



UNIVERSITÀ
DEGLI STUDI
FIRENZE

**DOTTORATO DI RICERCA IN
SCIENZE CLINICHE**

CICLO XXXVII

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**The psychosocial mechanisms involved in
gambling behavior and Gambling Disorder**

Settore Scientifico Disciplinare PSIC-04/B

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anni 2021/2024

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Premise

Gambling is a widespread activity deeply rooted in human society since ancient times, evolving from a simple pastime to a multi-billion-dollar industry. Although seen as a form of entertainment, gambling has drawn the attention of clinicians since the late 19th century due to its significant negative consequences to the point of being officially recognized as an addiction, the only behavioral addiction univocally acknowledged in the scientific landscape. Over the years, numerous speculations and theoretical conceptualizations have advanced regarding the etiology of gambling in order to delineate possible explanatory models, and almost all theories proposed recognize the complex and multifaceted phenomenon of dissociation as a key mechanism.

Despite the well-documented link between gambling and dissociation, the multifaceted nature of this latter complicates this scenario, and it is still unclear which specific facets of dissociation are more predominant. Moreover, all the studies conducted so far have been cross-sectional, making it impossible to determine whether the tendency toward dissociation favors the onset of gambling, whether gambling fosters dissociative tendencies, or whether the relationship is bidirectional. Therefore, this dissertation aims to address these gaps.

Specifically, in Chapter 1, an introductory section will introduce the phenomena of gambling and dissociation, explaining their potential interplay.

Then, in Chapter 2, a validation study will be presented. In particular, given the multifaceted nature of dissociative experiences, Study 1 will report the results of the Italian validation of *Jacobs' Dissociative Experience Questions* (JDEQ). This measure, grounded in the General Theory of Addiction, specifically assesses gambling-related dissociative experiences.

Subsequently, in Chapter 3, a longitudinal study will be considered. The aim of this study will be to determine whether gambling-related dissociative experiences are a risk factor for gambling behavior, whether gambling leads to an increase in dissociative experiences, or whether there is a two-way link between the two phenomena beyond other well-known facets of dissociation.

Finally, in Chapter 4, a general discussion will be provided to summarize the contributions of this dissertation to the research strand on the association between gambling and dissociative experiences. Moreover, limitations and future directions will be discussed.

Chapter 1

Introduction

1.1 Gambling behaviors and Gambling Disorder

The term gambling is generally used to refer to all those activities that consist of “staking money or something of material value on an event having an uncertain outcome in the hope of winning additional money and/or material goods” (Williams et al., 2017, p. 11) and it derives from the Old English word *gamen*, meaning “game” or “play”, reflecting its recreational nature (Reith, 2003). Therefore, the terms gambling and gaming share the same etymology, and technological development along with the migration into the digital world have led to gambling activities increasingly incorporating gaming themes, while online games often feature gambling and gambling-like elements. These developments have led to growing concerns that the structural boundaries between gambling and gaming may become virtually indistinguishable (King & Delfabbro, 2016). Moreover, with the rise of hybrid activities that blur these lines, such as loot boxes and in-game purchases with gambling-like mechanics, it is increasingly difficult to draw a clear boundary between the two domains, as both can share overlapping features and psychological dynamics (Heinz et al., 2019). Despite this complex scenario and the presence of hybrid activities, a possible distinction between the two activities may be proposed. Indeed, while gaming can be defined by its interactivity, skill-based play, and contextual indicators of progression and success, gambling is characterized by betting and wagering mechanisms, outcomes primarily determined by chance, and monetization features that involve risk and financial stakes for the gambler (King et al., 2015).

1.1.1 History and diffusion of gambling behaviors

From a historical perspective, the exact origins of gambling have been lost to history, but it is possible to assume that it is an activity as ancient as civilization itself (Tani & Ilari, 2016). The earliest traces of gambling can be traced back to the magical-religious rituals of prehistoric primitive societies. These practices involved the use of small objects called lots (e.g., stones, sticks, nuts, etc.) with the aim of predicting the future or explaining what was not understandable. Furthermore, murals and archaeological artifacts indicate that board games, such as the precursors of checkers and backgammon and the astragals (knucklebones) used as dice thrown to determine the number of steps to move game pieces, were commonly accepted as pastimes as early as 4,000 years BCE. Overall, all these activities relied on chance as a determining factor in outcomes, but the exact point at which players began to risk valuable items to heighten the excitement of competition or for personal gain remains unknown (Tani & Ilari, 2016). However, many games laid the foundation for activities that later met the definition of gambling (Heinz et al., 2019). For example, roulette has its origins in the betting games practiced by Greek and Roman soldiers, who wagered on the spin of numbered chariot wheels. This game evolved over time, with its modern form developed in France in the 18th century, where people bet on numbers and colors as the wheel spun. The throwing of dice and the use of lots for religious divination represent the precursors to modern dice games. As mentioned, people from ancient times used dice to determine fate and choices, and their use has become central to many contemporary gambling activities. Horse and chariot races evolved into national wagering events, particularly in ancient Greece and Rome, where racing was a significant social event. These races gave rise to more formalized betting structures similar to those we know today. Finally, card games have their roots in simple variants played in markets and public squares. Over time, these games diversified, leading to more complex forms such as poker, which

originated from various variants played in American markets in the 19th century, and blackjack, which has roots in Spanish games like “ventiuna”.

Another significant aspect to consider is that social acceptance of gambling has fluctuated throughout history between extremes of widespread indulgence and attempts at suppression. For example, during the Middle Ages, gambling faced social ambivalence because it was condemned by the Catholic Church as immoral, but some forms gained acceptance since they were used to finance public works and churches, marking the beginning of regulatory frameworks (Czortek, 2000). This fluctuation has been evident since the beginning of gambling, reflecting different cultural attitudes and regulatory responses (Heinz et al., 2019). Specifically, religious and legal restrictions on gambling in Europe were adopted primarily in response to the social and economic impacts associated with such activity (e.g., public disorder, economic harms, personal and family distress, fraud, and exploitation), and by 1882, virtually all European provinces banned gambling with the temperance movement in the latter part of that decade temporarily succeeding in moderating alcohol consumption and gambling in America (Peterson, 1950; Tani & Ilari, 2016).

However, nowadays this trend has changed, and gambling is currently a very popular activity around the world, so much so that it is considered a socially accepted form of entertainment in many countries, representing a multi-billion global industry (Calado & Griffiths, 2016; Molinaro et al., 2018). The growing diffusion of gambling is probably due to the extraordinary technological developments that have characterized the last decades, and which have allowed the proliferation of a wide variety of gambling activities easily available and accessible (Heinz et al., 2019). Indeed, today, individuals can engage in a wide range of gambling activities and place bets at any time, 24/7. This accessibility is made possible by the fact that alongside the classic land-based establishments it is now possible to gamble via digital devices such as smartphones and tablets. This change not only allows for

a more anonymous experience, but also meets the demands of a modern and fast-paced lifestyle, making gambling an ever-present option for entertainment and potential profit.

Given the social acceptability and widespread accessibility of various forms of gambling, it is unsurprising that the majority of individuals have gambled at least once in their lifetime (Calado & Griffiths, 2016; Molinaro et al., 2018). Moreover, although gambling is often considered an adult-oriented activity, a growing body of research reveals its popularity and spread even among adolescents (Calado et al., 2017) despite legislation generally prohibiting minors from participating in any form of gambling activity. Confirming the widespread prevalence of gambling behaviors, a recent meta-analysis (Tran et al., 2024) found that approximately 46.2% (95% CI 41.7%–50.8%) of adults globally had gambled in the past 12 months, equivalent to 2.3 billion people worldwide. Additionally, the same meta-analysis highlighted that more than one in six adolescents (17.9%, 95%CI 14.8%–21%) – representing approximately 159.6 million adolescents – had engaged in gambling during the same time frame, including commercial forms of gambling, which are largely subject to age restrictions.

1.1.2 Gambling types

Over the years, a huge variety of gambling games have been created and offered on the world stage. The main commercial gambling activities include lotteries, bingo, sports betting, card games, casino table games, and electronic slot machines. Furthermore, each of these gambling types includes numerous specific variations that are accessible both in physical venues and on online platforms (Abbott et al., 2018). The commercial gambling landscape has undergone significant transformations driven by the interplay between supply and demand (Heinz et al., 2019). Gambling operators continuously innovate by developing new products that leverage advanced technologies, thus enhancing the structural

characteristics of their offerings. This strategic innovation aims to create appealing experiences that motivate individuals to invest their money in gambling activities. For example, the introduction of online gambling applications and interactive online platforms has expanded access and engagement, attracting a broader audience. This evolution reflects a deeper understanding of consumer behavior, where the motivation to gamble is influenced not only by the thrill of potential rewards but also by the immersive experiences that modern gambling products provide (Liu et al., 2021).

