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Experiential Avoidance as a Mediator of the Relationship between Dispositional Mindfulness and Compulsive Sexual Behaviors among Men in Residential Substance Use Treatment

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Abstract

The present study sought to extend compulsive sexual behavior (CSB) and mindfulness research by testing whether dispositional mindfulness negatively related to CSB among men with substance use disorders (SUD) through experiential avoidance. Dispositional mindfulness is believed to decrease experiential avoidance, a correlate of CSB. We therefore hypothesized that dispositional mindfulness would relate to CSB indirectly through experiential avoidance. We reviewed medical records from 175 men in residential treatment for SUD. Results revealed significant indirect effects of dispositional mindfulness on CSB through experiential avoidance. Results provided preliminary support for developing mindfulness-based CSB interventions that target experiential avoidance.

Compulsive sexual behaviors (CSB) are defined as excessive or out of control sexual behaviors and desire/drive that contribute to personal, social, or occupational distress (e.g., excessive or out of control pornography use, sexual chat/video use, masturbation, sexual intercourse, or engagement in sexual fantasy; Kafka, 2010). CSB are over-represented among men with substance use disorders (SUD) relative to community samples of men (Deneke, Knepper, Gree, & Carnes, 2015). Indeed, prior research has shown that nearly one third of individuals in residential treatment for SUD identified as at-risk for CSB; men were more likely to fall within the at-risk range for CSB than were women (Stavro, Rizkallah, Dinh-Williams, Chiasson, & Potvin, 2013). As such, CSB is oftentimes referred to as a behavioral addiction, otherwise known as “sexual addiction,” though this classification remains controversial (Carnes, Green, & Carnes, 2010). Researchers have suggested that the high prevalence of CSB among men with SUD may be due, in part, to the clinical features that are common to both CSB and SUD (e.g., deprivation, compulsions, and extreme avoidance strategies; Carnes 1989, 1991; Garcia & Thibaut, 2010; Phillips, Hajela, & Hilton, 2015).

CSB is characterized by preoccupation with sexual activity, perceived loss of control over sexual behavior, relationship disturbance, and affect disturbance (Carnes et al., 2010; Phillips et al., 2015). These CSB characteristics may be intricately linked to substance use. For instance, Carnes (2001) suggested that alcohol and illicit substances may be used to cope with difficulties associated with CSB. Similarly, substances may be used in conjunction with sexual activity, such that engagement in either substance use or CSB elicits engagement in the other (Carnes, 2001). Of particular concern to men in treatment for SUD, untreated CSB increased the likelihood of substance use relapse following SUD treatment (Schneider & Irons, 2001). Given the risk CSB poses to the prevention and treatment of SUD, it is imperative that researchers explicate factors that may minimize the risk of CSB among men with SUD.

Dispositional mindfulness gained increased attention as a protective factor for CSB (Brem, Shorey, Anderson, & Stuart, in press-b; Reid, Bramen, Anderson, & Cohen, 2014; Shorey, Elmquist, Gawrysiak, Anderson, & Stuart, 2016). However, the processes underlying this relationship remain unknown. The present study examined experiential avoidance as one such process underlying the association between dispositional mindfulness and CSB among men in residential treatment for one or more SUD.

The concept of mindfulness originated from Buddhist traditions and has been incorporated into various treatment modalities as a way to facilitate emotional balance and reduce habitual patterns of responding (Kabat-Zinn, 1990). According to Bishop and colleagues (2004), being mindful includes the presence of two states of being: sustained, present-moment attention, and acceptance towards one's internal and external experiences regardless of their valence or desirability. Though mindfulness can be improved through training (Bishop et al., 2004), an individual's capacity to maintain intentional awareness and acceptance of experiences, regardless of exposure to mindfulness training, supported mindfulness as a dispositional trait (Brown & Ryan, 2003). Higher dispositional mindfulness is considered an indicator of psychological health (Keng, Smoski, & Robins, 2011). Consistent with this notion, dispositional mindfulness negatively related to a number of maladaptive psychological phenomena, including depression, anxiety, substance use, and CSB (Brem et al., in press-b).

