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ORIGINAL PAPER

Experiential Avoidance Mediates the Association Between Thought Suppression and Mindfulness with Problem Gambling

Ben Riley

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Abstract Experiential avoidance (EA) has been shown to be an important etiological and maintenance factor in a wide range psychopathology that includes addictive, anxiety, depressive and impulse control disorders. One common form of EA is thought suppression. Problem gambling causes enormous problems for afflicted individuals and has major social costs for their families and the community. Despite increasing interest in the contribution of EA to a broad range of psychological problems, its association with problem gambling has not previously been empirically investigated. The purpose of this cross-sectional study was to investigate the relationship between EA, thought suppression, and mindfulness among a group of 103 treatment seeking problem gamblers. Of particular interest was the extent to which EA accounted for the relationships between problem gambling and the two theoretically opposing constructs: thought suppression and mindfulness. Results showed EA was predictive of problem gambling. Thought suppression was positively associated and mindfulness negatively associated with problem gambling, and these relationships were mediated by EA. Directions for future research are suggested which include the application of treatments for problem gambling that undermine EA, such as acceptance and mindfulness based therapies.

Keywords Experiential avoidance · Acceptance · Problem gambling · Mindfulness · Thought suppression · Mediation

Introduction

Experiential avoidance (EA) is a functional construct that has been shown to be a central process in the development and maintenance of psychological distress (Hayes 1987; Kashdan et al. 2006). It has been defined as a phenomenon that occurs when a person is

B. Riley (✉)
Department of Health Sciences, Flinders University, Adelaide, SA, Australia
e-mail: ben.riley@health.sa.gov.au

B. Riley
Flinders Medical Centre, Block E2, The Flats, Flinders Drive, Bedford Park, SA 5042, Australia

unwilling to experience unwanted private events (e.g. bodily sensations, thoughts, memories, urges) and takes steps to reduce the frequency or form of these events, such as disassociation, escape, and avoidance, to the extent that their ability to take effective action in valued domains of their life is adversely affected (Hayes et al. 1996). EA can take wide range of forms such as sex, gambling, internet use, eating and exercise (Hayes and Pierson 2005). In conceptualising behaviour as EA it is the function rather than the form of the behaviour that is of interest. Psychological problems that have been conceptualised as EA include depression (Zettle 2007), problem anger (Eifert et al. 2006) and anxiety (Eifert and Forsyth 2005). For example in conceptualising anxiety disorders as EA, Eifert and Forsyth (2005) argue that anxiety and fear are not themselves problematic and in fact can be beneficial in some contexts. Anxiety becomes a problem when individuals make deliberate inflexible efforts to avoid or regulate their experience of anxiety. Therefore anxiety is not the problem per se. Rather, an individual's response to their experience of anxiety has the potential to develop into an anxiety disorder. Studies have shown EA to be a core mechanism in the maintenance of a broad range of psychological disorders such as trichotillomania (Begotka et al. 2004), posttraumatic stress disorder (Orcutt et al. 2005) and binge eating (Lillis et al. 2011).