Therefore, it is not easy to classify the different types of gambling into specific categories, although some attempts have been made. For example, specific forms of gambling activities differ in their structural characteristics and can, therefore, be organized into some basic categories based on these characteristics (Abbott et al., 2018). In this regard, timing parameters in terms of the frequency of events or the delay between the bet and the outcome are found to be one of these categorization criteria. For instance, in lotteries there is a long delay between buying the ticket and the outcome, and it is rarely possible to bet again immediately, while in other forms of gambling (e.g., instant lotteries and electronic gambling machines) this delay is only a few seconds, and a subsequent bet can start immediately. However, other structural parameters typically used to classify different types of gambling activity – such as reward parameters, the presence of audiovisual features, near-miss characteristics, and opportunities for perceived skill or control – do not provide a clear distinction among the various game types. This lack of clarity arises because, within the same category of gambling activities such as slot machines, one can find contrasting ends of the same parameter: some slot machines may offer frequent but smaller win feedback, while others provide less frequent but significantly larger payouts (Heinz et al., 2019).

Consequently, there is broad consensus within the literature that a more flexible classification system is preferable, one that maintains a clearer distinction between different

forms of gambling while accommodating the complexities inherent in these activities (Abbott et al., 2018). Historically, gambling activities have been divided into two groups: strategic (games of skill) versus non-strategic (games of chance) forms of gambling (Grant et al., 2012; Odlaug et al., 2011). This distinction is based on whether adopting, practicing, or varying strategies can influence the outcome or profitability of the game. Non-strategic games, such as slot machines, lotteries, and bingo, involve little to no decision-making or skill, meaning that gamblers cannot affect the game's outcome. In contrast, strategic games, including poker, blackjack, dog and horse racing, and sports betting, allow gamblers to attempt to use their knowledge of the game to influence or predict results. Despite this distinction, it is important to recognize that even skill-based games retain a substantial element of chance. Moreover, while the distinction between strategic and non-strategic gambling provides valuable insight into different gambling behaviors, it is important to recognize that many individuals do not limit themselves to a single type of gambling activity. Instead, a significant portion of gamblers, often referred to as “mixed” gamblers, engage in a variety of gambling forms without a strong preference for either skill-based or chance-based games (Myrseth et al., 2011; Odlaug et al., 2011). This behavior reflects a more fluid approach to gambling, where gamblers participate across multiple types of games without a clear focus on either strategic or non-strategic forms of gambling.

1.1.3 From Pastime to Disorder

Despite the fact that many adolescents and adults engage in gambling on an occasional or recreational basis (Heinz et al., 2019; Tran et al., 2024), for some individuals this behavior can intensify beyond mere occasional participation. In other words, although it may begin as a harmless pastime, some individuals develop maladaptive patterns of gambling, characterized by an increasing frequency of gambling participation, larger

monetary stakes, and a loss of control over the behavior. Over time, these patterns may lead to the emergence of significant psychological, social, and financial consequences, ultimately manifesting in a full-blown addiction (American Psychiatric Association, 2022). In such cases, gambling shifts from a form of entertainment to an addictive behavior, marked by an inability to stop despite the negative impacts on personal well-being and quality of life.

Although, as previously stated, gambling has existed since the dawn of human civilization and its associated harms have long been recognized, the first author to emphasize its clinical relevance and to introduce it into the scientific and psychiatric landscape was Kraepelin, who at the end of the nineteenth century referred to “gambling mania” as a special impulse disorder (see Bleuler, 1924). However, it was only at the end of the 1920s, with the essay “Dostoevsky and Parricide” (Freud, 1927), that a psychodynamic clinical interpretation of the disorder was reached, connecting gambling to deep psychological and unconscious drives, particularly the concepts of guilt, punishment, and unresolved Oedipal conflicts. Briefly, Freud believed that gambling contains a masochistic element, where the gambler derives unconscious pleasure from losing, as it satisfies a deeper need for punishment linked to Oedipal guilt.

With continuing outbreaks of interest, countless psychological explanations have been advanced over the years regarding the etiology of “compulsive” gambling. However, it was not until its inclusion in the International Classification of Disease and Related Health-Problems 9th edition (ICD-9; World Health Organization, 1977) and in the Diagnostic and Statistical Manual of Mental Disorders third edition (DSM-III) of the American Psychiatric Association (APA, 1980) that the debate over inconsistencies in terminology, categorization, and criteria used to diagnose a gambling disorder became prevalent. In particular, as we will see, gambling disorders have been considered to be a disorder of impulse control, an addictive behavior, or fall within an obsessive-compulsive spectrum (Heinz et al., 2019).

1.1.3.1 The Evolution of Gambling in the International Classification of Diseases

The classification and understanding of gambling have undergone significant transformations across the various editions of the International Classification of Diseases (ICD). In the ICD-8 (WHO, 1965), gambling was not recognized as a clinical disorder, but it was viewed as a behavior that could range from normal to problematic without any specific diagnostic categorization. The publication of the ICD-9 (WHO, 1977) marked the introduction of Pathological Gambling as a recognized condition, although the criteria for diagnosis remained vague and underdeveloped. At this edition, gambling was primarily conceptualized as a compulsive behavior under the section “Disorders of impulse control, not elsewhere classified”, but the lack of clear diagnostic guidelines limited the ability of clinicians to effectively identify and treat individuals experiencing gambling-related problems, and it was approached more as a symptom rather than a condition that could stand on its own (Heinz et al., 2019). The publication of ICD-10 (WHO, 1992) marked the first formal recognition of gambling as a specific disorder, which was classified under the section of "Habit and Impulse Disorders" (F63.0). This edition provided explicit diagnostic criteria, highlighting the psychological, social, and financial consequences of compulsive gambling. Moreover, in this edition, Pathological Gambling was grouped with other disorders characterized by the inability to resist impulses, such as pathological fire-setting (i.e., pyromania, multiple acts of, or attempts at, setting fire) trichotillomania (compulsive hair pulling) and pathological stealing (i.e., kleptomania, failure to resist impulses to steal objects). In other words, the emphasis in this edition, similar to what we will see in DSM-IV (APA, 1994), was on the inability to control urges, with little distinction between habitual and addictive behaviors. Indeed, the term “habit” implied that gambling was a repetitive and learned behavior, rather than a behavior driven by addiction-like mechanisms. Twenty-five years later, with the advent of ICD-11 (WHO, 2018), the classification of gambling has seen

a significant change. In ICD-11, the term “Pathological Gambling” has been replaced by “Gambling Disorder” and placed in the new section entitled “Disorders Due to Addictive Behaviors” (6C50), aligning with the DSM-5’s approach (APA, 2013). The previous term “pathological” was eliminated and replaced with “disorder” as it was considered derogatory (Petry, 2010). This reclassification emphasizes the compulsive and addictive nature of the disorder, where gambling is no longer seen simply as a failure in impulse control, but rather as a compulsive behavior similar to substance addictions. According to ICD-11 (WHO, 2018) Gambling Disorder is characterized by a pattern of persistent or recurrent gambling behavior, which may be online (i.e., over the internet) or offline, manifested by:

1. impaired control over gambling (e.g., onset, frequency, intensity, duration, termination, context).
2. increasing priority given to gambling to the extent that gambling takes precedence over other life interests and daily activities; and
3. continuation or escalation of gambling despite the occurrence of negative consequences.

For Gambling Disorder to be diagnosed, the behavior pattern must be of sufficient severity to result in significant impairment in personal, family, social, educational, occupational, or other important areas of functioning. The pattern of gambling behavior may be continuous or episodic and recurrent but is manifested over an extended period (e.g., 12 months).

1.1.3.2 The Evolution of Gambling in the Diagnostic and Statistical Manual of mental disorders

The classification of gambling in the Diagnostic and Statistical Manual of mental disorders (DSM) has evolved significantly over time, reflecting shifts in understanding the disorder's nature and its clinical implications. Early editions of the DSM did not include gambling as a distinct disorder, and in both the DSM-I (APA, 1952) and DSM-II (APA, 1968), gambling behaviors were not classified into any specific category. At the time, gambling behaviors were largely understood through the lens of other psychological conditions, often seen as a symptom of underlying personality disorders or indicative of impulsive and reckless behavior. Essentially, gambling was viewed as part of broader behavioral disorders rather than as a distinct mental health condition requiring its own diagnostic criteria.

