

ARTICLES

Mindfulness in Patients With Gambling Disorders

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This study explored facets of mindfulness between patients diagnosed with a gambling disorder (n = 26) and a community sample of non-gambling-disordered individuals (n = 33). Multivariate statistics comparing group differences showed the gambling-disordered patients exhibited significantly lower levels of mindfulness, emotional regulation, stress coping, and impulse control compared to the non-gambling-disordered group. Overall, gambling severity was negatively associated with higher levels of mindfulness and positively linked to indices of emotional dysregulation, stress proneness, and impulsivity. Correlations between mindfulness and emotional dysregulation and impulsivity were much stronger than those between mindfulness and the severity of disordered gambling behaviors as measured by the National Opinion Research Center DSM Screen for Gambling Problems (NODS). These findings are

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discussed in the context of possible implications for future directions in exploring mindfulness-based interventions as a plausible intervention among those with gambling disorders.

KEYWORDS emotional regulation, gambling, impulse control, intervention, mindfulness, stress coping

Mindfulness has been applied to address a variety of psychological issues associated with distress and emotional suffering (Baer, 2003). Moreover, mindfulness interventions have demonstrated some efficacy in disorders where behavior regulation is compromised (Brewer et al., 2011; de Lisle, Dowling, & Allen, 2011; Zylowska et al., 2008). Mindfulness also seems to attenuate undesirable characteristics often implicated in various psychiatric disorders involving deficits in self-control (Frieze, Messner, & Schaffner, 2012), impulsivity (Lattimore, Fisher, & Malinowski, 2011; Peters, Erisman, Upton, Baer, & Roemer, 2011), and emotional dysregulation (Goodall, Trejnowska, & Darling, 2012; Hill & Updegraff, 2012; Mitchell et al., 2014; Robins, Keng, Ekblad, & Brantley, 2012). Because increased regulation of impulses, emotions, and stress coping are common goals for treatment of individuals with gambling disorders, mindfulness interventions could have the potential to benefit this population.

As a precursor to resource-intensive outcome research, this study seeks to investigate what, if any, relationships exist among mindfulness, problem gambling, and indices of impulsivity, emotional dysregulation, and stress proneness among a group of patients with gambling disorders compared with a sample of non-gambling-disordered individuals. More specifically, we sought to investigate if a sample of individuals assessed as having a gambling disorder exhibited significant differences on indices of mindfulness and what relationships would emerge among mindfulness and features of impulsivity, emotional dysregulation, and stress proneness.

WHAT IS MINDFULNESS?

Mindfulness is typically defined as the process of bringing awareness and nonjudgmental acceptance to one's present moment experience of thoughts, emotions, and bodily sensations (Bishop et al., 2004; Kabat-Zinn, 1990). In recognizing a need for consensus on a unified conceptualization of mindfulness, researchers have proposed a two-component model. The first component involves the self-regulation of attention so it is directed and maintained on the immediate experience. Focusing attention in this manner is thought to enhance recognition of one's moment-to-moment mental events. The second component entails adopting an orientation toward one's present

experience characterized by openness, curiosity, and acceptance (Bishop et al., 2004). Although a number of meditation techniques thought to cultivate mindfulness have their origins in Buddhist spiritual philosophies (Hanh, 1976; Silananda, 1990; Thera, 1962), contemporary clinicians have focused on mindfulness-based clinical applications and omitted adherence to any particular spiritual or religious dogma (Baer, 2003).

Several forms of meditation are taught in mindfulness-based approaches to treatment and each has similarities in its procedures and goals. An example of a typical meditation exercise might instruct a client to sit quietly, either cross-legged or on the floor, and focus attention on the somatic sensations of breathing. As various thoughts compete for the individual's attention, the client is encouraged to take note of them (e.g., a planning thought, a worrying thought) and then let go of the thought while returning the focus of attention to the breath. Throughout this process, the client cultivates the ability to observe incoming thoughts without overidentifying with them or judging them (e.g., my thoughts are neither good nor bad). Moreover, when a shift in self-awareness occurs, the individual can redirect focus back to the breath and away from distressing thoughts or ruminations. Clients are further encouraged to apply the concepts learned in meditation to activities in their daily lives.

