Metacognition and Metacognitive Therapy in Gambling Disorder

Kumar Oynama Bozukluğunda Üstbilişler ve Metakognitif Terapi

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ABSTRACT

Gambling Disorder (GD) is associated with substantial financial, psychological, and interpersonal harms. Emerging evidence highlights metacognitive mechanisms as central to the onset and maintenance of addictive behaviors. This narrative review synthesizes theoretical and empirical work on metacognitions, the Self-Regulatory Executive Function (S-REF) model, and the Cognitive Attentional Syndrome (CAS) in GD, and evaluates the therapeutic promise of Metacognitive Therapy (MCT). Positive and negative metacognitive beliefs shape how individuals appraise and control internal experiences, fostering maladaptive cycles marked by desire thinking, rumination, attentional bias, and thought suppression. These processes impair monitoring, reduce attentional flexibility, and degrade decision-making, while emotion-regulation deficits across identification, selection, and implementation further perpetuate gambling. Within the S-REF/CAS framework, GD is conceptualized as a cyclical pattern sustained by rigid, repetitive processing of threat- and reward-related cognitions. MCT targets these processes directly via techniques such as detached mindfulness and the attention training technique, aiming to weaken repetitive negative thinking and restore cognitive control. Preliminary evidence including an eight-session pilot focused on gambling-specific distortions suggests acceptability and reductions in cognitive distortions, with broader support from trials in anxiety, depression, and substance use indicating superior or comparable outcomes to cognitive behavioral and acceptance-based approaches. We conclude that metacognitive dysfunctions constitute actionable treatment targets in GD and that MCT is a theoretically coherent, promising intervention.

Keywords: Gambling disorder, metacognition, metacognitive therapy, cognitive attentional syndrome

ÖZ

Kumar Oynama Bozukluğu (KOB), bireylerde ciddi finansal, psikolojik ve kişilerarası sorunlara yol açmaktadır. Son yıllarda yapılan araştırmalar, bağımlılık davranışlarının ortaya çıkışı ve sürdürülmesinde üstbilişsel mekanizmaların merkezi bir rol oynadığını göstermektedir. Bu derleme, KOB bağlamında üstbilişler, Kendini Düzenleyici Yürütücü İşlev (KDYİ) modeli ve Bilişsel Dikkat Sendromu'nun (BDS) teorik ve ampirik temellerini incelemekte ve Metakognitif Terapi'nin (MKT) terapötik potansiyelini değerlendirmektedir. Olumlu ve olumsuz üstbilişsel inançlar, bireylerin içsel yaşantılarını değerlendirme ve kontrol etme biçimlerini şekillendirerek arzu düşüncesi, ruminasyon, dikkat yanlılığı ve düşünce baskılama gibi işlevsiz döngüleri beslemektedir. Bu süreçler, dikkat esnekliği ve karar verme becerilerinde bozulmalara, öz farkındalıkta azalmaya ve duygu düzenleme güçlüklerine yol açmaktadır. KDYİ/BDS çerçevesinde KOB, tehdit ve ödül odaklı bilişlerin katı, tekrarlayıcı biçimde işlenmesiyle sürdürülen döngüsel bir süreç olarak kavramsallaştırılmaktadır. MKT, ayrışmış farkındalık ve dikkat eğitimi gibi teknikler aracılığıyla bu süreçleri doğrudan hedefleyerek tekrarlayıcı olumsuz düşünmeyi zayıflatmayı ve bilişsel kontrolü yeniden sağlamayı amaçlar. Kumarla ilişkili bilişsel çarpıtmaları hedefleyen sekiz oturumluk pilot bir çalışma, yöntemin kabul edilebilirliğini ve çarpıtmalarda azalma sağladığını göstermiştir. Anksiyete, depresyon ve madde kullanım bozuklukları alanındaki bulgular da MKT'nin bilişsel davranışçı ve kabul temelli yaklaşımlara benzer ya da üstün sonuçlar verebildiğini ortaya koymaktadır. Metakognitif işlev bozukluklarının KOB'da tedavi edilebilir hedefler oluşturduğu ve MKT'nin teorik olarak tutarlı, umut verici bir müdahale olduğu sonucuna ulaşılmıştır.

