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A Review of Buddhist Concentration, Ethics, and Wisdom-Based Meditation Practices for Prevention and Recovery from Gambling Harm

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Abstract: This critical review assesses the use of Buddhist concentration-, ethics-, and wisdom-based meditation practices in the context of prevention and recovery from gambling harm. It begins by exploring the core psychological mechanisms and processes involved in problem gambling and introduces a model that identifies psychological distress, a lack of values clarification, and a lack of identity as the main drivers of addictive gambling behaviour. The review then examines how the three types of meditation practices interact with these mechanisms to formulate a theoretical framework for using meditative interventions to reduce problem gambling. Additionally, the review analyses several empirical studies that have implemented the different meditation practices in efforts to reduce gambling behaviours, evaluating their effectiveness, and validating the proposed theoretical framework. The review findings indicate that specific meditation practices vary in their effectiveness in addressing the different core mechanisms of problem gambling and in breaking the cycle of addictive behaviour. Consequently, for meditation practices to be most effective as a therapeutic tool for problem gambling, clinicians are recommended to first determine the specific causes of an individual's gambling behaviour and then tailor the meditation intervention to meet those specific needs.

Keywords: Buddhism, Concentration, Wisdom, Mediation, Gambling, Harm, Recovery.

Introduction

Over the last decade, there have been several key literature reviews, including systematic reviews and meta-analyses, assessing the effectiveness of mindfulness-based interventions (MBIs) for addressing problem gambling. These reviews vary in scope; some investigate mindfulness as a treatment for both substance and behavioural addictions (Rosenthal et al., 2021; Sancho et al., 2018), others focus exclusively on behavioural addictions (Brandtner et al., 2022; Schwebel et al., 2020), and several concentrate specifically on mindfulness-based approaches for disordered gambling (Chen et al., 2023; de Lisle et al., 2012; Manyard et al., 2018).

To greater or lesser extents, each of these reviews conclude that MBIs are effective in both preventing and aiding recovery from gambling harm and/or addictive behaviour. Specifically, MBIs have been shown to be effective in issues of behavioural addiction (e.g. gambling disorders) by reducing dependence, craving, and other addiction related symptoms (Chen et al., 2023; Sancho et al., 2018). However, the specific meditation practices used within the interventions and the mechanisms through which they address gambling issues, remain speculative (de Lisle et al., 2012; Griffiths et al., 2016; Manyard et al., 2018). Given the diverse nature of disordered gamblers, a single, one-size-fits-all approach to the problem may not suit every individual seeking treatment (Ladouceur, 2005). This underscores the need for a deeper understanding of how different MBIs interact with various causes and triggers of gambling behaviour, as individuals with specific triggers may benefit more from distinct types of meditative practice.

This critical review aims to deepen understanding of how various meditation practices can aid in the prevention and recovery from problem gambling. The review will begin by examining the core psychological mechanisms underlying problem gambling and behavioural addictions. It will then assess how various meditation practices differentially impact cognitive, affective, and perspective-taking processes. Subsequently, the review will explore the interactional effects of these practices on the mechanisms of gambling behaviours to develop a theoretical framework for how meditative interventions might be effectively used for prevention and recovery from gambling harm. Finally, the review will analyse several studies that have implemented different meditation techniques in interventions aimed at reducing gambling behaviours, evaluating their effectiveness and testing the validity of the proposed theoretical framework.

Mechanisms of Problem Gambling

During the 1980s, “pathological gambling” was included in the third edition of the Diagnostic and Statistical Manual of Mental Disorders, but was re-termed as “gambling disorder” in the DSM-IV and DSM-5 (i.e., along with associated revisions to the diagnostic criteria with each subsequent version of the DSM) (Brandtner et al., 2022). A defining factor

of gambling disorder is the habitual or even compulsive behaviour of repetitive engagement in gambling activities, strong cravings in their absence, and continued engagement despite negative consequences (Brandtner et al., 2022; Rosenthal et al., 2021). Problem gambling may result in different levels and types of harm such as personal, familial, social, vocational, educational, financial and legal difficulties (Rickwood et al., 2010).

One rationale for considering gambling behaviours as addictive has been research identifying common neurocognitive mechanisms underlying both the development and maintenance of substance use disorders and nonsubstance addictive behaviours (Kiefer et al., 2013). Several theoretical models suggest that similar psychological core processes are fundamental to the emergence and persistence of nonsubstance addictive behaviours (Brand et al., 2019; Dong & Potenza, 2014; Wei et al., 2017). These models incorporate neurocognitive insights and theories from substance use disorders research, including impaired response inhibition and salience attribution (Goldstein & Volkow, 2011), incentive sensitization (Berridge & Robinson, 2016), and reward deficiency syndrome (Blum et al., 1996). The application of these concepts to nonsubstance addictive behaviours (i.e. gambling disorder) provide frameworks to facilitate the empirical investigation of these processes.

One such framework which derives, integrates, and highlights the previously mentioned psychological core processes, and has been specifically applied to gambling disorder, is the interaction of person-affect-cognition-execution (I-PACE) model (Brand et al., 2019). It suggests that the perception of internal and external triggers, such as stress, can lead to increased attention to addiction-related cues, triggering cue reactivity and cravings responses (Brandtner et al., 2022). If these craving reactions intensify and the ability or willingness to resist the urges weakens, the likelihood of engaging in addictive gambling behaviours may increase.

Over time, these decisions may become habitual, driven by the dominance of the brain's reward system and a reduction in cognitive control from higher brain functions (Brewer & Potenza, 2008; Everitt & Robbins, 2005). Through the experience of positive and/or negative reinforcement associated with the behaviour, the anticipation of rewards may be altered, leading to more pronounced cognitive biases towards target-associated cues (Wiers & Stacy, 2006). Specifically, winning money may act as a positive reinforcement, encouraging gamblers to continue playing in the hopes of further gains. Conversely, the experience of losing money can serve as negative reinforcement, compelling gamblers to keep playing to avoid the distress associated with losses or in an attempt to recover losses. These changes can then enhance the allocation of attentional resources, thereby improving the perception of target-associated stimuli, overemphasizing the potential rewards of winning, while downplaying the risks of loss (Brandtner et al., 2022). Consequently, it is suggested that core processes such as stress responsiveness, craving, inhibitory control, decision-making,

and cognitive biases, which are individually determined, may interact and promote engagement in gambling disorder (Brand et al., 2019).