MINDFULNESS AND GAMBLING DISORDERS

Gambling researchers have hypothesized mindfulness might attenuate problem gambling through increasing stress tolerance, cognitive flexibility, affect modulation, and self-regulation of addictive cravings and urges (de Lisle, Dowling, & Allen, 2012; Shonin, Van Gordon, & Griffiths, 2014). However, there is a paucity of empirical literature examining relationships between mindfulness and problem gambling (Chen, Jindani, Perry, & Turner, 2014). In two separate studies using a convenience sample of college students, self-reported mindfulness showed significant negative correlations with gambling severity (Lakey, Campbell, Brown, & Goodie, 2007). Researchers further noted that the inverse relationship between mindfulness and problem gambling was partially mediated by heightened risk-taking propensities involving overconfidence, risky bet acceptance, and myopic focus on reward (Lakey et al., 2007). In another study using a convenience sample of treatment-seeking problem gamblers ($N = 103$), gambling severity showed an inverse relationship with mindfulness (Riley, 2014). Moreover, emotional avoidance acted as a mediating variable between mindfulness and problem gambling (Riley, 2014). These latter findings suggest that mindfulness might exert a positive effect in reducing problem gambling by enhancing one's ability to be emotionally present with unpleasant feelings that might otherwise be a catalyst for gambling behaviors.

Large-scale controlled outcome studies examining the efficacy of mindfulness in a clinical sample of patients with gambling disorders are nonexistent. However, two published case studies reported a reduction in problematic gambling for a male and female in their 60s who received mindfulness-based interventions (de Lisle et al., 2011; Toneatto & Nguyen, 2007). Additionally, the female case study also showed improvements in levels of psychological distress as measured by subclinical scores on measures of depression and anxiety. Moreover, a small pilot study that combined cognitive behavioral therapy with a mindfulness intervention showed positive results in reducing gambling severity at the end of treatment and at a 3-month follow-up (Toneatto, Pillai, & Courtice, 2014). Such findings suggest that mindfulness could be a viable intervention in reducing problem gambling and the psychological distress that has been frequently linked to gambling severity.

Although some preliminary evidence is mounting in support of mindfulness-based interventions for gambling disorders, the fundamental question about whether problem gamblers exhibit significant differences in mindfulness compared to a group of non-gambling-disordered individuals remains uncertain. Thus, this study sought to explore group differences on indices of mindfulness, emotional regulation, stress coping, and impulse control compared to a group of nongamblers. We anticipate that those with a gambling disorder will exhibit significantly higher levels of impulsivity and lower levels of mindfulness, emotional regulation, and stress coping compared with non-gambling-disordered individuals. Moreover, we anticipate that mindfulness will be inversely related to gambling severity, emotional regulation, impulse control, and effective stress coping.

METHODS

Participants

GAMBLERS

Gamblers ($N = 26$; men = 16) in this study had a mean age of 41.3 years ($SD = 11.4$, range = 21–65). The sample included White (43.0%), Asian (20.6%), Hispanic (8.8%), and African American (7.4%) participants. Relationship status included never married (39.7%), first marriage (27.9%), divorced or separated (25%), remarried (2.9%), or cohabitating (4.4%). Education included 4-year college degree (35.3%), some college (29.4%), high school diplomas (25%), and 10.3% with graduate degrees.

CONTROLS

Controls ($N = 33$; men = 19) in this study had a mean age of 37.1 years ($SD = 8.7$, range = 23–62). The sample included White (75%), Hispanic

(12.5%), Asian (9.4%), and African American (3.1%) participants. Relationship status included first marriage (51.6%), never married (26.6%), divorced or separated (12.5%), remarried (4.7%), or cohabitating (4.7%). Education included some college (48.4%), 4-year college degree (32.8%), high school diplomas (7.8%), and 10.9% with graduate degrees.

Measures

NEO PERSONALITY INVENTORY–REVISED

The NEO Personality Inventory–Revised (NEO PI–R), designed to measure the Five-Factor Model (FFM) of personality, was used to assess self-reported personality traits (Costa & McCrae, 1992). The NEO has 240 items, consisting of self-statements such as “I am a worrier,” answered on a 5-point Likert scale ranging from *strongly disagree* to *strongly agree*. The NEO assesses 30 facets, 6 for each dimension of the FFM. Raw scores are standardized as T scores ($M = 50$, $SD = 10$) using respective sex norms reported in the NEO manual (Costa & McCrae, 1992). Evidence on convergent and discriminant validity is presented in the NEO manual, including cross-observer agreement and prediction of external criteria (e.g., psychological well-being, needs, motives, creativity, educational and occupational achievements, and coping mechanisms). The NEO facets of interest in this study were those measuring emotional regulation and stress proneness (Depression, Anxiety, Impulsiveness, and Vulnerability).