Anahtar sözcükler: Kumar oynama bozukluğu, metakognisyon, bilişsel dikkat sendromu, metakognitif terapi

Introduction

Gambling Disorder (GD) leads to financial losses, the development of addiction, and various psychological problems, resulting in a significant decline in overall quality of life (Petry 2005, Dowling et al. 2016). GD also deeply affects the individual's environment through negative consequences such as loss of trust in family relationships, conflicts, and social isolation (Kalischuk et al. 2006). This condition poses a threat not only to the individual's well-being but also to the mental and economic health of their close social network (Wardle et al. 2024). In the DSM-5, Gambling Disorder is classified under the category of Substance-Related and Addictive Disorders as a "non–substance-related disorder." Globally, approximately 50% of adults and 20% of adolescents have gambled in the past 12 months; 11.9% of men and 5.5% of women exhibit risky gambling behaviors. In Turkey, 6.8% of adults have gambled at least once in their lifetime, and one-third of them continue to gamble regularly (Wardle et al. 2024, Altıntaş et al. 2024). These prevalence rates indicate that gambling is not only a significant issue on individual and societal levels but also that the underlying cognitive and metacognitive processes warrant deeper investigation.

In recent years, the role of metacognitive processes in addictive behaviors has become increasingly evident. Spada et al. (2015), in their study examining the influence of metacognitive processes and the Cognitive Attentional Syndrome (CAS) in individuals with GD, revealed that positive and negative metacognitive beliefs play a decisive role in the initiation and maintenance of gambling behavior. The inability to recognize and accurately evaluate metacognitive knowledge has been identified as a central feature in various personality disorders and addictive behaviors. According to the Self-Regulatory Executive Function (S-REF) model, this dysfunction is considered a result of the activation of the CAS (Lysaker et al. 2014).

This review article discusses the metacognitive processes involved in the emergence and maintenance of gambling behavior, as well as the use of Metacognitive Therapy (MCT) as an intervention tool. The metacognitive processes associated with the psychopathology of GD are examined, and their potential contributions to treatment are discussed. However, the literature indicates that empirical data regarding MCT in the context of GD remain limited. Therefore, this study aims to draw attention to the application of MCT in GD and emphasize the importance of further research in this area.

Metacognitions

Metacognition is defined as the individual's ability to monitor, evaluate, and regulate their own thoughts and cognitive processes. This concept, often described as "thinking about thinking," plays a functional role in the management of learning processes (Rhodes 2019). It has been suggested that metacognition enhances individuals' problem-solving abilities and decision-making skills, either independently or in collaboration with others (Varshney and Barbey 2021). Metacognition not only guides cognitive performance but also shapes awareness of conscious experiences (Koriat 2007). Contemporary research suggests that metacognitive processes are complex and processed by distinct brain regions. For example, Fleming and Dolan (2012) demonstrated that individual differences in metacognitive ability are associated with the functional activity of specific brain structures, such as the rostrolateral and dorsolateral prefrontal cortex, ventromedial prefrontal cortex, anterior cingulate cortex, and insula. Moreover, metacognitive ability has been found to correlate significantly with microstructural differences in the prefrontal cortex and hippocampus (Allen et al. 2017).

Recognizing learning styles and factors influencing cognitive processes; knowing which strategies to apply, when, and why in the face of a problem; assessing performance during task execution; and being aware of one's current state are regarded as core elements defining the metacognitive structure. Nelson and Narens (1994) proposed that metacognition consists of two main components: the monitoring process, in which learning is tracked, and the control process, in which learning strategies are adjusted based on monitoring outcomes. The Self-Regulatory Executive Function (S-REF) model, on the other hand, was developed to explain the relationship between metacognitive processes and psychological disorders.

Self-Regulatory Executive Functions (S-REF)

The S-REF model provides a framework for understanding how individuals regulate their cognitive processes and how these regulatory mechanisms relate to mental and behavioral disorders. It comprises three interconnected components that are activated by positive or negative stimuli and operate cyclically as long as the individual attempts to exert control over them. 1) Automatic and reflexive information processing: Enables rapid responses to environmental stimuli. 2) Conscious attention and cognitive strategy level: Allows the deliberate regulation of thought processes, attention control, and emotional responses. 3) Stored knowledge and self-beliefs: Includes beliefs and memories about oneself and the environment, divided into declarative and procedural knowledge (Wells and Matthews 1996). Declarative knowledge represents beliefs about oneself, classified into positive and negative metacognitive beliefs. Positive beliefs reflect evaluations that worry, rumination, or threat monitoring are useful strategies (e.g., "I must worry to always be prepared"). In contrast, negative beliefs involve judgments that thoughts are uncontrollable or harmful (e.g., "I can't control my mind" or "Certain thoughts can harm me") (Wells 2019).