Similarly, de Lisle et al. (2012) outlined four key mechanisms that influence gambling behaviour. First, they noted that overconfidence and risk-willingness significantly impact gambling behaviours (Lakey et al., 2007). Individuals who do not accurately assess risk or who are more accepting of high stakes may be susceptible to developing a gambling disorder. Secondly, de Lisle et al. (2012) pointed out that myopic focus on rewards can drive gambling behaviour. This concept aligns with the I-PACE model's emphasis on the brain's reward system dominance, suggesting that individuals who concentrate on potential rewards rather than potential losses are at risk for problem gambling (Lakey et al., 2007).

However, the third mechanism identified by de Lisle et al. (2012) diverges from the I-PACE model. They propose that ego involvement plays a significant role in gambling behaviour. For instance, symptoms such as preoccupation with gambling might reflect a tendency among some gamblers to place heightened degrees of egoic attachment in the outcomes of their gambling, linking their ego or even their self-worth to the rewards obtained from gambling activities (de Lisle et al., 2012). Similarly, Singer (1994) proposes that from the viewpoint of transpersonal psychology, problem gambling can be seen as stemming from an individual's failure to comprehend the true transcendental essence and completeness of their existence. Instead, individuals with addictive gambling behaviour derive their sense of self-worth from the rewards they obtain, using this as a 'shortcut' to feeling some sense of worth, while bypassing a more profound investigation into their true identity and nature (Leonard, 1989).

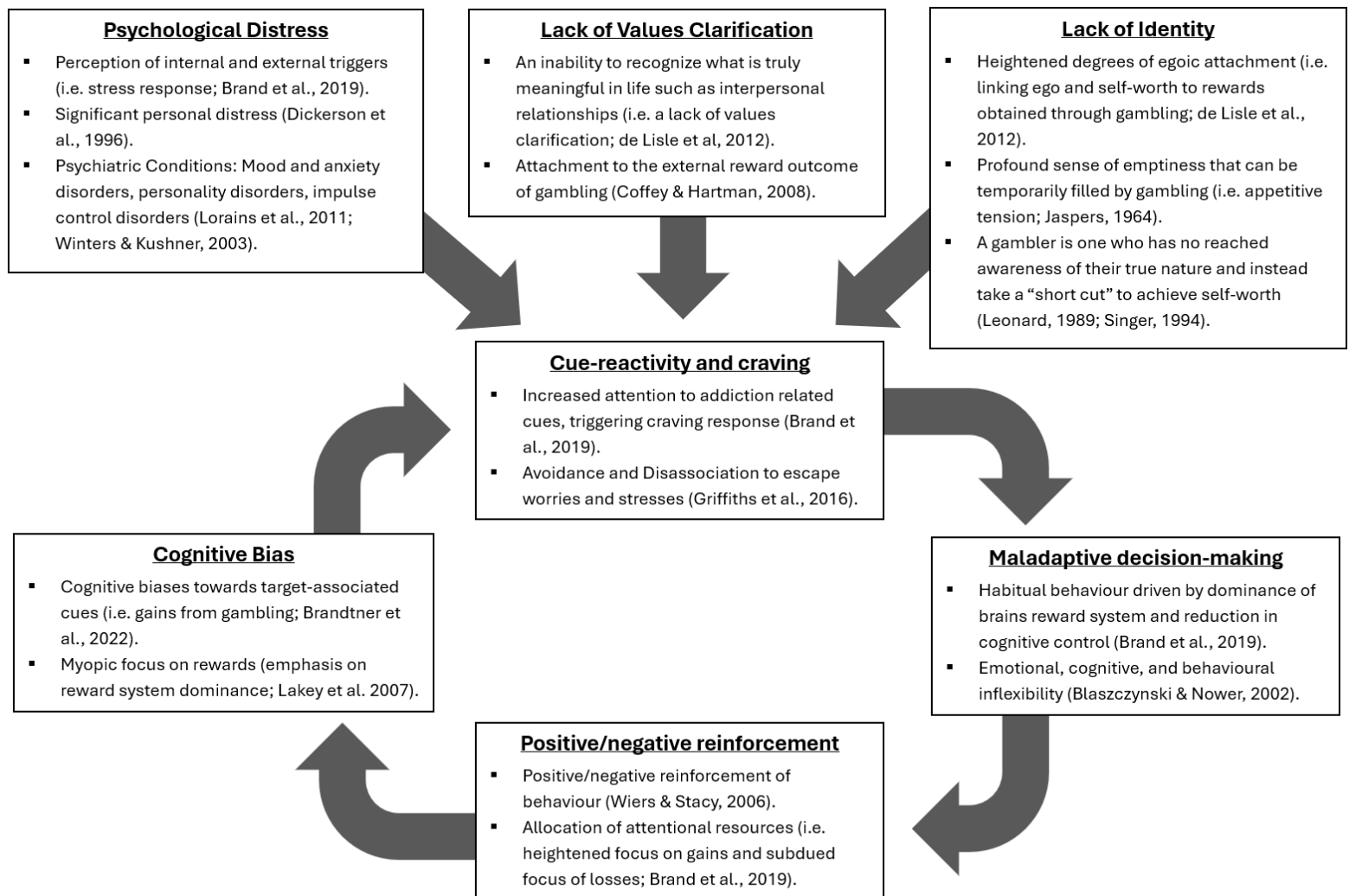
Finally, according to de Lisle et al. (2012), the fourth factor contributing to gambling behaviour is psychological distress. Extensive research indicates that problem gambling is correlated with significant personal distress (Dickerson et al., 1996) and is frequently associated with various psychiatric conditions, including mood and anxiety disorders, personality disorders, and other impulse control disorders (Lorains et al., 2011; Winters & Kushner, 2003).