FREIBURG MINDFULNESS INVENTORY

The Freiburg Mindfulness Inventory (FMI) short form consisting of 14 items is purported to represent a single-dimensional construct reflecting tendencies to be mindful, regulate attention, regulate awareness, and be nonjudgmental of one’s experiences (Walach, Buchheld, Butenmuller, Kleinknecht, & Schmidt, 2006). The FMI items are endorsed on a 4-point Likert scale with categories fully labeled (1 = *rarely*, 2 = *occasionally*, 3 = *fairly often*, 4 = *almost always*). Correlations with the original long-form FMI (Buchheld, Grossman, & Walach, 2001) are high ($r = .95$) and items yield acceptable internal consistency ($\alpha = .86$). Items in this study demonstrated high reliability ($\alpha = .90$).

MINI INTERNATIONAL NEUROPSYCHIATRIC INTERVIEW

The Mini International Neuropsychiatric Interview (MINI) is a structured diagnostic clinical interview used to assess *Diagnostic and Statistical Manual of Mental Disorders* (4th ed, text rev. [DSM–IV–TR]; American Psychiatric Association, 2000) psychopathology along the Axis I domains. It is used

widely, and the psychometric properties have been established and reported in the literature (Sheehan et al., 1998). This brief clinical interview for psychiatric disorders takes approximately 15 min to administer and has been validated against other structured clinical interviews.

NATIONAL OPINION RESEARCH CENTER DSM SCREEN FOR GAMBLING PROBLEMS

The National Opinion Research Center DSM Screen for Gambling Problems (NODS) is a short, brief, structured interview based on the *DSM-IV* criteria (Gerstein et al., 1999) and has been demonstrated to be a valid, reliable, and clinically useful tool to screen for gambling-related disorders (Hodgins, 2004; Wickwire, Burke, Brown, Parker, & May, 2008). Participants who answered positively to five or more items were classified as pathological gamblers.

Procedures

Problem gambling participants were recruited as part of ongoing research conducted by the University of California, Los Angeles (UCLA) Gambling Studies Program. Gambling disorders were assessed using the NODS structured interview and required NODS scores ≥ 5 . Participants were also assessed for psychopathology and substance-related disorders using the MINI and a toxicology screen. Participants used for this analysis did not meet criteria for a substance-related disorder in the past 12 months (with exceptions for nicotine) and tested negative for cannabis, cocaine, opioids, methamphetamine, and alcohol at the time of intake.

The healthy community controls used in this study consisted of individuals who sought help for minor issues (e.g., communication problems) or a life transition (e.g., starting a new job) at an outpatient community clinic that provided brief counseling as part of an employee assistance program. Historically, our work with these individuals has shown them to be psychologically healthy and the difficulties they encounter are usually resolved within two or three sessions of counseling. These participants were assessed by a clinical psychologist using a structured diagnostic interview for psychopathology and determined to be void of criteria for any mental health illness, substance-related disorders, or gambling disorders as measured by the NODS.

All participants completed a demographic survey, completed study measures, and also received a structured diagnostic clinical interview using the MINI that was administered by two doctoral-level clinicians with more than 8 years of experience. One clinician was trained in neuropsychology and the other in psychiatry. All study procedures were approved by the Institutional Review Board at the University of California, Los Angeles, and all participants signed informed consent prior to participation.

DATA RESULTS AND ANALYSIS

Data were analyzed for extreme scores and met the requirements of test assumptions of normality, linearity, homoscedasticity, homogeneity, and multicollinearity. Subsequently no transformations were conducted. No missing data were observed.

Correlational Relationships

Overall, gambling severity was negatively associated with higher levels of mindfulness ($r = -.33, p < .05$), and positively linked to indices of emotional dysregulation including depression ($r = .42, p < .01$), anxiety ($r = .32, p < .01$), vulnerability to stress proneness ($r = .34, p < .01$), and impulsivity ($r = .54, p < .01$). As might be expected, mindfulness was negatively associated with all of the indices of emotional dysregulation (see [Table 1](#)). As can be seen in [Table 1](#), the zero-order correlations between mindfulness and emotional dysregulation and impulsivity were much stronger than those between mindfulness and the severity of disordered gambling behaviors as measured by the NODS. These correlations suggest mindfulness might have a mediating or moderating relationship with gambling severity through facets of emotional dysregulation, stress proneness, or impulsivity. However, the limited sample size in this study precluded testing for mediating and moderating relationships.