Procedural knowledge describes the tendency to automatically use specific cognitive strategies. Strategies such as rumination or threat-focused attention can become automatic through repetition, being triggered reflexively under stress without conscious choice (Salaberry 2018). Dysfunctions in these components contribute to emotion regulation difficulties (Mansueto et al. 2022), which are linked to the presence and severity of Gambling Disorder (Artemi et al. 2025). Within the S-REF model, the Cognitive Attentional Syndrome (CAS) has been identified as a key process in maintaining such disorders (Wells and Matthews 1996).

Cognitive Attentional Syndrome (CAS)

The CAS refers to the individual's "rigid, repetitive, and maladaptive response patterns" to negative thoughts, emotions, and beliefs. These include rumination, excessive worry, threat monitoring, thought suppression, and beliefs about the uncontrollability or danger of thoughts. Although these responses are intended to manage internal distress, they typically exacerbate it (Wells 2009). Attentional bias toward negative stimuli is another core component of CAS, leading to reduced attentional and emotional regulation and depletion of mental resources (Fergus et al. 2013). CAS is regarded as a fundamental cognitive dysfunction underlying mood disorders, anxiety disorders, obsessive–compulsive disorder (OCD), and various addictions (Yörük and Tosun 2015, Batmaz et al. 2021).

Studies have shown that CAS is linked to increased symptom severity in psychosis, depression, anxiety, stress, and anorexia nervosa and is characterized by threat-focused and excessive cognitive control efforts (Fergus et al. 2012, Davenport et al. 2015, Sellers et al. 2018). Moreover, negative metacognitive beliefs have been associated with reduced attentional flexibility, explaining repetitive worry and rumination. Different types of metacognitive impairments have been observed in OCD, schizophrenia, addictions, depression, and anxiety disorders but may be less evident in remitted individuals (Kraft et al. 2017, Hoven et al. 2019). Interventions targeting CAS in addiction treatment are proposed to facilitate long-term recovery by regulating cognitive processes that trigger addictive behaviors (Bonner et al. 2022).

Metacognitions, Self-Regulatory Executive Functions, and Cognitive Attentional Syndrome in Gambling Disorder

There is a growing body of evidence indicating that metacognitive beliefs play a central role in the emergence and maintenance of addictive behaviors (Hamonniere et al. 2022). These beliefs contain assumptions about how individuals should evaluate their thoughts and emotions and are reported to often trigger rumination, which in turn activates avoidance-based coping strategies such as substance use or behavioral addictions (Casale et al. 2021). Mansueto et al. (2016) stated that metacognitive processes play a role within this cyclical structure and influence individuals' behavioral control.

Spada et al. (2015), in their study investigating the effects of metacognitive processes and the CAS in individuals with GD, revealed that positive and negative metacognitive beliefs play a determining role in the initiation and maintenance of gambling behavior. The study also showed that these individuals exhibit weakened abilities to monitor their thoughts and environment while gambling, leading to diminished self-awareness, an impairment that is associated with the persistence of gambling behavior. Metacognitive beliefs, differentiated by their positive or negative content, are thought to act as guiding mechanisms in this process. In gamblers, positive metacognitive beliefs are typically associated with misconceptions that gambling serves as a coping mechanism for stress and emotional distress. For example, a thought such as "If I gamble, I will feel better" may be perceived as a legitimate coping strategy (Mansueto et al. 2022). On the other hand, negative metacognitive beliefs, encompass assumptions that individuals cannot control their own thoughts and that these thoughts may exert harmful influences over their behavior. These beliefs are further elaborated through the concept of desire thinking, a cognitive process identified as reinforcing gambling behavior. Desire thinking is defined as the individual's tendency to mentally rehearse or elaborate upon positive images and experiences associated with a desired event. This process is associated both with positive metacognitions such as "This motivates me and prevents me from feeling bad" (Table 1) and with negative metacognitions such as "I can't stop doing this; I can't control myself" (Table 2) (Caselli and Spada 2010, Caselli and Spada 2015).

