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Online problem gambling: clinical implications considering etiological profiles

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Abstract: Online gambling has emerged as a significant public health challenge, with multiple psychological and contextual factors contributing to the development and maintenance of gambling behavior. This narrative brief review aims to discuss the pathways model, a theoretical framework that categorizes distinct etiological profiles of individuals with problem gambling. The model offers insights for more personalized therapeutic interventions by identifying specific characteristics and vulnerability factors associated with each profile. The paper further explores the structural and situational characteristics of different gambling modalities, highlighting how specific design features contribute to their heightened addictive potential. Clinical implications are presented, focusing on the need for individualized treatment plans adapted to each gambler profile. Future directions are discussed, particularly the importance of tailoring interventions to the Brazilian mental health care context, considering its public health structure and the demand for capacity-building among professionals. The review highlights the relevance of integrating assessment, early identification, and targeted interventions as key strategies to mitigate the negative consequences of online gambling and to improve health outcomes.

Keywords: Gambling; behavior, addictive; psychosocial intervention; psychotherapy; health personnel.

Introduction

Online gambling has emerged as a significant public health challenge, with impacts extending beyond individual behavior to affect economic systems and societal well-being.[1] This expansion has been observed globally,[2] and Brazil—following recent sector regulations—faces substantial challenges in understanding and mitigating the adverse effects of this phenomenon. Multiple psychological and structural factors

contribute to the acquisition, development, and maintenance of gambling behavior.[3,4] This multifactorial etiology compels counselors to stratify gambler subtypes for precision therapeutic interventions.

This article aims to examine the clinical relevance and applicability of the pathways model of problem gambling[5]—a theoretical framework that contributes to understanding distinct clinical profiles of gamblers. Special attention is given to the context of online gambling, considering its specific structural features and psychological impacts. Based on the characteristics of each gambler profile, the review also suggests possible therapeutic interventions.

This study is based on a brief narrative review of the literature. The selection of sources was guided by their relevance to the pathways model of problem gambling and to the structural characteristics of online gambling. Priority was given to peer-reviewed articles and theoretical or empirical contributions published in English that were most frequently cited or conceptually influential in the field.

Problem gambling

Gambling behavior can be conceptualized along a spectrum that identifies varying levels of gambling involvement. At this *continuum*'s lower end, recreational gamblers engage in occasional betting without experiencing significant negative consequences. [6] However, some individuals develop problem gambling patterns, resulting in frequent financial losses, increased impulsivity, and emerging adverse impacts on personal and professional life.[7] The term "problem gambling" is commonly employed in epidemiological research and public health to characterize individuals who, although not necessarily meeting formal diagnostic criteria, exhibit risky gambling behavior that may progress to gambling disorder. [5] When this behavior becomes persistent and recurrent, accompanied by significant distress, severe impairment, and loss of control, it meets clinical criteria for gambling disorder.[8]

Recent data from the Third National Survey on Alcohol and Drugs (LENAD III) stress distinct demographic characteristics among Brazilian individuals who engage in gambling. Among people who reported gambling within the past year, 64.8% are male, 50.6% are between 25 and 49 years old, 16.8% are young adults (18–24 years), 4.0% are adolescents, and 8.1% are aged 65 years or older. Regarding ethnicity, 45.6% identify as mixed-race (pardo), and 34.1% as white. Educational attainment shows that 42.9% have completed secondary education, while 26.7% hold a higher education

degree. Concerning marital status, 50.0% are single, and 40.3% are married. From a socioeconomic perspective, 35.0% report household incomes above three times the minimum wage.[9]

Characteristics of online gambling

The boost of digital gambling platforms has introduced new modalities of online gambling. In sports betting (commonly termed "bets"), individuals wager on the outcomes of sporting events such as football, basketball, and other athletic competitions.[10] Online casinos replicate the land-based casino experience by offering gambling modalities including poker, roulette, blackjack, and slot machines.[11] Within the same digital environment, esports betting enables individuals to gamble on the performance of teams and athletes in competitive video game tournaments such as *League of Legends* (LoL), *FIFA*, and *Counter-Strike*. This form of betting operates similarly to traditional sports betting.[12]

Unlike traditional betting, sports trading operates as a stock market for wagers, where individuals "buy" and "sell" probabilities of sports outcomes, targeting financial market dynamics.[13] Additionally, certain platforms offer "special bets" - wagers on non-sporting events, including political elections, reality television outcomes, and entertainment awards ceremonies such as the Oscars and Grammys[14].

