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Enhancement Motives Mediate the Positive Association Between Mind/Body Awareness and College Student Drinking

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Abstract

This study was undertaken to examine the relationship between mindfulness and alcohol consumption among college students, with enhancement and coping motives evaluated as potential mediators. Differences between men and women in drinking and mindfulness (mind/body awareness specifically) were also considered. Undergraduate students ($n = 212$, 51% male) completed a survey that included measures of mindfulness, drinking motives, and drinking. Results indicated that greater mind/body awareness was associated with more alcohol use in men and women, and non-attachment to thoughts was associated with less drinking in men. Furthermore, enhancement but not coping motives were found to mediate these associations for men only. Results are discussed in terms of the theoretical implications for understanding the relationship between mindfulness and alcohol consumption.

Keywords

college drinking; mindfulness; drinking motives; sex differences; alcohol; meditation

Alcohol consumption among college students continues to be both prevalent and problematic. In a recent national survey (1999) more than 80% of college students reported consuming some alcohol in the past year and approximately 44% reported heavy episodic drinking (i.e., 4 or more drinks in a row for women / 5 or more drinks in a row for men) at least once in the previous 2 weeks. Additionally, approximately 23% reported frequent heavy episodic drinking (i.e., 3 or more times in the previous 2 weeks), and among students who drank, 45% of them reported that they usually drink heavily when drinking and 48% said that they drink “to get drunk” (Wechsler, Lee, Kuo, & Lee, 2000). Frequent heavy episodic drinkers account for 68% of all consumed alcohol as well as the majority of alcohol related problems among college students (Wechsler, Molnar, Davenport, & Baer, 1999). Although moderate alcohol consumption by college students is relatively normative and might represent healthy psychosocial development (e.g., Schulenberg & Maggs, 2002), excessive drinking is associated with damaged property, poor class attendance, hangovers, trouble with authorities, and injuries (Wechsler et al., 2000; Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994). Research has also demonstrated links between college drinking and unwanted sexual advances, unplanned and unprotected sex, sexual aggression, and sexual assault (Frintner & Rubinson, 1993; Koss & Gaines, 1993; Larimer, Lydum, Anderson, & Turner, 1999; Wechsler et al., 2000; Wechsler et al., 1994). Excessive drinking in late adolescence and early adulthood cannot be attributed to a single causal factor, although there is evidence that drinking is positively

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related to stressful events, negative affect, anxiety, and nervousness during young adulthood (Rutledge & Sher, 2001).

The role of mindfulness in the drinking behavior of college students has recently received attention. Although there are a number of mindfulness measures currently in use (see Baer, Smith & Allen, 2004; Baer, Smith, Hopkins, Kreitemeyer & Toney, 2006; Brown & Ryan, 2003; Buccheld, Grossman & Walach, 2002; Hayes & Feldman, 2004), general agreement on what constitutes mindfulness has not been reached. Mindfulness has often been described as “paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally” (Kabat-Zinn, 2003), and is generally considered a positive trait (or state) associated with psychological health. However, Leigh, Bowen and Marlatt (2005) reported that a higher level of mind/body awareness might (at least in some cases) be associated with engaging in potentially harmful behavior such as heavy drinking among college students. Contrary to initial expectations, investigators reported that college students who engaged in heavy episodic-drinking reported significantly higher scores on the Frieberg Mindfulness Inventory (FMI; Buccheld, et al., 2002) mind/body awareness subscale than did students who did not drink. In other studies that have examined self-reported mindfulness, mindfulness has been positively correlated with openness to experience, emotional intelligence, self-compassion, life satisfaction, and personal well-being, and negatively correlated with psychological symptoms (e.g., depression, anxiety, and dissociation), neuroticism, thought suppression, difficulties in emotion regulation, experiential avoidance, and absent-mindedness (Baer et al., 2006; Baer et al., 2004; Brown & Ryan, 2004; Brown & Ryan, 2003; Feldman et al., 2006). Results suggesting that an aspect of mindfulness might be related to problematic behavior was unexpected, and suggests that not only is mindfulness a multifaceted construct but that in some cases particular aspects of mindfulness might be associated with greater risk related behavior thus serving as both a marker of psychological health and as potentially harmful.