Table 1. Positive metacognitions in gambling disorder	
Positive Metacognitions	**Metacognitive Thoughts**
The belief that gambling helps to cope with stress or negative emotions	"Gambling helps me relax and reduces my stress." "When I experience sadness or anxiety, engaging in gambling helps me feel better."
The belief that gambling contributes to the improvement of cognitive or mental skills	"Engaging in strategic thinking during gambling helps me maintain mental sharpness." "Participating in games of chance enhances my speed of thinking and decision-making."
The distorted metacognitive belief that gambling serves as a means of financial problem-solving	"By gambling persistently, I believe I will eventually achieve a major win sufficient to resolve my financial problems." "I can earn extra income through gambling."
The metacognitive belief that gambling functions as a social activity and contributes to the enhancement of interpersonal relationships	"Gambling allows me to interact and socialize with others." "I perceive gambling with friends as an enjoyable and socially engaging activity."
Beliefs based on luck and illusion of control	"The belief that current luck ensures future success through continued play." "Having won in the past makes me confident that I can win again."

Parallel to impairments observed in cognitive processes, individuals with GD have also been reported to show significant distortions in self-assessments of their abilities and decision-making skills. In GD, several cognitive distortions have been identified, including the illusion of control (the overestimation of one's ability to influence random outcomes), the gambler's fallacy (the belief that the probability of winning increases after repeated losses), and the near-miss effect (interpreting near wins as indicators of imminent success) (Clark 2010, Orgaz et al. 2013). Examples include believing that the way dice are thrown can influence outcomes, or persisting in playing a slot machine that previously yielded winnings under the assumption that one's "luck" continues.

Moreover, individuals with GD tend to overestimate their abilities and performance, show excessive confidence in the accuracy of their knowledge, and consequently experience impaired decision-making (Goodie 2005, Brevers et al. 2014). Due to heightened reward sensitivity, the expectation of winning increases self-confidence, whereas losses only slightly diminish it. Disturbances in self-confidence and perceived control lead to greater risk-taking, functioning as a mechanism that triggers and sustains gambling behavior (Friedemann et al. 2024). All of these findings indicate that the evaluation of thoughts

and emotions is impaired in GD, resulting in diminished self-awareness. Furthermore, the degree of metacognitive dysfunction has been shown to correlate with the presence of comorbid mental disorders and gambling behavior (Mansueto et al. 2016).

Another important dimension for understanding GD concerns how these metacognitive impairments are reflected in emotional regulation processes. Rogier and Velotti (2018) conceptualized GD as a complex emotion regulation disorder, and their findings demonstrated that individuals with GD experience functional impairments in all three main stages of the emotion regulation process, identification, selection and implementation. Elements such as reduced emotional awareness, low acceptance of emotions, excessive reliance on avoidance-based strategies, impulsivity, heightened reward sensitivity, and the use of ineffective strategies were identified among these impairments. Moreover, difficulties in regulating positive emotions were found to be particularly associated with certain subtypes of GD, especially among individuals with high levels of sensation seeking.

Table 2. Negative metacognitions in gambling disorder	
Negative Metacognitions	**Metacognitive Thoughts**
The metacognitive belief of losing control over one's thoughts	"Intrusive gambling-related thoughts persist in my mind and drive me to engage in gambling again." "Regardless of my efforts, I am unable to resist or control my urge to gamble." "I experience persistent gambling thoughts that seem impossible to suppress or control."
The belief that gambling serves as a necessary strategy for stress relief and emotional regulation	"I believe that gambling is necessary to relieve my stress and emotional tension." "I feel compelled to continue gambling to recover my losses; otherwise, I will experience intense negative emotions."
The belief that certain thoughts are threatening and may lead to negative outcomes	"I believe that the presence of gambling-related thoughts inevitably means I will gamble again." "When I experience the urge to gamble, I think resistance is pointless because I cannot control it."
Maladaptive beliefs about one's ability to control intrusive or unwanted thoughts.	"Once I start thinking about gambling, I find it impossible to distract myself with other activities." "If I am unable to dismiss gambling-related thoughts, I feel compelled to gamble." "I believe that the only way to stop gambling is to suppress gambling-related thoughts."

Self-Regulatory Executive Functions in Gambling Disorder

Addictive psychopathology is conceptualized as a cycle in which behavior progresses through three stages. In the pre-engagement stage, it is stated that individuals' positive ("If I gamble, I will relax") or negative ("I cannot control these thoughts") metacognitive beliefs are triggered by environmental stimuli or internal impulses, leading to an increase in desire. During this process, it has been shown that the use of dysfunctional strategies such as rumination, worry, desire thinking, and thought suppression increases emotional distress and initiates gambling behavior (Toneatto 1999, Lindberg et al. 2011).

