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Can Preoccupation with Alcohol Override the Protective Properties of Mindful Awareness on Problematic Drinking?

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Abstract

Objectives—To assess the mediating role of drinking restraint— specifically preoccupation with drinking— on the associations between mindful awareness and alcohol consumption and alcohol-related problems.

Methods—390 heavy-drinking, undergraduate, college students (52% male) were assessed on measures of mindfulness, drinking restraint, alcohol consumption (prior 90-days), and alcohol-related problems via self-report surveys.

Results—Mindfulness was negatively associated with alcohol consumption, problems, and both factors of drinking restraint (emotional preoccupation and behavioral constraint). Emotional preoccupation, but not behavioral constraint, statistically mediated these relationships and demonstrated positive associations with both alcohol consumption and related problems.

Conclusions—Results replicate previous findings documenting a negative association between mindfulness and alcohol consumption and problems. Statistical mediation models suggest that preoccupation with drinking may be a risk factor that over-rides the health-promoting effects of mindfulness.

Keywords

college students; drinking restraint; mindfulness; preoccupation; temptation

Introduction

Problem drinking among college students has become one of the nation's leading public health concerns.¹ Rates of frequent, heavy alcohol consumption have increased² and between 30 and 40% of college students report at least one symptom of either alcohol abuse or dependence. In addition to alcohol use diagnoses, college students are vulnerable to alcohol-related problems^{1,3} including, academic impairment, physical fights, property damage, criminal justice involvement,^{2,3,4} and sexual violence victimization and perpetration.³

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Mindful awareness is an emerging characteristic that has recently been examined in relation to alcohol use and problems. It is a marker of pro-health behavior that could be used in college-based prevention and intervention programs to help reduce harmful drinking and related problems. Kabat-Zinn⁵ defined mindfulness as one's awareness due to purposefully paying particular attention to the present moment and acknowledging this moment without judgment. Mindfulness is considered a positive attribute, which has been linked to enhanced mental and physical well-being,^{6,7,8,9,10,11,12} decreased stress-response,⁶ and cognitive flexibility.^{13,14} By acknowledging unpleasant thoughts and feelings without bias (cognitive flexibility, non-rumination) and accepting rather than fixating on unpleasant thoughts and feelings (self-awareness), individuals who are mindful are better equipped to control their own behavior (alcohol use) by anticipating both the positive and negative consequences of this behavior.^{15,16} In linking this to college student drinking, young adults who are mindful and aware of their actions have a greater chance of managing maladaptive behavior, such as heavy drinking, before it carries serious consequences (i.e. receiving a DUI, being sexually victimized), and later develops into an alcohol use disorder.¹⁷ In this way, mindful awareness may protect against excessive drinking and related negative consequences^{6,18,19} due to its association to adaptive behavioral regulation.^{6,13,14}

Studies have generally shown that mindfulness is negatively associated with alcohol use and problems among heavy drinking college students;²⁰ however, inconsistencies in the literature warrant discussion. For example, Leigh and Neighbors²¹ examined the relationship between three distinct aspects of mindfulness and alcohol consumption in a sample of undergraduate students: Acceptance and Openness to Self and Experiences, Mind and Body Awareness, and *Non-Attachment to Thoughts*. Results indicated that *Mind and Body Awareness* was associated with increased alcohol consumption among both men and women, whereas *Acceptance and Openness* was unrelated to drinking. However, *Non-Attachment to Thoughts* was significantly related to lower alcohol consumption in men, and unrelated to drinking in women. More recently, Fernandez et al.²² examined five independent facets of mindfulness and their unique associations to alcohol consumption in a sample of undergraduate college students. The results of this study were inconsistent with those reported by Leigh and Neighbors.²¹ Fernandez and colleagues²² found that *Acting with Awareness*, a factor that describes one's ability to concentrate on present stimuli, and *Describe*, a factor that is characterized by one's ability to verbally express feelings, were both negatively related to alcohol consumption; thus indicating that the ability to be present and articulate one's emotions in the present moment correlated with decreased drinking, as would be expected. The remaining three factors— *Nonreactivity*, *Nonjudging*, and *Observe* — were not significantly related to alcohol use. Further, and inconsistent with current theory, Fernandez et al.²² found that those who were higher on *Describe* also reported more alcohol-related negative consequences. The authors suggested that levels of consumption may be more strongly linked to mindfulness (or lack thereof) than actual consequences of use. Based on these equivocal findings, the underlying mechanism relating mindfulness to problematic drinking in college-aged samples remains unclear.

