Published in final edited form as:

Subst Abus. 2015 ; 36(3): 374–379. doi:10.1080/08897077.2014.935841.

The relation between moment-to-moment mindful attention and anxiety among young adults in substance use treatment

Ryan C. Shorey¹, Scott Anderson², Samantha Lookatch¹, Todd M. Moore¹, and Gregory L. Stuart¹

University of Tennessee – Knoxville

Cornerstone of Recovery, Louisville, TN

Abstract

Background—A growing body of research has examined the intersection of mindfulness and substance use and a large body of research has examined the relation between mindfulness and anxiety. Unfortunately, no research has been conducted on the relation between mindfulness and anxiety symptoms among young adults (i.e., 18–25 year-old) in treatment for substance use. The purpose of the current study was to examine the relation between one facet of mindfulness, moment-to-moment attention, and anxiety (panic and generalized anxiety) among young adults in treatment for substance use.

Method—Pre-existing patient records from a residential substance use treatment center for young adults were reviewed ($N = 148$). Patient records were examined from May 2012 to August 2013, which represented all young adult patients admitted to the residential treatment facility during this time.

Results—Findings demonstrated that moment-to-moment mindful attention was associated with symptoms of panic disorder and generalized anxiety disorder even after controlling for gender, age, education, alcohol use, drug use, and the shared variance in generalized and panic symptoms. There were no gender differences in moment-to-moment mindful attention.

Conclusions—These findings provide preliminary evidence that moment-to-moment mindful attention is associated with panic and generalized anxiety in young adults in substance use treatment. Combined with previous research on mindfulness-based interventions among adults in substance use treatment, research should examine the efficacy of mindfulness-based interventions for young adults in substance use treatment.

Keywords

Mindfulness; anxiety; gender; substance use; treatment

Young adults evidence higher prevalence rates of drug use relative to any other age group [1]. For instance, in the United States the rate of illicit drug use is higher for individuals aged 18 to 25 (21.2%) than for individuals aged 12 to 17 (10.0%) and 26 years or older

(6.3%) [1]. Moreover, although college students often demonstrate high rates of drug use, and indeed demonstrate the highest alcohol use levels out of any population, the use of illicit drugs is more prevalent among young adults not in college when compared with their college-aged peers [2]. Unfortunately, relapse rates are high among individuals who complete substance use treatment, which may be partially due to comorbid mental health problems that may continue to impact the risk for substance use after treatment [3].

As related to the current study, anxiety disorders and symptoms, particularly generalized anxiety and panic, are prevalent among individuals with a substance use disorder [4–6] and predict poor substance use treatment outcomes [3]. In the current study, we examined whether one facet of mindfulness, moment-to-moment attention, was associated with panic and generalized anxiety among young adults in substance use treatment.

Mindfulness is most commonly defined as “paying attention in a particular way: on purpose, in the present moment, and non-judgmentally” [7]. More specifically, mindfulness is a “way of being” [8]; a way that allows all experiences that enter awareness, whether emotions, thoughts, or physical sensations, to naturally come and go without being judged or evaluated as good or bad, right or wrong [9]. Mindfulness is a way of viewing experiences as fleeting phenomena; avoidance of negative states, or clinging to positive states, may lead to suffering. Because mindfulness is a way of interacting with the self, others, and world, it can be enhanced with appropriate training and practice, namely through mindfulness-based interventions [8]. Mindfulness-based interventions are effective for a range of mental health disorders, including anxiety [10–14]. In the current study we examined one facet of mindfulness: moment-to-moment attention. Moment-to-moment mindful attention is considered a naturally occurring, inherent characteristic, assessed by asking individuals to report on their tendencies to have sustained attention to what occurs in the present moment of daily life. Moment-to-moment attention represents only one of many facets of mindfulness.

We are unaware of any research that has specifically examined the moment-to-moment attention facet of mindfulness among young adults in substance use treatment. There is, however, a fairly large literature documenting deficits in attention, namely attention deficit hyperactivity disorder, and anxiety are linked in children and adolescents [15]. Prior research has demonstrated that facets of mindfulness are lower among adults in substance use treatment than the general population [16–17]. Facets of mindfulness have also been shown to be negatively associated with posttraumatic stress disorder symptoms among adults in substance use treatment [18,19]. A number of studies have also demonstrated that substance use specific mindfulness-based interventions for adults improves substance use outcomes [20–24].