In the engagement stage, it is noted that gambling behavior is maintained and that positive metacognitive beliefs ("Gambling relaxes me") reinforce this behavior (Spada et al. 2015). However, due to deficiencies in metacognitive monitoring and attentional flexibility, it is reported that the amount of money lost or the duration of gambling cannot be evaluated accurately (van Holst et al. 2010). In the post-engagement stage, feelings of regret and guilt become prominent. Thoughts such as "Why did I lose so much money?" increase rumination and negative emotional states, thereby weakening coping capacity. This condition, combined with paradoxical effects of thought suppression where efforts to suppress thoughts make them more intense triggers the gambling behavior again and perpetuates the cycle (Wenzlaff and Wegner 2000, Oakes

2019). In conclusion, GD is conceptualized as a cyclical process maintained by impairments in metacognitive beliefs, attentional flexibility, and self-regulatory executive functions.

Cognitive Attentional Syndrome in Gambling Disorder

It is stated that the CAS plays an important role in the development and maintenance of addiction (Wells and Matthews 2016). Specifically, repetitive negative thinking, avoidance strategies, and maladaptive coping mechanisms are reported to be among the key elements that reinforce addictive behaviors (Spada and Roarty 2015). It is suggested that each component of the CAS operates at different stages of the addiction cycle, thereby reinforcing the process. One such component, attentional bias, is defined as individuals' disproportionate allocation of attention to particular stimuli they perceive as threatening or emotionally salient. It is reported that attentional bias typically develops toward stimuli that are emotionally or cognitively meaningful, and that it is shaped by individuals' current cognitive schemas, emotional states, or past experiences (Gibb et al. 2016). In GD, it has been shown that individuals notice gambling-related stimuli much more quickly than other stimuli and sustain their attention on these cues for longer periods (Brevers et al. 2011). This has been identified as meaningfully associated with the urge to gamble, conceptualized as a reflection of addiction-related motivational processes; it increases under conditions such as stress, withdrawal, or exposure to addiction-related cues and is emphasized as a component that should be targeted in treatment (Field et al. 2014, Ciccarelli et al. 2016). Considering all these findings, attentional bias is thought to play an important role in the development, maintenance, and relapse of addictions (Field ve Cox 2008).

Another component, extended thinking, is described as one of the mental processes that sustain addictive behaviors and encompasses repetitive, dysfunctional, and inflexible patterns of thought. These patterns begin with individuals' intense focus on a specific topic, event, or thought; over time, thoughts spiral out of control, leading to exaggerated imagery or expectations. Particularly in addictions such as gambling, these mental processes—aimed at desire thinking, rumination, and anxious anticipation—have been shown to strengthen internal triggers and weaken control over thoughts or desires (Caselli et al. 2015, Brandtner et al. 2021, Bonner et al. 2022). In behavioral patterns commonly observed in nicotine dependence, gambling, and alcohol misuse, desire thinking is reported to be the conscious mental rotation of positive images and information associated with a particular object or situation (Kavanagh et al. 2004, Kavanagh et al. 2009, Fernie et al. 2014). This process is considered a factor that particularly contributes to increases in (Caselli et al. 2013). Another component, rumination, has been shown to be higher in problem drinkers than in social drinkers and to significantly predict alcohol use (Caselli et al. 2008). Similarly, individuals with high levels of anxious anticipation have been found to be more inclined toward addictive substances (Smith and Book 2010).

Accompanying these cognitive processes, thought suppression is identified as another important factor. Thought suppression is defined as the control attempts individuals develop to cope with specific thoughts they wish to remove from their minds. Paradoxically, however, these attempts often lead to more frequent and intense returns of the unwanted thoughts (Rassin et al. 2000). For example, in individuals with alcohol dependence, attempts to suppress alcohol-related thoughts may cause these thoughts to rebound more intensely and, as a result, trigger alcohol use (Klein 2007). Similarly, in smokers, thought-suppression efforts have been shown to increase the urge to smoke, thereby complicating cessation (Erskine et al. 2010). In the context of GD, the same mechanism applies; as attempts to suppress gambling-related thoughts increase, these thoughts become more dominant, thereby elevating the risk of resuming gambling (Riley 2014). Furthermore, another study showed that when individuals have a higher capacity to direct attention to their momentary experiences in a nonjudgmental and conscious manner, the severity of GD is lower, which may be related to healthier decision-making processes (Lakey et al. 2007).