As mentioned, the introduction of Pathological Gambling as a separate diagnosis occurred in the DSM-III (APA, 1980), where it was classified among the “impulse control disorders not elsewhere classified”, marking a major turning point in the clinical recognition of gambling as a mental health issue. Pathological Gambling was defined as an inability to resist gambling impulses, leading to severe personal, social, and financial consequences. However, its placement as an impulse control disorder reflected a limited understanding, with a focus on compulsive, rather than addictive, aspects of the behavior. In DSM-IV (APA, 1994) – as well as in its revised form DSM-IV-Text Revision (DSM-IV-TR; APA, 2000) – Pathological Gambling remained in the same category but with refined diagnostic criteria, emphasizing the role of preoccupation with gambling, attempts to cut down or stop, and continued gambling despite negative consequences. To be diagnosed as a pathological gambler according to the new criteria, an individual had to meet at least 5 of the 10 proposed. The refinement in criteria was significant as it began to align gambling with substance-

related disorders, highlighting similarities in compulsive engagement, loss of control, and persistence despite harm. Indeed, although gambling shares some characteristic features with the other disorders in this section (i.e., trichotillomania, intermittent explosive disorder, kleptomania, and pyromania), such as not resisting impulses or temptations to perform a harmful act for oneself or others and pleasure or liberation while performing the act, there is little empirical evidence on the association between this disorder and the others (Petry et al., 2014). Otherwise, there is much evidence that underlines the similarities between gambling and addictive disorders, not only in diagnostic, clinical and neurological terms, but also in their treatment and comorbidity (Petry et al., 2014). Given these premises, in the DSM-5 (APA, 2013) and its revised form (DSM-5-TR; APA, 2024), gambling was moved into the section of “Substance-Related and Addictive Disorders” where it is the sole member of a grouping titled “non-substance-related disorders”, changing the name from pathological to Gambling Disorder and representing the only recognized behavioral addiction. In other words, with the inclusion of Gambling Disorder in this section, it has been officially recognized that the use of substances is not essential for diagnosing addiction. This change was based on emerging research that demonstrated similarities between Gambling Disorder and substance use disorders, particularly in terms of neurobiological mechanisms and symptoms. For example, indulging in gambling behaviors activates reward systems similar to those activated by drugs and produces some behavioral symptoms that appear comparable to those produced by substance use disorders (Heinz et al., 2019). According to this new classification, to receive a diagnosis of Gambling Disorder, individuals must meet 4 of 9 criteria within a 12-month period and the behavior must not be better accounted for by a manic episode. These 9 criteria are:

1. Needing to gamble with increasing amounts of money in order to achieve the desired excitement.

2. Feeling restless or irritable when attempting to cut down or stop gambling.
3. Making repeated unsuccessful attempts to control, cut back, or stop gambling.
4. Often experiencing preoccupation with gambling (e.g. having persistent thoughts of reliving past gambling experiences, handicapping or planning the next venture, thinking of ways to get money to gamble).
5. Often gambles when feeling distressed (e.g., helpless, guilty, anxious, depressed).
6. After losing money gambling, often returns another day to get even (“chasing” one’s losses).
7. Lies to conceal the extent of involvement with gambling.
8. Jeopardizing or losing a significant relationship, job or educational or career opportunity because of gambling.
9. Has relied on others to provide money to relieve desperate financial situations caused by gambling.

In addition to the major changes in naming (from pathological to disorder) and the recognition as a behavioral addiction, it is important to note that there were also changes in the number of criteria in the transition from DSM-IV-TR (APA, 2000) to DSM-5 (APA, 2013). In particular, criterion 8 of DSM-IV-TR (APA, 2000), which referred to illegal acts (i.e., “has committed illegal acts such as forgery, fraud, theft, or embezzlement to finance gambling”), was removed in the new edition. The choice to remove it was taken because only a minority of the treated population endorsed this criterion, and those who did often reported also meeting more other criteria, thus reducing the usefulness of this criterion in the diagnostic process (Petry et al., 2014). However, other authors have contested this change, noting that illegal acts are relatively common in the treatment-seeking gamblers samples, and maintaining this criterion would draw attention to the relationship between Gambling

Disorder and legal issues (Mitzner et al., 2011). For example, a study aimed to assess the impact of changes in diagnostic criteria in DSM-5 on prevalence rates and classification accuracy across different treatment and community samples found that 41.10% of those who are engaged in treatment for gambling-related problems responded affirmatively to the criterion of commission of illegal acts (Petry et al., 2013). Also, those who reported legal problems secondary to gambling were more likely to show suggestive features of antisocial personality disorder and substance use disorders (Potenza et al., 2000) and gamblers reporting illegal activities may also require more intensive treatment than those who do not (Grant & Potenza, 2007). Therefore, empirical evidence suggests that the relationship between gambling and illegality should remain a clinical and research focus despite the removal of the criterion of illegal acts in DSM-5 (APA, 2013).

Another change in the diagnostic criteria for DSM-5 (APA, 2013) was the reduction of the number of criteria required for a diagnosis. In the DSM-IV-TR (APA, 2000), 5 out of 10 criteria listed were required to be met for a diagnosis, while in the DSM-5 (APA, 2013) this was reduced to 4 out of 9. Furthermore, based on the number of criteria met, it is now possible to establish the severity of the disorder, which can range from mild (4–5 criteria met), moderate (6–7 criteria met), and severe (8–9 criteria met). The rationale for choosing this reduction was that it would ensure consistency with previous diagnosis rates following the removal of the criterion related to illegal acts (Petry, 2010) and empirical studies have shown that this change in the threshold for diagnosis either resulted in no significant change in the number of individuals meeting the criteria for a diagnosis (Denis et al., 2012; Temcheff et al., 2011).

1.1.4 Beyond the diagnosis: Subclinical Gambling Disorder

There are many individuals who engage in problematic gambling behaviors but do not fully meet the diagnostic criteria. These individuals, though not diagnosable with Gambling Disorder, are still exposed to considerable risks, such as financial difficulties, strained relationships, and mental health challenges (Heinz et al., 2019). This gap in the diagnostic system presents significant challenges both in clinical practice and research, as it overlooks those who fall between non-problematic gambling and full-blown addiction. In light of this consideration, other terms are also widely used in the literature, and over the years various proposals have been made on how to classify such “subclinical” gamblers. One proposal has been to model the criteria for DSM-5 on the classification system used for “Substance Use Disorder”, in which the endorsement of only two symptoms is required for a diagnosis, with moderate and severe specifiers (Mitzner et al., 2011). According to this system, individuals who endorse two to four symptoms might be classified as having “Gambling Disorder, Moderate”, while those who meet more than four criteria might be classified as having “Gambling Disorder, Severe”. Another proposal has its origins with the development of the National Opinion Research Center DSM Screen for Gambling Problems (NODS; Gerstein et al., 1999), a population-based screening tool to identify gambling problems according to DSM-IV criteria. According to this classification, those who meet one or two of the previous DSM-IV criteria are classified as “at-risk” gamblers, those who meet three or four criteria are classified as “problem gamblers” and those who meet 5 or more criteria are classified as “pathological gamblers” (Hodgins, 2004). Although different classifications and terminologies have been proposed, there is a general consensus in the literature on the use of two key classifications in the latest framework (i.e., at-risk and problem gambling) to describe different degrees of gambling-related harm that do not necessarily meet the threshold for a diagnosis (Heinz et al., 2019). In a broad sense, at-risk

gamblers are individuals whose gambling behavior has the potential to lead to negative consequences but who have not yet experienced severe harm (Raylu & Oei, 2002; Shaffer et al., 1999). They might show some early warning signs, such as increased frequency or higher stakes, but are not yet experiencing major issues. On the other hand, problem gamblers have already begun to experience negative outcomes – such as financial losses, relationship conflicts, or psychological distress – but may not exhibit all the criteria necessary for a diagnosis (Volberg, 2002). These individuals often demonstrate maladaptive patterns of behavior that, while concerning, still fall short of the clinical definition of Gambling Disorder.

Although the current editions of the major diagnostic manuals in use (ICD-11 and DSM-5-TR) have opted not to include a subclinical diagnosis, substantial evidence suggests that individuals in this category may require clinical intervention (Heinz et al., 2019). Indeed, research indicates that those who exhibit problematic gambling symptoms but do not meet the diagnostic criteria for a full-blown disorder exhibit higher rates of other Axis I psychiatric conditions (Bischof et al., 2013), and increased incidence of alcohol and substance use disorders (Blanco et al., 2006), and higher levels of suicidal ideation (Feigelman et al., 2006) compared to the general population. Moreover, longitudinal studies have demonstrated that gambling behaviors does not always progress straightforwardly, as previously believed, but rather fluctuate between different levels of severity (LaPlante et al., 2008).

Overall, this evidence highlights the importance for clinicians and researchers in the gambling field to broaden their perspective beyond those who meet the established diagnostic criteria for gambling disorder. It is essential to recognize that there exists a wide spectrum of gambling-related behaviors that can cause significant distress and harm, even in the absence of a formal diagnosis. Therefore, it is crucial to develop more inclusive and

sensitive intervention approaches that address the needs of all individuals who may be affected by negative consequences related to gambling, regardless of whether they meet diagnostic criteria.

1.1.5 Prevalence of subclinical and gambling disorder

As previously stated, gambling is a socially accepted recreational behavior in most countries of the world. Therefore, it's no surprise that most human beings have engaged in gambling activities at least once in their lives, which may include betting on sports events, lotteries as well as casino games (Heinz et al., 2019). However, a substantial and alarming proportion of these gamblers fall into the category of “at-risk” category, characterized by gambling behavior that can lead to financial or relational problems without meeting the criteria for Gambling Disorder. In this regard, a recent meta-analysis (Gabellini et al., 2023) conducted on 23 studies published between 2016 and the first quarter of 2022 showed a pooled estimate of the prevalence rate of moderate risk/at-risk gambling of 2.43% (95% CI 1.73; 3.13) with predictive values ranging from 0 to 5.81%. However, a more recent meta-analysis found a slightly higher prevalence. Specifically, Tran and colleagues (2024) evaluated studies published from 2010 to March 2024 and found that 8.70% (95% CI 6.6–11.30) of adults engaged in any risk gambling in the past 12 months, an estimation equates to 439.6 million (95% CI 331.9–569.4) adults.

Regarding problem gambling, Gabellini and colleagues (2023) found a prevalence rate of 1.29% (95% CI 0.63; 1.95) with values of prediction range from 0 to 4.71%, while Tran and colleagues (2024) reported a slightly higher prevalence of 1.41% (95% CI 1.06–1.84). These higher prevalences found by Tran and colleagues (2023) could be explained not only by the use of a wider time window (2010-2024 compared to 2016-2022) but also by the fact that the gambling industry is expanding rapidly, also thanks to new technologies.