As early as the 1970s, mindfulness has been examined as a treatment for problematic drinking. Earlier studies examined the effect of meditation on the drinking behavior of college students (Benson, 1975; Marcus, 1974; Marlatt & Marques, 1977; Marlatt, et al, 1984; Murphy, Pagano, & Marlatt, 1986), and suggested that meditation can be used effectively as an intervention for students described as “heavy social drinkers” (i.e., those who drink an average of one and one-half drinks per day). More recently, the efficacy of a 10-day Vipassana meditation course on substance use in an incarcerated sample was investigated (Bowen, et al., 2006; Marlatt, et al, 2004; Witkiewitz & Marlatt, 2004; Witkiewitz, Marlatt, & Walker, 2005). Study investigators found significant reductions in drug and alcohol use for individuals who voluntarily attended a 10-day Vipassana meditation course as compared to controls. Bowen, Parks, Coumar, & Marlatt (2006) suggest that mindfulness might mediate substance use by encouraging acceptance of and contact with internal experience that had previously been avoided (through the use of substances). While this is promising work, it does not specifically address the relationship between ones level of mindfulness (i.e., mind/body awareness) and their substance use pre-treatment.

In addition to problematic drinking, mindfulness-based interventions have shown promise for a number of psychological disorders including anxiety disorders, depressive relapse, chronic pain, stress, and binge-eating disorders (Kabat-Zinn, 1990; Kabat-Zinn, et al., 1992; Kristeller & Jones, 2006; Kristeller, Wolever, & Sheets, 2006; Ma & Teasdale, 2004; Segal, Williams & Teasdale, 2002; Teasdale et al., 2000; Telch, Agras, & Linehan, 2001). These studies suggest that increased awareness and acceptance of experience/sensation (as cultivated by mindfulness training) is efficacious in alleviating psychopathology. Mindfulness training may also increase awareness of body cues and sensations. In a study investigating a mindfulness-based intervention for disordered eating, individuals randomized into the meditation intervention

were reported to cultivate an increased awareness of bodily hunger and satiety cues. Thus, those trained in meditation and mindfulness practices developed an ability to ‘tune into’ their bodies (Kristeller et al., 2006). In combination with previous findings related to mindfulness and heavy drinking among college students (Leigh et al., 2005), these results beg the question of whether sensitivity to one’s mind and body states (an aspect of mindfulness) might also play a role in initiating or maintaining maladaptive behaviors.

In considering possible mechanisms for the positive relationship between mind/body awareness and heavy drinking (Leigh et al., 2005) we posited two plausible mediators: drinking to cope and drinking for enhancement. Thus we considered that this relationship might be the consequence of negative reinforcement (e.g., to feel less depressed or nervous) thereby escaping unwanted bodily sensations, or positive reinforcement (e.g., to enhance a pleasant feeling) thereby enhancing pleasurable bodily sensations. Previous research examining predictors of heavy drinking in college students has consistently demonstrated that enhancement and coping motives for drinking are associated with heavier and more problematic drinking (Cooper, 1994; Cooper, Frone, Russell, & Mudar, 1995; Cooper, Russell, Skinner, & Windle, 1992; Neighbors, Larimer, Geisner, & Knee, 2004; Stewart & Devine, 2000; Stewart, Loughlin, & Rhyno, 2001; Stewart, Zvolensky, & Eifert, 2001). Moreover, both of these motives have plausible associations with mindfulness, and mind-body awareness in particular, in that they suggest an awareness of one’s mind and body states. Finally, given previous research demonstrating gender differences in drinking as well as antecedents of drinking we were further interested in considering whether the mindfulness-drinking relationship, as mediated by coping and enhancement motives, might vary by gender.

Sex differences in motives, mindfulness, and drinking

Research has consistently demonstrated that male college students drink significantly more alcohol (i.e., larger quantities and more frequently) than female college students (Clements, 1999; O’Malley & Johnston, 2002; Read et al., 2002; Valliant & Scanlan, 1996; Wechsler, et al., 1994; Wechsler, et al., 1995a; Wechsler et al., 1995b); although some suggest that these differences are diminishing (Ham & Hope, 2003; Keeling, 2002; Martin & Hoffman, 1993). Additionally, there is some evidence to suggest that sex-based differences exist in motives for drinking, and although the findings have not been entirely consistent (Read, Wood, Lejuez, & Palfai, 2004), some evidence suggests that coping and enhancement motives might be more strongly related to drinking among men. For example, Rutledge and Sher (2001) reported that 21 year old male college students, who had higher tension reduction motives for drinking (a composite of tension-reduction alcohol expectancies and affect-regulation reasons for drinking) and higher stress, reported the highest levels of drinking. With respect to enhancement, Read et al (2005) found that accessibility of social/enhancement reasons for drinking were more strongly associated with drinking among college men in comparison to college women. Similarly, Cooper et al (1995) found that among adults, the relationship between enhancement motives and drinking was stronger among men than women, as was the relationship between coping motives and alcohol related problems. Thus, converging evidence suggests that male college students drink more and have differing motives for drinking, as compared to their female peers.