In Figure 1, the relationships between the S-REF impairments observed in GD and the CAS are schematized by the authors and presented in a concise format. This schema aims to contribute to a holistic understanding of the relevant processes.
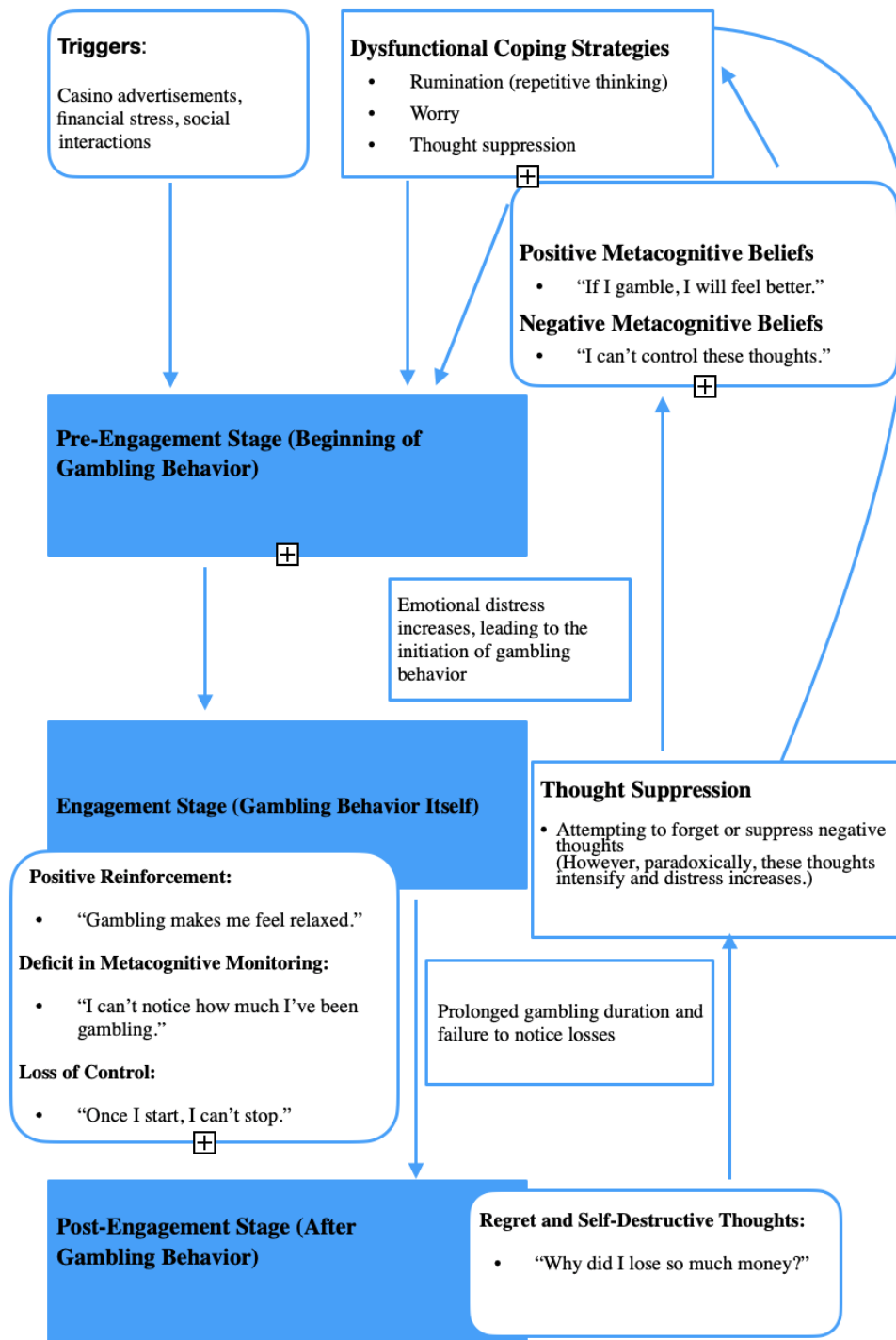
Triggers:

Casino advertisements, financial stress, social interactions

Dysfunctional Coping Strategies
- Rumination (repetitive thinking)
- Worry
- Thought suppression

Positive Metacognitive Beliefs
- "If I gamble, I will feel better."