Dispositional mindfulness is believed to facilitate psychological health by increasing the availability of adaptive emotion regulation skills (Baer, Smith, & Allen, 2004; Coffey, Hartman, & Frederickson, 2010). Specifically, dispositional mindfulness facilitates emotion regulation by increasing one's contact with the present moment, remaining curious and non-judgmental towards the experiences of the present moment, and refraining from efforts to alter the form or frequency of private events (Baer, 2003; Hayes & Feldman, 2004). In other words, being mindful is conceptually inverse to experiential avoidance, a facet of emotion dysregulation defined as an unwillingness to maintain contact with present-moment experiences and making efforts to alter the form or frequency of these experiences (Baer, 2003; Hayes & Feldman, 2004; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Experiential avoidance is linked to a number of poor health outcomes, most notably, substance-related disorders (Levin et al., 2014). Prior research suggested that increased dispositional mindfulness related to reduced experiential avoidance (Kumar, Feldman, &

Hayes, 2008; Segal, Williams, & Teasdale, 2002). Similarly, the impact of various mindfulness-based interventions (e.g., Acceptance and Commitment Therapy, Dialectical Behavioral Therapy, and Mindfulness-Based Cognitive Therapy) on psychological symptoms, including substance-related disorders, was mediated by reductions in experiential avoidance (Bond & Bunce, 2000; Flaxman & Bond, 2010; Gifford et al., 2004; Hayes, Strosahl, & Wilson, 2011). Together, these findings suggest that dispositional mindfulness may be inversely related to various problematic behaviors due, in part, to experiential avoidance. This hypothesis has yet to be tested in relation to CSB.

Previous research and theory suggested that CSB is partially motivated by an effort to circumvent unwanted or unpleasant internal experiences (Wetterneck, Burgess, Short, Smith, & Cervantes, 2012; Hall, 2011; Reid, 2010). This cycle is initiated by the pleasure associated with sexual activity, which provides a temporary antidote for painful affective experiences (Reid, 2010). However, individuals with CSB may come to over-rely on sexual activity as a way to temporarily avoid unpleasant internal events, which has the paradoxical effect of exacerbating negative affect (Reid, 2010; Reid, Harper, & Anderson, 2009). For decades, researchers have theorized that CSB is related to experiential avoidance (e.g., Carnes, 2001; Hall, 2011); however, researchers have only recently begun to empirically examine experiential avoidance in relation to CSB. For instance, time spent viewing pornography positively related to experiential avoidance (Levin, Lillis, & Hayes, 2012; Wetterneck et al., 2012). Within a sample of men in residential treatment for SUD, greater experiential avoidance positively related to CSB (Brem et al., in press-a).

Moreover, researchers began to investigate dispositional mindfulness as a protective factor for CSB (Brem et al., in press-b; Reid et al., 2014; Shorey et al., 2016). Research supported a robust, negative relationship between mindfulness and CSB among a clinical sample of men seeking CSB treatment (Reid et al., 2014), and among men in residential treatment for SUD (Brem et al., in press-b; Shorey et al., 2016). Although these researchers speculated that the adaptive emotion regulation capabilities that mindful individuals have (e.g., less experiential avoidance) may explain the negative association between dispositional mindfulness and CSB, this hypothesis has yet to be tested. Furthermore, that dispositional mindfulness related to compulsive behaviors (e.g., gambling) through experiential avoidance may offer a useful framework for understanding the associations between dispositional mindfulness and CSB (Gifford et al., 2004; Riley, 2014).

Using a sample of men in residential treatment for SUD, the present study aimed to test a mediational model whereby dispositional mindfulness related to CSB indirectly through experiential avoidance. We hypothesized that, controlling for substance use and problems, dispositional mindfulness would negatively relate to CSB indirectly through experiential avoidance. Researchers have yet to develop a treatment for CSB specific to individuals with SUD. Elucidating the relations between dispositional mindfulness and CSB within this population could inform much-needed intervention efforts.