Conversely, college students who focus on controlling their urges and thoughts to consume may likely be at risk for exacerbating their current drinking problem.²³ Drinking restraint, a robust risk factor for drinking and related problems, is one such characteristic that may help explain the negative association between mindfulness and alcohol use and problems. Contrary to the core characteristics of mindfulness, drinking restraint does not emphasize acceptance and non-judgment of the present moment;²⁴ rather, restrained drinkers, as defined by Ruderman and McKirnan,²⁵ are those who consistently resist their desires to consume alcohol and are thus preoccupied with urges and the temptation to drink. Rather than accept or tolerate their present desire to consume alcohol, restrained drinkers may instead attempt to control these desires through behavioral restriction and emotional

preoccupation; in spite of increasing temptations. This over-control may cause a “rebound” effect, wherein restrained drinkers experience more intense or frequent urges, inadvertently leading to over-consumption of alcohol.^{26,27} Thus, where being mindful describes a disposition in which one acknowledges and accepts current stimuli without opinion, rumination and an over-focus on negative thoughts or feelings has been shown to be related to poor mental health outcomes by increasing unwanted internal experiences.²⁸ For example, earlier studies show that when regulation and control fail, previously restrained drinkers consume alcohol more frequently and in larger amounts than people who are not restrained.^{23,25}

The Temptation Restraint Inventory (TRI),²³ one of the most widely used assessment tools for measuring drinking restraint, is composed of two higher-order factors: cognitive and emotional preoccupation (CEP), which describes one’s temptation or fixation to drink; and cognitive and behavioral control (CBC), which describes one’s attempts to restrain or control drinking.^{23,29} Previous research has demonstrated that CEP (“temptation”) and CBC (“restraint”) represent distinct factors and are associated with different drinking outcomes in various clinical and non-clinical samples. For example, temptation has been associated with greater alcohol consumption in undergraduate students,^{30,31} whereas restraint is often negatively related to alcohol consumption in similar undergraduate populations.³² Thus, the two higher order factors of the TRI have been shown to be inversely related to drinking outcomes in heavy drinking college samples.

To date, prior research is limited in its examination of the links between mindfulness and drinking restraint as they relate to drinking and related problems in college student samples. Despite their apparent dissimilarity, these constructs may share a common pathway—that is, self-regulation/dysregulation—toward the development of an alcohol use disorder. Mindfulness, being in direct opposition to emotional preoccupation, is purported to bring about improved functioning via adaptive coping.^{10,33} This study seeks to replicate extant research^{21,22} by investigating the relationship between mindfulness and alcohol consumption and problems and to expand the current body of knowledge by exploring associations among mindful awareness, drinking restraint, alcohol consumption and related problems in a sample of college students. We propose a theoretical pathway, linking mindfulness to drinking restraint, and drinking restraint to alcohol consumption and problems in college students (see Figure 1). In this model, a tendency toward mindful awareness may act as a protective factor that reduces the likelihood that one would develop greater preoccupation with drinking (TRI CEP). We were specifically interested in examining the CEP factor of the TRI—trait temptation—as our proxy for drinking restraint because this factor taps into the cognitive aspect of restraint, which we felt would be uniquely and negatively related to mindfulness relative to behavioral attempts to restrict drinking (TRI CBC). This was based on extant research demonstrating that preoccupation with unwanted thoughts about drinking can increase those thoughts and lead to problematic drinking behavior.^{26,27} To our knowledge this relationship has not been studied empirically. Second, and based on prior research, we hypothesized that mindfulness would be negatively related to alcohol consumption and alcohol-related problems, such that those who report higher levels of mindfulness would be less likely to drink and report fewer problems from drinking. A final and exploratory aim was to investigate the role of preoccupation with drinking (CEP) as a potential risk factor that might statistically mediate the association between mindfulness and alcohol consumption and problems.^a In this way, we expected

^aDue to data being collected cross sectionally rather than longitudinally, we could not test for true causal mediation as outlined by Kazdin and Nock;³⁴ we were only able to test statistical mediation as outlined by Baron and Kenny³⁵ in which the association between the independent variable and dependent variable becomes significantly reduced or non-significant after controlling for the mediator.

that, if individuals were higher on emotional preoccupation, this may “over-ride” the protective effects of mindfulness on drinking outcomes. We expected that both behavioral restraint (CBC) and emotional preoccupation (CEP) would be positively related to alcohol consumption and that the associations between mindfulness and alcohol indices (consumptions and problems) would be reduced after accounting for the effects of preoccupation to drink, but not behavioral restraint.