Although these studies provide evidence of mindfulness deficits in adults in substance use treatment, its relation to anxiety, and benefits of mindfulness-based interventions for adults, research is needed that extends these findings to young adults in substance use treatment and different anxiety symptoms. The present study therefore examined the relation between the moment-to-moment attention facet of mindfulness and anxiety (panic and generalized anxiety) among young adults in a residential substance use treatment program. We

hypothesized that moment-to-moment attention would be negatively associated with symptoms of generalized anxiety [panic] even after controlling for the shared variance with panic [generalized anxiety], substance use, and demographic characteristics (e.g., gender).

Method

Procedures and Participants

The medical records of young adults in residential substance use treatment from a private facility in the Southeastern United States were reviewed for the current study. The treatment facility provides a 28–30 day residential program that is primarily guided by the 12-step model. All patients must have a primary substance use disorder and be 18–25 years of age to be admitted to the young adult inpatient facility. After admission to treatment (and medical detoxification, when necessary), patients are administered an intake assessment battery, which includes clinical interviews and self-report measures (discussed below). All substance use diagnoses are based on the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition – Text Revision (DSM-IV-TR) criteria [25]. Diagnoses are made through the consultation of treatment team members, which includes a licensed psychologist, psychiatrist, general physician, and substance abuse counselors. Study procedures were approved by the Institutional Review Board of the first author.

Patient records were examined from May 2012 to August 2013, which represented all young adult patients admitted to the inpatient treatment facility during this time. This resulted in a sample of 148 patients (65.5% male). The primary substance use diagnoses for this sample were opioid dependence (52.7%), polysubstance dependence (26.3%), and alcohol dependence (13.5%). The remaining 7.5% of patients had a mix of primary substance use diagnoses (e.g., cannabis dependence; amphetamine dependence). The majority of patients were non-Hispanic Caucasian (96%). The remaining self-reported ethnic/racial groups were African American (2.7%) and Hispanic (1.4%). The mean age of patients was 21.56 ($SD = 2.03$). The mean number of years of education completed by patients was 12.72 ($SD = 1.64$).

Measures

Mindfulness—The Mindful Attention Awareness Scale (MAAS) [26], a 14-item self-report measure was used to assess the moment-to-moment facet of mindfulness. We utilized the “dispositional” version of the MAAS rather than the “state” version. The MAAS has demonstrated good reliability (Cronbach’s $\alpha = .88$) and validity and is appropriate for use with young adult populations [26]. A mean score was obtained by summing all items on a 6-point scale and dividing by the total number of items. Higher scores on the MAAS correspond to higher levels of moment-to-moment mindful attention. Patients were instructed to rate each item about their “every day experience” to indicate how frequently or infrequently they have each experience. Patients were further instructed to rate each item about what really reflects their experience and not what they think their experiences should be.

Anxiety—The Psychiatric Diagnostic Screening Questionnaire (PDSQ) [27,28] was used to examine symptoms of panic disorder and generalized anxiety disorder. The panic subscale

consists of 8 items and the generalized anxiety subscale consists of 10 items, with all items rated dichotomously using a true/false format. Higher scores indicate more symptoms [28]. The internal consistency ($\alpha = .91$), test-retest reliability, and validity (convergent and discriminant) of the PDSQ is well established across multiple samples [27].

Alcohol Use—Alcohol use in the year prior to treatment was assessed with the Alcohol Use Disorders Identification Test (AUDIT) [29]. The AUDIT, which contains 10-items, examines the intensity and frequency of alcohol use, symptoms that might indicate dependence or tolerance to alcohol, and negative consequences associated with alcohol use. The AUDIT has shown good reliability and validity across multiple populations [30].

Drug Use Disorders Identification Test (DUDIT)—The DUDIT [31,32] is a 14-item self-report measure that assesses the frequency of drug use and symptoms that may indicate tolerance/dependence in the year prior to treatment entry. The DUDIT examines 7 different types of drugs (cannabis, cocaine, hallucinogens, stimulants, sedatives/hypnotics/anxiolytics, opiates, and other substances). The DUDIT has demonstrated good reliability ($\alpha = .90$) and validity [32].