Method

Participants

Medical records for 175 men in residential treatment for SUDs were reviewed in the present study. The primary diagnoses for this sample were alcohol use disorder (59.6%), opioid use disorder (23.0%), cannabis use disorder (6.6%), sedative, hypnotic, or anxiolytic use disorder (3.8%), and cocaine use disorder (3.3%). The remaining patients (3.7%) had a mix of other primary substance use diagnoses (e.g., amphetamine use disorder, stimulant use disorder, and inhalant use disorder). The racial/ethnic composition of the sample was as follows: Caucasian (91.2%), African American (6.6%), Hispanic/Latino (1.7%), and Native American/American Indian (0.6%). Patients' mean age was 39.11 years ($SD = 12.10$). The majority of the sample reported that they were married (40.4%), followed by never married (33.9%), divorced (15.3%), separated (2.7%), engaged (2.2%), and remarried (1.1%). An additional 4.5% of patients did not report their relationship status.

Procedures

We reviewed patients' medical records from a private, residential substance misuse treatment facility located in the Southeastern United States. Admission dates on records reviewed ranged from June 2016 to September 2016. Admission into the 28–30 day program requires that patients be at least 18 years old and have a primary SUD diagnosis. Patients complete a series of self-report measures following admission to the program and after medical detoxification (if necessary). Treatment thereafter is broadly based on the 12-step, abstinence-based model of recovery. Diagnoses were based on the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (American Psychiatric Association, 2013) and were determined through consultation of the treatment team, which included a licensed psychologist, psychiatrist, general physician, and substance abuse counselor. Patients provided consent to have their de-identified medical records used for research purposes. All procedures were approved by the Institutional Review Board of the first author.

Measures

Dispositional Mindfulness.—The treatment facility used a 14-item version of the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003), which does not contain the item “I drive places on ‘automatic pilot’ and then wonder why I went there,” to assess self-reported dispositional mindfulness. The treatment facility used the 14-item version of the measure because patients cannot drive while in treatment; the treatment facility wanted to be able to eventually measure pre-post treatment changes in dispositional mindfulness. Patients indicated the extent to which they experienced 14 statements (e.g., “I find myself preoccupied with the future or the past”) with responses ranging from 1 (*almost always*) to 6 (*almost never*). Scores are summed then divided by 14 to obtain a mean MAAS score with possible scores ranging from 1 to 6. Higher scores correspond to higher levels of dispositional mindfulness. Existing literature supports the psychometric properties and use of the MAAS in assessing dispositional mindfulness within treatment populations (Brown & Ryan, 2003; Dakwar, Mariani, & Levin, 2011).

Experiential Avoidance.—The Acceptance and Action Questionnaire-II (Bond et al., 2011) is a 10-item, self-report measure that assessed trait experiential avoidance. Responses to items (e.g., “*I worry about being unable to control my worries and feelings*”) are provided on a scale ranging from 1 (*never true*) to 7 (*always true*). Seven items are reverse scored before all items are summed; lower scores suggest greater experiential avoidance. The AAQ-II demonstrated good reliability and validity across various populations, including men in treatment for SUD (Gratz, Bornova, Delany-Brumsey, Nick, & Lejuez, 2007).

Compulsive Sexual Behavior.—The 20-item Core scale of the Sexual Addiction Screening Test-Revised (SAST-R; Carnes, Green, & Carnes, 2010) was used to assess core components of CSB, including preoccupation (i.e., obsessive thinking about sexual behavior, opportunities, and fantasies), loss of control (i.e., inability to stop behavior despite commitments to self and others and despite problems caused by the behavior), affective disturbance (i.e., significant depression, despair, or anxiety over sexual behavior), relationship disturbance (i.e., sexual behavior has created significant relationship problems), and other associated features (e.g., seeking help for sexual behavior). These 20 items (e.g., “*Have you made efforts to quit a type of sexual activity and failed?*”) are presented in a forced-choice (Yes/No) format and summed with possible scores ranging from 0–20. The SAST-R demonstrated adequate psychometric properties in clinical and non-clinical samples of men, and across sexual orientations (Carnes et al., 2010).