These sex-based differences in young adulthood can be viewed from a developmental perspective. On the basis of their studies with infants, Weinberg, Tronick, Cohn and Olson (1999) concluded that boys demonstrated a limited capacity for emotional self-regulation and used a wider range of emotional expressions in order to make their needs explicit, and suggested that this difference contributes to gender differences seen later in life. Consistent with this perspective, in their recent review of the literature Kuntsche and colleagues suggested that drinking motives become more distinct across development, with enhancement motivation

emerging as a primary determinant of drinking for boys (Kuntsche, Knibbe, Gmel, & Engels, 2006). Thus, converging research suggests that affect regulation (via coping and enhancement) might have a stronger connection to drinking for men.

In sum, the present study was designed to evaluate coping and enhancement motives as mediators of the association between mindfulness and drinking among college students. In particular, we were interested in evaluating the extent to which coping and/or enhancement motives might account for the previous counterintuitive finding indicating a positive association between mind/body awareness and drinking in college students. We were further interested in considering whether these putative mediators could provide a better explanation for this relationship in men as compared to women.

Method

Participants

Participants included 212 (52% men) students from the University of Washington (UW) who were recruited from the undergraduate psychology pool. Distribution of ethnicity was primarily Caucasian (45.0%) and Asian/Pacific Islander (42.2%). The average age of participants was 19.52 (SD = 1.87). Participants completed all measures using paper and pencil questionnaires. The study was approved by the UW Institutional Review Board and each study participant read a written Informed Consent prior to participating. Participants received course extra credit in exchange for their participation, and all data collection was anonymous.

Measures

Mindfulness—Mindfulness was measured using the Freiburg Mindfulness Inventory (FMI; Buccheld et al., 2002). The 30-item FMI assesses multiple aspects of mindfulness. In previous work three specific aspects of mindfulness were identified using factor analysis, and three corresponding subscales were constructed (Leigh et al., 2005). The same subscales were used in the present study. Response options were revised from a 4-point to a 6-point scale as suggested by measure developers (Buccheld et al., 2002), ranging from Rarely to Almost Always. The three subscales were as follows: Acceptance and openness to self and experiences (i.e., *openness*) contained 12 items (e.g., “*I accept myself as I am.*”; $\alpha = .80$). Mind and body awareness (i.e., *mind/body*) was assessed by 10 items (e.g., “*I notice how my emotions express themselves through my body*”; $\alpha = .85$), and non-attachment to thoughts (i.e., *non-attachment*) was assessed by 8 items (e.g., “*I watch my thoughts without identifying with them*”; $\alpha = .70$).

Coping and enhancement motives—Motives for drinking were assessed using the Drinking Motives Questionnaire (DMQ; Cooper, 1994). The 20-item DMQ is rated on a 5-point scale ranging from Never/Almost Never to Almost Always/Always and assesses reasons for drinking within four domains; social, conformity, enhancement and coping. Our analyses focused on the coping subscale (e.g., “*Because it helps you when you feel depressed or nervous.*”) and the enhancement subscale (e.g., “*Because you like the feeling.*”). In this study, alpha’s for coping and enhancement motives were .84 and .91 respectively.

Alcohol consumption—Alcohol use was assessed with the Daily Drinking Inventory (DDQ; Dimeff, et al., 1999). The DDQ measures typical and peak weekly drinking levels over the past 30 days. The DDQ has been used extensively in the college student drinking literature and has shown good concurrent validity and test-retest reliability (e.g., Marlatt et al, 1998; Neighbors et al., 2006).

Results

Descriptive Statistics

Means and standard deviations for all study variables are provided in table 1. Correlations among all study variables are provided in table 2. Results indicated significant positive associations among the three aspects of mindfulness. Neither *openness* nor *non-attachment* was associated with coping or enhancement motives for drinking. Mind/body awareness was positively associated with enhancement motives for drinking, but was uncorrelated with coping motives. *Non-attachment* was also uncorrelated with drinking. Consistent with previous work, mind/body awareness was positively associated with drinking. In this study, *openness* was also positively correlated with drinking. As in previous work, enhancement and coping motives were both positively correlated with drinking.