Although all forms of gambling may lead to problematic behavior, certain modalities exhibit heightened addictive potential due to their user experience mechanisms.[3,15] Structural characteristics of gambling refer to game-intrinsic elements—including design features and platform functionalities—that directly modulate user experience and may elevate the likelihood of excessive gambling behavior.[10,16,17] Sports betting, for instance, enables more frequent and rapid wagering with the structural characteristics of in-play betting (wagering while an event is happening) and micro-betting (wagering on discrete events within a match rather than just the final outcome).[3,18]

On the other hand, situational characteristics encompass the environmental features of where gambling occurs.[19] These include factors such as 24/7 accessibility, anonymity, multi-platform availability, mobile device ubiquity, increasing social acceptability, and social reinforcement (e.g., live-streamed betting communities and social media engagement).[19–21] These characteristics are compounded by gambling bookmakers' digital marketing strategies employing influencer endorsements, targeted

promotional incentives, and algorithmically optimized advertisements.[22] By simultaneously enhancing users' immersion (through persistent engagement cycles) and impairing financial/time self-regulation, these situational elements collectively accelerate the development of problem gambling.[20]

Different profiles of gamblers

The pathways model[4], originally developed by Blaszczynski and Nower[5], posits that problem gamblers constitute a heterogeneous population classifiable into three distinct subtypes, each demonstrating different etiological risk factors. The first group, *behaviorally conditioned gamblers*, comprises individuals without pre-existing psychopathology. Gambling engagement stems primarily from conditioning mechanisms and cognitive distortions related to chance. The second subtype encompasses *emotionally vulnerable gamblers*, characterized by histories of anxiety, depression, and adverse childhood experiences, who utilize gambling for stress-coping. Finally, *antisocial-impulsivist gamblers* exhibit elevated impulsivity, risk-seeking behavior, and antisocial/narcissistic traits. This group uses gambling both as a coping strategy and a quest for existential meaning.

The authors contend that no homogenous model can comprehensively account for the complex interplay of biological, psychological, and ecological influences underlying problem gambling. Consequently, they propose that gambling develops along differential but identifiable trajectories (pathways). Each gambler subgroup exhibits unique vulnerability factors, sociodemographic characteristics, and etiological processes contributing to problem gambling. Although different profiles present distinct variables, ecological factors, conditioning processes, and cognitive distortions affect all gamblers and represent core variables across the three pathways. This model supports counselors in developing individualized treatment plans by aligning clinical interventions with the specific clinical features of each subtype of gambler. Figure 1 shows the model with different profiles of gamblers.

Recent evidence supports the clinical utility of the pathways model, emphasizing its role in guiding therapeutic interventions based on its theoretical variables. Bonnaire and Billieux[26] presented case studies of gamblers based on the proposed etiological pathways model. Each case was understood through process-based dimensions, such as personality traits, impulsivity, cognitive-affective patterns, and adverse life events. These elements were integrated into clinical case formulations. The authors moved beyond symptom-focused descriptions and identified underlying factors contributing to the development and maintenance of problem gambling. They also proposed tailored intervention strategies based on these determinants. The model proves valuable for guiding individualized psychological treatments, as it links etiological factors with case formulation and treatment planning.
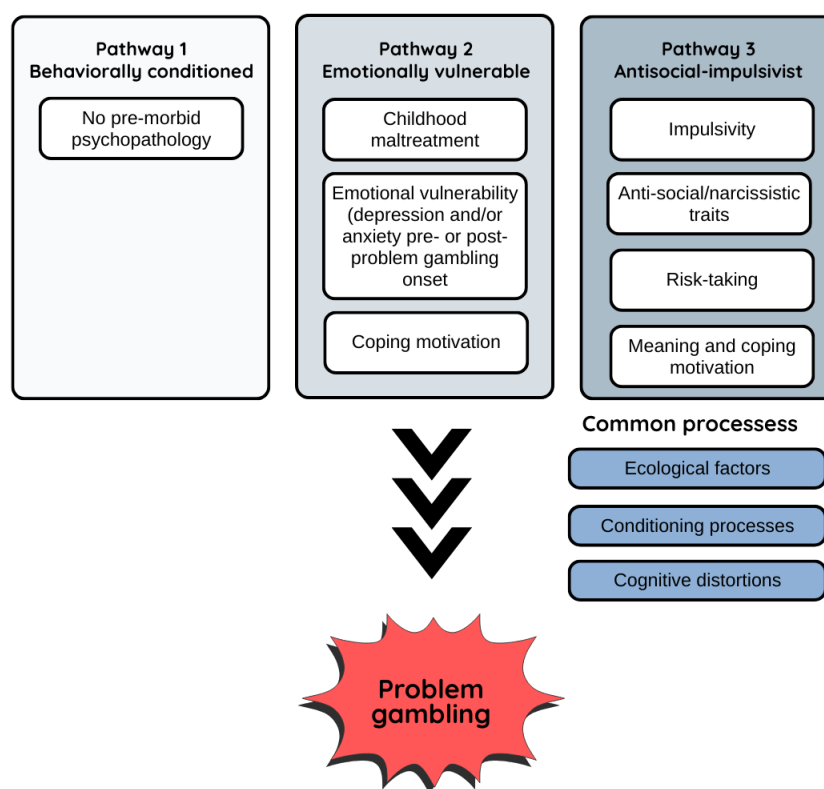

