudinal and experimental designs are needed to sort out the temporal ordering of changes in mindfulness, drinking motives, and alcohol outcomes. Kazdin and Nock (2003) propose seven criteria to be used to demonstrate a mechanism of change in psychotherapy studies that are relevant here. We were able to demonstrate a “strong association” via our statistical mediation tests, and provided “plausibility and coherence” by using a theory to select mechanisms for examination. However, we were unable to provide support for five of the seven proposed requisite criteria for identifying a mechanism: “gradient”, “specificity”, “experiment”, “temporal relation”, and “consistency.” Given that all measures were assessed using continuous self-report measures, it is unknown to what extent our findings are biased by retrospective self-report biases (e.g., recall bias for alcohol, Ekholm, 2004), or if our findings would be similar to those in which alcohol use disorder was a focal outcome. Other limitations include the convenience sample, the potential relationship between level of mindfulness and validity of self-reports, and the fact that we had limited statistical power to detect small indirect effects (Fritz & MacKinnon, 2007).

Our results suggest that college students who drink for risky reasons could benefit from mindfulness-based interventions or from receiving mindfulness training in addition to existing empirically supported interventions for problematic drinking. However, future research is needed to understand whether mindfulness-based interventions are feasible, acceptable, and effective among college students, and whether dispositional mindfulness among college students is amenable to mindfulness-based interventions.

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Figure 1.

Path model of associations among mindfulness facets, drinking motives, alcohol use, and alcohol problems. Only significant effects (i.e., 95 % confidence interval not containing zero) are shown. Although the correlations among mindfulness facets and among drinking motives were estimated, they are not shown for reasons of parsimony. Fit statistics are not reported as the model was fully saturated. Demographic covariates [Gender (0 = women, 1 = men), Age, Race (0 = non-White, 1 = White), and Ethnicity (0 = Hispanic, 1 = non-Hispanic)] were entered as predictors of all other variables in the model. Observe = Observing subscale from the FFMQ; Describe = Describing subscale from the FFMQ; Act-Aware = Acting with Awareness subscale of the FFMQ; Nonjudge = Nonjudging of inner experience subscale of the FFMQ; Nonreact = Nonreacting to inner experience subscale of the FFMQ.

Table 1

Demographics of Analysis Sample

Gender	n (%)
Male	104 (35.0)
Female	192 (64.6)
Missing	1 (0.3)
Age	n (%)
<i>M (SD)</i>	21.54 (5.77)
18	84 (28.3)
19	52 (17.5)
20	39 (13.1)
21	37 (12.5)
22	27 (9.1)
23+	52 (17.5)
Missing	6 (2.0)
Race	n (%)
American Indian/Alaska Native	20 (6.7)
Asian	10 (3.4)
Black/African American	8 (2.7)
Native Hawaiian/Pacific Islander	4 (1.3)
White	198 (66.7)
Other	40 (13.5)
No Race Selected	35 (11.8)
Ethnicity	n (%)
Not Hispanic/Latino/Spanish Origen	141 (47.5)
Mexican/Mexican American/Chicano	68 (22.9)
Puerto Rican	4 (1.3)
Other Hispanic/Latino/Spanish Origen	90 (30.3)
No Ethnicity Selected	7 (2.4)
Education	n (%)
Freshman	100 (33.7)
Sophomore	69 (23.2)
Junior	63 (21.2)
Senior	60 (20.2)
Graduate Student	2 (0.7)
Missing	3 (1.0)

Note. Race and ethnicity were assessed with separate checkbox items (i.e., could select multiple options).