As proof of this, when online gambling was taken into consideration, the prevalence of people who would be involved in problematic gambling results to be between 2.70 and 11.11% (Mora-Salgueiro et al., 2021).

When considering Gambling Disorder, evidence has shown that the past-year prevalence rate is about 0.2%-0.3% in the general population, while the lifetime prevalence rate is about 0.4%-1.0% (APA, 2022). However, statistical data demonstrate a highly variable range of gambling disorder prevalence worldwide, between 0.5% and 7.6%, probably due to differences in screening and diagnosis assessments, as well as different accessibility to gambling opportunities, in various geographical areas (Williams et al., 2012).

Although gambling is an activity generally prohibited for minors, the high popularity and diffusion of gambling among adolescents indicate that it is part of their life experiences and one of their favorite forms of entertainment in their spare time (Calado & Griffiths, 2016; Tran et al., 2024). Furthermore, the prevalence data paint an alarming picture, revealing an even higher prevalence than that found among adults. In this respect, a broad cross-sectional school-based study conducted in Germany, Greece, Iceland, the Netherlands, Poland, Romania, and Spain showed that 3.6% of all adolescents and 28.1% of adolescent gamblers are at risk or have a gambling problem (Andrie et al., 2019). Moreover, a systematic review conducted by Calado and colleagues (2017) identified 44 studies examining problem gambling in adolescent and showed that 0.20–12.30% of youth met the criteria for problem gambling. Again, the scenario worsens when online gambling is taken into account, so much so that a recent systematic review (Montiel et al., 2021) showed that between 0.77% and 57.5% of adolescents presented some degree of problematic online gambling behaviors, and between 0.89% and 1% of adolescents exhibited an online gambling disorder. Overall, the high prevalence of adolescent gamblers is a serious problem given the wide range of negative consequences associated with gambling during adolescence

(Heinz et al., 2019). Indeed, research has consistently shown that teenagers who gamble are at a higher risk of quickly transitioning from recreational to problem gambling (Granero et al., 2014; Volberg et al., 2010), engage in other forms of addictive behavior (Colasante et al., 2014; Walther et al., 2012) and are at increased risk of developing more serious gambling problems in adulthood (Carbonneau et al., 2015).

1.1.6 Consequences related to gambling behaviors

As already mentioned, the consequences of gambling can also occur in those who do not fully meet the diagnostic criteria of the main diagnostic manuals. However, it is more difficult to identify the specific consequences of subclinical gambling in these individuals (Heinz et al., 2019). In fact, some evidence suggests that while the majority of gambling-related harm is experienced by individuals diagnosed with Gambling Disorder, the cumulative burden of harm may be greater among those in the subthreshold group, as they often remain outside the focus of clinical intervention (Browne & Rockloff, 2018; Canale et al., 2016). Therefore, it is crucial to recognize gambling as a serious public health issue that must be addressed through both harm prevention and harm minimization strategies for individuals at all levels of the gambling risk spectrum.

In this regard, Langham and colleagues (2015) proposed a definition of gambling-related harm as “any initial or exacerbated adverse consequence due to an engagement with gambling that leads to a decrement to the health or wellbeing of an individual, family unit, community or population” (p. 4). Moreover, the authors identified and organized the health and well-being harms of gambling experienced by people who gamble, by affected others of people who gamble, and by communities, classifying them into seven domains. Briefly, these domains are:

1. Financial harm - Loss of money and assets due to gambling activities, leading to economic instability.
2. Emotional harm - Psychological distress such as anxiety, depression, and feelings of guilt related to gambling behaviors.
3. Relationship harm - Strain on personal and family relationships due to gambling activities, which can lead to conflict and breakdowns in communication.
4. Health harm - Physical and mental health issues arising from gambling behaviors, including substance abuse and poor overall well-being.
5. Cultural harm - The negative impact of gambling on cultural values and practices, particularly in indigenous communities.
6. Work and study harm - Impairment in occupational and academic performance due to gambling-related issues, affecting productivity and achievement.
7. Crime and community harm - Increased incidence of crime and disorder within communities linked to gambling, including fraud and violence.

Importantly, the authors identified a distinction based on the temporal experience of harms identified, distinguishing between those that occur at a specific time point during a gambling episode or period of disordered gambling (i.e., crisis harms), and those that persist or emerge even after a person has ceased engaging in gambling activities (i.e., legacy harms).

Finally, the authors proposed that gambling-related harms may have intergenerational consequences. However, being these domains more difficult to define, they were not included in the proposed classification but were mentioned to serve as a starting point for future research.

1.1.7 Theoretical Frameworks: Towards Integrated Models

In light of the spread of gambling worldwide (Tran et al., 2024) and the plethora of negative consequences of such behavior (Langham et al., 2015), it is not surprising that the literature over the years has focused on recognizing risk and protective factors related to the onset, maintenance, and severity of gambling behavior in order to delineate possible explanatory models. As previously mentioned, early attempts to conceptualize pathological gambling arise within the psychoanalytic framework. Despite the differences between the various interpretations that have been proposed, three key aspects of the psychoanalytic theory of gambling behaviors can be identified: first, gambling is viewed as an unconscious substitute for pregenital libidinal and aggressive outlets associated with Oedipal conflicts; second, it reflects a desire for punishment in reaction to the guilt; and third, it serves as a mechanism for recurrent reenactments, but not resolutions, of the conflict (Allcock, 1986). While this approach has diminished in prominence in contemporary research, it has provided foundational insights into the psychological aspects of gambling, particularly through its in-depth focus on the internal processes that can lead to problematic gambling (Raylu & Oei, 2002).

In contrast, behavioral learning theories present a different perspective, positing that gambling is sustained through reinforcement via classical and operant conditioning (Raylu & Oei, 2002). In particular, operant conditioning suggests that gambling behaviors are reinforced by intermittent rewards (i.e., occasional wins) which help keep individuals engaged. Complementing this, classical conditioning adds to this by explaining how environmental stimuli (such as the sights and sounds of a casino) can trigger gambling urges. This model illustrates how gambling behaviors can be learned as well as maintained through both positive and negative reinforcement (Skinner, 1953; Petry, 2005).

In parallel, cognitive theories further enrich this perspective by emphasizing the role of distorted thinking in gambling behaviors (Raylu & Oei, 2002). This includes cognitive biases such as the “illusion of control” (i.e., the belief that one can influence outcomes in games of chance) and the “gambler’s fallacy” (i.e., the belief that past events affect future probabilities) are central to this framework. Briefly, cognitive theorists argue that erroneous beliefs about luck and probability can lead individuals to persist in gambling despite experiencing mounting losses (Ladouceur & Walker, 1996).

As a continuation of these earlier models, cognitive-behavioral theories have emerged as one of the most widely accepted explanations for gambling addiction. This integrative framework combines cognitive and behavioral perspectives, suggesting that gambling results from a confluence of learned behaviors and cognitive distortions. In essence, these theories assert that gambling behavior is reinforced by external rewards (e.g., money and excitement) alongside internal cognitive biases (e.g., overestimating the likelihood of winning) (Raylu & Oei, 2002).

Although the models discussed above have some strengths and contribute to a greater understanding of gambling behaviors, a growing body of empirical evidence underscores the crucial role played by the interaction among biological, psychological, and social variables in the onset and maintenance of gambling behaviors (Heinz et al., 2019). From a biological perspective, genetic predisposition is increasingly recognized as a significant factor influencing an individual's vulnerability to gambling disorders (Kovan, 2024; Solé-Morata et al., 2022). Research has identified specific genetic markers associated with impulsive behavior and reward sensitivity, suggesting that individuals with certain genetic profiles could be more prone to engage in risky gambling behaviors (Gyollai et al., 2014). Moreover, neurobiological studies indicate that dysregulation of the brain's reward pathways can lead to heightened cravings for gambling, akin to substance dependence (Meng et al., 2014).

When it comes to psychological variables, traits such as impulsivity (Ioannidis et al., 2019), sensation-seeking (Dowling et al., 2017), and emotional regulation (Velotti et al., 2021) have been linked to problematic gambling behaviors. For instance, impulsivity can lead individuals to make hasty decisions without considering the consequences, while sensation-seeking may drive them to pursue the excitement associated with gambling, even in the face of potential losses (Heinz et al., 2019). Cognitive biases, such as the illusion of control and the gambler's fallacy, further exacerbate these psychological tendencies, compelling individuals to persist in gambling despite adverse outcomes (Ladouceur & Walker, 1996). Finally, social influences are equally important in understanding gambling behavior. Peer pressure can significantly impact an individual's gambling habits, especially among adolescents and young adults who may engage in gambling to fit in with friends or to seek social approval (Parrado-González et al., 2023). Additionally, cultural attitudes toward gambling can shape an individual's perception of gambling activities, normalizing risky behaviors in certain contexts while stigmatizing them in others (Raylu & Oei, 2004).

Together, these biological, psychological, and social factors interact in complex ways, creating a multifaceted landscape where gambling behaviors emerge and persist (Heinz et al., 2019). Consequently, the need for a deeper understanding of this interaction has led to the emergence of comprehensive and integrated models that adopt a biopsychosocial perspective.