Alcohol Use and Problems.—The Alcohol Use Disorders Identification Test (AUDIT; Saunders, Asaland, Babor, de la Fuente, & Grant, 1993) assessed patient’s self-reported alcohol use and problems in the year prior to treatment admission. Ten items examined the intensity and frequency of alcohol use, symptoms of alcohol tolerance and dependence, and negative consequences of alcohol use. Scores are summed such that higher scores are indicative of greater levels of alcohol use and problems. The AUDIT demonstrated excellent reliability and validity across multiple populations (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001).

Drug Use and Problems.—The Drug Use Disorders Identification Test (DUDIT; Stuart, Moore, Kahler, & Ramsey, 2003a; Stuart, Moore, Ramsey, & Kahler, 2003b) assessed patients’ drug use (i.e., cannabis, cocaine, hallucinogens, stimulants, sedatives/hypnotics/anxiolytics, opiates, and other substances [e.g., inhalants]) and problems in the year prior to treatment admission. Like the AUDIT, the DUDIT’s 14 items examined the intensity and frequency of drug use, symptoms of drug tolerance and dependence, and negative consequences of drug use. The DUDIT evidenced good psychometric properties (Stuart et al., 2003a, 2003b).

Data Analytic Strategy

All analyses were conducted using SPSS Version 24.0. We first examined bivariate correlations between study variables. We then used the PROCESS SPSS macro developed by Hayes (2012) to test the hypothesis that experiential avoidance would mediate the relation between dispositional mindfulness and CSB, controlling for alcohol/drug use and problems. Dispositional mindfulness was entered as the predictor variable, experiential

avoidance was entered as the mediator, and CSB was entered as the criterion variable; AUDIT and DUDIT scores were controlled for in all paths by entering them as covariates. We conducted the mediation analysis using 5,000 bootstrapped samples and bias-corrected 95% confidence intervals (CIs) to test for significance of the indirect effect (Preacher & Hayes, 2004; 2008).

Results

Descriptive Statistics

Means, standard deviations, and bivariate correlations among the variables are shown in Table 1. As expected, AAQ-II scores positively related to dispositional mindfulness, and inversely related to CSB, alcohol use and problems, and drug use and problems. Dispositional mindfulness negatively related to CSB, alcohol use and problems, and drug use and problems. CSB positively related to alcohol use and problems and drug use and problems. Alcohol use and problems negatively related to drug use and problems.

Tests of Mediation

Results of the mediation analysis are displayed in Table 2. We found that dispositional mindfulness had a significant total effect in predicting CSB, $\beta = -.25$, $p = .001$. With experiential avoidance included in the model, the effect of dispositional mindfulness was reduced, $\beta = -.13$, $p = .163$. Results indicated a significant indirect effect of experiential avoidance ($B = -.35$, $SE = .18$; 95% CI: $[-.765, -.038]$), supporting a model by which experiential avoidance fully mediated the relation between dispositional mindfulness and CSB among men in residential treatment for SUD. See Figure 1 for a depiction of the model.

Discussion

The present study sought to extend CSB and mindfulness research by testing whether dispositional mindfulness negatively related to CSB among men with SUD through experiential avoidance. Consistent with our hypothesis, results of the present study supported a model by which experiential avoidance fully mediated the relationship between dispositional mindfulness and CSB among men in residential treatment for SUD. These results provide preliminary evidence for future longitudinal research aiming to investigate whether, and how, increases in mindfulness may protect against CSB among men with SUD.