Additionally, de Lisle et al. (2012) highlights several other psychosocial processes that may serve as mechanisms for problem gambling. These include a lack of values clarification, where individuals struggle to recognize what is truly meaningful in their lives (i.e. interpersonal relationships; Shapiro et al. 2006); emotional, cognitive, and behavioural inflexibility, where gambling becomes an automatic, and rigid response to life and emotional stress (Blaszczynski & Nower, 2002); and attachment, such as being attached to the external reward outcome of gambling (Coffey & Hartman, 2008).

Two additional mechanisms of gambling behaviour, not covered by the I-PACE model or de Lisle et al.'s (2012) categorization, have been proposed. Firstly, Griffiths et al. (2016) suggest that for some individuals, gambling serves as a strategy for avoidance and dissociation, helping them

to escape their worries and stresses. Secondly, Frisone (2021) introduces the concept of appetitive tension (Jaspers, 1964), which posits that individuals with gambling disorders experience a profound sense of emptiness. This emptiness, driven by the compulsive need to gamble, perpetuates a vicious cycle as the act of gambling temporarily fills this existential void, only to deepen it further over time.

Gambling behaviour is a complex process involving various factors that together can increase one's vulnerability to relapse (Oakes et al., 2019). Figure 1 presents a proposed model of the core psychological mechanisms underlying gambling behaviour, integrating the theoretical concepts and frameworks discussed previously. The model identifies three fundamental causes that may initiate problem gambling: psychological distress, a lack of values clarification, and a lack of identity. Similar to the I-PACE model, once triggered, cue-reactivity and craving lead to maladaptive decision-making. This, in turn, positively reinforces gambling behaviours, which then contributes to the development of cognitive biases due to a myopic focus on rewards. This cycle ultimately circles back to intensify the craving response, driven by the desire to achieve those rewards.

Figure 1.*Proposed model of the core psychological mechanisms of gambling behaviour***Differential Impact of Meditative Practices**

The first generation of empirical studies into Buddhist meditation techniques predominantly began in the 1980's and investigated mindfulness meditation (Furnell et al., 2024a). Mindfulness meditation, distinct from mindfulness as a trait or as a concept in Buddhist philosophy, was popularized by the development of MBIs, and understands mindfulness as a type of non-judgemental awareness of experiences in the present moment (Kabat-Zinn, 2003). The focus is on concentrative meditations to improve one's ability to be attentive to what is happening in the present (Brown & Ryan, 2003).

To offer insights into the potential neurobiological mechanisms underlying mindfulness practice, Vargo and Silberswig (2012) proposed the S-ART framework, encompassing 1. self-awareness, 2. self-regulation, and 3. self-transcendence. They suggested that mindfulness practice operates through three fundamental mechanisms that mitigate biases associated with self-processing to promote a sustainable, healthy mindset. Initially, this involves the development of meta-awareness concerning one's own emotions and thoughts (self-awareness); this awareness then progresses into an ability to effectively modulate one's behaviour and regulate emotions (self-regulation), which ultimately leads to the cultivation of a positive relationship between self and other that transcends self-focused need and increases prosocial characteristics (self-transcendence) (Vargo & Silberswig, 2012).

While the S-ART framework (Vargo & Silberswig, 2012) presents a neurobiological model for understanding the mechanism of mindfulness practice, it generalizes the effects of mindfulness rather than differentiating between different types of meditation. As the twenty-first century began, a second generation of MBIs arose which acknowledged the benefits and importance of integrating additional Buddhist meditation practices into MBIs (Van Gordon et al., 2019). A defining characteristic of second generation MBIs, compared to first generation MBIs' focus on cognitive practices for enhancing present-centred-awareness, is the additional inclusion of ethics as an integral part of the program (Shonin et al., 2014a). Within empirical studies, these so-called affect practices, such as loving-kindness meditation and compassion meditation have become widely utilized (Zeng et al., 2015). More recently, there has been a growing interest in understanding how more investigative and intuitive meditation techniques – such as contemplations on interdependence and emptiness – can influence the outcomes of MBIs (Furnell et al., 2024b; Wu et al., 2019).

The continued development of incorporating varied meditation practices into MBIs has been accompanied by the introduction of several frameworks seeking to understand the differential effects of these varied practices. Two such frameworks are Dahl et al.'s (2015) distinct cognitive mechanisms within meditation practice and Furnell et al.'s (2024a) threefold categorization of MBIs. Both Dahl et al. (2015) and Furnell et al. (2024a) separate meditative practices into three distinct categories. Firstly, meditations belonging to the attentional family (Dahl et al., 2015) include practices for stabilizing the mind and enabling the practitioner to concentrate with a calm and focussed awareness. These concentration-based practices (Furnell et al., 2024a) are primarily focussed on attention and interoceptive awareness and include techniques such as mindfulness of breath and body scans. Secondly, meditations included in the constructive family (Dahl et al., 2015) encompass techniques intended to purify the mind from unwholesome qualities such as anger, hate, jealousy, or discrimination, so that the practitioner can think clearly and with compassion. These ethics-based practices (Furnell et al., 2024a) are

primarily focussed on nurturing compassion and regulating emotions and include practices such as loving-kindness meditation. Finally, meditations belonging to the deconstructive family (Dahl et al., 2015) comprise practices centred around investigating and intuiting the nature of existence, in an effort to gain insight into non-duality and interdependence. These wisdom-based practices (Furnell et al., 2024a) are primarily focussed on changing perspectives of self and embracing non-attachment and interconnectedness and include practices such as insight meditations contemplating impermanence, emptiness and the non-duality of self and other.