Data Analytic Strategy

All statistical analyses were conducted with SPSS version 21.0. Variables were initially examined for skew and kurtosis, with results demonstrating acceptable skew (e.g., less than 1.4) and kurtosis (e.g., less than .85) for all variables. We next examined the bivariate relations between moment-to-moment mindful attention, anxiety, and substance use (alcohol and drug) for males and females separately. We also included age and years of education to explore whether these demographic characteristics were related to study variables. *T* tests were then employed to examine whether men and women differed on study variables. Lastly, we examined whether moment-to-moment mindful attention was associated with panic and generalized anxiety symptoms even after controlling for gender, age, education, alcohol use, drug use, and the overlap in symptoms between panic and generalized anxiety. Due to the theoretical and empirical overlap between anxiety disorder symptoms, it is important to control for the shared variance between GAD and panic symptoms. To examine this, hierarchical multiple regression analyses were employed with gender, age, education, alcohol use, drug use, and panic [GAD] entered into the first model predicting GAD [panic]. In the second model, moment-to-moment mindful attention was added as a predictor.

Results

As displayed in Table 1, moment-to-moment mindful attention was negatively and significantly associated with panic and generalized anxiety disorder (GAD) symptoms for men and women. Moment-to-moment mindful attention was unrelated to substance use for females, negatively associated with drug use for males, and unrelated to age and education for males and females.

We next examined whether males and females differed on study variables. Means and standard deviations for each gender are displayed in Table 1. Males and females did not differ on moment-to-moment mindful attention, $t = 1.28, p > .05$. The mean MAAS scores

for males and females in this sample are consistent with those found in samples of adolescent psychiatric inpatients (e.g., 3.80) [26]. Moreover, males and females did not differ on AUDIT score, $t = .80, p > .05$, or DUDIT score, $t = 1.90, p > .05$, age, $t = .37, p > .05$, or education, $t = .09, p > .05$. However, men and women did differ on symptoms of panic, $t = 2.16, p < .05$, and GAD, $t = 1.95, p < .05$, with females reporting greater symptom endorsement.

Lastly, results of the hierarchical multiple regression analyses are displayed in Table 2. Results demonstrated that moment-to-moment mindful attention remained negatively and significantly associated with both panic and generalized anxiety symptoms even after controlling for all other predictors.

Discussion

This is the first known empirical investigation of the relation between moment-to-moment mindful attention and panic and generalized anxiety symptoms among young adults in treatment for substance use, a notable extension of the literature given the high rates of substance use and comorbid anxiety disorders among this age group. Our findings demonstrated that moment-to-moment mindful attention was negatively and significantly associated with both panic and generalized anxiety symptoms for men and women. These results are consistent with research in non-substance using populations. Correlational analyses also demonstrated that moment-to-moment mindful attention, as rated at treatment intake, was negatively associated with drug use in the year prior to treatment for men. It is important to note that previous research on the relationship between various facets of mindfulness and substance use have demonstrated inconsistent results in treatment populations, such that a relationship between mindfulness and substance use is not always present. It is believed that this may be due to a third variable (e.g., avoidant coping) moderating this relationship, which has recently been supported in a treatment sample [33]. Future research should continue to examine the correlational relationship of various facets of mindfulness (e.g., moment-to-moment attention; non-reactivity) and substance use and the impact of moderating factors on its relation.

Our findings are also consistent with research on adults in substance use treatment [16,17] in that males and females did not differ on moment-to-moment mindful attention. Unfortunately, we were unable to determine whether this sample reported lower moment-to-moment mindful attention than young adults without a substance use disorder because we did not have a non-clinical comparison group of demographically matched participants. Previous studies suggest that moment-to-moment mindful attention [16] and mindful curiosity and decentering [17] are lower among individuals in substance abuse treatment relative to healthy controls. However, both of these previous studies did not include direct comparison groups, rather utilizing published norms for mindfulness from healthy normative groups as the comparison. Thus, additional research that employs direct comparison groups is needed to determine whether various facets of mindfulness (e.g., moment-to-moment attention; curiosity) are lower among young adults with a substance use disorder.