Negative Metacognitive Beliefs
- "I can't control these thoughts."

Pre-Engagement Stage (Beginning of Gambling Behavior)

Emotional distress increases, leading to the initiation of gambling behavior

Engagement Stage (Gambling Behavior Itself)

Thought Suppression
- Attempting to forget or suppress negative thoughts
  (However, paradoxically, these thoughts intensify and distress increases.)

Positive Reinforcement:
- "Gambling makes me feel relaxed."

Deficit in Metacognitive Monitoring:
- "I can't notice how much I've been gambling."

Loss of Control:
- "Once I start, I can't stop."

Prolonged gambling duration and failure to notice losses

Post-Engagement Stage (After Gambling Behavior)

Regret and Self-Destructive Thoughts:
- "Why did I lose so much money?"

Figure 1. Self-regulating executive functions and cognitive attention syndrome in gambling disorder

Metacognitive Therapy and Gambling Disorder

Core Principles of Metacognitive Therapy

In order to demonstrate the functionality of MCT in therapeutic applications, it is important to examine the techniques it employs, as this helps to understand how the approach can be evaluated in the context of

GD. One of these core techniques, detached mindfulness, is defined as a method that aims to help individuals recognize and observe thoughts appearing in the mind as mere mental events, without attempting to suppress or alter them. This technique enables individuals to perceive thoughts not as reflections of personal reality but as transient cognitive experiences, thereby preventing identification with negatively valenced cognitions. As a result, repetitive worry and rumination cycles are weakened, while attentional flexibility is reported to increase. Furthermore, this approach has been emphasized as being therapeutically effective, particularly in restoring control over cognitive processes and breaking internal self-critical cycles (Wells 2005). Indeed, in a randomized controlled trial including individuals with high levels of repetitive negative thinking (Repetitive Negative Thinking Questionnaire score > 33) and conducted with 50 participants from the general population, this method was shown to be effective in reducing repetitive negative thoughts and contributing to mood regulation in daily life (Bolzenkötter et al. 2024). Although there is no direct study in the literature examining the applicability of detached mindfulness techniques in GD, group-based detached mindfulness therapy has been found effective in reducing substance craving and anxiety among individuals with substance dependence (Gholami and Shareh 2015).

Another core technique, the Attention Training Technique (ATT) or Directed Attention Training (DET), aims to help individuals flexibly redirect their attention processes, disengage from involuntary thought streams, and improve cognitive flexibility and emotion regulation skills (Wells 1990). In a functional magnetic resonance imaging (fMRI) study, Jahn et al. (2023) reported that after one week of DET training in healthy participants, there was an increase in attentional disengagement speed and a decrease in anterior cingulate cortex activation. However, this study did not include individuals with GD. Studies directly investigating DET application in the context of GD remain limited; instead, most research has focused on attentional bias (Farr et al. 2023). Research conducted on other types of addictions has demonstrated that ATT and similar attention training procedures produce positive effects in domains such as attention control, response time based on attentional processes, and emotional state regulation in individuals with alcohol/substance use disorders as well as in those with anxiety and mood disorders (Jahn et al. 2023, Verdejo-Garcia et al. 2023).

Role and Efficacy of MCT in Gambling Disorder

It has been stated that addictions profoundly affect individuals' cognitive processes, leading to a loss of control over thoughts, emotions, and behaviors. Offering a holistic framework, MCT is defined as a therapeutic model that focuses on how thoughts are processed and how these processes are managed, with the goal of developing more effective internal regulation strategies (Wells and Matthews 1996, Wells 2009). Gehlenborg et al. (2021) developed a structured eight-session pilot intervention program by adapting MCT techniques to the therapeutic context. This program included modules specifically targeting gambling-related cognitive distortions, as well as strategies such as attention training, awareness of cognitive distortions, and restructuring of metacognitive beliefs. The findings indicated that the program was an effective approach and was highly accepted by participants. Moreover, MCT was found to reduce cognitive distortions and improve treatment adherence among individuals. However, current literature on MCT interventions in individuals with GD remains limited to this study.

