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Differences in Trait Mindfulness across Mental Health Symptoms among Adults in Substance Abuse Treatment

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Abstract

Mindfulness is a growing area of investigation among individuals with substance use disorders, as mindfulness meditation may help to prevent relapse to substance use. The current study examined levels of trait mindfulness in people seeking treatment for substance abuse at a residential center and whether patients with probable (i.e., diagnoses based on a self-report screening instrument) comorbid depression or PTSD reported lower mindfulness than patients without a probable comorbid diagnosis. Archival patient records from a residential treatment center from May 2012 to August 2012 ($N = 125$) were reviewed. The majority of patients were male ($n = 84$) and non-Hispanic Caucasian (92%); the mean age of the sample was 37.36 ($SD = 12.47$). Results showed that lower trait mindfulness was associated with increased levels of substance use, depression, and PTSD. Patients with a probable depression or PTSD diagnosis reported lower mindfulness than patients without these disorders. Patients with probable comorbid depression *and* PTSD reported the lowest levels of mindfulness. These findings suggest that altering levels of mindfulness interventions may be important for individuals with dual-diagnoses in substance use treatment.

Keywords

Mindfulness; substance use; depression; posttraumatic stress disorder; treatment

Substance use disorders (SUDs) have high rates of relapse for individuals who seek treatment. Understanding factors that may reduce the risk of relapse and improve treatment outcomes is of critical importance. Recently, there has been increased attention on the role of mindfulness deficits in contributing to substance use and how mindfulness-based interventions can be implemented in substance use treatment (e.g., Eisenlohr-Moul, Walsh, Charnigo, Lynam, & Baer, 2012; Marcus & Zgierska, 2009). Indeed, it is believed that mindfulness-based interventions may help to reduce risk for relapse (Bowen et al., 2009). Mindfulness has been defined as “paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally” (Kabat-Zinn, 1994, p. 4). In essence, mindfulness is

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being attentive to whatever is occurring in the present moment (e.g., emotions, thoughts) without needing to judge or change anything about the experience.

Previous research with mindfulness and substance use has demonstrated that individuals who seek treatment for substance use report lower levels of trait mindfulness relative to non-substance abusers (e.g., Dakwar, Mariani, & Levin, 2011); that trait mindfulness is associated with increased cigarette use, which is mediated by increased depressive affect and perceived stress (Black, Sussman, Johnson, & Milam, 2012); and that Mindfulness-Based Relapse Prevention (MBRP; Bowen et al., 2009), which combines aspects of Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 1990), Mindfulness-Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2012), and relapse prevention, reduces substance use to a greater degree relative to standard 12-step outpatient treatment.

A factor that may complicate our understanding of the relation between mindfulness and substance use is the high comorbidity between substance use and depression and posttraumatic stress disorder (PTSD). Approximately 25–50% of individuals with a SUD meet criteria for major depressive disorder and 10–25% meet criteria for PTSD (Falck et al., 2004; Kessler et al., 1997). Individuals with depression or PTSD are also at heightened risk for relapse to substance use after SUD treatment (e.g., Kodl et al., 2008). Thus, it is possible that individuals who seek substance use treatment and who also have comorbid depression and/or PTSD may evidence reduced trait mindfulness above and beyond individuals with substance use diagnoses only. This would be consistent with the suppositions of Brewer, Bowen, Smith, Marlatt, and Potenza (2010) who detail how mindfulness-based interventions may target underlying mechanisms for substance use and comorbid disorders.

The current study examined the relation between trait mindfulness, depression, and PTSD among residential substance use treatment patients. We hypothesized that (1) lower trait mindfulness would be associated with increased substance use, depression, and PTSD; (2) individuals with probable comorbid depression or PTSD would report lower trait mindfulness relative to individuals without probable comorbid depression or PTSD; and (3) individuals with probable comorbid depression *and* PTSD would evidence the lowest levels of trait mindfulness.

Method

Participants and Procedures

Archival treatment records were coded from 125 patients housed at a 28–30 day residential substance abuse facility in the state of Tennessee from May 2012 to August 2012. Patient records were chosen by convenience by sequential entry into the treatment facility during the date range specified. This reflects all new admissions to the residential treatment program during that time period. To be admitted to the treatment facility, patients must have a primary substance use disorder diagnosis and be 18 years of age or older. Table 1 presents demographic information for the sample. All procedures for the current study were approved by the Institutional Review Board of the University of Tennessee.

Measures

Mindful Attention Awareness Scale (MAAS)—The 14-item version of the MAAS was employed (Brown, West, Loverich, & Biegel, 2011). The 14-item version of the MAAS has demonstrated good reliability (Cronbach's $\alpha = .88$) and validity (Brown et al., 2011). 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 indicate higher levels of trait mindfulness. Patients were asked to rate items about their "every day experience." A single question was also included that asked patients to indicate whether they had any previous training in mindfulness or meditation during their lifetime using a yes/no format.