Results of our regression analyses supported our second hypothesis, that moment-to-moment mindful attention would be associated with panic and generalized anxiety symptoms even after controlling for age, education, gender, alcohol and drug use, and the overlap in symptoms between generalized anxiety and panic. It is possible that higher levels of moment-to-moment mindful attention is associated with reduced generalized anxiety and panic symptoms due to reduced rumination over particular anxiety-related thoughts, feelings, and sensations, as attention is directed toward the present moment and each new experience that comes into awareness. It is also possible that individuals higher in moment-to-moment mindful attention are also higher in the other facets of mindfulness, such as non-judgment and non-reactivity, which may also help explain why we found negative relationships between moment-to-moment mindful attention and anxiety symptoms. However, one cannot assume that proficiency in one facet of mindfulness (e.g., moment-to-moment attention) corresponds to proficiency in other facets of mindfulness (e.g., non-judgment). Additional research is needed to explore these possibilities.

There are a number of important areas for future research on mindfulness and mental health among young adults in substance use treatment. First, research should examine whether moment-to-moment mindful attention deficits, and other facets of mindfulness (e.g., non-reactivity; non-judgment), predict anxiety and substance use prospectively in this population, or whether substance use and anxiety results in reduced moment-to-moment attention across time. Indeed, it is certainly plausible that substance use would result in reduced moment-to-moment mindful attention. Longitudinal research is needed to answer these questions. Future research should also examine the factors that may mediate the relation between moment-to-moment mindful attention and substance use and/or anxiety in this population. It is possible that deficits in moment-to-moment mindful attention increase the likelihood that other factors that are more proximally linked to substance use or anxiety will increase the risk for substance use or the development of panic and generalized anxiety. For instance, it is possible that experiential avoidance, the unwillingness to remain in contact with negative, private experiences (e.g., negative affect) and actions toward avoiding or reducing such aversive experiences [34], mediates the relation between moment-to-moment attention and panic and anxiety symptoms in this population. Future research should examine these potential mediators.

Perhaps one of the most important areas for future research with mindfulness and young adult substance use is to determine whether mindfulness-based interventions are efficacious with this population. As discussed earlier, mindfulness-based interventions specific to substance use have demonstrated initial efficacy with adults in substance use treatment [20], although we are unaware of such intervention efforts with young adults in treatment for substance use. Drawing from the broader literature on mindfulness with young adults, mindfulness-based interventions have demonstrated efficacy in this age group for other problem areas (e.g., psychiatric outpatients) [35]. Thus, we believe that research should begin to investigate derivatives of mindfulness-based interventions for young adult substance use, which may have the concurrent benefit of reducing symptoms of panic and generalized anxiety, as mindfulness-based interventions are efficacious for these anxiety disorders [13].

The current study also has several notable limitations which should be addressed in future research. First, we did not employ an active comparison group of demographically matched non-substance using young adults. Future research should compare these groups on moment-to-moment mindful awareness. The sample in the current study was primarily non-Hispanic Caucasian in ethnicity, limiting the generalizability of findings to more diverse substance abusing populations. Our entire sample also attended the same treatment facility, and future research should employ patients from multiple treatment facilities to enhance generalizability. Additionally, the cross-sectional chart review method of the current study does not allow for the determination of causality among study variables. Longitudinal research is needed to examine whether lower moment-to-moment attention influences the development of problematic substance use and anxiety, whether substance use and anxiety results in decreased mindfulness, or whether there is a reciprocal relationship among moment-to-moment attention, substance use, and anxiety. The treatment facility where charts were reviewed does not conduct structured diagnostic interviews to confirm diagnoses, limiting our ability to verify the accuracy of patient diagnoses. Future research with a larger, more diverse sample would allow for the examination of whether moment-to-moment mindful attention varies across a range of substance use disorders in young adults.

Finally, our use of the MAAS has several limitations, as this measure of mindfulness only examines one component of mindfulness, namely moment-to-moment attention. Although moment-to-moment attention is a central component of mindfulness [26], and is included in almost every definition, other self-report measures of mindfulness include other important facets. For instance, non-reactivity, non-judgment, observing, and describing, to name a few, are facets of mindfulness captured with the Five Facet Mindfulness Questionnaire (FFMQ) [36]. It is possible that other facets of mindfulness may be differentially related to anxiety symptoms in a treatment sample. Moreover, due to the MAAS focusing on moment-to-moment attention, results may have been confounded with attention deficit hyperactivity disorder (ADHD) symptomatology, which is not formally assessed at the treatment facility where charts were reviewed. Thus, future research should confirm our findings with other facets of mindfulness while simultaneously controlling for potential ADHD symptoms.