Materials and Methods

Participants

The sample ($n = 496$) was collected at a large, public university in the northeastern United States. The majority of participants ($n = 457$; 92.1%) were recruited from Introductory Psychology courses during the spring 2010 academic semester and received course credit for their participation, while a small portion ($n = 39$; 7.9%) were recruited from advertisements within newspapers over the spring and summer of 2010 and were paid \$15.00 for their participation.^b Participants were included in current analyses if they were: 18 years of age or older, an undergraduate student, and consumed any alcohol within the 90 days prior to being surveyed. This left a final sample of 390 individuals (52% male; M age = 19; $SD = 1.23$; 58% white).

Measures

Quantity/Frequency Index—Alcohol consumption in the prior 90-days was collected through a modified quantity/frequency index (QFI).³⁶ Two separate measurements for quantity and frequency were created by summing together participant’s reports of the frequency and amount in which they drank beer, wine, and hard liquor (in standard drink conversions) over the reporting period.

Rutgers Alcohol Problem Index (RAPI)³⁷—The RAPI is a 23-item self-report measure assessing alcohol-related problems. Participants were asked to estimate how often they experienced each alcohol-related problem (0 = *never*; 3 = *more than 5 times*). Individual items were summed to compute a total RAPI score ($\alpha = .88$).

Mindful Attention Awareness Scale (MAAS)⁶—The MAAS is a 15-item self-report instrument that was used to assess individual-level differences in the presence or absence of attention and awareness on present stimuli across time. Higher scores on the MAAS are indicative of greater mindfulness of experiences and ability to alter emotions.⁶ The MAAS has been validated as a single-factor measure and has good reliability ($\alpha = .87$).^{6,38,39}

Temptation Restraint Inventory (TRI)²³—The TRI is a 15-item self-report instrument measuring the temptation and attempts to control alcohol consumption. The TRI consists of two higher-order factors, which were used in the current study’s analyses: Cognitive and Emotional Preoccupation (CEP; $\alpha = 0.84$), which measures temptation to drink and Cognitive and Behavioral Control (CBC; $\alpha = 0.83$), which measures attempts to restrict drinking.

^bSample types were equivalent when examining mindfulness, drinking restraint, and quantity and frequency of alcohol use; however, sample types displayed significant differences on alcohol-related problems ($F(1,396) = 11.94$; $p < .05$). Therefore, we controlled for recruitment type in subsequent regression analyses involving alcohol-related problems as the dependent variable.

Procedure

Participants completed a series of anonymous in-person questionnaires during a one-hour experiment. All participants provided informed consent and all procedures were approved by the university's Institutional Review Board.

Results

Demographic and Drinking Characteristics

On average, participants drank 17 of the prior 90-days ($SD=14.53$; 18.89%), and consumed 5.88 ($SD=3.95$) standard drinks on weekend days, as well as 2.56 ($SD=2.74$) standard drinks per day during the week. Individuals reported consuming an average of 9.71 ($SD=5.70$) standard drinks as the greatest amount of alcohol consumed within one 24-hour period. Of those who drank at least one day per week, liquor was reported as the most frequently consumed (37.9%), followed by beer (34.9%) and wine (4.6%).

Correlations among Mindfulness, Drinking Restraint, Alcohol Consumption, and Problems

Pearson correlation coefficients showed that mindfulness was negatively correlated with preoccupation ($r = -0.29$, $p < 0.01$), restraint ($r = -0.13$, $p < 0.05$), alcohol consumption ($r = -0.11$, $p < 0.05$), and alcohol-related problems ($r = -0.27$, $p < 0.01$). Additionally, preoccupation was positively correlated with restraint ($r = 0.56$, $p < 0.01$), alcohol consumption ($r = 0.37$, $p < 0.01$), and alcohol-related problems ($r = 0.66$, $p < 0.01$). Restraint was not significantly correlated with alcohol consumption ($r = 0.08$, $p > 0.05$), but was positively related to alcohol problems ($r = 0.43$, $p < 0.01$) (see Table 1).

Testing for Mediation

A final aim of this study was to examine whether preoccupation would statistically mediate the associations between mindfulness and drinking and consequences of use. We followed the steps outlined by Baron and Kenny³⁵ to test for mediation. Due to the high inter-correlation among the alcohol use variables ($r = 0.61$, $p < 0.01$), we created a composite score of drinking by summing together the quantity and frequency indices into one alcohol consumption variable.^c We examined two separate models, one that used alcohol consumption as the dependent variable (DV), and a second that used alcohol-related problems as the DV. In the first step, we regressed the mediator (preoccupation) on the independent variable (IV) (mindfulness). In the second step, we regressed the DV of interest (alcohol consumption or alcohol-related problems) on mindfulness. In the third step, we regressed the DV of interest on both mindfulness and preoccupation. Mediation was determined by associations between mindfulness and alcohol use/problems becoming significantly reduced or non-significant in models that control for preoccupation.