Psychiatric Diagnostic Screening Questionnaire (PDSQ)—The PDSQ (Zimmerman, 2002; Zimmerman & Mattia, 2001) was used to assess depression and PTSD in the two weeks prior to treatment. The PDSQ has established cutoff scores to indicate probable diagnoses (scores of 9 and 5 for depression and PTSD, respectively; Zimmerman & Mattia, 2001). The sensitivity and specificity of the cutoff scores are .90 and .67 (depression) and .92 and .62 (PTSD) (Zimmerman & Mattia, 2001). The depression subscale consists of 22 items and the PTSD subscale consists of 13 items, with all items rated on a true/false format. The internal consistency, test-retest reliability, and validity of the PDSQ is established (Zimmerman, 2002).

Alcohol Dependence Scale (ADS)—The ADS (Skinner & Allen, 1982) is a 25-item self-report measure that examines alcohol use in the past 12 months. The ADS measures the severity of alcohol dependence, with items covering symptoms that include withdrawal, impaired control over alcohol use, awareness of compulsion to drink alcohol, and alcohol seeking behavior. Higher scores on the ADS correspond to more severe alcohol dependence. The ADS has demonstrated good psychometric properties (e.g., $\alpha = .92$; Skinner & Allen, 1982).

Drug Use Disorders Identification Test (DUDIT)—The DUDIT (Stuart, Moore, Kahler, & Ramsey, 2003; Stuart, Moore, Ramsey, & Kahler, 2004) 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 (Stuart et al., 2004).

Data Analytic Plan

To examine differences between probable diagnostic groups Analyses of Covariances (ANCOVAs) were employed, adjusted for demographic covariates (i.e., age, gender, employment status, and relationship status) that may confound results. We employed the same analytic strategy to examine whether individuals meeting probable diagnostic criteria for both PTSD and depression reported lower trait mindfulness than (a) individuals without these comorbid disorders or (b) individuals with only one comorbid disorder (depression or PTSD). Pairwise comparisons were examined with post-hoc Tukey's HSD. Effect size differences between groups were calculated using Cohen's d (Cohen, 1988).

Results

Table 2 displays correlations, means, and standard deviations among study and control variables. As displayed in Table 3, patients meeting the probable diagnostic cutoff score for depression reported lower mindfulness than patients not meeting the probable diagnostic cutoff score ($d = .96$). None of the demographic control variables were related to the MAAS in this model. For PTSD, patients meeting the probable diagnostic cutoff score reported lower mindfulness scores than patients not meeting the probable diagnostic cutoff score ($d = .46$). In this model, the only demographic variable related to the MAAS was gender, with women reporting higher levels of MAAS than men.

As displayed in Table 4, pairwise comparisons of the groups demonstrated that individuals with probable PTSD + depression diagnosis reported lower mindfulness than individuals with one probable diagnosis ($d = .81$), or no probable diagnosis ($d = 1.23$). When we included previous mindfulness experience as a covariate in the models, all results remained the same with one exception: patients with a probable PTSD diagnosis no longer scored significantly lower than patients without a probable diagnosis on the MAAS.

Discussion

Overall results were consistent with our hypotheses in that mindfulness was associated with more severe levels of substance use, depression, and PTSD, and patients with probable depression or PTSD reported the lowest levels of trait mindfulness. Analyses demonstrated strong relations between mindfulness and all mental health variables assessed, especially depression. This finding is consistent with previous research and is also one of the few known studies to demonstrate relations between mindfulness and mental health among SUD patients. Because mindfulness deficits have been theorized to be an underlying vulnerability, or maintaining factor, to substance use, depression, and PTSD (e.g., Brewer et al., 2010), these findings are not surprising, although they are important in providing empirical evidence for assumptions proposed by researchers.

In addition, this is the first study that we are aware of that has demonstrated that SUD patients with a probable comorbid depression or PTSD diagnosis report lower mindfulness than SUD patients without these disorders. Moreover, the group with the lowest mindfulness score was patients with a probable depression *and* PTSD diagnosis. Thus, low levels of trait mindfulness may represent a risk factor for the development, or maintenance, of SUDs, especially SUDs with comorbid disorders.

Clinically, these findings, and that of previous research, raise the question as to whether mindfulness-based interventions could be effectively implemented in residential substance abuse treatment facilities. Mindfulness-based interventions may help to target underlying vulnerability or maintaining factors for all three disorders simultaneously. To date, however, the only mindfulness protocol for substance use disorders, MBRP, was created for the outpatient treatment of substance use. As there are many differences between residential and outpatient substance use treatment, the efficacy of residential mindfulness programs for substance use disorders remains an empirical question. Thus, it is likely that continued

advancements in this area will detail the specific protocols appropriate for residential substance use settings.

The current study is not without its limitations. The sample was primarily non-Hispanic Caucasian and male. The treatment facility where charts were reviewed for the current study does not utilize structured diagnostic interviews for assessing substance use or mental health problems and we were unable to provide additional information on other Axis I conditions. The use of a single measure of mindfulness hinders our ability to determine whether different facets of mindfulness are more strongly associated with the constructs examined. The reliance on patient charts for information also represents a limitation. Lastly, the cross-sectional design of the current study limits the determination of causality among variables.