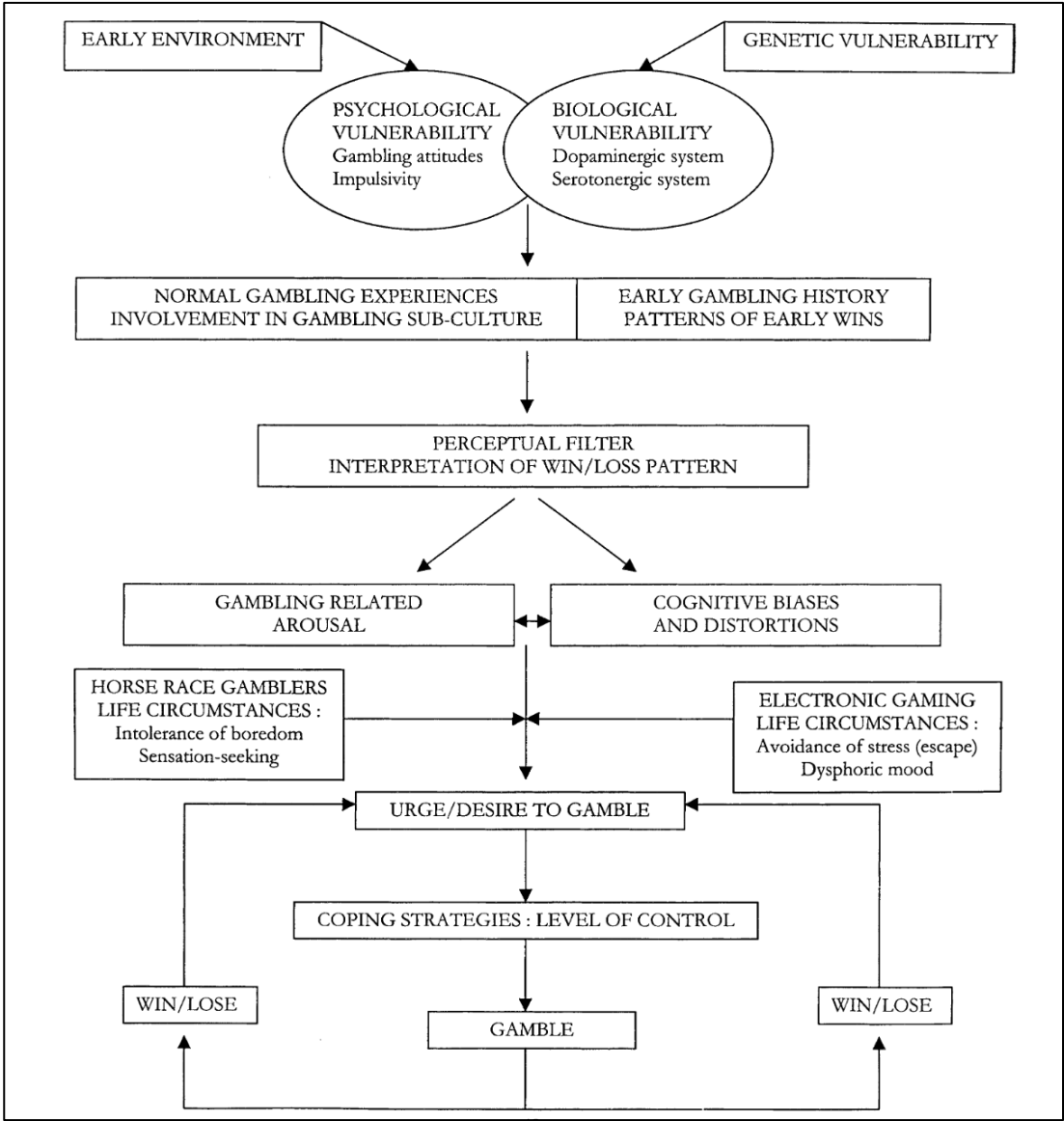
1.1.7.1 The Biopsychosocial Model of Sharpe

Sharpe's Biopsychosocial Model (2002) offers the first comprehensive theoretical framework for understanding gambling behaviors by incorporating biological, psychological, and social factors. This integrative model (see Figure 1.1) moves beyond unidimensional explanations of gambling, positing that the interplay of genetic

predispositions, cognitive-emotional states, and social contexts is crucial in both the onset and progression of problematic gambling.

Figure 1.1

The Biopsychosocial Model of Sharpe



Note. Reprinted from *Clinical Psychology Review*, Vol. 22, Issue 1, L. Sharpe, *A reformulated cognitive-behavioral model of problem gambling: A biopsychosocial perspective*, p. 19, Copyright (2002), with permission from Elsevier.

At the biological level, the model highlights how neurobiological vulnerabilities (e.g., dopamine and serotonin systems dysfunctions) may increase sensitivity to gambling rewards, reinforcing the desire to gamble. Also, psychological factors (particularly impulsivity) play a significant role in this model. Accessibility to gambling venues, societal attitudes toward gambling, and peer influences are all seen as contributing to the reinforcement of gambling behaviors.

Furthermore, according to this model, the different experiences related to gambling can operate at two levels. At the first level, initial gambling experiences can contribute to the development of irrational beliefs (e.g., gambler's fallacy) that drive individuals to continue gambling both during and between gaming sessions. These distortions cause individuals to expect more positive outcomes (e.g., wins) and to overestimate their chances of success in the short and long term. Over time, these cognitive biases may become deeply ingrained, reinforcing a mindset that sustains continued gambling, even when the actual probability of success is low. On a second level, these experiences result in being important for establishing patterns of behavior (e.g., wins may become associated with an excited or heightened arousal state and similarly losing or nearly winning may become associated with similar patterns). Once these behavioral patterns have developed and become automatic, individuals may be at high risk of their gambling behavior spiraling out of control. This creates a vicious cycle where, as the frequency of gambling increases, these patterns become more automatic and require less conscious effort.

Overall, Sharpe's model is particularly valuable because it not only explains why individuals engage in gambling but also provides a framework for understanding its progression into a disorder.

1.1.7.2 The Components Model of Griffiths

Another prominent model for the conceptualization of behavioral addictions – and therefore of gambling – is the six-component model proposed by Griffiths (2005, 2019) developed from the pioneering work of Brown (1993) on the common psychological components of addictions. Initially developed to describe a broad range of behavioral addictions, this model is often applied to gambling because it captures the core psychological mechanisms that underpin disordered gambling behavior. Unlike models which focus on external factors, Griffiths' framework emphasizes the internal experiences that define addiction, drawing from the parallels between substance-related addictions and behavioral addictions like gambling. In this model, a behavior to be considered “addictive” must significantly impact a person's daily life and exhibit several characteristic symptoms typically associated with substance addiction. Briefly, the six core components of this model are:

1. **Salience.** Gambling becomes the most important activity in a person's life. It dominates thoughts, feelings, and actions, leading to preoccupation and constant planning of the next gambling session.
2. **Mood Modification (“euphoria” in the Brown's model).** This refers to the subjective experience that people report as a consequence of engaging in gambling (i.e., exciting “buzz”, a sense of “high”, or feelings of “escape” or “numbness” that can be either sedative or distressing). Therefore, gambling is used as a means to achieve this state (i.e., to alter mood). Specifically, gamblers may engage in gambling to escape from negative emotions such as stress, anxiety, or sadness or, conversely, to heighten positive emotions like excitement. Over time, gambling becomes a coping mechanism for managing emotional distress.

3. **Tolerance.** Over time, the gambler needs to increase the intensity or frequency of gambling to achieve the same emotional or psychological effects that were previously attained with lesser engagement. Similar to substance tolerance, the individual becomes desensitized to the initial excitement, requiring greater risks or longer gambling sessions to experience the same thrill or mood alteration.
4. **Withdrawal Symptoms.** Just as with substance addiction, individuals experience psychological withdrawal-like symptoms when they are unable to gamble. These symptoms can include irritability, anxiety, restlessness, and mood swings. The intensity of these feelings can drive the person back to gambling to alleviate the discomfort.
5. **Conflict.** Gambling creates conflicts on two levels: interpersonal and intrapersonal. Interpersonally, gambling can damage relationships with family, friends, and colleagues, leading to social isolation. At the intrapersonal level, it creates internal conflicts, often manifesting as guilt, shame, or self-reproach due to the recognition of the harmful effects of gambling. Additionally, gambling may interfere with work, studies, and other personal responsibilities, exacerbating these conflicts.
6. **Relapse.** After attempts to reduce or quit gambling, individuals often find themselves returning to the behavior, despite being aware of its negative consequences. This component highlights the cyclical nature of addictive behaviors, where the compulsion to gamble resurfaces, leading to repeated patterns of problematic behavior.