Independent sample t-tests were conducted to evaluate sex differences in mindfulness, drinking motives, and drinking. Men and women did not differ in mindfulness with respect to any of the mindfulness subscales. Men and women also did not differ with respect to coping motives. However, men reported higher enhancement motives, $t(205) = 2.21, p < .05$. In addition, consistent with previous research, on average men in this sample reported consuming significantly more drinks per week ($M = 9.10, SD = 12.97$) than did women ($M = 3.36, SD = 4.96; t(206) = 4.17, p < .001$).

Primary analyses

Multi-group path analysis using full information maximum likelihood estimation (Bollen, 1989; Arbuckle & Wothke, 1999) was used as the primary analysis strategy to evaluate 1) the unique contribution of sex and mindfulness in predicting drinking, 2) sex differences in these relationships, and to evaluate 3) drinking motives as potential mediators of the relationship between mindfulness and drinking (mediation), and 4) whether or not mediation differed between men and women (moderated mediation). Benefits of this approach include a state of the art treatment of missing responses (Shafer, 2002; Wothke, 2000) and an ability to evaluate multiple mediators simultaneously (MacKinnon & Dwyer, 1993; MacKinnon et al., 2002).

Direct effects were evaluated in a multi-group model evaluating drinking as a function of mindfulness subscales and were simultaneously estimated separately for men and women. In order to evaluate model fit (i.e., avoid a completely saturated model) and because as noted above there were no significant gender differences in associations among mindfulness subscales, covariances among subscales were constrained to equality across genders. The resulting model provided reasonably good fit to the data (Browne & Cudeck, 1993), $\chi^2(df = 3; N = 212) = 5.41, p = ns$; NFI = .997; TLI = .992; CFI = .999; RMSEA = .062. Figure 1 presents standardized path coefficients for men and women. Results indicated that for men and women, mind/body awareness was significantly associated with more drinking whereas *openness* was not associated with drinking for either men or women. *Non-attachment* was also directly associated with significantly less drinking for men, but not for women.

Next we evaluated multi-group mediation models, extending the direct effects model, such that associations between mindfulness subscales and drinking were specified to occur through coping and enhancement motives. Path coefficients between mindfulness subscales and motives and between motives and drinking were free to vary across gender whereas covariances among mindfulness subscales were again constrained to equality across genders. The resulting model provided marginal fit to the data, $\chi^2(df = 11; N = 212) = 97.89, p < .001$; NFI = .967; TLI = .886; CFI = .970; RMSEA = .194, and was likely due at least in part to the large number of non-significant paths among mindfulness subscales, motives, and drinking, particularly for women. Figure 2 presents standardized path coefficients for men and women.

Results indicated that for men, *openness* was negatively associating with drinking to cope and was not associated with drinking for enhancement. Mind/body awareness was not associated with drinking to cope but was strongly associated with drinking for enhancement. *Non-attachment* was positively associated with drinking to cope and negatively associated with drinking for enhancement. Drinking to cope was not significantly associated with number of drinks consumed per week whereas drinking for enhancement was strongly and positively associated with drinking.

Results for women indicated no association between mindfulness subscales and drinking motives with the exception of a marginally significant positive association ($p = .06$) between mind/body awareness and drinking for enhancement. Consistent with the findings for men, drinking to cope was not associated with drinking whereas enhancement was strongly and positively associated with drinking.

Mediation was evaluated by testing indirect effects using the ab products method as described by MacKinnon and colleagues (MacKinnon & Dwyer, 1993; MacKinnon et al., 2002) where the standard error for indirect effects was estimated using the Sobel (1982) formula. Table 3 presents mediation results by gender. Results indicated that enhancement motives mediated the relationship between mindfulness and drinking for men but not for women. More specifically, the indirect effects of mind/body awareness and non-attachment on drinking through enhancement were both significant for men. There was no evidence of drinking to cope as a mediator for either men or women.