In summary, findings from the current study provide the first evidence of the relationship between moment-to-moment mindful attention and symptoms of panic and generalized anxiety among young adults in substance use treatment. Consistent with the broader literature on mindfulness and adult substance use [16], our findings demonstrated no gender differences in levels of moment-to-moment mindful attention. Given the efficacy of mindfulness-based interventions for substance use among adults in substance use treatment [20], as well as mindfulness-based interventions for anxiety in general [13], future research should determine whether such interventions are efficacious for young adults with substance use disorders. It is possible that mindfulness-based interventions for this population will reduce anxiety symptoms which may, in turn, reduce the risk for relapse.

Acknowledgements

This work was supported, in part, by grant K24AA019707 from the National Institute on Alcohol Abuse and Alcoholism (NIAAA) awarded to the last author. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIAAA or the National Institutes of Health.

References

1. Substance Abuse and Mental Health Services Administration (SAMHSA) Office of Applied Studies. Rockville, MD: SAMHSA Office of Applied Studies; 2010. Results from the 2009 national survey on drug use and health: Volume I. Summary of national findings.
2. Johnston, LD.; O'Malley, PM.; Bachman, JG.; Schulenberg, JE. Ann Arbor: Institute for Social Research, The University of Michigan; 2011. Monitoring the future national survey results on drug use, 1975–2010. Volume II: College students and adults aged 19–50.
3. Bradizza CM, Stasiewicz PR, Paas ND. Relapse to alcohol and drug use among individuals diagnosed with co-occurring mental health and substance use disorders: a review. *Clinical Psychology Review*. 2006; 26(2):162–178. [PubMed: 16406196]
4. Zimmermann P, Wittchen HU, Hofler M, Pfister H, Kessler RC, Lieb R. Primary anxiety disorders and the development of subsequent alcohol use disorders: a 4-year community study of adolescents and young adults. *Psychological medicine*. 2003; 33(7):1211–1222. [PubMed: 14580076]
5. Goodwin RD, Fergusson DM, Horwood LJ. Association between anxiety disorders and substance use disorders among young persons: results of a 21-year longitudinal study. *Journal of Psychiatric Research*. 2004; 38(3):295–304. [PubMed: 15003435]
6. Grant BF, Goldstein RB, Chou SP, Huang B, Stinson FS, Dawson DA, Compton WM. Sociodemographic and psychopathologic predictors of first incidence of DSM-IV substance use, mood and anxiety disorders: results from the Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions. *Molecular psychiatry*. 2008; 14(11):1051–1066. [PubMed: 18427559]
7. Kabat-Zinn, J. *Wherever you go, there you are*. New York: Hyperion; 1994.
8. Kabat-Zinn J. Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science & Practice*. 2003; 10:144–156.
9. Baer RA. Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice*. 2003; 10:125–143.
10. Kabat-Zinn, J. *Full Catastrophe Living: Using the Wisdom of your Mind to Face Stress, Pain and Illness*. New York: Dell Publishing; 1990.
11. Keng S, Smoski MJ, Robins CJ. Effects of mindfulness on psychological health: A review of empirical studies. *Clinical Psychology Review*. 2011; 31:1041–1056. [PubMed: 21802619]
12. Vøllestad J, Nielsen MB, Nielsen GH. Mindfulness-and acceptance-based interventions for anxiety disorders: A systematic review and meta-analysis. *British Journal of Clinical Psychology*. 2012; 51(3):239–260. [PubMed: 22803933]
13. Hofmann SG, Sawyer AT, Witt AA, Oh D. The effect of mindfulness-based therapy on anxiety and depression: A meta-analytic review. *Journal of consulting and clinical psychology*. 2010; 78(2):169. [PubMed: 20350028]
14. Roemer L, Lee JK, Salters-Pedneault K, Erisman SM, Orsillo SM, Mennin DS. Mindfulness and emotion regulation difficulties in generalized anxiety disorder: Preliminary evidence for independent and overlapping contributions. *Behavior Therapy*. 2009; 40(2):142–154. [PubMed: 19433145]
15. Weissman AS, Chu BC, Reddy LA, Mohlman J. Attention mechanisms in children with anxiety disorders and in children with attention deficit hyperactivity disorder: Implications for research and practice. *Journal of Clinical Child & Adolescent Psychology*. 2012; 41:117–126. [PubMed: 22417186]
16. Dakwar E, Mariani JP, Levin FR. Mindfulness impairments in individuals seeking treatment for substance use disorders. *The American Journal of Drug and Alcohol Abuse*. 2011; 37:165–169. [PubMed: 21410417]
17. Shorey RC, Brasfield H, Anderson S, Stuart GL. Mindfulness deficits in a sample of substance abuse treatment seeking adults: A descriptive investigation. *Journal of Substance Use*. In press.
18. Garland EL, Roberts-Lewis A. Differential roles of thought suppression and dispositional mindfulness in posttraumatic stress symptoms and craving. *Addictive behaviors*. 2013; 38(2): 1555–1562. [PubMed: 22385734]
19. Shorey RC, Brasfield H, Anderson S, Stuart GL. Differences in trait mindfulness across mental health symptoms among adults in substance abuse treatment. *Substance Use and Misuse*. In press.