What is notable about these three categorizations is their close alignment with the "three trainings" in Buddhist meditation (Sanskrit: *triśikṣā*), which consist of concentration (Sanskrit: *samādhi*), ethical awareness (Sanskrit: *sīla*), and wisdom (Sanskrit: *prajñā*) (Anālayo, 2017). Although these categorizations are distinct, they are profoundly interconnected, with each serving as both the cause and the condition for the others. For example, a mind free from unethical thoughts is essential for developing the calmness and concentration required as a prerequisite for deep, insightful observation that leads to wisdom, while insight into the true nature of reality is necessary to cultivate a mind that is truly at peace (Nhat Hanh, 1996). It is argued that a meditative practice lacking in any of these elements (concentration, ethics, or wisdom) may be incomplete, thereby diminishing the potential benefits for the practitioner (Shonin et al., 2014a). Furnell et al. (2024a) propose that the interaction among the "three trainings" leads to enhanced prosocial behaviour (actions benefiting others; Pfattheicher et al., 2022), improvements in social and emotional well-being (the way one thinks and feels about oneself and others; Mander et al., 2001), and better mental health (the ability to think clearly, handle stress, and make informed decisions; WHO, 2022).

In support of the "three trainings" principle, as well as the three distinct categorizations of concentration-, ethics-, and wisdom-based meditation practices, a nine-month longitudinal study exploring the differential benefits of meditative practices was conducted (Trautwein et al., 2020). This longitudinal study tested three consecutive three-month training modules aimed at cultivating either cognitive processes (attention), socio-affective qualities (such as compassion), or socio-cognitive skills (such as perspective-taking) (Singer & Engert, 2019). While each module was found to have an interactional effect on all three of the core outcomes measures, specific modules had significantly greater effects on certain outcomes. For example, the Presence Module which included practices like breathing meditations and body scans, primarily enhanced attention and interoceptive awareness; the Affect Module, which included practices such as loving-kindness meditation, primarily heightened the ability to regulate difficult emotions and modulate behaviour; while the Perspective Module primarily fostered meta-cognition and changes in perspective-taking on self and others (Trautwein et al., 2020).

Therefore, it is evident that different meditation practices have differential effects on cognitive processes, socio-affective qualities, and social-cognitive skills. In other words, the impact of MBIs on outcome measures can differ significantly depending on whether they incorporate concentration-, ethics-, or wisdom-based practices. Consequently, the specific causes and triggers of an individual's gambling behaviour may make them more or less receptive to a particular type of meditative practice.

Meditation Practices and Problem Gambling

A critical focus needs to be applied to the three proposed causes of gambling behaviours (psychological distress, lack of values clarification, lack of identity), as well as on the potential for breaking or reducing the cycle of addiction, to gain insight into what meditative practice may be more suited for addressing each cause (see Figure 1).

Starting with psychological distress, this cause of problem gambling often stems from an individual's inability to effectively manage internal and external stress triggers (Brand et al., 2019). Instead of confronting these stressors, individuals may resort to gambling as a means to avoid and dissociate from their worries (Griffiths et al., 2016). Given this context, concentration-based practices, which focus on attention and interoceptive awareness, seem particularly effective as such practices enhance both self-awareness and self-regulation of emotions (Vargo & Silberswig, 2012). For example, first-generation MBIs, such as mindfulness-based stress reduction (MBSR), are designed to develop non-reactivity to feelings, thoughts, and emotions, thereby enhancing an individual's ability to cope with stress triggers (Kabat-Zinn, 2003).

Supporting this, a recent systematic review and meta-analysis on the impact of MBSR on psychological health and mental well-being found consistent significant reductions in stress, anxiety, and burnout symptoms, along with significant improvements in overall well-being among participants (Querstret et al., 2020). Additionally, a systematic review focusing on the effectiveness of MBSR among healthcare professionals revealed that concentration-based meditation practices significantly reduced experiences of anxiety, depression, and stress (Kriakous et al., 2021). Therefore, it is reasonable to suggest that for individuals whose problem gambling is primarily driven by psychological distress, engaging in concentration-based meditation practices may be the most appropriate meditative approach.

However, ethics-based meditation practices, such as loving-kindness meditation, have also proven effective in regulating emotional distress. Zeng et al. (2015) conducted a meta-analytical review and concluded that meditation interventions incorporating loving-kindness practice significantly increased participants' positive emotions. Furthermore, a study by Fredrickson et al. (2017) comparing the effects of mindfulness meditation and loving-kindness meditation on participants' emotional states found significant gains in positive emotions with both

types of meditation, suggesting that either approach can enhance emotional well-being. These findings indicate that for individuals whose psychological distress stems from negative emotions such as anger or aversion, ethics-based techniques such as loving-kindness meditation could also be beneficial in addressing these triggers of problem gambling.

Moving on to the issue of lack of values clarification, there is increasing recognition that affective and socio-affective states play significant roles in addictive behaviour. This is supported by a recent systematic review that examined MBIs for behavioural addictions, analysing both cognitive and affective processes (Brandtner et al., 2022). When individuals fail to recognize what is truly meaningful in life, such as interpersonal relationships, they may seek meaning through alternative avenues, such as gambling, to the detriment of their personal relationships (de Lisle et al., 2012). Through this process they may become attached to external reward obtained through the gambling behaviour (Coffey & Hartman, 2008), leading to a negative cycle where increased gambling results in greater isolation and a diminished ability to appreciate the value of relationships outside their gambling behaviour.

In this context, ethics-based meditation practices, which emphasize extending love, compassion, and gratitude towards others (Furnell et al., 2024a), may be particularly effective in addressing the root cause of problem gambling associated with a lack of values clarification. For instance, loving-kindness meditation has been shown to reduce participants' self-focus and enhance their perception of others as familiar and attractive (Seppala, 2009). It has also been recommended as a valuable tool for increasing social connectedness, especially among individuals with interpersonal vulnerabilities, such as rejection sensitivity (Seppala, 2009).