Discussion

This research was designed to consider possible explanations for the positive relationship previously reported between mind/body awareness and drinking, by examining motives for drinking as possible mediators. Additionally, we wanted to examine the role of sex in the mindfulness-drinking relationship, due to converging evidence that suggests men and women may have differing motives for drinking. Our results were generally consistent with study hypotheses. In support of previous findings, mind/body awareness was associated with increased weekly drinking in both men and women, suggesting that awareness of one's mind/body states or sensations is an important aspect of the mindfulness-drinking relationship within this population. Although openness was positively correlated with drinking overall, it was not uniquely associated with drinking in multivariate models for men or women. In contrast, non-attachment to thoughts was not correlated overall with either drinking or drinking motives, however path analysis revealed that it was a significant predictor of both among men but not women. Moreover, among men, non-attachment was associated with more coping, less enhancement, and less drinking. Furthermore, the association between non-attachment and less drinking was mediated by enhancement, suggesting that men who are less attached to their thoughts drink less at least in part because they are less likely to drink for enhancement reasons. The positive relationship between non-attachment and coping motives among men was unexpected. Although speculative, the pattern of results between non-attachment and drinking motives may suggest that men who ruminate and get 'caught-up' in their thoughts are more likely to associate alcohol with positive affect, and hence less likely to drink for coping and more likely to drink for enhancement reasons. The absence of a relationship between coping and drinking suggests that the enhancement path provides a better account for the association between non-attachment and drinking for men. Results also suggest that the relationship between mind/body awareness and drinking is mediated by enhancement motives for men only. Although mind/body awareness was associated with higher levels of drinking in women, neither enhancement nor coping motives mediated this relationship. Thus, the role of mind/body awareness in drinking for women remains unclear.

Recall that the Freiburg Mindfulness Inventory (FMI; Buccheld, et al., 2002; Leigh, et al., 2005) 3-factor solution assesses mindfulness in three domains; acceptance and openness to self and experiences (openness), mind/body awareness (mind/body), and non-attachment to thoughts (non-attachment). The current study replicated previous findings (Leigh et al. 2005), suggesting that mind/body awareness is related to higher levels of drinking in college students. Why might this be so? What is mind/body awareness, generally, and how does it relate to drinking? Although the FMI was constructed on a sample of experienced meditators, results suggest that study participants reliably responded to questions on the measure and its subscales. In relation to the mind/body subscale, this suggests that study participants could identify the states or sensations presented, whether pleasant or unpleasant. However, given the positive relationship between mind/body awareness and enhancement motives for drinking, pleasant experiences/sensations appear to be more important, particularly for men. Perhaps the ability to “tune-into” mind/body experiences facilitates enhancement of those states, especially pleasurable ones. Thus, the link between mind/body awareness and enhancement motives for drinking becomes theoretically important, as it offers one possible explanation for what is behind, or what facilitates, enhancement motives for drinking in male college students. As has been described in detail elsewhere, many individuals drink to enhance positive experiences or emotions (Cooper, Russell, Skinner & Windle, 1992). Thus, drinking “because you like the feeling” and/or “because it makes you feel good” might be initiated and maintained by individuals who have a higher level of awareness of these pleasurable states.

Why might this be so for men and not for women? From a developmental perspective, it has been suggested that boys have more difficulty with affect regulation than do girls (Weinberg, et al., 1999). Through enculturation, boys are directed to engage in sports at a younger age, perhaps to express their affective states, and with more intensity than girls (although this difference is changing). Through increased physical activity boys may identify with their body at a much earlier age than do girls. Thus, men may be more in-tune with their bodies than women. In contrast, evidence suggests that negative body image and body dissatisfaction is prevalent in college females (Depcik & Williams; 2004; Levitt, 2004). This body dissatisfaction could result in a tendency to separate from or ignore one’s body; rather than “tuning-in” to their body college women may be more inclined to “tune-out.” The concept of mindfulness, and mindfulness-based disordered eating research supports the notion that negative body image is related to disconnection from one’s body (Kabat-Zinn, 2005; Kristeller, Baer & Quillian-Wolever, 2006; Kristeller & Jones; 2006; Kristeller, Wolever, & Sheets; 2006). Another source of evidence for this “tuning-out” stems from evidence suggesting that chronic dieting can disrupt one’s natural, physiological awareness of satiety (Heatherington & Baumeister, 1991; Heatherington, 1996), and chronic dieting among American women has been well documented. It is also possible that men have more experience drinking alcohol, and are (through experience) more aware of its affects. Drinking patterns among college students have been examined extensively over the past 25 years, and results consistently demonstrate that college males drink significantly more than their female peers (Johnston, O’Malley, Bachman, & Schulenberg, 2005). Additionally, as women differ from men in terms of alcohol absorption and oxidation, these physiological differences offer another possible explanation. Perhaps women reach a more severe level of intoxication quicker than men, and therefore miss the subtle physiological changes in their body that low to moderate levels of alcohol can produce.