Figure 1 - The pathways model adapted from Nower et al.[4]

The model was originally developed based on the clinical experience of the authors and subsequently empirically validated[4,23,24]. Nonetheless, its application was primarily intended for clinical settings, thereby limiting its generalizability. As a static model, it does not account for potential transitions between different profiles over time,

nor is it applicable to recreational or low-risk gamblers, which restricts its utility in preventive interventions. Although the model was tested in American, Australian, and Canadian populations[4,25], the authors acknowledge that cultural factors may influence gamblers' willingness to report their experiences, particularly regarding sensitive issues such as trauma and antisocial behavior. Furthermore, the model still lacks validation in Latin American populations, such as Brazil, which could limit its applicability in these cultural contexts.

Clinical implications

Behaviorally conditioned gamblers (pathway 1) comprise the largest group and show a slower progression to problem gambling than other subtypes. Their initial gambling behavior typically originates from recreational or social motivations. The simple exposure to and repeated engagement in gambling activities progressively increases both the frequency and intensity of gambling behavior. The subsequent escalation is driven by operant conditioning mechanisms and the development of cognitive distortions regarding winning probabilities. The interplay between intermittent reinforcement schedules and erroneous probability estimations perpetuates gambling engagement despite negative consequences [4,5].

This group reports lower gambling severity scores and exhibits greater responsiveness to early interventions (e.g., brief cognitive-behavioral therapy [CBT]), which may effectively prevent the progression into gambling disorder.[4] Among interventions, these include: (1) psychoeducation regarding gambling's addictive potential and associated risks, (2) cognitive restructuring to address maladaptive beliefs (e.g., illusion of control and gambler's fallacy), and (3) stimulus control through technological tool (e.g., gambling site-blocking applications such as Gamban) and/or self-exclusion tools offered by licensed bookmakers.

Emotionally vulnerable gamblers (pathway 2) are predominantly women who experience marked difficulties dealing with stress. They often engage in gambling as a maladaptive strategy to escape from aversive emotional states. This group is also characterized by limited problem-solving abilities, a background of familial dysfunction, and a history of traumatic life events (i.e. abuse, neglect, or exposure to violence). Among psychiatric comorbidities, depressive and/or anxiety disorders are often observed either prior to or following the onset of problem gambling.[4]

For individuals within this subtype, therapeutic strategies should be tailored to

address both the gambling behavior and the underlying emotional vulnerabilities. CBT is commonly used to promote cognitive restructuring, enhance problem-solving skills, and develop functional coping strategies. Psychiatric care is commonly necessary to deliver pharmacological treatment to address comorbid psychopathologies. Due to a history of maltreatment and childhood adversity, trauma-focused therapies are often beneficial in the sustained recovery of these individuals, as unresolved traumatic experiences are frequently identified as predictors of relapse in the context of addictions.[27]

Distinguishing whether mood disorders are pre-existing or arise following the onset of gambling problems is essential for effective treatment planning.[5] When mood disorders are pre-morbid, gambling often serves as a maladaptive coping mechanism, requiring therapeutic focus on mood stabilization first. In contrast, when mood symptoms emerge as a consequence of gambling-related harms (e.g., financial stress and/or family conflicts), treatment should prioritize the restoration of psychosocial functioning and the development of adaptive coping strategies. In both scenarios, combined interventions (therapy + psychopharmacological intervention) are generally more effective.

In contrast, the antisocial-impulsivist gambling subtype (pathway 3) is predominantly composed of men. This group exhibits higher levels of gambling severity compared to the other subtypes. Their engagement in gambling is partly driven by the need to cope with stress, as observed in subtype 2, but also by a search for meaning and purpose in life. These individuals frequently present dysfunctional personality traits (predominantly antisocial and narcissistic traits), which further complicate clinical engagement. They tend to show low adherence to treatment protocols, reflecting a broader pattern of disengagement and resistance to structure. They exhibit significant deficits in impulse control, often leading to high levels of behavioral instability. Their clinical profile is also marked by a pattern of risk-taking behaviors, including engagement in risky sexual activities.[4,5,25]

For this group, motivational interviewing strategies are essential to improve treatment adherence and promote sustained participation in the therapeutic process[28]. Dialectical behavior therapy (DBT) strategies alongside CBT could be used to address the underlying impulsivity, distress tolerance, and interpersonal instability characteristic of this group. DBT skills training delivered in a group format may assist these gamblers in acquiring more adaptive coping strategies[29]. Moreover, evidence-

based therapies for personality disorders (e.g., schema-focused therapy for narcissist disorder)[30] could also be included in the treatment planning to address dysfunctional personality traits that often complicate treatment.