In contrast, while concentration-based practices, such as mindfulness meditation, have been demonstrated to increase life satisfaction and quality of life (Lomas et al., 2019), which could theoretically address a lack of values clarification, it has also been suggested that these practices, when pursued independently, might lead individuals to become overly focused on self-improvement and self-regulation, potentially at the expense of social connectedness and prosocial behaviour (Chen & Jordan, 2020; Gethin, 2013). Therefore, it appears that for individuals whose problem gambling is primarily driven by a lack of values clarification, engaging in ethics-based meditation practices may be more appropriate than purely concentrative-based techniques.

Alternatively, wisdom-based meditation practices, which involve reflecting on non-duality and interdependence (Shonin et al., 2013), have been effective in addressing issues related to a lack of values clarification. For instance, a recent systematic review on the impact of wisdom-based practices on prosocial behaviour found that these practices foster a sense of shared humanity and a desire to help others (Furnell et al., 2024b). This indicates a shift in values clarification, where the importance of interpersonal relationships is elevated above personal interests or actions.

Similarly, a three-arm randomized controlled trial that compared the effects of concentration- and ethics-based practices with concentration- and wisdom-based practices (insight meditation) found that both interventions significantly enhanced social connectedness compared to the control group, yet there was no significant difference between the two interventions (Goldberg et al., 2020). These results suggest that for individuals whose gambling addiction stems from a lack of values clarification, both ethics- and wisdom-based meditation practices could be beneficial in addressing these underlying issues.

For the final identified cause of gambling behaviour, a lack of identity, it is suggested that individuals may link their ego and self-worth to the rewards obtained from gambling (de Lisle et al., 2012). Similarly, those affected by problem gambling might experience a deep sense of emptiness, which they believe can be temporarily alleviated through gambling (Jaspers, 1964). These observations indicate that problem gamblers might suffer from what has been described as "an egomaniac with an inferiority complex" (Cavanagh, 1988, p.47), referring to their tendency to display an exaggerated sense of self-importance at the detriment of others, while simultaneously harbouring deep-seated feelings of inadequacy and low self-esteem. Addressing this sense of inadequacy, or emptiness, is crucial in tackling the issue of a lack of identity as a cause of problem gambling.

In this context, wisdom-based meditation practices, which aim to transcend the attachment to an independent, permanent self (i.e., the ego), seem particularly suitable. These practices can be seen as a form of transpersonal psychology intervention, aimed at releasing the egoic self to help individuals experience moments with greater clarity and tranquillity (Nixon & Solowoniuk, 2008). This process involves working through the narcissistic wound and recognizing that "I am not the answer" (Nixon & Solowoniuk, 2008). Consequently, the addict acknowledges their betrayal of the Self and through the recovery journey, they are intrinsically guided to confront the inner darkness and emptiness they once avoided, ultimately returning to discover their fundamental essence or being (Almass, 1996).

A quantitative study comparing the effects of emptiness meditation (a wisdom-based practice) with mindfulness meditation (a concentration-based practice) demonstrated that emptiness meditation provided participants with spiritually significant insights that connected them to what they perceived as the deepest nature of their minds and external phenomena (Van Gordon et al., 2019). Emptiness insight involves the realization that an independent, permanent self does not exist in the intrinsic sense of the word (Shonin et al., 2016; Van Gordon et al., 2020). Insight gained from entering a state of emptiness through wisdom-based practices has been described as embodied non-dual beingness that extends beyond the awareness of ego identity to higher transpersonal levels (Tzu et al., 2015). The central wisdom found in this non-dual realization is freedom from the ego self and total relaxation into being (Fosters, 2007; Parsons, 2004).

Therefore, an individual who can gain insight into emptiness through wisdom-based practices, instead of being ‘an egomaniac with an inferiority complex’, could be said to be an egoless observer, aware of their unity with all phenomena. From this perspective, it is suggested that for individuals whose gambling addiction stems from a lack of identity, wisdom-based practices may be the appropriate form of meditation to mitigate this trigger by enabling them to find their own inner self-worth.

Additionally, it is crucial to consider how meditation practices not only address the identified causes of problem gambling but also aid in breaking the cycle of addictive gambling behaviour (see to Figure 1). This cycle is often perpetuated by habitual tendencies, making it difficult for individuals to change their behaviour and learn from the destructive consequences of gambling relapses (Oakes et al., 2019). In such cases, gambling becomes a reflexive action which individuals automatically resort to when faced with stressful emotions or challenging situations, losing control over their actions as they succumb to habitual patterns (Oakes et al., 2019).