20. Bowen S, Chawla N, Collins SE, Witkiewitz K, Hsu S, Grow J, Marlatt GA. Mindfulness-based relapse prevention form substance-use disorders: A pilot efficacy trial. *Substance Abuse*. 2009; 30:295–305. [PubMed: 19904665]
21. Alterman AI, Koppenhaver JM, Mulholland E, Ladden LJ, Baime MJ. Pilot trial of effectiveness of mindfulness meditation for substance abuse patients. *Journal of Substance Use*. 2004; 9:259–268.
22. Brewer JA, Sinha R, Chen JA, Michalsen RN, Babuscio TA, Nich C, Rounsaville BJ. Mindfulness training and stress reactivity in substance abuse: Results from a randomized, controlled Stage I pilot study. *Substance Abuse*. 2009; 30:306–317. [PubMed: 19904666]
23. Garland EL, Gaylord SA, Boettiger CA, Howard MO. Mindfulness training modifies cognitive, affective, and physiological mechanisms implicated in alcohol dependence: Results of a randomized controlled pilot trial. *Journal of psychoactive drugs*. 2010; 42(2):177–192. [PubMed: 20648913]
24. Zgierska A, Rabago D, Chawla N, Kushner K, Koehler R, Marlatt A. Mindfulness meditation for substance use disorders: a systematic review. *Substance Abuse*. 2009; 30:266–294. [PubMed: 19904664]
25. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed.. Washington, DC: Author; 2000. text rev.
26. Brown KW, West AM, Loverich TM, Biegel GM. Assessing adolescent mindfulness: Validation of an adapted Mindful Attention Awareness Scale in adolescent normative and psychiatric populations. *Psychological Assessment*. 2011; 23:1023–1033. [PubMed: 21319908]
27. Zimmerman, M. The Psychiatric Diagnostic Screening Questionnaire manual. Los Angeles: Western Psychological Services; 2002.
28. Zimmerman M, Mattia JI. The Psychiatric Diagnostic Screening Questionnaire: Development, reliability and validity. *Comprehensive Psychiatry*. 2001; 42:175–189. [PubMed: 11349235]
29. Saunders JB, Asaland OG, Babor TF, de la Fuente JR. Development of the Alcohol Use Disorders Identification Test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption: II. *Addiction*. 1993; 86:791–804. [PubMed: 8329970]
30. Babor, TF.; Higgins-Biddle, JC.; Saunders, JG.; Monteiro, MG. The Alcohol Use Disorders Identification Test: Guidelines for Use in Primary Care (2nd ed.). World Health Organization; 2001.
31. Stuart GL, Moore TM, Kahler CW, Ramsey SE. Substance abuse and relationship violence among men court-referred to batterers' intervention programs. *Substance Abuse*. 2003; 24:107–122. [PubMed: 12766378]
32. Stuart GL, Moore TM, Ramsey SE, Kahler CW. Hazardous drinking and relationship violence perpetration and victimization in women arrested for domestic violence. *Journal of Studies on Alcohol*. 2004; 65:46–53. [PubMed: 15000503]
33. Bowen S. Enkema. Relationship between dispositional mindfulness and substance use: Findings from a clinical sample. *Addictive Behaviors*. in press.
34. Hayes SC, Strosahl KD, Wilson KG, Bissett RT, Pistorello J, Taormino D, et al. Measuring experiential avoidance: A preliminary test of a working model. *Psychological Record*. 2004; 54:553–578.
35. Biegel GM, Brown KW, Shapiro SL, Schubert CM. Mindfulness-based stress reduction for the treatment of adolescent psychiatric outpatients: A randomized clinical trial. *Journal of Consulting and Clinical Psychology*. 2009; 77(5):855–866. [PubMed: 19803566]
36. Baer R, Smith GT, Hopkins J, Krietemeyer J, Toney L. Using self-report assessment methods to explore facets of mindfulness. *Assessment*. 2006; 13(1):27–45. [PubMed: 16443717]