In the first model that included alcohol consumption as the DV, mindfulness was negatively related to alcohol consumption ($\beta = -0.11$, $p < 0.05$), while preoccupation was positively related to the DV ($\beta = 0.37$, $p < 0.01$). In the final step of our mediation model, emotional preoccupation statistically mediated the relationship between mindfulness and alcohol consumption ($\beta = 0.00$, $p > 0.05$) (see Figure 2). Behavioral restraint was not statistically related to alcohol consumption ($\beta = 0.08$, $p > 0.05$); therefore, subsequent mediation analyses were not examined.

In the second model that included alcohol-related problems as the DV, results indicated that mindfulness was negatively related to problems ($\beta = -0.28$, $p < 0.01$), while emotional

^cMales and females were equivalent when examining alcohol consumption.

preoccupation and behavioral restraint were both positively related to the DV ($\beta = 0.65$, $p < 0.01$ and $\beta = 0.43$, $p < 0.01$, respectively). The final step indicated that emotional preoccupation partially statistically mediated the relationship between mindfulness and alcohol-related problems ($\beta = -0.08$, $p < 0.05$) (See Figure 2), as noted by a significant reduction in the beta weight. No such association was found for behavioral restraint acting as the mediator ($\beta = -0.22$, $p < 0.05$).

Discussion

The aims of this study were to investigate the inverse relationship between dispositional mindfulness and alcohol consumption and related problems in a sample of college students and to examine the role of drinking restraint, specifically emotional preoccupation with drinking, as a statistical mediator of the association between mindfulness and alcohol use variables. We set forth the following hypotheses to examine these relationships: (1) mindfulness would be negatively related to alcohol consumption and related problems; (2) emotional preoccupation with drinking would be negatively related to mindfulness, but positively related to alcohol consumption and problems; (3) associations between mindfulness and alcohol use and problems would be lessened after controlling for the effects of preoccupation with drinking.

We found support for our first hypothesis in that increased mindfulness was associated with a decrease in both alcohol consumption and alcohol-related problems. This suggests that college students who are more aware and accepting of their present behaviors are less likely to engage in problematic drinking and experience negative consequences associated with alcohol consumption. Due to mindfulness's focus on present acceptance of thoughts rather than preoccupation with those thoughts, it makes sense that individuals who are more mindful may also be less preoccupied with thoughts of drinking and would therefore be less likely to consume alcohol at risky levels than those who are less mindful. In support of our second hypothesis, we found that increased emotional preoccupation with drinking was associated with decreased levels of mindful awareness, meaning one who is less mindful also appears to be more likely to dwell on thoughts pertaining to alcohol consumption. This has significant implications for targets for modification in brief interventions with college student populations. Our findings demonstrated that a cognitive emotional preoccupation with drinking does explain, in part, associations between lower mindfulness and increased risk for alcohol consumption and problems. Similarly, behavioral restraint demonstrated an inverse relationship with mindful awareness, as well as a positive association to alcohol related problems. These findings support our hypothesis, as well as the extant research indicating that individuals who are over-attentive to their desires and temptations to drink would be more likely to consume alcohol.^{26,27} We did not find a significant relationship between behavioral restraint and alcohol consumption, contrary to our expectations. Thus, college students who experience more frequent attempts at controlling their urges to drink are no more or less likely to consume alcohol, when compared to those who are not attempting to control their urges to consume.

Finally, our findings, which supported our final hypothesis, suggested that emotional preoccupation with one's drinking, but not behavioral restrictions, statistically mediated the relationship between mindful awareness and alcohol consumption, while also demonstrating a partial statistical mediation on the relationship between mindful awareness and alcohol-related problems. Therefore, college students exhibiting increases in the amount of time in which they dwell on thoughts related to alcohol use are likely to consume greater amounts of alcohol and experience more alcohol-related problems, perhaps due to the fact that emotional preoccupation with drinking overrides the health benefits of mindful awareness. Overall, our findings suggest that college students with greater mindfulness may be less

likely to act upon cues that promote alcohol consumption (i.e. rumination of negative affect or thoughts related to drinking) and therefore less likely to succumb to urges to drink and experience alcohol-related problems; however, among those who possessed an underlying vulnerability toward emotional preoccupation with urges to drink, the risk of experiencing negative drinking outcomes were much greater.