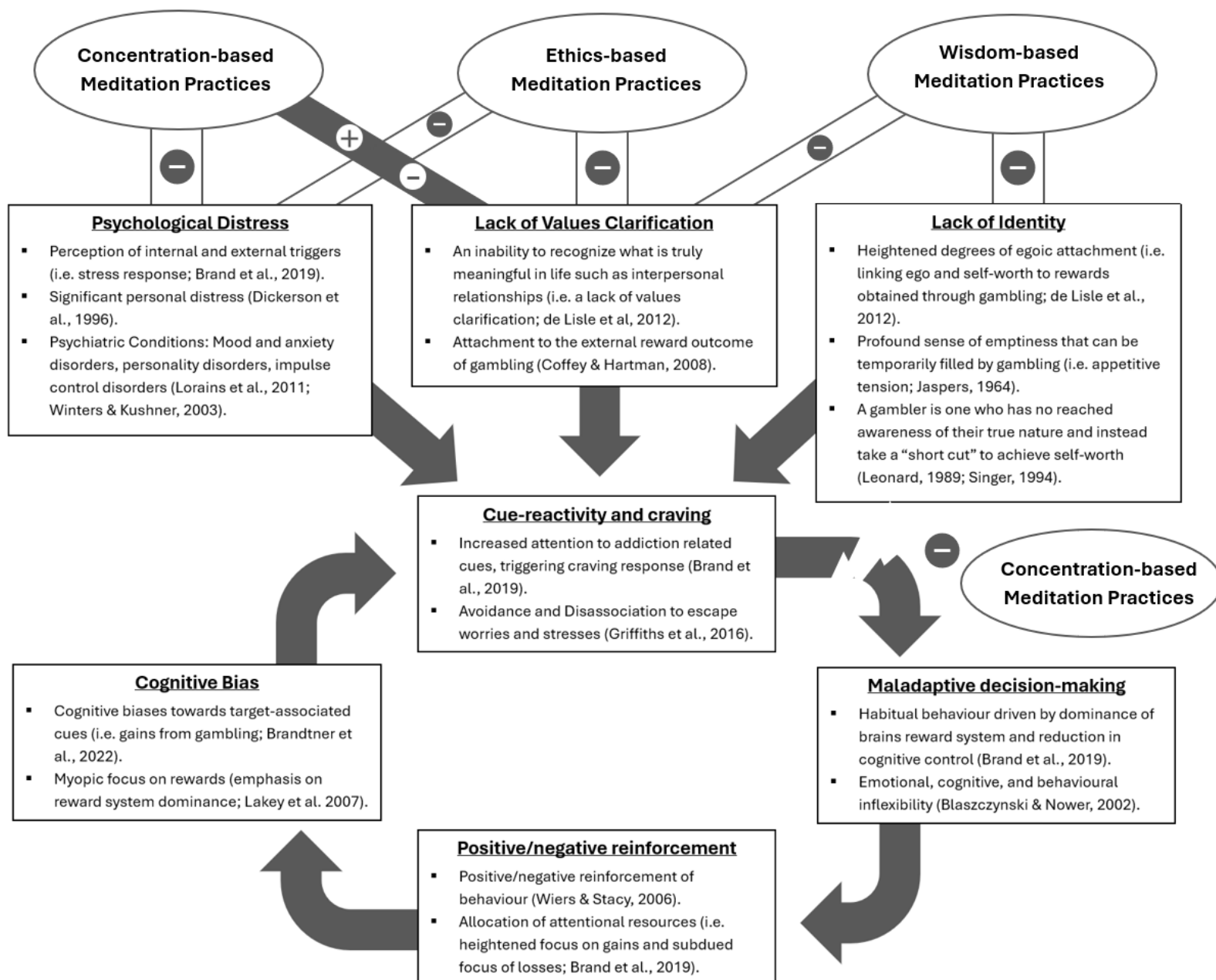
In this context, concentration-based practices such as mindfulness meditation could be particularly beneficial. To transcend the limitations of the habitual tendencies of addiction, Brewer and Kabat Zinn (2016) recommend mindfulness as a way to overcome the constraints of addictive behaviours by liberating oneself from the control of cravings and automatic responses. Likewise, a qualitative study on the connection between mindfulness and habitual behaviour (Lea et al., 2015) found that mindfulness meditation not only serves as an effective intervention for breaking established body, mind and everyday habits but also helps practitioners recognize and identify their apparent hidden habitual tendencies.

Figure 2 presents the above theorized impact of concentration-, ethics-, or wisdom-based meditation practices on the core psychological mechanisms underlying gambling disorder. The initial cause, psychological distress, is depicted as being primarily mitigated through concentration-based practices which have consistently been shown to reduce stress. Additionally, ethics-based practices are depicted as a secondary process to reduce psychological distress, especially in regard to anger and aversion. Secondly, a lack of values clarification is primarily mitigated by ethics-based practices due to their ability to increase social connectedness and reduce interpersonal vulnerabilities, such as rejection sensitivity. Moreover, wisdom-based practices are depicted as a secondary mitigator of a lack of values clarification due to their ability to foster a shared sense of humanity and a desire to help others. Notably, concentration-based practices are depicted as both enhancing and mitigating a lack of values clarification due to their potential to increase life satisfaction but also due to warnings surrounding such practices in developing an increased focus on the self. Thirdly, lack of identity is primarily mitigated through wisdom-based practices due to their ability to enable practitioners to overcome their ego

and realize their true self-worth. Finally, concentration-based practices are also depicted as being effective in breaking the cycle of addiction due to their ability to enable participants to break habitual tendencies.

Figure 2.

Theorized impact of varied meditation practices on the core psychological mechanisms of gambling behaviour



Verification of the proposed theoretical model

The majority of interventions employing meditation practices to address problem gambling have not differentiated between different types of meditative techniques. Nonetheless, the relationship between different meditation practices on the causes of gambling behaviour within various studies need to be considered as part of articulating the validity of the previously proposed model (see Figure 2).

Reviews of the meditation and problem gambling literature have often been unable to identify controlled studies evaluating the clinical effectiveness of concentration-based practices for reducing gambling behaviour (de Lisle et al., 2012). Instead, they have focussed on case studies that have implemented mindfulness practice for individual participants (de Lisle et al., 2011; Toneatto et al., 2007, and Shonin et al., 2013). However, within the literature there are a few controlled clinical trials on the effects of mindfulness meditation on problem gambling (McIntosh et al., 2016; Shead et al., 2020; Toneatto et al., 2014; van der Tempel et al., 2019).

Firstly, a three-armed clinical trial including: 1) a manualised cognitive-based therapy approach, 2) a mindfulness-based approach, and 3) an individually tailored cognitive-based therapy approach, measured changes in problem gambling behaviour, as well as secondary dysfunction such as quality of life, psychological distress, and thought suppression (McIntosh et al., 2016). Results indicated that interventions including concentration-based practices (i.e. mindfulness meditation) were effective at reducing problem gambling behaviour (as measured by the South Oaks Gambling Screen; Lesieur and Blume 1987, and Diagnostic and Statistics Manual-V; APA, 2013), and associated distress (as measured by the Depression Anxiety and Stress Scale 21; Lovibond and Lovibond 1995), as well as improving quality of life-mental functioning (as measured by a Quality-of-Life short form health survey; Ware et al., 1996).

Secondly, a recent randomized clinical trial assessing the effectiveness of a brief mindfulness intervention was conducted to evaluate the usefulness of the intervention in reducing cravings and impulsivity among gamblers (Shead et al., 2020). Participants were randomly assigned to a mindfulness-based meditation intervention group or an active audio-book control group. Results indicated a significant reduction in gambling cravings of participants in the intervention group (as measured by the Gambling Craving Scale; Young & Wohl, 2009). However, dispositional mindfulness (as measured by the Mindfulness Attention Awareness Scale; Brown & Ryan, 2003) was shown to be inversely related to measures of problem gambling severity.