Findings from the present study supported and extended prior research demonstrating that dispositional mindfulness negatively related to CSB (Brem et al., in press-b; Reid et al., 2014; Shorey et al., 2016). Specifically, our data suggested that men who were more attentive and accepting of present-moment experiences were less likely to evidence CSB. Furthermore, the relationship between dispositional mindfulness and CSB was explained by experiential avoidance. That is, men with SUD who had higher dispositional mindfulness were less likely to evidence experiential avoidance, and therefore were less likely to endorse CSB. These results are consistent with prior research and theory which suggested that CSB is partially motivated by efforts to alter or avoid unpleasant experiences (Brem et al., in press-a; Reid, 2010; Wetterneck et al., 2012). That is, if men engaged in CSB in an effort to decrease contact with present-moment aversive experiences (i.e., experiential avoidance), it

follows that men who were more willing to attend to, and accept, experiences were less likely to engage in CSB.

Results of the present study extended prior CSB research by providing empirical support for the theoretical hypothesis that CSB is motivated, in part, by efforts to cope with aversive experiences (Hall, 2014). Though burgeoning research supported an association between compulsive pornography use and experiential avoidance (Wetterneck et al., 2012), only one study has examined men's CSB more broadly in relation to experiential avoidance (Brem et al., in press-a). Findings from the present study provided additional support for the relationship between experiential avoidance and broad conceptualizations of CSB among men with SUD. Furthermore, researchers called for a CSB treatment that reduces the impact of various emotional states on CSB (Hall, 2014; Reid, 2010; Reid et al., 2009). Results of the present study provided preliminary support for examining the efficacy of mindfulness-based interventions for CSB. Indeed, mindfulness-based interventions demonstrated efficacy in reducing experiential avoidance, negative affect, and substance use (Chiesa & Serretti, 2014; Hayes et al., 2011; Kumar et al., 2008; Luoma, Kohlenberg, Hayes, & Fletcher, 2012). As such, mindfulness-based interventions may be efficacious in reducing CSB; however, researchers have yet to investigate this hypothesis.

Although results from the present study elucidated the association between dispositional mindfulness and CSB, additional research is needed to determine the extent to which higher dispositional mindfulness interferes with the many etiological pathways to CSB, and the extent to which decreases in experiential avoidance mediate such interference. For instance, Hall (2014) posited that CSB may develop in response to attachment difficulties (e.g., loneliness, rejection, and low autonomy), depression, anxiety, intimacy concerns, shame, and trauma-related symptoms. It is plausible that these experiences prompt experiential avoidance, thereby facilitating CSB. If this theoretical supposition is correct, it follows that increased dispositional mindfulness may prevent experiential avoidance, thereby reducing the risk of CSB. Additional research is needed to determine the protective utility of dispositional mindfulness when CSB is prompted by other internal and external events (e.g., trauma), and the role of experiential avoidance in such etiological pathways.

In addition to better understanding the protective role of dispositional mindfulness for CSB, future research is needed to better understand proximal antecedents to CSB, and the extent to which experiential avoidance explains the function of CSB in response to antecedents. For instance, CSB and SUD commonly co-occur (Deneke et al., 2015). While the extent to which CSB and substance use proximally co-occur remains unknown, it is plausible that they are both activated by the same or similar internal or external events (e.g., negative affect; Carnes, 1991; Phillips et al., 2015). Elucidating the antecedents to CSB will allow investigators to determine whether experiential avoidance facilitates CSB and, as such, whether mindfulness-based CSB intervention research would be a useful avenue of investigation.

The present study has a number of limitations which should be considered when interpreting the findings. The sample for the present study was comprised of primarily Caucasian, non-married men with one or more SUD and whose sexual orientations were not ascertained.