Problem gambling causes enormous problems for afflicted individuals and has major social costs for their families and the community (Walker 2008). Although gambling patterns vary across countries and populations, problem gambling prevalence studies report rates of problem gambling between 0.8 and 2.8 % (Stucki and Rihs-Middel 2007). The concept of pathological gambling as a maladaptive coping strategy for unwanted private events has been suggested by a number of researchers. Blaszczynski et al. (1986a) argued that avoidance of anxiety or dysphonic mood, in conjunction with a behaviour completion mechanism (BCM), was a major factor in the maintenance of pathological gambling behaviour. Under a BCM model as described by McConaghy (1980), once BCMs are established and activated by relevant cues, failure to complete the behaviour results in increased tension or anxiety which drives the individual to complete the behaviour. For example if a pathological gambler is in a conflict situation, such as deciding whether or not to gamble, their BCM remains incomplete, activating their arousal system which is experienced as an aversive state. The individual then experiences some relief when they gamble and complete their BCM. Wood and Griffiths (2007) described gambling to escape through mood modification as the prime characteristic reported by problem gamblers. Studies also suggest problem gamblers report greater maladaptive coping skills. In a study of 1,339 youth, problem gamblers were more likely to avoid stressors by engaging in distracting activities (Nower et al. 2004). McCormick (1994) reported male substance abusers with gambling problems displayed significantly more avoidant and impulsive coping styles than those without gambling problems. These studies suggest that excessive gambling may be used by some gamblers as a coping strategy to regulate unwanted private events. Marotta (2002) suggested EA may be a significant functional process in both the development and maintenance of problem gambling. In an EA conceptualisation of problem gambling, the gambling behaviour itself (i.e. the form), is not pathological. Rather, the repeated maladaptive attempts to control or avoid unwanted private events via gambling, has the potential for the development of problem gambling (Marotta 2002).

Intrusive thoughts are an important clinical feature of impulse control disorders such as kleptomania (Dannon et al. 2006) and pathological gambling (Blaszczynski 1999). Compared to normal subjects pathological gamblers have been found to report a higher preoccupation with intrusive thoughts (Blaszczynski 1999). Thought suppression is one common form of EA (Hayes et al. 1996). Given observed high levels of intrusive thoughts

among problem gamblers, it was predicted in the current study that thought suppression would be positively associated with problem gambling, and mediated by EA. A number of studies have found deliberate thought suppression can actually lead to more, not fewer, of the very thoughts being targeted (Wegner et al. 1987; Wenzlaff and Luxton 2003). Based on learning theory such thoughts may also function as cues which trigger off cravings and maintain the behaviour (Marlatt and Gordon 1985; Toll et al. 2001).

An opposing theoretical construct to that of thought suppression is mindfulness. Mindfulness is concerned with non-judgemental acceptance of one's experience, including unwanted cognitions, whereas thought suppression involves non-acceptance of unwanted cognitions along with attempts to suppress them (Lavender et al. 2009). Mindfulness can be defined as "paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally" (Kabat-Zinn 1994, p. 4). It enables an individual to experience a clarity and vividness of their experience, which is distinct from less mindful states of habitual or automatic functioning (Brown and Ryan 2003). Increased levels of mindfulness have been reported to be associated with less severe gambling outcomes among frequent gamblers (Lakey et al. 2007).

The literature reviewed suggests EA may be an important factor in the development and maintenance of a broad range of psychological disorders. To date there are no published data examining the relationship between EA and problem gambling. Better understanding the role EA plays in problem gambling may lead to the development of more effective treatments. The purpose of this study was firstly to determine, in a sample of problem gamblers, if EA was related to problem gambling, and secondly to investigate if EA mediated anticipated relationships between problem gambling and respectively, thought suppression and mindfulness. It was hypothesised that EA would be predictive of problem gambling. It was further hypothesised that thought suppression would be positively associated with, and mindfulness negatively associated with problem gambling, and that these relationships would be mediated (Baron and Kenny 1986) by EA.

Method

Participants and Procedure

Using a convenience sample 103 consecutive adult treatment seeking problem gamblers (51 male) attending an outpatient problem gambling therapy service in South Australia were asked to complete a battery of measures individually in a quiet waiting room prior to their initial appointment. Four percent of participants were Asian with the remainder Caucasian. The mean age was 42 years with a standard deviation (SD) of 13.99 years. Twenty-five percent of participants were single, 45 % married or in a defacto relationship and 27 % separated and 3 % other. Sixty percent were employed, 9 % performing home duties, 9 % unemployed, 6 % retired, 9 % receiving a disability pension and 7 % other. Twenty-seven percent reported the duration of their gambling problem as more than 10 years, 30 % 5–10 years, 20 % 2–5 years, 12 % 1–2 years and 11 % less than 1 year. The study was approved by the Southern Adelaide Clinical Human Research Ethics Committee and all participants signed individual consent forms. The battery of measures assessed their level of problem gambling, level of mindfulness, their tendency to suppress difficult thoughts, and their inability to take action in the face of negatively evaluated private events.