Group Comparisons

Given the number of variables used in our analysis and the respective size of our two groups, multivariate statistics were used to reduce Type I error (probability of making one or more false discoveries). The overall multivariate analysis of variance (MANOVA) for the study variables revealed significant differences between the two groups: Wilks's $\lambda = .115, F(6, 52) = 66.52, p = .0001$. As shown in [Table 2](#), post-hoc univariate tests showed significant differences between the groups across all of the study variables. The

TABLE 1 Zero-Order Correlations Between Primary Study Variable

	1	2	3	4	5	6
1. Gambling	—	.33*	.42**	.32*	.54**	.34**
2. Mindfulness	-.33*	—	-.58**	-.51**	-.61**	-.48**
3. Depression	.42**	-.58**	—	.78**	.69**	.74**
4. Anxiety	.32*	-.51**	.78**	—	.55**	.75**
5. Impulsiveness	.54**	-.61**	.69**	.55**	—	.51**
6. Vulnerability	.34**	-.48**	.74**	.75**	.51**	—

* $p < .05$, two-tailed. ** $p < .01$, two-tailed.

TABLE 2 Means, Standard Deviations, and Group Differences on Study Variables

Study Variables	Gamblers ^a		Controls ^b		<i>F</i>	Effect Size η^2
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Gambling						
NODS Total Score	7.92	2.12	0.33	0.65	381.44***	0.87
Mindfulness						
FRI Total Score	28.96	6.59	35.00	9.11	8.07**	0.16
Emotional Regulation						
Depression	71.06	10.53	59.77	11.88	10.61***	0.24
Anxiety	62.35	13.13	53.90	10.08	6.11*	0.15
Impulsiveness	68.76	9.49	54.33	14.60	13.34***	0.28
Vulnerability	65.12	17.95	54.57	11.70	5.96*	0.15

Note. NODS = National Opinion Research Center DSM Screen for Gambling Problems; FMI = Freiburg Mindfulness Inventory.

^a*n* = 26. ^b*n* = 33.

p* < .05. *p* < .01. ****p* < .001.

magnitude of the differences was most pronounced for variables measuring gambling severity, depression, and impulsivity, with smaller effect sizes for group differences for mindfulness, anxiety, and stress proneness.

DISCUSSION

This is one of the first studies to find significant differences on indices of mindfulness in a sample of patients with gambling disorders compared to a healthy sample of community controls. Although not surprising, it is important to demonstrate that problem gamblers exhibit diminished levels of mindfulness prior to developing mindfulness-based interventions for this clinical population. Our findings showed significant group differences across variables of emotional regulation, impulsivity, and stress proneness. Correlations among gambling severity, depression, and impulsivity were stronger than with mindfulness. Similarly, relationships among mindfulness, anxiety, depression, impulsivity, and stress proneness were stronger than the relationship between mindfulness and gambling severity. These results warrant further investigation to examine whether the relationships between gambling severity and mindfulness might be mediated by other variables such as those measuring emotion regulation, impulsivity, or stress proneness. Similar research appears to be emerging among other populations exhibiting behavioral dysregulation, such as patients with hypersexual behavior (Reid, Bramen, Anderson, & Cohen, 2014).

Collectively, the findings from this study, combined with results from prior research, suggest that relationships between mindfulness-based interventions and gambling disorders should be explored further. Moreover,

future directions for studies investigating possible mechanisms of action through which mindfulness might exert its effects on problem gambling might consider examining indices of impulsivity, emotion regulation, stress proneness, and gambling severity. Models examining the role of mindfulness might consider if, and how, mindfulness-based interventions might attenuate gambling problems through other covariates of problem gambling such as those noted in this study.

Limitations

Despite a number of interesting findings, this study is limited in several ways. This study is cross-sectional and based on correlational data and therefore does not address causality. This study also possesses the limitations commonly associated with studies using self-report measures. Inferences about our findings beyond those listed in this study should be made with caution, in part, because our sample was small and a larger sample might have yielded different results (although it is likely that the significant group differences would still emerge in a larger sample).

CONCLUSION

Interventions using mindfulness continue to be explored across a broad range of domains and psychological conditions. This study suggests that populations with gambling disorders exhibit significant differences in mindfulness compared to healthy controls as well as the other indices reported in our investigation, including emotion regulation, impulsivity, and stress coping. However, more specificity regarding these relationships will need to be explored in future research to determine whether those with gambling disorders might benefit from mindfulness-based interventions.

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