The results obtained from our study are consistent with the findings presented by Fernandez et al.,²² in which they found negative relationships between mindfulness, alcohol use, and negative consequences. However, our findings are inconsistent with those presented by Leigh and Neighbors²¹ in which a positive association between mindful awareness and alcohol consumption was observed. This may be due, in part, to employing different questionnaires to measure mindfulness. For example, Leigh and Neighbors²¹ used the Freiburg Mindfulness Inventory (FMI) which has several sub-scales capturing distinct aspects of mindfulness. In the current study, we employed the MAAS, which has a unidimensional structure and does not measure different underlying facets mindful awareness. It is also possible that differences among recall periods (30 in other research vs. 90-days in the current study), as well as differences between the ethnic/racial compositions between samples (42.2% Asian in other research vs. 21.3% in the current study) may account for our results being different from those reported in prior studies. Further examination of mindful awareness and its associations with alcohol consumption and related problems should be explored in order to clarify this discrepancy and to replicate our findings.

Limitations and Future Directions

Some limitations should be discussed. First, because this is a cross-sectional study, we are unable to obtain evidence of causality among the study variables. We have been cautious in using the term statistical mediation to denote that we cannot determine whether mindfulness influences one's tendency toward restrained drinking, or vice versa. Future studies should utilize longitudinal data collection procedures to determine whether mindfulness or drinking restraint develops first and how these constructs might change over time. A second limitation was that our sample was composed primarily of regular and social drinking undergraduate students, which may limit the generalizability of our findings to clinical samples of individuals with alcohol dependence. It would be noteworthy, in future research, to examine the same mediational relationships in a more severely affected sample of problem drinkers. Lastly, our data, which was collected via self-report surveys, may be affected by responder biases; however, Hagman et al.⁴⁰ found that college students tend to answer self-report measures accurately.

Despite these limitations our study demonstrated several noteworthy strengths. First, we utilized a sample of college students in order to further understand problematic drinking behaviors in this high-risk and heavy-drinking population. Second, this is the first study to our knowledge that examined associations between drinking restraint, a robust risk factor of alcohol dependence, and mindful awareness. Third, our findings help to clarify the discrepancy of the associations between mindfulness and alcohol consumption and related problems demonstrated by Leigh and Neighbors²¹ and Fernandez and associates²² by adding supportive evidence for the role of drinking restraint, specifically preoccupation with drinking, as one potential mechanism of action. Similar to Fernandez et al.,²² we found that mindfulness was associated with significant decreases in the levels of alcohol consumption, as opposed to increases in the levels of alcohol use that were demonstrated by Leigh and colleagues.²¹

Our findings suggest that, among college students, rumination over drinking is likely to outweigh the health-promoting effects of mindfulness. Once rumination begins, the

likelihood that he or she will consume greater amounts of alcohol will increase, as will the likelihood of experiencing negative consequences associated with drinking. Intervention programs for heavy-drinking college students may increase effectiveness by incorporating components addressing the limitation of one's emotional preoccupation and temptation to drink, coupled with elements of mindfulness-based therapy. Certain elements of mindfulness-based therapy, such as increasing one's awareness and non-judgmental acceptance, may be beneficial in strengthening the overall health-promoting characteristics of mindful awareness. Individuals who increase their awareness of cues that encourage alcohol use can then avoid these cues altogether, thus limiting their preoccupations and temptations to drink. The lessening of one's emotional preoccupations and temptations with drinking may aid in decreasing its influence on mindfulness and in turn, reducing the probability of experiencing negative alcohol outcomes.

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Figure 1.

Theoretical model of the association between mindfulness and alcohol problems and consumption in a sample of college-aged students, as statistically mediated by the *Cognitive and Emotional Preoccupation* subscale of the Temptation Restraint Inventory.

Figure 2.

Relationships between mindfulness and alcohol-related problems and alcohol consumption, as statistically mediated by the *Cognitive and Emotional Preoccupation* subscale of the Temptation Restraint Inventory.

* $p < 0.05$. *** $p < 0.001$.

Table 1

Means, standard deviations, and intercorrelations of mindfulness, drinking restraint, alcohol-problems and use.

Measure	M	SD	1	2	3	4	5
1. Mindfulness	4.02	0.85	—	−0.29**	−0.13*	−0.27**	−0.11*
2. Preoccupation	18.02	9.50		—	0.56**	0.66**	0.37**
3. Restraint	13.22	8.37			—	0.43**	0.08
4. RAPI	8.71	8.40				—	0.50**
5. Alcohol Consumption ^a	69.19	32.26					—

Notes. RAPI = Rutgers Alcohol Problem Index

^a = Multiplication of frequency and quantity of beer, wine, and hard liquor consumed in the prior 90-days

* $p < .05$.

** $p < .01$.