Measures

Experiential avoidance The revised second version of the Acceptance and Action Questionnaire (AAQ-II; Bond et al. 2011) is a 10-item self-report measure of EA. Items on the AAQ-II measure an individual's tendency to make negative evaluations of unwanted private events, unwillingness to be in contact with them and a desire to alter their form or frequency to the extent that they are unable to take action in the face of such events. Items such as "My painful experiences and memories make it difficult to live a life that I would value" are rated on a 7 point scale from "Never true" to "Always true". Seven of the items are reversed for scoring purposes. The scale has demonstrated good internal consistency, test–retest reliability and validity with a mean Chronbach alpha coefficient of 0.84 (Bond et al. 2011). Items were scored so that higher scores reflect greater psychological flexibility and therefore lower EA.

Thought suppression The White Bear Suppression Inventory (WBSI; Wegner and Zanakos 1994) is a 15-item self-report measure of an individual's tendency to suppress unwanted negative thoughts. Respondents rate items (e.g. "I have thoughts that I try to avoid" and "There are images that come to mind that I cannot erase") on a 5 point scale from "Strongly disagree" to "Strongly agree". The scale has good internal consistency, reliability over different samples, and test–retest reliability (Wegner and Zanakos 1994) with a reported Chronbach alpha coefficient of 0.94 (Lavender et al. 2009). Higher scores reflect greater thought suppression.

Mindfulness The Mindfulness and Attention Awareness Scale (MAAS; Brown and Ryan 2003) is a 15-item self-report measure of an individual's mindful states over time. This scale was chosen as it aims to measure an individual's dispositional mindfulness rather than a set of mindfulness skills (Brown and Ryan 2003). The MAAS is concerned with the presence or absence of an individual's attentional presence to their ongoing experience. Respondents rate items (e.g. "I could be experiencing some emotion and not be conscious of it until some time later" and "I find it difficult to stay focused on what's happening in the present") on a 6 point scale from "Almost always" to "Almost never". The scale has demonstrated good internal consistency, test–retest reliability and validity with reported Chronbach alpha coefficients ranging 0.80–0.87 (Brown and Ryan 2003). The 15 items are scored and then averaged. Higher scores reflect greater levels of mindfulness.

Problem gambling The Problem Gambling Severity Index (PGSI; Ferris and Wynne 2001) is a 9 item self-report measure of problem gambling. The PGSI consists of 4 items that assess problem gambling behaviours (e.g. "How often have you bet more than you could really afford to lose?") and 5 that assess adverse consequences of gambling (e.g. "Has your gambling caused any financial problems for you or your household?"). Respondents rate each item on a 4 point scale from "none of the time" to "always". A score of 1–2 indicates low risk gambling, 3–7 moderate risk gambling and 8 or more a gambling problem. The scale has good internal consistency, test–retest reliability and good content validity as a measure of problem gambling with a reported Chronbach alpha coefficient of 0.87 (Ferris and Wynne 2001).

Statistical Analyses

The data were examined initially to ensure assumptions of parametric testing were met. Multicollinearity was not deemed to be present in this data ($r < 0.75$; Hosmer and Lemeshow 2000) and histograms and normality plots suggested that the data were distributed

normally. Zero-order correlations were performed between all variables. Tests of mediation were then followed using the multiple regression approach outlined by Baron and Kenny (1986) to examine whether EA mediated relations between problem gambling and respectively, thought suppression and mindfulness. Following this the Sobel test of mediation as suggested by Baron and Kenny (1986) was used to examine the indirect effect of the independent variable on the dependent variable via the mediator.