Griffiths' Six-Component Model offers a comprehensive explanation of how gambling behavior can evolve from recreational to pathological, detailing the psychological and emotional processes involved. By mirroring the core characteristics of substance

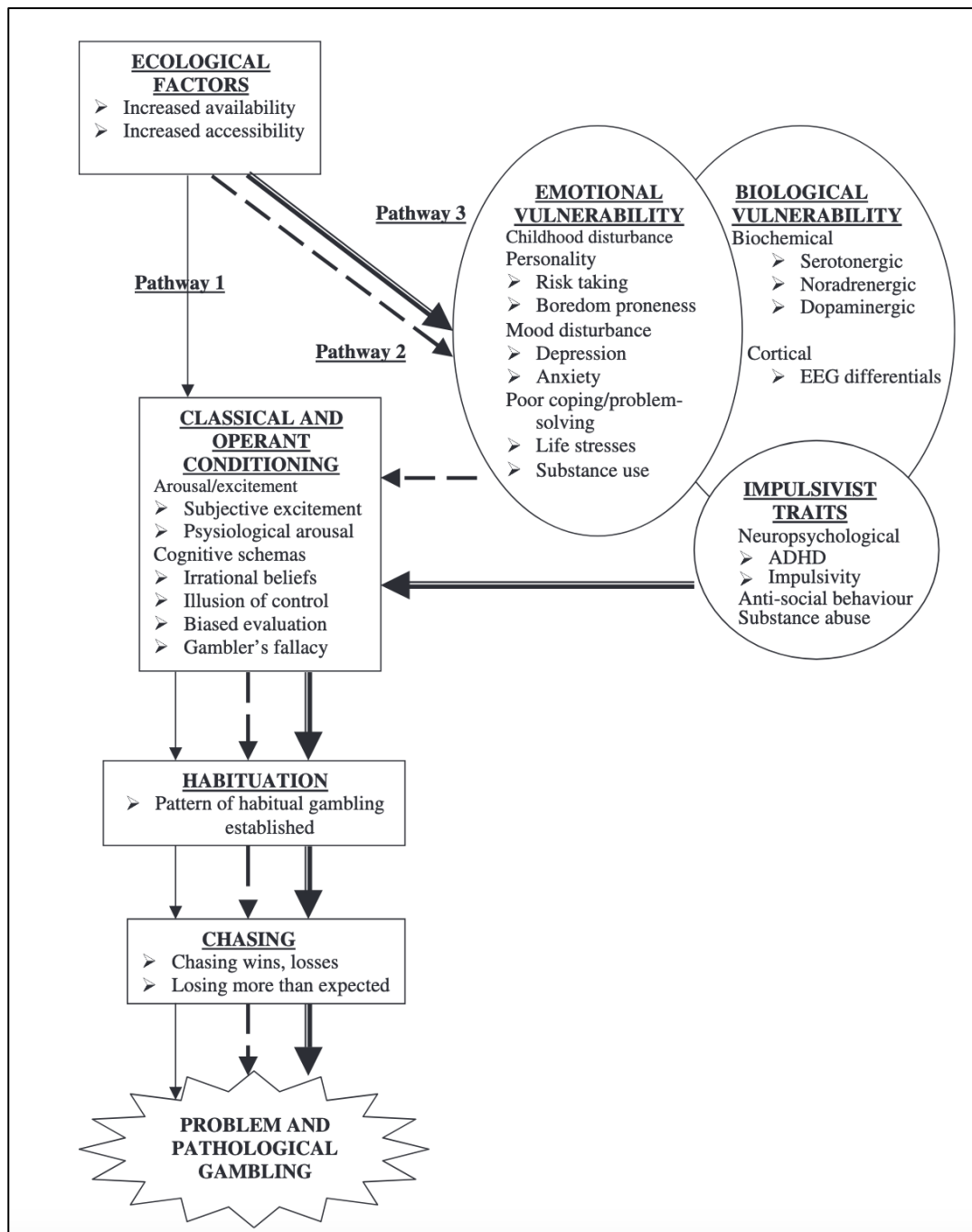
addiction, the model reinforces the perspective that gambling disorder operates similarly to other addictions. Specifically, this model provides an explanatory pathway that moves from occasional or social gambling to more harmful, compulsive behaviors, explaining how various psychological mechanisms (such as mood modification or withdrawal symptoms) contribute to the escalation of gambling problems.

1.1.7.3 The (Revised) Pathways Model of Blaszczynski and Nower

The Pathways Model proposed by Blaszczynski and Nower (2002) and its subsequent revision (Nower et al., 2022) is one of the most comprehensive and influential frameworks for understanding the etiology and development of problem gambling. This model adopts a multifactorial approach that highlights how gambling disorder is far from a homogenous phenomenon; rather, it arises from distinct pathways that contribute to diverse expressions of disordered gambling behavior. This model stems from the idea that, rather than trying to force a single explanatory approach on all disordered gamblers, it seems more appropriate to recognize the existence of specific subtypes. Indeed, clinical experience has long shown that although symptoms of depression, substance use, impulsivity, and antisocial behaviors typically characterize most disordered gamblers, the role and implications of these variables in the etiology and treatment vary widely on a case-by-case basis. Thus, by identifying and categorizing these distinct pathways to problem gambling (see Figure 1.2), the model provides a richer insight into the variability observed among individuals with gambling disorders.

Figure 1.2

The Pathways Model of Blaszczynski and Nower



Note. Reprinted from *Addiction*, Vol. 97, Issue 5, A. Blaszczynski, & L. Nower, *A pathways model of problem and pathological gambling*, p. 496, Copyright (2002), with permission from John Wiley and Sons.

The authors hypothesize three main pathways leading to the development of three distinct subgroups of gamblers: Behaviorally Conditioned Problem Gamblers, Emotionally Vulnerable Problem Gamblers, and Antisocial-Impulsive Problem Gamblers. All the pathways share some processes, characteristics, and symptoms but are distinguishable by empirically testable factors. The first is represented by environmental factors (e.g., availability and accessibility to gambling), which are well-known variables associated with problem gambling (St-Pierre et al., 2014). Moreover, in the revised model (Nower et al., 2022), the emphasis on media influence and targeted marketing becomes more prominent as environmental factors, which may alter gambling behavior beyond traditional reinforcers like intermittent rewards (Rossi & Nairn, 2022). The second element that typically involves all gamblers is the influence of classical and operant conditioning that drives gamblers to continue gambling, the development of habitual gambling patterns, and irrational beliefs about personal skills and odds of winning (Armstrong et al., 2020; Goodie & Fortune, 2013).

Pathway one (i.e., Behaviorally Conditioned Problem Gamblers) represents the least complex and most common category, encompassing gamblers who meet the criteria for Gambling Disorder but lack specific premorbid psychopathological features. In essence, these gamblers oscillate between regular and excessive gambling due to the effects of conditioning and distorted cognitions and biases rather than due to impaired control.

The second pathway (Emotionally Vulnerable Problem Gamblers) includes individuals with psychological vulnerabilities such as depression, anxiety, or trauma histories. For these individuals, gambling serves as an emotional crutch or a way to escape negative emotional states. This idea aligns with the concept of negative reinforcement, where individuals gamble to relieve psychological distress or improve mood (Baker et al., 2004). Emotional vulnerabilities can amplify cognitive distortions and lead to excessive gambling as a maladaptive coping mechanism. The revision of the model (Nower et al., 2022)

introduced a deeper exploration of the relationship between emotion regulation deficits and gambling behavior, and this group is now seen as more directly tied to co-occurring disorders such as post-traumatic stress disorder (PTSD), depression, and anxiety. These conditions may exacerbate gambling behavior, especially when individuals use gambling as a way to cope with trauma or emotional distress.

The third subgroup of pathological gamblers (i.e., Antisocial Impulsivist Problem Gamblers) includes individuals with significant psychosocial dysfunction as a result of their gambling behavior. This group is characterized by signs of neurological and neurochemical imbalances, along with deficits in executive functioning. Therefore, like the gamblers in pathway 2, this subgroup experiences both psychosocial and biological vulnerabilities. However, they are further distinguished by pronounced traits of impulsivity, antisocial personality disorder, or attention-deficit traits. These issues contribute to maladaptive behaviors and impulsivity that compromise multiple aspects of their lives. The revised model (Blaszczynski et al., 2021) emphasizes that, unlike pathway 2 gamblers, those in pathway 3 report lower levels of depression and anxiety both before and after the onset of their gambling problems, and they exhibit a lower prevalence of childhood trauma. While individuals in both pathways may turn to gambling as a coping mechanism for stress, those in pathway 3 tend to gamble in search of meaning and purpose or due to heightened impulsivity, antisocial traits, and risk-seeking behaviors.

In summary, the Pathways Model offers a more detailed and comprehensive framework that is grounded in empirical evidence and research. This model significantly enhances our understanding of the complex nature of gambling behavior, especially when considering the context of contemporary gambling environments. Additionally, it incorporates the latest findings from neurobiological research, which further elucidates the underlying mechanisms of gambling disorders.

1.2 Dissociation

Formulating a precise and all-encompassing definition of dissociation proves difficult due to the term's inherent semantic flexibility. According to the DSM-5 (APA, 2013), the construct of dissociation refers to the “disruption of and/or discontinuity in the normal integration of consciousness, memory, identity, emotion, perception, body representation, motor control, and behavior” (APA, 2013, p. 291). However, the term “dissociation” is used to describe both a clinical diagnostic category and a broader psychological mechanism. This dual usage increases the risk of ambiguity, as different contexts and interpretations can result in varied meanings, potentially leading to confusion in conceptual understanding (Ciulla & Caretti, 2012). According to Van der Hart and colleagues (2005), dissociation encompasses disturbances in the integration of consciousness, perception, memory, and identity, and these disruptions can manifest across a spectrum, ranging from everyday occurrences – such as daydreaming or losing track of time – to more severe and pathological forms seen in conditions like dissociative identity disorder or post-traumatic stress disorder.