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Table 1

Demographic Characteristics of Study Sample and Diagnostic Groups

	Total Sample (<i>n</i> = 125)	Probable PTSD (<i>n</i> = 44)	Probable Depression (<i>n</i> = 59)	PTSD + Depression (<i>n</i> = 27)
Gender				
Male	<i>n</i> = 84	<i>n</i> = 24	<i>n</i> = 35	<i>n</i> = 14
Female	<i>n</i> = 41	<i>n</i> = 20	<i>n</i> = 24	<i>n</i> = 13
Race				
Non-Hispanic Caucasian	92%	86.4%	97.7%	95.2%
African American	4%	4.5%	2.3%	4.8%
Hispanic	1.6%	4.5%	---	---
Other (e.g., Multi-Racial; Native American)	2.4%	4.6%	---	---
Employment Status				
Employed	32.8%	38.6%	32.2%	37%
Unemployed	67.2%	61.4%	67.8%	63%
Relationship Status				
Married	41%	54.3%	54.5%	59.1%
Never Married	36.8%	14.3%	13.6%	13.6%
Divorced	12.8%	20%	15.9%	13.6%
Other (e.g., widowed)	9.4%	11.5%	16%	13.7%
Age (mean, SD)	37.36 (12.47)	37.86 (11.77)	36.84 (12.25)	39.22 (11.76)
Education (years completed; mean, SD)	13.71 (2.39)	14.06 (2.37)	13.94 (2.64)	13.96 (2.55)
Diagnosis				
Alcohol Dependence	50%	50%	44.1%	48.1%
Opioid Dependence	26.2%	22.7%	35.6%	18.5%
Polysubstance Dependence	13.9%	20.5%	13.6%	22.2%
Cannabis Dependence	3.3%	2.3%	1.7%	3.7%
Sedative/Hypnotic/Anxiolytic	1.6%	2.3%	3.4%	3.7%
Dependence				
Cocaine Dependence	1.6%	2.3%	1.7%	3.7%
Amphetamine Dependence	1.6%	---	---	---
Alcohol Abuse	1.6%	---	---	---
Prior Mindfulness/Meditation Experience	19.2%	31.8%	30.5%	40.7%

Table 2

Correlations among Mindfulness, Mental Health, Substance Use, and Demographic Variables among Residential Substance Use Treatment Seekers ($N = 125$)

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. MAAS	---	-.56***	-.25**	-.24**	-.23*	.17	-.23**	-.01	.10
2. Depression		---	.34***	.33***	.38***	-.14	.19*	-.14	-.08
3. PTSD			---	.25**	.13	.01	.32***	.03	.02
4. ADS				---	-.28**	.06	.00	.08	.13
5. DUDIT					---	-.59***	.18*	-.25**	-.31***
6. Age						---	-.05	.16	.45***
7. Gender							---	-.19*	-.13
8. Employment								---	-.09
9. Marital Status									---
<i>M</i>	4.09	8.42	4.61	10.88	14.88	37.36	1.32	.32	.40
<i>SD</i>	1.03	5.21	5.95	10.14	14.36	12.47	.47	.47	.49

Note: MAAS = Mindful Attention Awareness Scale; PTSD = Posttraumatic Stress Disorder; ADS = Alcohol Dependence Scale; DUDIT = Drug Use Disorders Identification Test; Gender (0 = male, 1 = female); Employment (0 = unemployed, 1 = employed); Marital Status (0 = single, 1 = in relationship).

* $p < .05$,

** $p < .01$,

*** $p < .001$

Table 3

Differences in Trait Mindfulness between Probable Diagnostic Groups

	Probable Diagnosis Group <i>M</i> (<i>SD</i>)	Non-Diagnostic Group <i>M</i> (<i>SD</i>)	<i>F</i>	<i>p</i>	<i>d</i>
Depression	<i>n</i> = 59 (47.2%)	<i>n</i> = 66 (52.8%)			
MAAS	3.62 (.97)	4.51 (.89)	20.04	< .001	.96
	Probable Diagnosis Group <i>M</i> (<i>SD</i>)	Non-Diagnostic Group <i>M</i> (<i>SD</i>)			
PTSD	<i>n</i> = 44 (35.2%)	<i>n</i> = 81 (64.8%)			
MAAS	3.78 (1.14)	4.26 (.93)	4.37	.04	.46

Note: MAAS = Mindful Attention Awareness Scale; Probable Diagnosis = Meeting established cutoff score on self-report screening instrument. Cutoff scores for probable diagnoses are 9 (depression) and 5 (PTSD).

Table 4
Differences in Trait Mindfulness between Individuals with Depression and PTSD and a single or no-diagnosis

	Probable Both Diagnosis Group (B) <i>M (SD)</i>	Probable Single Diagnostic Group (S) <i>M (SD)</i>	Non-Diagnostic Group (N) <i>M (SD)</i>	<i>F</i>	<i>p</i>	<i>HSD test</i>
Depression & PTSD	<i>n</i> = 27 (21.6%)	<i>n</i> = 49 (39.2%)	<i>n</i> = 49 (39.2%)			
MAAS	3.31 (1.03)	4.11 (.94)	4.50 (.89)	12.21	< .001	B < S & N; S = N

Note: MAAS = Mindful Attention Awareness Scale