Results

The mean score on the PGSI was 17.62 with a standard deviation (SD) of 5.39 indicating high levels of problem gambling. The mean score on the AAQ-II was 39.19 with a SD of 12.5 which was comparable to a sample of individuals with mild to moderate depressive and or anxiety symptoms (Fledderus et al. 2012). The mean score on the WBSI was 50.42 with a SD and of 16.67, which was higher than those observed in a study of undergraduate university students (Wegner and Zanakos 1994) and the mean score on the MAAS was 3.84 with a SD of 1.23 which was lower than those observed in an adult community sample (Brown and Ryan 2003). Table 1 describes the zero order correlations for all study variables. Results indicated that the tendency to engage in EA predicted problem gambling and thought suppression and was negatively associated with mindfulness.

According to Baron and Kenny (1986) to support a mediational hypothesis the following conditions must be met. The independent variable, mediator and dependent variable must all be significantly inter-correlated. Then when the independent variable and mediator are entered simultaneously into a model predicting the dependent variable, the relationships between the independent variable and dependent variable must become significantly reduced or non-significant. The zero-order correlations presented in Table 1 satisfied the necessary conditions required to use the mediation approach: (1) there were significant relations between thought suppression and mindfulness (independent variables) and problem gambling (dependent variable); (2) EA (mediator) was significantly related to problem gambling (dependent variable); and (3) thought suppression and mindfulness (independent variables) were significantly related to EA (mediator). The linear regression analyses examined the relations between thought suppression and mindfulness respectively, on problem gambling, and to the extent to which such relations were mediated by EA (see Table 2). In both models in which problem gambling was the dependent variable, the standardised regression coefficients between thought suppression and problem gambling, and mindfulness and problem gambling decreased substantially and became non-significant when controlling for EA.

Table 1 Zero order correlations of study variables

		2	3	4
1	Experiential avoidance	-0.43^{***}	0.51^{***}	-0.63^{***}
2	Problem gambling	–	-0.39^{***}	0.33^{**}
3	Mindfulness	–	–	0.48^{***}
4	Thought suppression	–	–	–

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Table 2 Linear regression models for testing the final step of experiential avoidance as a mediator

Mediation models	*B*	*SE B*	*β*	*p*	R^2	*F*	Sobel *z*
DV = Problem gambling							
Thought suppression	0.04	0.04	0.11	0.91	0.19	10.27	2.73***
Experiential avoidance	−0.15	0.05	−0.35	0.001**			
DV = Problem gambling							
Mindfulness	−0.82	0.47	−0.19	0.085	0.22	12.99	−2.82***
Experiential avoidance	−0.15	−0.05	−0.35	0.002**			

B = unstandardised coefficients and *β* = beta weight from linear multiple regressions. A significant Sobel *z* indicates that the mediator fully or partially accounts for the influence of an independent variable on a dependent variable. All *p* values were two-tailed. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Discussion

A growing body of research suggests EA is an important etiological and maintenance factor in a wide range of clinical disorders. Despite increasing interest in the contribution of EA to a range of psychopathology that includes addictive disorders, anxiety and depressive disorders and impulse control disorders, its association with problem gambling has not previously been empirically investigated. The goal of this study was to examine the relationships between EA, thought suppression, mindfulness and problem gambling. Results from this study suggested EA was in fact predictive of higher levels of problem gambling. This finding is consistent with previous research which has observed that individuals with gambling problems have often reported gambling in attempt to regulate a range of unwanted private experiences (Blaszczynski et al. 1986; Wood and Griffiths 2007) and reported greater maladaptive coping skills (Nower et al. 2004; McCormick 1994). The hypotheses that EA would mediate anticipated relationships between thought suppression and problem gambling, and mindfulness and problem gambling, were also supported. That thought suppression and mindfulness were positively and negatively respectively associated with problem gambling is not surprising, given problem gamblers have previously reported a higher preoccupation with intrusive thoughts (Blaszczynski 1999) and reported lower levels of mindfulness (Lakey et al. 2007). The contribution of the current data is the suggestion that not only is EA related to problem gambling, it may also be a mechanism through which unhelpful psychological strategies such as thought suppression and mind*less*ness operate. Some researchers have suggested metacognition (knowledge and beliefs about one's own cognitive system) may play a role in problem gambling (Lindberg et al. 2011; Caselli and Spada 2010). A metacognitive conceptualisation of psychological problems (see Wells 2008) proposes unhelpful metacognitions are a maladaptive coping strategy to regulate or avoid aversive internal states. Consistent with an EA conceptualisation of psychological disturbance, it is the function of unhelpful thoughts and beliefs rather than their form or content that is of interest. In a recent study Lindberg et al. (2011) reported two metacognitive constructs (negative beliefs about thoughts concerning uncontrollability and danger and beliefs about the need to control thoughts) predicted gambling behaviour independently of anxiety and depression among 91 treatment seeking problem gamblers. This is consistent with the current study in that unhelpful metacognitive strategies may be yet another form of EA among problem gamblers.