Besides psychotherapy, pharmacological interventions are commonly required to stabilize comorbid conditions, which often coexist with gambling behaviors[31]. A comprehensive treatment plan should also address the existential function that gambling may serve in an individual's life, helping them identify alternative, adaptive sources of meaning and purpose, especially through interventions drawn from acceptance and commitment therapy (ACT)[32]. Family and systemic therapies may also be beneficial, particularly in addressing relational dynamics that reinforce or maintain gambling behavior[33]. Long-term recovery requires ongoing psychiatric care, psychological assistance, social support, and consistent monitoring by a multidisciplinary team. This approach ensures that both gambling behavior and any underlying psychological issues are effectively addressed, promoting sustained recovery and improving overall quality of life[34]. Table 1 summarizes potential interventions aimed at each profile.

Table 1 - Etiological profiles, clinical targets, and interventions for gamblers patients.

Etiological profile	Clinical targets	Therapeutic interventions
Subtype 1 – Behaviorally Conditioned	- Poor awareness of risk and addictive potential of gambling - Conditioning effects - Cognitive distortions	- Psychoeducation on risks and reinforcement mechanisms - Brief CBT focused on gambling-related thoughts and behaviors - Stimulus control strategies (e.g., setting limits, self-exclusion tools) - Relapse prevention techniques
Subtype 2 – Emotionally Vulnerable	- Gambling for stress-coping - Mood and anxiety disorders - Deficits in problem solving skills - History of trauma (e.g., abuse, neglect, violence)	- CBT interventions for cognitive restructuring, problem-solving skills, and adaptive coping strategies - Pharmacological treatment for comorbidities (e.g., mood and anxiety disorders) - Relapse prevention techniques - Trauma-focused therapies

Subtype 3 – Antisocial-Impulsivist	- Low treatment adherence - Deficits in impulse control - Risk-taking behaviors - Interpersonal and behavioral instability - Dysfunctional personality traits - Gambling as a source of meaning to life	- MI to strengthen treatment engagement and readiness to change - Behavioral contracts and structured, long-term therapeutic plans - DBT skills training focusing on impulsivity and modules for emotional regulation, mindfulness, interpersonal effectiveness and, distress tolerance - ACT strategies for meaning reformulation and development of alternative sources of purpose - Schema-focused therapy for personality disorders - Family/systemic therapies to address relational dynamics that may reinforce gambling - Pharmacological treatment for co-occurring conditions (e.g., mood instability, attentional deficits, substance abuse) - Multidisciplinary treatment involving psychiatric care, psychological therapy, and social services support

Note. CBT = cognitive-behavioral therapy; DBT = dialectical behavioral therapy; MI = motivational interviewing; ACT = acceptance and commitment therapy.

Future directions

Future research should focus on developing evidence-based assessment tools and empirically supported interventions tailored to the Brazilian context. Such research should include refining screening instruments to ensure they are sensitive to local realities, enabling early identification of individuals at risk. Targeted prevention strategies should be developed and implemented across both primary healthcare settings and specialized mental health services, ensuring that interventions are accessible to diverse populations, including those who are more vulnerable. In addition, developing and evaluating the effectiveness of digital health interventions, such as online therapeutic programs and mobile applications, are pivotal in the Brazilian context, where internet access is widespread.

Addressing problem gambling within public health systems is increasingly urgent in countries such as Brazil, where the gambling market is rapidly expanding. Within the Unified Health System (SUS), training mental health professionals is key to improving early detection and management of gambling problems. Incorporating gambling-specific assessment and care into existing services—especially Psychosocial Care Centers for Alcohol and Drugs (CAPS AD)—can enhance timely, integrated treatment. Aligning these efforts with the Ministry of Health's mental health policies and guidelines, such as the National Policy on Mental Health[35], would further strengthen the capacity of public services to respond effectively to gambling disorder. This alignment would help ensure culturally sensitive and contextually appropriate interventions.

In addition, interdisciplinary collaboration among key stakeholders—clinicians, researchers, and policymakers—is needed to align regulatory efforts with public health priorities. Such collaboration may facilitate the effective monitoring and regulation of technological innovations in the gambling industry. It may also help ensure that vulnerable populations—particularly those facing socioeconomic adversity—receive adequate protection and access to care.

Conclusion

Online gambling represents a rapidly evolving phenomenon with far-reaching implications for mental health research, clinical practice, and public policy. The pathways model has emerged as a valuable theoretical framework in this context, offering clinicians and researchers a structured approach to understanding the

heterogeneity of gambling behaviors. Efforts to adapt interventions to the local healthcare contexts are necessary to address the challenges posed by online gambling. This is particularly important for Brazil, where social and economic disparities require tailored, accessible solutions.

Disclosure

The authors declare no conflicts of interest concerning the publication of this article.

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