Table 2

Bivariate correlations and descriptive statistics

	Facets of Mindfulness					Drinking Motives					Alcohol Outcomes					Demographic Covariates				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	M	SD	N	
1. Observe	<u>.80</u>																3.41	0.71	297	
2. Describe	.18	<u>.89</u>															3.40	0.75	297	
3. Act-Aware	-.10	.41	<u>.87</u>														3.23	0.77	297	
4. Nonjudge	-.26	.33	.47	<u>.89</u>													3.08	0.85	297	
5. Nonreact	.27	.29	.09	.14	<u>.77</u>												3.07	0.65	297	
6. Social	.04	-.08	-.26	-.21	.04	<u>.92</u>											3.11	1.22	297	
7. Coping-Anxiety	.00	-.28	-.34	-.39	-.14	.62	<u>.76</u>										2.34	1.04	297	
8. Coping-Depression	.04	-.30	-.30	-.41	-.17	.40	.74	<u>.96</u>									1.80	1.06	297	
9. Coping	.02	-.31	-.34	-.43	-.16	.54	.93	.93	<u>.85</u>								2.07	0.98	297	
10. Enhancement	.07	-.12	-.32	-.33	-.11	.75	.71	.56	.68	<u>.90</u>							2.76	1.19	297	
11. Conformity	-.05	-.28	-.27	-.23	-.11	.31	.43	.47	.48	.32	<u>.88</u>						1.41	0.74	296	
12. Alcohol Use	.00	-.04	-.11	-.10	-.05	.36	.37	.37	.40	.43	.22	-----					7.01	6.43	297	
13. Alcohol Problems	.00	-.14	-.23	-.22	-.13	.48	.55	.52	.57	.56	.42	.56	<u>.90</u>				6.19	5.51	297	
14. Gender	-.06	.14	.13	.06	.19	.12	.04	.04	.05	.07	.10	.12	.09	-----			0.35	0.48	296	
15. Age	-.02	.17	.15	.18	.19	-.23	-.08	-.11	-.10	-.16	-.12	.03	-.06	.14	-----		21.54	5.77	291	
16. Race	-.02	-.02	-.05	.01	-.05	-.05	-.06	-.05	-.06	-.01	-.00	-.08	-.07	.01	.06	-----	0.67	0.47	297	
17. Ethnicity	-.02	-.00	-.03	.00	-.05	.07	.01	.01	.01	.06	.03	.10	-.02	.10	.05	.30	0.47	0.50	297	

Note. FFMQ = Five Facet Mindfulness Questionnaire; Observe = Observing subscale from the FFMQ; Describe = Describing subscale from the FFMQ; Act-Aware = Acting with Awareness subscale of the FFMQ; Nonjudge = Nonjudging of inner experience subscale of the FFMQ; Nonreact = Nonreacting to inner experience subscale of the FFMQ; Gender (0 = women, 1 = men); Race (0 = non-White, 1 = White); Ethnicity (0 = Hispanic, 1 = non-Hispanic). The underlined values on the diagonal are the Cronbach's alphas for multi-item inventories. Alcohol use refers to typical number of drinks per week, which ranged from 1 to 40 drinks among the sample of 297 students.

Table 3

Summary of direct effects of main predictor variables on outcomes

Outcome Variables:	Social Motives			Coping Motives			Enhancement Motives			Conformity Motives		
	β	B	95% CI	β	B	95% CI	β	B	95% CI	β	B	95% CI
Predictor Variables:												
Describing	.06	.10	-.12,.31	-.13	-.17	-.35,-.02	.07	.11	-.08,.31	-.18	-.17	-.31,-.05
Observing	-.00	-.01	-.22,.20	-.02	-.03	-.20,.13	.00	.00	-.19,.19	-.04	-.04	-.16,.10
Nonjudging of inner experience	-.09	-.12	-.33,.05	-.31	-.36	-.51,-.22	-.22	-.30	-.49,-.12	-.09	-.08	-.17,.01
Nonreactivity to inner experience	-.02	-.03	-.26,.18	-.09	-.13	-.29,.03	-.09	-.16	-.37,.05	-.04	-.05	-.21,.09
Acting with Awareness	-.24	-.37	-.60,-.14	-.15	-.19	-.35,-.04	-.24	-.37	-.59,-.17	-.17	-.16	-.30,-.03
Age	-.21	-.05	-.06,-.02	.00	.00	-.01,.02	-.10	-.02	-.04,.00	-.06	-.01	-.02,.00
Gender	.17	.43	.16,.71	.12	.24	.03,.43	.13	.32	.08,.60	.16	.25	.09,.41
White (0=nonwhite, 1=white)	-.07	-.18	-.47,.11	-.08	-.16	-.35,.05	-.04	-.09	-.39,.19	-.02	-.03	-.19,.14
Ethnicity (0=Hispanic, 1=non-Hispanic)	.07	.18	-.08,.48	.01	.02	-.18,.20	.06	.13	-.13,.38	.01	.01	-.15,.19
Outcome Variables:												
	Alcohol Use			Alcohol Problems								
Predictor Variables:	β	B	95% CI	β	B	95% CI						
Describing	.02	.19	-.97,1.13	.02	.15	-.61,.92						
Observing	.01	.07	-.105,.97	.01	.04	-.67,.73						
Nonjudging of inner experience	.08	.58	-.36,1.51	.02	.11	-.56,.77						
Nonreactivity to inner experience	-.03	-.25	-.145,.78	-.07	-.56	-.135,.19						
Acting with Awareness	.01	.04	-.108,1.22	-.02	-.18	-.93,.62						
Social Motives	.05	.28	-.75,1.15	.10	.43	-.08,.94						
Coping Motives	.20	1.29	.20,2.42	.19	1.07	.38,1.88						
Enhancement Motives	.27	1.48	.35,2.64	.15	.70	.07,1.33						
Conformity Motives	.05	.39	-.93,1.72	.17	1.28	.28,2.17						
Alcohol Use	----	----	-----	.35	.30	.20,.40						
Age	.09	.10	-.05,.26	.03	.03	-.08,.14						
Gender (0=women, 1=men)	.05	.72	-.84,2.23	.01	.16	-.83,1.17						
White (0=non-White, 1=White)	-.10	-.132	-.294,.17	-.01	-.05	-.109,1.04						
Ethnicity (0=Hispanic, 1=non-Hispanic)	.10	1.23	-.02,2.65	-.09	-.95	-.1.95,.02						

Note. Significant effects are in bold typeface for emphasis and were determined by a 95% bias-corrected bootstrapped confidence interval (based on 1,000 bootstrapped samples) that does not contain zero.