Discussion

In GD, metacognitive beliefs and dysfunctional cognitive processes play a critical role in maintaining addictive behavior. Positive metacognitions lead individuals to view gambling as a means of emotion regulation, while negative metacognitions sustain the addiction cycle through beliefs that thoughts are uncontrollable. Processes such as desire thinking, rumination, and thought suppression further reinforce this cycle. MCT presents a promising approach for GD because, rather than focusing on the content of thoughts, it targets the relationship individuals have with their thoughts and the processes through which these thoughts are managed. Comparing different therapeutic approaches is particularly important to understand how MCT differs from other modalities.

In cognitive behavioral therapy (CBT), the focus is on examining the content of thoughts and modifying individuals' belief systems. In contrast, MCT centers on how thoughts are processed and the relationship established with them. Randomized controlled trials and meta-analyses on generalized anxiety disorder (GAD) have demonstrated that MCT provides higher recovery rates than CBT, being more effective in regulating anxiety and cognitive processes, with these advantages maintained in long-term follow-ups. Specifically, studies by Nordahl et al. (2018), Solem et al. (2021), and Rawat et al. (2023) have reported that MCT offers greater short and long-term benefits in GAD compared to CBT. Furthermore, systematic reviews have shown that MCT produces strong effects on anxiety and depression, and in some cases, may even surpass CBT in effectiveness (Normann and Morina 2018).

A study with heterogeneous samples found that, due to its short-term and structured format, MCT demonstrates broad applicability across various psychopathologies (Nordahl 2009). While acceptance and commitment Therapy (ACT) targets processes such as cognitive fusion and experiential avoidance, MCT approaches these phenomena within the framework of the CAS, thus offering a more integrative model (Ruiz and Odriozola-González 2017). In a meta-analysis by Sánchez-Escamilla et al. (2023), the effectiveness of MCT and ACT in anxiety and OCD was compared, with findings showing that MCT yielded stronger results in cognitive interventions. MCT was highlighted for facilitating individuals' understanding of their cognitive processes, thereby contributing to a reduction in threat perception and promoting tolerance toward symptoms. In contrast, mindfulness-based approaches aim to cultivate awareness but do not focus sufficiently on restructuring the functional meanings attributed to thoughts (Javadi et al. 2018).

These findings suggest that MCT's distinct mechanisms targeting cognitive processes may be particularly useful in addressing the cognitive distortions and metacognitive beliefs that sustain gambling behavior. Within this framework, MCT appears advantageous both theoretically and clinically. However, direct evidence regarding the efficacy of MCT specifically for GD remains limited. Existing evidence primarily stems from mood and anxiety disorders.

In a study involving individuals with GD, metacognitive beliefs were found to be directly associated with depression and anxiety symptoms, and modifying these beliefs also reduced the urge to gamble (Jauregui et al. 2016). Given MCT's demonstrated effectiveness in anxiety and depression, it is reasonable to infer that by targeting dysfunctional metacognitive beliefs, it may help disrupt the cycles that perpetuate gambling behavior. Supporting evidence from substance-related disorders reinforces this view: in a case series with individuals with alcohol use disorder, the application of MCT techniques such as detached mindfulness and postponement of thoughts significantly reduced alcohol consumption and alcohol-related metacognitive beliefs (Caselli et al. 2018). Similarly, a pilot study with individuals with alcohol use disorder showed that group-based MCT effectively reduced metacognitive beliefs and alcohol-related desire thinking (Kroener et al. 2024). In another study with women diagnosed with substance use disorder, group-based MCT was shown not only to decrease depression and anxiety but also to reduce substance-related cognitive distortions and cravings while enhancing self-efficacy and motivation (Karimi and Ziaee 2023). Studies specific to GD and other behavioral addictions remain scarce and are based on small samples. The study by Gehlenborg et al. (2021), which examined MCT in the context of GD, did not include a control group; therefore, comparisons with other therapy models or treatment protocols could not be made. Moreover, no standardized MCT-based therapeutic plan specific to GD has yet been established. In addition, the cultural, social, and economic contexts of gambling behavior may pose challenges to the applicability of MCT. Indeed, to date, no study investigating MCT in the context of GD has been conducted in Türkiye.

Conclusion

Metacognitive processes play a crucial role in maintaining addictive behaviors in Gambling Disorder. MCT holds significant therapeutic potential by directly targeting these processes. Yet, empirical evidence for MCT's effectiveness in GD remains scarce. Future research should systematically examine MCT's efficacy across diverse cultural contexts and larger samples. Longitudinal and comparative clinical studies are

needed to clarify how MCT influences cognitive, emotional, and behavioral mechanisms in GD, advancing both theoretical understanding and clinical practice.

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