Thus, the present findings may have limited generalizability. Additionally, diagnoses were based on consultation with multiple treatment team members and did not include structured diagnostic interviews. The cross-sectional nature of our data precludes an ability to determine the temporal order between the study variables as well as causation. For example, it is plausible that CSB precedes the development of dispositional mindfulness. Additional research employing longitudinal methods would allow for a better approximation of whether experiential avoidance mediates the association between dispositional mindfulness and CSB. Furthermore, some research supports dispositional mindfulness as a multifaceted construct that, in addition to awareness and acceptance, is comprised of non-judgment, non-reactivity, and observation (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006; Baer et al., 2008). As such, it is plausible that the interaction of various facets would have implications for the associations between dispositional mindfulness, experiential avoidance, and CSB. Relatedly, responses on the SAST-R are dichotomous thereby limiting the range of responses participants may endorse to further characterize their sexual behaviors. Future research should consider using a multifaceted dispositional mindfulness measure as well as a CSB measure with various response options (e.g., the Compulsive Sexual Behavior Inventory; Coleman, Miner, Ohlerking, & Raymond, 2001). Further, sexual addiction and CSB are not necessarily synonymous; the SAST-R was originally developed to screen for the former (Carnes et al., 2010; Kraus, Voon, & Potenza, 2016). Future research should consider using structured clinical interviews and various sexual addiction and CSB measures to further distinguish individuals who evidence sexual addiction as opposed to problematic and excessive sexual behaviors. Finally, because only total scores were available for each measure, reliability statistics could not be calculated.

Despite these limitations, the present study contributed to the limited body of research examining dispositional mindfulness and experiential avoidance in relation to CSB among men with SUD. Results from the present study offer preliminary support for the hypothesis that experiential avoidance partially mediates the association between dispositional mindfulness and CSB. These findings suggest that researchers should consider the potential utility of mindfulness-based interventions for CSB, particularly among men with SUD. Based on these preliminary results, it is plausible that dispositional mindfulness may decrease experiential avoidance, thereby reducing CSB.

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Figure 1.

Standardized regression coefficients for the relationship between dispositional mindfulness and compulsive sexual behavior among men in residential treatment for substance use disorders as mediated by experiential avoidance. Alcohol/drug use and problems were controlled for in all paths. The standardized regression coefficient between dispositional mindfulness and compulsive sexual behavior, controlling for experiential avoidance, is in parentheses. The AAQ-II, used to measure experiential avoidance, is scored such that low scores represent higher experiential avoidance. ** $p < .010$; *** $p < .001$.

Table 1.

Means, standard deviations, and bivariate correlations among study variables

	1	2	3	4	5
1. Dispositional Mindfulness	-				
2. Experiential Avoidance	.64**	-			
3. Compulsive Sexual Behavior	-.35**	-.42**	-		
4. Alcohol Use and Problems	-.14	-.26**	.30**	-	
5. Drug Use and Problems	-.35**	-.25**	.09	-.42**	-
Mean	4.24	49.52	1.36	14.98	10.52
<i>SD</i>	.96	11.73	2.59	11.36	13.79

Note. The AAQ-II, used to measure experiential avoidance, is scored such that low scores represent higher experiential avoidance.

**
 $p < .010$.

Table 2.

Hierarchical regression analyses predicting men's compulsive sexual behavior

Predictor	<i>R</i> ²	<i>R</i> ²	<i>B</i>	β	<i>F</i>
Step 1	.14				15.42 ***
Alcohol Use and Problems			.10 ***	.42 ***	
Drug Use and Problems			.05 **	.27 ***	
Step 2	.19	.05			14.43 ***
Alcohol Use and Problems			.07 ***	.33 ***	
Drug Use and Problems			.03	.14	
Dispositional Mindfulness			-.70 **	-.25 **	
Step 3	.22	.03			12.97 ***
Alcohol Use and Problems			.06 **	.26 **	
Drug Use and Problems			.02	.10	
Dispositional Mindfulness			-.35	-.13	
Experiential Avoidance			-.05 **	-.24 **	

Note. The AAQ-II, used to measure experiential avoidance, is scored such that low scores represent higher experiential avoidance.

**
 $p < .010$,

 $p < .001$.