Table 4

Summary of total, indirect, and direct effects of mindfulness on alcohol problems via drinking motives

Predictor Variables:	Observe			Describe			Act-Aware			Nonjudge			Nonreact		
	β	B	95% CI	β	B	95% CI	β	B	95% CI	β	B	95% CI	β	B	95% CI
Outcome: Alcohol Problems															
Total Effect	-.05	-.04	-1.13,.83	-.02	-.12	-1.10,.85	-.18	-1.28	-2.12,.36	-.12	-.76	-1.59,.07	-.13	-1.08	-2.18,-.15
Total Indirect Effect	-.01	-.08	-.73,.47	-.04	-.26	-.99,.40	-.16	-1.11	-1.82,-.37	-.13	-.87	-1.51,-.30	-.06	-.53	-1.23,.19
Specific Indirect Effects															
Social Motives	.00	-.00	-.15,.09	.01	.04	-.03,.24	-.02	-.16	-.49,.01	-.01	-.05	-.25,.01	-.00	-.01	-.18,.07
Coping Motives	-.00	-.03	-.26,.14	-.03	-.19	-.49,-.04	-.03	-.21	-.54,-.04	-.06	-.39	-.76,-.13	-.02	-.14	-.47,.00
Enhancement Motives	.00	.00	-.14,.17	.01	.08	-.03,.31	-.04	-.26	-.65,-.04	-.03	-.21	-.53,-.05	-.01	-.11	-.38,.00
Conformity Motives	-.07	-.05	-.28,.11	-.03	-.22	-.52,-.07	-.03	-.21	-.50,-.03	-.02	-.10	-.31,.00	-.01	-.06	-.34,.11
Alcohol Use (AU)	.00	-.02	-.34,.30	.01	.06	-.28,.37	-.00	-.01	-.36,.37	.03	.18	-.11,.49	-.01	-.08	-.46,.22
Social Motives $\rightarrow$ AU	.00	.00	-.04,.03	.00	.00	-.02,.10	-.00	-.03	-.19,.07	-.00	-.01	-.10,.02	.00	-.00	-.08,.02
Coping Motives $\rightarrow$ AU	-.00	-.01	-.10,.05	-.01	-.07	-.20,-.01	-.01	-.08	-.21,-.01	-.02	-.14	-.33,-.02	-.01	-.05	-.18,.01
Enhancement Motives $\rightarrow$ AU	.00	.00	-.10,.10	.01	.05	-.02,.20	-.02	-.16	-.36,-.05	-.02	-.14	-.34,-.03	-.01	-.07	-.24,.00
Conformity Motives $\rightarrow$ AU	-.00	-.01	-.07,.01	-.00	-.02	-.13,.04	-.00	-.02	-.11,.04	-.00	-.01	-.07,.02	-.00	-.01	-.07,.01
Direct Effect	.01	.04	-.67,.73	.02	.15	-.61,.92	-.02	-.18	-.93,.62	.02	.11	-.56,.77	-.07	-.56	-1.35,.19

Note. Significant effects are in bold typeface for emphasis and were determined by a 95% bias-corrected bootstrapped confidence interval (based on 1,000 bootstrapped samples) that does not contain zero. Observe = Observing subscale from the FFMQ; Describe = Describing subscale from the FFMQ; Act-Aware = Acting with Awareness subscale of the FFMQ; Nonjudge = Nonjudging of inner experience subscale of the FFMQ; Nonreact = Nonreacting to inner experience subscale of the FFMQ. Demographic covariates [Gender (0 = women, 1 = men), Age, Race (0 = non-White, 1 = White), and Ethnicity (0 = Hispanic, 1 = non-Hispanic)] were entered as predictors of all other variables in the model. Total Effect = reflects the total overall effect of each facet of mindfulness on alcohol problems (i.e., the sum of direct and indirect effects); Total Indirect Effect = reflects the sum of all indirect (i.e., mediated) effects of mindfulness on alcohol problems via drinking motives and alcohol use; Specific Indirect Effects = reflects each specific mediated path to alcohol problems; Direct Effect = reflects the part of the total effect of mindfulness on alcohol problems that is not mediated by drinking motives or alcohol use.