Additionally, a randomized, controlled clinical study including two conditions: 1) a mindfulness-enhanced cognitive-behavioural treatment group, and 2) a wait-list control, was conducted among a group of pathological gamblers to assess the effectiveness of mindfulness in addressing problem gambling (Toneatto et al., 2014). Results revealed that integrating mindfulness into cognitive-behavioural therapy was effective in

reducing the severity of gambling (as measured by the Centre for Addiction and Mental Health's Assessment for Problem Gambles; Toneatto et al., 2014), as well as reducing the urges and habitual tendencies associated with gambling behaviour (as measured by the Gambling Related Cognitive Scale; Raylu & Oei, 2004).

Finally, a between-groups design study investigating the therapeutic potential of a group based 10-week MBI was conducted among treatment-seeking woman with gambling disorder (van der Tempel et al., 2019). Findings revealed that participants of the MBI group exhibited a reduction in gambling symptoms (as measured by the Yale-Brown Obsessive-Compulsive Scale–Pathological Gambling version; Pallanti et al., 2005), as well as the craving to gamble between treatment sessions (as measured by the Gambling Craving Scale; van der Tempel et al., 2019).

Collectively these four controlled trials support the proposed interactional effects of concentration-based meditation practice with gambling behaviour (Figure 2). There is a clear indication that mindfulness meditation leads to a reduction in the severity of gambling through its ability to mitigate the cause of psychological distress (McIntosh et al., 2016; Toneatto et al., 2014). Additionally, there was also evidence to suggest that mindfulness meditation was able to address the cause of a lack of values clarification by improving one's quality of life (McIntosh et al., 2016). Moreover, the studies indicated that concentration-based practices help break the cycle of addiction through reducing craving and urges to gamble (Shead et al., 2020; Toneatto et al., 2014; van der Tempel et al., 2019).

Although one study (van der Tempel et al., 2019) assessed the self-centeredness of participants at baseline (as measured through the Eysenck Personality Inventory-Neuroticism Scale; Eysenck & Eysenck, 1963), this data was not gathered as part of the post-treatment assessment and therefore could not be used to help verify the proposed potential increase of a lack of value clarification caused by concentration-based practices. On the other hand, a study (Shead et al., 2020) reported an positive relationship between dispositional mindfulness and problem gambling severity, implying the more an individual is aware of their own thoughts, feelings, and actions the more severe addictive gambling behaviour becomes. This could be tentative evidence supporting the causal relationship between concentration-based practices and a lack of value clarification due to a heightened focus on self.

Currently, there appears to be no study specifically assessing the use of ethics-based practices, such as loving-kindness meditation, on gambling behaviour. However, the mindfulness-based relapse prevention for problem gambling program (MBRPPG; Chen et al., 2016) has been extensively used for individuals attending problem gambling treatment. Chen et al. (2021) recently developed the second edition of the manual for MBRPPG with a specific focus on helping individuals reduce gambling urges and cravings. During the seventh session of this eight-session group-based intervention, the primary focus and practice is loving-kindness meditation (Chen et al., 2021; Chen et al., 2023). It is common for MBIs to incorporate more than

one type of meditation practice and from this perspective, the MBRPPG program can be categorized as an MBI including concentration- and ethics-based practices (Furnell et al., 2024a). Therefore, empirical studies evaluating the implementation of the MBRPPG in the context of gambling behaviour may provide insight into the validity of how ethics-based meditation practices interact with the causes of problem gambling.

There is a growing body of research exhibiting empirical support for mindfulness-based relapse prevention programs for the treatment of substance use disorders due to their ability to decrease the severity of the addiction, the intensity of cravings, and stress (Grant et al., 2017; Li et al., 2017). However, far fewer studies have applied the MBRPPG to problem gambling within a clinical trial or empirical evaluation (Shead et al., 2020).

Within the literature, there seems to be only one empirical study that has assessed the effects of MBRPPG on gambling addiction (Chen et al., 2014). This mixed methods study employed both quantitative and qualitative analysis to evaluate the potential for the MBRPPG as a problem gambling treatment (Chen et al., 2014). Participant responses to the open-ended feedback questions were analysed through Grounded Theory methodology (Morone, et al., 2008), revealing seven core themes. One such theme was increased awareness of triggers and ability to cope with gambling urges. Additionally, responses indicated that participants learned to use meditation techniques to feel calmer, more relaxed, and more patient. Moreover, two core themes that arose from the findings were better interpersonal skills, including improvements in participants' ability to relate to other people and be more compassionate, as well as experiencing positivity in their lives, such as the positive effect on overall outlook and life satisfaction of participants.

From this empirical study there is tentative support for the proposed interactional effects between ethics-based meditation practices and the causes of problem gambling. Although the intervention did not isolate ethics-based practices from concentration-based practices, results suggested that an intervention including loving-kindness meditation reduced the psychological distress of participants (Chen et al., 2014). Additionally, results suggested that an MBI including ethics-based practices was able to address a lack of values clarification by positively influencing how participants related to others and increased their overall life satisfaction and outlook on life (Chen et al., 2014).

Similarly to ethics-based practices, although there are theoretical papers proposing the development of a transpersonal approach to gambling treatment (Nixon & Solowoniuk, 2008), there appears to be no empirical studies specifically assessing the use of wisdom-based meditation practices for problem gambling. However, there have been instances where MBIs that include wisdom-based practices have been used as a treatment for pathological gambling (Shonin et al., 2014b).