1.2.1 Historical perspective on the concept of dissociation

Historically, Pierre Janet (1894, 1898), in his studies on trauma and hysteria, was the first author to shed light systematically on the role of dissociative defense mechanisms in response to trauma, and the term dissociation was to be understood as opposed to association (Van der Hart & Horst, 1989). Specifically, Janet linked the origins of dissociation to a state or mental condition that he called “psychological misery”, or “mental depression”, in terms of a lowered integrative capacity (“malady of personal synthesis”) in the face of highly threatening events (Janet, 1905, 1909). According to the author, this integrative compromise manifested itself in (a) a retraction or narrowing of the field of personal consciousness, and

(b) a tendency toward the dissociation and emancipation of systems of ideas and functions that constitute personality. In lowering this integrative capacity, Janet observed that trauma-related "vehement emotions" as substitutes for adaptive integrative action are dominant (Van der Hart & Horst, 1989).

In the same period, the theme of dissociation was also addressed by Sigmund Freud, who, particularly in his early work with Josef Breuer on "Studies on Hysteria" (1895), considered it a key mechanism in the manifestation of hysterical symptoms. Freud's view was initially aligned with that of Pierre Janet, suggesting that traumatic experiences could lead to a split in consciousness, resulting in dissociative states. However, Freud soon moved away from the dissociative model and instead emphasized the role of repression (Giustino, 2016). Freud, from the observations of hysterical patients, arrived at the theory of defense and repression, while Breuer continued to hypothesize the existence, in addition to the presence of the transversal split between conscious and unconscious, of vertical dissociation as a mechanism between conscious and unconscious states. Freud supported the existence of a clear gap between conscious and unconscious, and proposed the existence of a barrier whose purpose was to safeguard consciousness from unconscious contents, which, being similar to dream thought, expressed a more primitive mental functioning. Breuer instead proposed that the traumatic experience was kept alive not so much by its stationing in the unconscious but rather by a state of self-hypnosis which, by clouding the perceptive powers, prevented a full relationship with reality and took away from the subject the most effective means to counteract the ideas responsible for the conversion. Because Freud's approach prevailed over Breuer's, hysteria became known as the disease of repression rather than of dissociation.

Later, the concept of dissociation was taken up by Sándor Ferenczi (1932), who made a huge contribution to trauma theory. Unlike Freud, who shifted his focus from trauma to

repression and unconscious fantasies, Ferenczi was firmly convinced that his patients' accounts of abuse and abandonment were real. He argued that trauma is born from a "confusion of languages" between adults and children: while children express vulnerability and need for care, adults can respond with abusive or contemptuous actions. According to Ferenczi, this disconnection damages the emotional and interpersonal development of the child, forcing him to dissociate parts of his experience to face the overwhelming reality. Dissociation, in this framework, is a relational defense, a way for children to separate emotions and painful memories when the caregiver, who should provide security, becomes instead a source of harm. As these children become adults, they may continue to use dissociative mechanisms, leading to emotional numbness and difficulties integrating traumatic memories. For Ferenczi, dissociation is deeply linked to trauma, emphasizing its role as a survival mechanism in response to relational failure, a perspective that contrasts with Freud's attention to internal psychic conflict.

Subsequently, Kleinian psychoanalysis, with the exploration of narcissistic pathologies and borderline disorders, brought to light the term "split", which is closely linked to the mechanism of projective identification and the horizontal splitting (similar to dissociation) of parts of the ego and the object (divided into good and bad) (Spillius, 1988). The term dissociation returns with Otto Kernberg (1984), who spoke of ego states that are dissociated from each other and that are organized around affective polarities (which are in a conflictual position with each other).

More recently, Daniel Stern (1997) has emphasized that dissociation functions as an active defensive process that constrains an individual's freedom of thought by inhibiting access to certain memories and formulations. This limitation prevents pre-reflective experiences from attaining a fully reflective and conscious understanding, thereby blocking the individual's ability to engage with their experiences on a deeper level. In this context, dissociation

manifests as an inability to reflect on one's experiences and a refusal to allow those experiences to be articulated in language or brought into full awareness. Stern introduces the concept of “unformulated experience”, referring to those feelings or memories that remain unexpressed and are therefore unintegrated into the individual’s narrative. This notion underscores the significance of language in shaping our understanding of experiences and highlights how dissociation can lead to fragmentation of the self, where crucial aspects of identity and emotional experience remain inaccessible.

1.2.2 The many faces of dissociation

Over the years, the construct of dissociation has garnered increasing attention from clinicians and researchers, but over time the structural element has been progressively obscured; in its place, the use of the term “dissociative responses” has become more prevalent (Van der Hart et al., 2005). The plurality of visions has meant that there is still no clear consensus in the field regarding the nature of dissociation and its components, determinants, and psychological correlates (Allcock et al., 2006).

Indeed, dissociation has been conceptualized in various ways, including as a stable personality trait or disposition (e.g., dissociative tendencies; Kwapil et al., 2002), a temporary state triggered by stress (Noyes & Kletti, 1977), a lasting consequence of trauma (Warshaw et al., 1993), an involuntary avoidance strategy that shields consciousness from traumatic memories (Spiegel et al., 1988), a maladaptive coping mechanism in response to stress and shame (Irwin, 1998), the primary disturbance in specific dissociative disorders such as Depersonalization Disorder (Simeon et al., 1997), and/or a correlate of various psychiatric disorders including borderline personality disorder, somatic symptom disorder, feeding and eating disorders, and substance-related and addictive disorders (Lyssenko et al., 2018).

In an attempt to clarify this nuanced nature, some authors have suggested conceptualizing dissociative experiences as existing on a continuum (Allcock et al., 2006). This continuum ranges from relatively benign and common phenomena, such as losing track of time or experiencing “highway hypnosis” (an altered mental state in which a driver can drive long distances and respond adequately to external events with no recollection of consciously having done so) to more pathological dissociative experiences (e.g., loss of identity) (Putnam et al., 1996; Ross et al., 1991). Therefore, the continuum model of dissociation suggests that dissociative disorders are not defined by a specific symptom or set of symptoms that distinctly separates “normal” from “abnormal” experiences. Rather, it is the variation in frequency, extent, and intensity of dissociative symptoms, along with the level of distress and functional impairment associated, that results in a diagnosis of a dissociative disorder (Kihlstrom et al., 1994). In other words, dissociative characteristics that are typically regarded as more severe, such as depersonalization, can also be understood as common experiences that exist on a continuum from normal to pathological. Similarly, less severe dissociative experiences may also fall within the realm of pathology if they are experienced in an intense and pervasive manner. An example of the latter circumstance is Maladaptive Daydreaming, a condition that may be viewed as a disordered form of dissociative absorption (Soffer-Dudek & Somer, 2022). Maladaptive daydreaming can be conceptualized as excessive engagement in immersive daydreaming characterized by excessively absorbing fantasy experiences that become a focus of consciousness at the expense of duties, activities, and relationships in the physical world (Somer, 2018). Indeed, while the tendency to focus on internal or external stimuli and momentarily disregard the external world by entering an altered state of consciousness (i.e., dissociative absorption) is considered a normal experience, the intense and pervasive immersion in inner fantasies can be seen as a pathological version of these experiences (Soffer-Dudek & Somer, 2022).

Alongside this perspective, other authors suggest the presence of two conceptually distinct types of dissociation, adopting a categorical approach (Allcock et al., 2006). One type consists of “non-pathological” experiences, such as psychological absorption (Tellegen & Atkinson, 1974), and the other type involves seemingly “pathological” experiences, such as depersonalization and derealization (Waller et al., 1996). In this regard, Waller and colleagues (1996) have proposed a typological model of dissociation through taxometric analysis and have identified two different typologies of dissociative phenomena: a pathological class-like and a non-pathological trait-like type of dissociation. The former is a trauma-related type of dissociation and is more likely to occur within a pathological spectrum. This type typically involves a greater frequency, intensity, and variety of dissociative experiences (i.e., amnesia and identity fragmentation). In contrast, the non-pathological and dispositional type of dissociation (e.g., fantasy proneness and imaginative involvement) would constitute a continuum, and has a normal distribution within the general population.

The theoretical debate between dimensional models (i.e., dissociation as a continuum) and categorical models (i.e., taxonomic) is still ongoing and has been enriched over time by further criticisms and proposals. Rather than viewing these models as mutually exclusive, many scholars argue for an integrative approach (Goldberg & Goodyer, 2014). For instance, different facets of dissociation may align better with one model or the other, depending on the context. The dimensional model might provide better insight for everyday and normative dissociative experiences, while more severe and clinically relevant forms of dissociation may necessitate a categorical view for practical diagnosis and treatment. Therefore, the coexistence of these paradigms is not only inevitable but also beneficial for a more comprehensive understanding of dissociation.