Alcohol consumption continues to be problematic on college campuses throughout the U.S., and has been implicated in a number of negative outcomes including death, injury to drinking and non-drinking students alike, property damage, and alcohol-related sexual assault or rape (National Institute on Alcohol Abuse and Alcoholism (NIAAA), 2002). Furthermore, although the overall rate of heavy episodic drinking did not change significantly between 1993 and 1999, the number of students frequently engaging in heavy episodic drinking increased by 14.5% (Wechsler, et al., 2000), and frequent heavy episodic drinkers account for the majority of

alcohol related problems among college students (Wechsler, Molnar, Davenport, & Baer, 1999). Clearly, the cost of college student drinking is high. While a number of interventions are currently in place, new approaches to address college drinking are sorely needed. Mindfulness training might be one such approach.

This study provides support for the theoretical understanding of mindfulness as a multidimensional (Baer et al. 2006; Baer et al. 2004; Kristeller & Jones, 2006; Leigh et al. 2005), rather than a uni-dimensional construct (Brown & Ryan, 2003). Considering mindfulness as multi-dimensional provides a theoretical framework for behaviors relating differently to different aspects of mindfulness. As reported in this study, being more aware of one's mind/body states, might actually contribute to higher levels of drinking; while being more open to one's experiences appears to be less relevant. Additionally, non-attachment to thoughts may be related to lower levels of drinking in men. Expanding our understanding of the role of mind/body awareness in drinking behavior could facilitate the development of an intervention for college students focusing on mindfulness training for students who drink more heavily than their peers. Thus, rather than enhancing pleasurable states through increased drinking, students could be trained to experience these states more adaptively, through mindfulness training. Future research is needed, to determine which specific approach might work best.

There are a number of limitations to this study. First, the Freiburg Mindfulness Inventory is only one measure of mindfulness, and was constructed on experienced meditators. Since our sample was not drawn from a pool of experienced meditators, study participants may not have fully understood the terms presented. The moderate alpha for the non-attachment to thoughts subscale is suggestive of this, or might alternatively suggest that this subscale is somewhat unreliable. Furthermore, the use of a college sample to assess mindfulness and drinking, limits our ability to generalize to other (i.e., non-student) populations and the correlational nature of our design limits any discussion of a cause-effect relationship. Finally, the relationship between sensation-seeking and mind/body awareness was not investigated. Although a significant body of research suggests that impulsivity/sensation-seeking is related to enhancement motives for drinking, a recent longitudinal study did not support this relationship (Read, Wood, Kahler, Maddock & Palfai, 2003). Nonetheless, examination of the role of sensation seeking in the mind/body awareness and drinking relationship might be fruitful.

In spite of these limitations, the present study identifies a relationship between mind/body awareness and higher levels of drinking in college students and suggests that for men, this relationship is mediated by enhancement motives for drinking. This finding has theoretical importance, as it helps clarify the seemingly counterintuitive relationship between mindfulness and drinking among college men. As individuals who drink for enhancement motives are reportedly more likely to use drugs that promote euphoria as well (Cooper, Russell, Skinner & Windle, 1992), future studies should examine the relationship of mind/body awareness and the use of other substances (e.g., marijuana, cocaine, ecstasy, etc).