Presently the most published evidence based treatment for problem gambling is cognitive-behavioural therapy (CBT; e.g. Sylvain et al. 1997; Tony Toneatto 2002), which

predominantly focuses on restructuring erroneous gambling related cognitions. Though CBT appears to be effective for some individuals, high non-response to treatment and relapse rates accentuate the need to consider alternative treatment approaches (Toneatto et al. 2007). There is a growing body of data suggesting acceptance based approaches can be effective for a range of clinical disorders (Grossman et al. 2004; Hayes et al. 2006). From a therapeutic perspective the findings from the present study suggest that interventions that undermine EA may be helpful in the treatment of problem gambling. Acceptance and mindfulness based approaches such as acceptance and commitment therapy (ACT; Hayes et al. 2006) and mindfulness based stress reduction (MBSR; Kabat-Zinn 1990) target clients' relationship to their unwanted private events, rather than the content of the events themselves. Acceptance in this context means purposely contacting psychological experiences—directly, fully and without needless defence, while behaving effectively (Hayes et al. 1996). Though in its infancy, research has begun on the use of mindfulness interventions in the area of problem gambling (de Lisle et al. 2011; Toneatto et al. 2007).

The present study has several limitations. Firstly, these data come from a cross-sectional design, therefore preventing inferences about the causal relations between constructs. Future repeated measures studies could examine the change process of acceptance and mindfulness based interventions for problem gambling, and investigate EA as a potential mediator for clinical outcomes. More frequent repeated measures may allow the possibility of investigating if changes in EA precede changes in problem gambling outcomes, therefore allowing some inference of temporal associations. Secondly, this study relies wholly on self-report data which raises problems such as self-report biases and social desirability. The use of a multiple regression to test a mediation model requires that there be no measurement error in the mediator (Baron and Kenny 1986). One approach to such potential unreliability is to use several self-report measures of a construct. Supplementing these with other methods such as informant reports and behavioural methods may also improve accuracy and future studies could consider this. Thirdly, this was a clinical sample of treatment seekers therefore caution should be used before generalising to a wider population of problem gamblers. Finally, although the purpose of this study was to examine if EA, thought suppression and mindfulness were associated with problem gambling, these dispositional factors are likely to be associated with a broad range of clinical problems and are therefore not unique to problem gambling. For example mindfulness has been reported to be negatively associated with bulimic symptoms (Lavender et al. 2009) and thought suppression associated with affective disorders (Purdon 1999).

Despite these limitations the present study contributes to the literature suggesting that the tendency to engage in EA is related to problem gambling. It also provides preliminary support that EA may constitute a specific mechanism through which thought suppression and mindfulness are positively and negatively respectively, associated with problem gambling. Newer acceptance and mindfulness based therapies such as ACT and MBSR have been adapted for use in the treatment of a broad range of clinical disorders. To date there has been very little investigation of their potential use for the treatment of problem gambling. The findings of this study suggest directions for future research including further examination of the role of EA and the application of acceptance and mindfulness based therapies in the area of problem gambling.

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