Table 1

Means, Standard Deviations, and Bivariate Correlations among Study Variables.

	1.	2.	3.	4.	5.	6.	7.
Males (<i>n</i> = 97)							
1. MAAS	---	-.18	-.28**	-.35**	-.44***	.08	-.00
2. AUDIT		---	-.26*	.01	.15	-.15	.04
3. DUDIT			---	.18	.18	-.07	-.05
4. Panic				---	.43***	-.03	.00
5. GAD					---	.11	-.07
6. Age						---	.54***
7. Education							---
<i>M</i>	3.87	9.77	27.42	2.54	5.63	21.51	12.71
<i>SD</i>	1.10	9.62	12.89	3.53	3.72	2.08	1.66
Females (<i>n</i> = 51)							
1. MAAS	---	-.12	-.10	-.38**	-.33*	.02	.07
2. AUDIT		---	-.14	.07	.08	-.04	.36*
3. DUDIT			---	.34*	.22	-.08	-.08
4. Panic				---	.64***	.05	-.18
5. GAD					---	.22	-.00
6. Age						---	.19
7. Education							---
<i>M</i>	3.64	8.33	31.39	3.53	6.80	21.64	12.74
<i>SD</i>	.92	11.29	10.03	2.90	2.93	1.96	1.60
Entire Sample (<i>n</i> = 148)							
1. MAAS	---	-.15	-.25**	-.36***	-.42***	.06	.02
2. AUDIT		---	-.22**	.03	.11	-.12	.15*
3. DUDIT			---	.25*	.21*	-.07	-.05
4. Panic				---	.50***	.02	-.08

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

	1.	2.	3.	4.	5.	6.	7.
5. GAD							
6. Age							
7. Education							
<i>M</i>	3.79	9.26	28.83	2.88	6.03	21.56	12.72
<i>SD</i>	1.04	10.22	12.07	2.68	3.51	2.03	1.64

Note: MAAS = mindful attention awareness scale; AUDIT = alcohol use disorders identification test; DUDIT = drug use disorders identification test; GAD = generalized anxiety disorder.

* $p < .05$,
** $p < .01$,
*** $p < .001$

Table 2**Multiple Regression Analyses Predicting Anxiety Symptoms**

	B	SE	β	R²	F
Panic					
Model 1				.28	9.06***
Gender	.33	.42	.06		
Age	.11	.10	.08		
Education	-.23	.13	-.14		
AUDIT	.01	.02	.03		
DUDIT	.03	.02	.15*		
GAD	.35	.06	.46***		
Model 2				.32 (R ² = .04)	8.77***
Gender	.27	.41	.05		
Age	.12	.11	.09		
Education	-.23	.13	-.13		
AUDIT	.00	.02	.00		
DUDIT	.02	.02	.11		
GAD	.30	.06	.39***		
MAAS	-.48	.21	-.19*		
Generalized Anxiety					
Model 1				.28	8.85***
Gender	.47	.55	.06		
Age	-.04	.14	-.02		
Education	.24	.17	.11		
AUDIT	.04	.03	.10		
DUDIT	.03	.02	.12		
Panic	.61	.10	.46***		
Model 2				.33 (R ² = .05)	9.43***

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

	B	SE	β	R ²	F
Gender	.37	.53	.05		
Age	-.02	.14	-.01		
Education	.24	.17	.11		
AUDIT	.02	.03	.05		
DUDIT	.02	.02	.06		
Panic	.50	.10	.38****		
MAAS	-.83	.27	-.25**		

Note. MAAS = mindful attention awareness scale; AUDIT = alcohol use disorders identification test; DUDIT = drug use disorders identification test; GAD = generalized anxiety disorder.

* $p < .05$,
** $p < .01$,
*** $p < .001$