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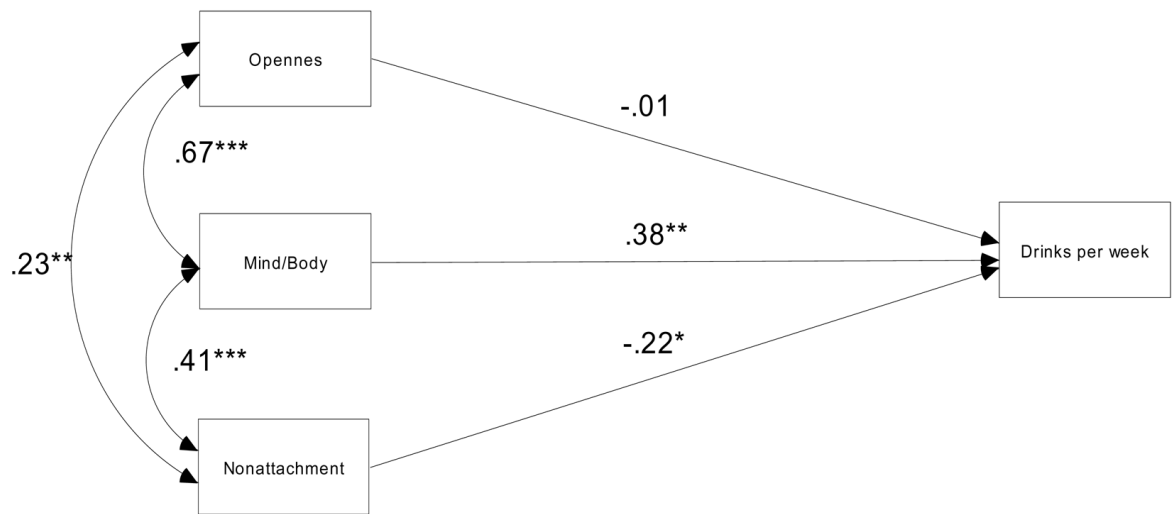
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Men



Women

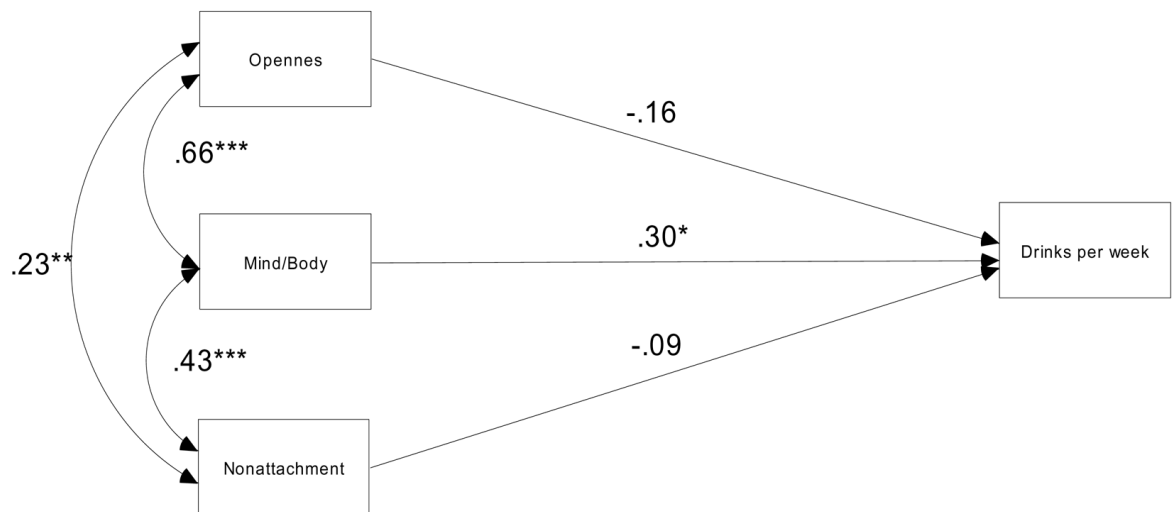
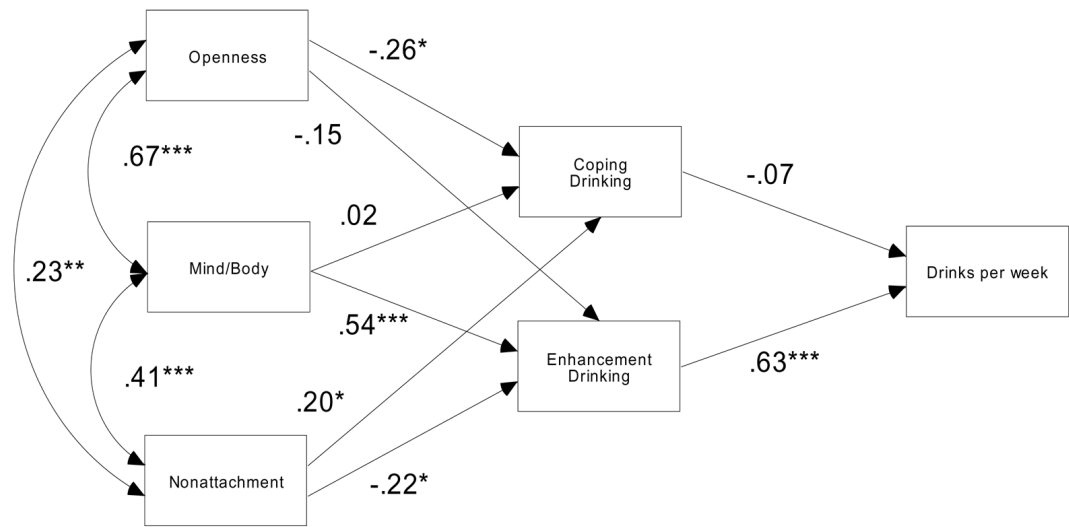


Figure 1.
Direct effects of mindfulness subscales on drinking for men and women.