An empirical case study evaluated the effectiveness of a MBI that incorporated wisdom-based meditation practices as part of a non-

pharmacological treatment for a participant with a dual diagnosis of schizophrenia and pathological gambling (Shonin et al., 2014b). The specific model used for recovery was an eight-week program known as Meditation Awareness Training (MAT; Van Gordon et al., 2013). This program integrates wisdom-based forms of meditation, particularly focusing on insight techniques during the second and fifth weeks to promote an initial understanding and realization of concepts such as impermanence and emptiness (Van Gordon et al., 2013). Findings indicated that by the end of the MBI, there were significant reductions in the participant's residual-type schizophrenia (as measured by the Brief Psychiatric Rating Scale; Overall & Gorham, 1962) and problem gambling behaviours (as measured by the Gambling Symptom Assessment Scale; Won Kim et al., 2009).

This case study offers preliminary support for the proposed interactional effects between wisdom-based meditation practices and the underlying causes of addictive gambling behaviour. Although the study did not measure outcomes related to the lack of values clarification, it included measures for changes in residual-type schizophrenia, which may provide evidence for wisdom-based practices in addressing a lack of identity. Schizophrenia can affect a person's sense of self or identity, as seen in symptoms like ego-fragmentation (Scharfetter, 2008). This condition, which is well-documented in individuals with schizophrenia, leads to significant disruptions in self-perception and can result in a confused or unstable identity (Scharfetter, 2008). Consequently, the findings that a MBI including wisdom-based practices can reduce symptoms of schizophrenia lend support to the notion that such practices might help address gambling causes related to a lack of identity.

Conclusion and Suggestions

Current empirical research on MBIs that incorporate concentration-, ethics-, and/or wisdom-based meditation practices suggest increasing support for the proposed model theorizing how various meditation practices influence the core psychological mechanisms underlying gambling behaviour (see to Figure 2).

It's crucial to recognize the complex and diverse nature of gambling disorder (Ladouceur, 2005). Individuals may be influenced by various causes that trigger and lead to their addictive behaviours, such as psychological distress, a lack of value clarification, or a lack of identity. A single, one-size-fits-all approach to the problem will not be effective for every individual seeking treatment. Thus, understanding the specific reasons why certain individuals are more susceptible to gambling is essential.

For those whose gambling is primarily driven by psychological distress, concentration-based methods such as mindfulness meditation, or ethics-based approaches of loving-kindness and compassion meditation, may prove more beneficial in mitigating problem gambling. For individuals whose issues stem from a lack of value clarification, ethics-based practices

such as loving-kindness meditation and wisdom-based practices such as contemplating interdependence might be more appropriate, whereas concentration-based practices could potentially exacerbate the issues if they lead to an excessive focus on the self. Lastly, for those struggling with a lack of identity, wisdom-based practices such as contemplating emptiness could be the most effective in reducing gambling addiction. Moreover, for those caught in cycle of habitual addictive gambling, concentration-based practices such as mindfulness meditation may be particularly effective in breaking these habitual behavioural patterns.

Therefore, to maximize the effectiveness of meditation practices as a therapeutic tool for problem gambling, it is advisable for clinicians to first identify the specific causes of an individual's gambling behaviour and then customize the meditation intervention accordingly. However, when personalized interventions are not feasible or suitable, it is recommended to use a MBI that integrates a combination of concentration-, ethics-, and wisdom-based meditation practices to tackle gambling disorder. Two such MBIs have been detailed in empirical studies and academic articles, illustrating methods for implementing these practices. Firstly, the MAT (Van Gordon et al., 2013) incorporates a variety of practices in a sequential order: (a) introduction to meditation and mindfulness, (b) exploration of impermanence and emptiness, (c) cultivation of joy and equanimity, (d) development of generosity towards self and others, (e) enhancement of ethical awareness and patience, (f) revisiting concepts of impermanence and emptiness, (g) fostering loving-kindness and compassion, and (h) practicing letting go. Secondly, an MBI including concentration-, ethics-, and wisdom-based practices (MBI-CEW; Furnell et al., 2024a) organizes the intervention into three distinct stages: 1) developing awareness of breath and body, which focuses on concentration-based practices, 2) enhancing ethical awareness, including the awareness of feelings and mind, which focusses of ethics-based practices, and 3) contemplating impermanence, interdependence, and emptiness, which are wisdom-based practices.

A significant limitation of the current proposed theory on the interactional effects of meditation practices with the causes of problem gambling is the lack of empirical studies that investigate the impact of specific meditative techniques. While there is a growing body of research that evaluates the effectiveness of concentration-based practices on addictive gambling behaviour, studies focusing on ethics- and wisdom-based practices are considerably less common. Furthermore, those studies that do examine these practices often integrate them within MBIs that also include concentration-based practices, making it challenging to isolate and distinguish the effects of each type of meditation.

Gaining a better understanding of how various meditation practices influence the causes of problem gambling could enhance the effectiveness of interventions aimed at reducing gambling addiction. Consequently, it is suggested that future research differentiates between the impacts of three distinct types of meditation: concentration-based, ethics-based, and

wisdom-based practices. This differentiation could be accomplished through two approaches. The first approach involves conducting randomized controlled trials that feature separate interventions for each type of meditation practice. The second approach entails structuring the interventions in three phases, starting with an evaluation of concentration-based practices, followed by ethics-based practices, and concluding with wisdom-based practices, such as outlined in the aforementioned MBI-CEW (Furnell et al., 2024a). Both approaches would be effective in isolating the effects of the different meditation practices and provide insight into the interactional effect between the meditative techniques and causes of problem gambling.

Statement of Competing Interests

The authors do not declare any interest.

Relative Contribution

Matthew Furnell: conceptualization, writing, figure and table creation. William Van Gordon: reviewing and editing.

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N/A.

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Declarations

None.

Research Promotion

This article introduces a model for the core psychological mechanisms driving gambling behaviour, including psychological distress, a lack of values clarification, and a lack of identity, which contribute to a cycle of addiction. While prior research has primarily focused on the role of mindfulness meditation in alleviating stress and disrupting habitual behaviors, this review expands on these findings by examining how various meditation practices—attentional, constructive, and deconstructive—target specific causes of gambling behavior.

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