Men



Women

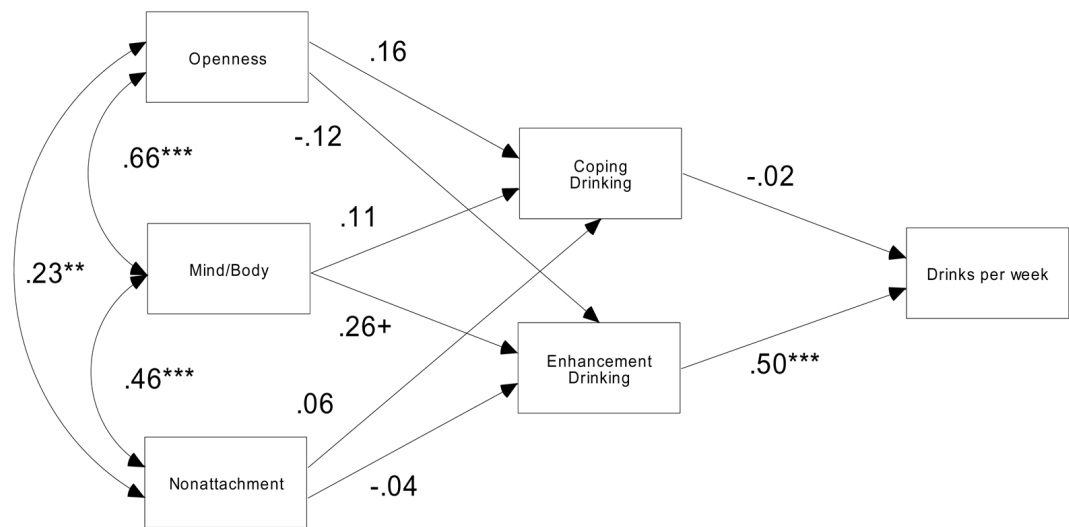


Figure 2. Mediation models examining drinking motives as mediators of the relationships between mindfulness subscales and drinking for men and women.

Table 1
Means and standard deviations (SD) for study variables

Variable	N	Mean	SD
Drinks per week	209	6.34	10.29
Openness	210	3.53	0.77
Mind/body	210	3.73	0.89
Non-attachment	210	2.97	0.77
Enhancement motives	208	2.58	1.28
Coping motives	208	1.87	0.88

Table 2
Correlations among sex, mindfulness, motives, and drinking.

Variable	1	2	3	4	5	6
1. Drinks per week	--					
2. Openness	0.14*	--				
3. Mind/body awareness	0.21**	0.67***	--			
4. Non-attachment	-0.05	0.23**	0.42***	--		
5. Enhancement motives	0.56***	0.11	0.26**	0.00	--	
6. Coping motives	0.21**	-0.12	0.00	0.13	0.53***	--

Note.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 3
 Mediation results examining drinking motives as mediators of the relationships between mindfulness subscales and drinking.

Gender	Mindfulness subscale	Motive	<i>ab</i>	SE, <i>ab</i>	Z
Men	Openness to experience	Coping	0.33	0.38	0.86
	Mindbody awareness	Coping	-0.02	0.15	-0.16
	Nonattachment	Coping	-0.25	0.29	-0.85
	Openness to experience	Enhancement	-1.65	1.34	-1.23
	Mindbody awareness	Enhancement	4.96	1.33	3.74***
	Nonattachment	Enhancement	-2.35	1.08	-2.18*
Women	Openness to experience	Coping	-1.13	0.95	-1.19
	Mindbody awareness	Coping	0.69	0.89	0.78
	Nonattachment	Coping	0.43	0.79	0.54
	Openness to experience	Enhancement	-1.11	1.24	-0.90
	Mindbody awareness	Enhancement	2.16	1.19	1.81
	Nonattachment	Enhancement	-0.35	1.05	-0.34