1.3 Dissociation in gambling behaviors and Gambling Disorder

As emphasized throughout this dissertation, the widespread prevalence of gambling, along with its significant individual, relational, and economic impacts, has escalated to such an extent that gambling now constitutes a critical and increasingly alarming public health issue (Heinz et al., 2019). Among the numerous psychological variables that may contribute to the onset and persistence of gambling behaviors (Dowling et al., 2017), dissociation stands out as a critical factor warranting focused attention in both theoretical and empirical research, as well as clinical practice (Rogier et al., 2021). This association is not surprising since dissociation has been linked to countless forms of psychopathology (Lyssenko et al., 2018), including addictive behaviors, such as alcohol use disorder (Noël et al., 2018), and Internet Gaming Disorder (Guglielmucci et al., 2019).

Moreover, despite most authors referring to the term dissociation in the context of gambling, its complex and multifaceted nature becomes evident in this field as well, while others use alternative terms (Rogier et al., 2021). Indeed, in the literature there are several nomenclatures that imply dissociation in reference to gambling, such as “(dark) flow” (Dixon et al., 2019; Murch et al., 2017), “altered state of awareness” (McKeith et al., 2017), “immersion” (Murch et al., 2017; Murch & Clark, 2019), “altered state of consciousness” (Tricker et al., 2016), and “the zone” (Murch et al., 2017; Oakes et al., 2018). However, all these different terms, each with its specificities, fall under the umbrella of dissociative experiences.

The relationship between dissociation and gambling becomes increasingly evident when considering that gambling frequently serves as a calming and anesthetizing mechanism, offering individuals a means of escape or distraction from their life challenges (Heinz et al., 2019). Not surprisingly, the mood-modification effects of gambling (e.g., providing a thrill or an opportunity to escape) are well-known motivations for harmful

participation that are explained by classic psychological theories of positive and negative reinforcement. In addition, these motivations are central components in several explanatory models that have been developed over time to understand problematic gambling behaviors. For instance, according to the six-component model of Griffiths (2005, 2019), people can engage in gambling to escape negative emotions (i.e., mood modification). Similarly, the Pathway Model (Blaszczynski & Nower, 2002; Nower et al., 2022) posits that certain gamblers, particularly those classified as emotionally vulnerable problem gamblers, utilize gambling as a mechanism for emotional relief.

In other words, various theories of gambling behavior include the idea of escape from unhappiness or the unpleasant present as a secondary gain of involvement in gambling (Anderson & Brown, 1984). This escape may occur through dissociative-like states, where an individual's attention becomes narrowly focused on the gambling experience, effectively shutting out everything else. This perspective aligns with broader etiological theories of addiction, which recognize dissociation as a key factor in the development and maintenance of addictive behaviors (Gori et al., 2023; Somer et al., 2010). Supporting this perspective are the numerous empirical evidence that highlight how people frequently show a co-occurrence of addictive behaviors (Barnes et al., 2015; Müller et al., 2022; Walther et al., 2012), giving rise to the idea that there is a common psychological substrate. An often-cited theoretical contribution regarding this topic is provided by the General Theory of Addiction (Jacobs, 1986, 1988) which used gambling as a prototype. In this theoretical framework, addiction can be understood as a dependent state that develops over time in predisposed individuals as an attempt to alleviate chronic stress. From this perspective, addictive behaviors can be conceptualized as a form of self-medication (Khantzian, 2003). According to Jacobs (1986, 1988), the presence of two interrelated sets of coexisting predisposing factors determines who is at risk of developing and maintaining an addictive pattern of behavior: one of a

physiological nature and the other psychological. In particular, the first of these two predisposing factors is the presence of a unipolar physiological resting state that is chronically and excessively either depressed (i.e., hypoarousal) or excited (i.e., hyperarousal). This persistent state of hypo- or hyper-arousal is believed to predispose individuals to a narrow range of stress-reducing, but potentially addictive, substances or experiences such as gambling (Baudinet & Blaszczynski, 2013). People with these arousal extremes may be classified as “enhancers”, who are characterized by a resting arousal state of under-mobilization (i.e., low arousal), or “reducers”, distinguished by a resting state of over-mobilization (i.e., high arousal). Both of these extreme arousal states are considered aversive and individuals in either group would attempt to discover and engage in activities that alleviate their discomfort. However, it is important to note that not all “reducers” and “enhancers” are at risk of developing addictions because the subjective perception of an individual regarding an arousal state that can be defined as adverse is also important. Moreover, in addition to the persistence of what is subjectively perceived as an aversive arousal state, the presence of predisposing factors of a psychological nature is necessary for the development of an addiction. In particular, the psychological substrate underlying addictions is a childhood and adolescence characterized by feelings of inferiority, inadequacy, and rejection arising from early relationships with parents, peers, and significant others. In the field of gambling, this perspective is supported by a recent systematic review (Ghinassi & Casale, 2022), which has highlighted how gambling behaviors and gambling disorder are closely associated with a low quality of relationship with parents and peers, as well as the presence of an insecure attachment. According to Jacobs (1988), the presence of such feelings can lead to three different types of reactions: (i) increasing adaptive efforts to gain social acceptance, (ii) reacting with angry and aggressive acting-out behaviors, or (iii) pretending not to care and/or conceptually abandoning the offensive field by escaping into

wish-fulfillment fantasies of being loved and admired. It is this last response that would lay the groundwork for the development of addictive behaviors. Therefore, according to Jacobs (1988), individuals with chronically abnormal arousal states who respond to feelings of inferiority or rejection by fleeing into denial and compensatory fantasy are particularly vulnerable to developing addictive behaviors. Indeed, one of the essential reinforcements in these behaviors is the ability to temporarily escape from distressing realities and indulge in fantasies as a means of wish fulfillment for love and acceptance. These fantasy states appear to be a mode of evasion that seems to be dissociative in nature. Indeed, related theoretical insights regarding the relationship between gambling and dissociation come from recent theories that consider deficits in emotion regulation as its core feature (Velotti et al., 2021). In this scenario, dissociative states during gambling are seen as conditioned responses to stress aimed at circumventing negative emotional states that, in contrast with functional emotion regulation strategies, interfere with the normal processing of emotional information.

In support of this theory, Rogier and colleagues (2021) recently conducted a systematic review and meta-analysis on the association between gambling and dissociative features and found a significant, positive, and moderate effect size ($r = .37$) linking the two phenomena. The quality of studies, age, and gender of participants nor measures used did not moderate this effect. It is also important to consider that the link between dissociation and gambling has been found in both the general and the clinical population (Gori & Topino, 2024; Rogier et al., 2022; Topino et al., 2023). The existence of dissociative experiences among gamblers is also documented with qualitative contributions. For example, in a study aimed at capturing the state of mind described by electronic gaming machine (EGM) problem gamblers, a participant reported that “I don’t know whether it’s a drug that when you sit in front of a machine and you might be depressed or anxious, there’s nothing else worrying you and you’re just totally fixated on the screen...It’s like you’re in another world,

you're just sitting in front of a screen being virtually hypnotized" (Oakes et al., 2020, p. 84). Similarly, other qualitative contributions have well captured the subjective experience of these states among gamblers such as feeling "mentally detached, [where] space and time do not exist" (Rogier et al., 2020) or wanting to "slip in a bubble bath" (Schüll, 2012).

1.4 Goals of the current dissertation

As discussed in the course of the introduction of the present dissertation, gambling is a pervasive phenomenon with a wide array of adverse consequences (Heinz et al., 2019) that are intrinsically linked to dissociative experiences (Rogier et al., 2021). However, dissociation is a complex and multifaceted phenomenon (see subsection 1.2.2), and it is this nature that could explain the presence of some conflicting data in the literature on the investigation of dissociative experiences in gambling behaviors and gambling disorder which we will discuss in the next chapter. Currently, several measures are used to assess dissociation, and while their definitions may overlap, each focuses on slightly different aspects of dissociative experiences (Schluter & Hodgins, 2019). Among these, the *Dissociative Experiences Scale* (DES) in its various forms (Bernstein et al., 1986; Carlson & Putnam, 1993) is the most frequently used in gambling research. The DES includes a set of items aimed at exploring a series of dissociative experiences that may occur in everyday life, which can be classified into the following categories: amnesic dissociation, depersonalization, derealization, absorption, and imaginative involvement – the latter two more specifically endorsed in non-clinical populations (Carlson, 2005). However, it is possible to assume that more specific dissociative experiences, such as those gambling-related, while existing within the broader continuum of dissociation, may be more directly linked to gambling behaviors (Rogier et al., 2021). Despite this theoretical speculation, there is currently no instrument available in the Italian context specifically designed to assess

gambling-related dissociation. Therefore, the first aim of the present dissertation was to adapt and validate the *Jacobs' Dissociative Experience Questions* (JDEQ; Jacobs, 1988) for the Italian context, ensuring its psychometric soundness. This instrument was developed by Jacobs in accordance with his General Theory of Addiction (Jacobs, 1986, 1988) and is specifically designed to measure gambling-related dissociation.

Moreover, the nature of the existing relationship between dissociation and gambling remains unclear, as all studies conducted to date have been cross-sectional in design. Consequently, it is not possible to determine whether a tendency toward dissociation contributes to the onset of gambling behaviors or vice versa, or whether the existing link is of a bidirectional nature (Rogier et al., 2021). Indeed, while existing literature and theories (i.e., the General Theory of Addiction) suggest that dissociation may significantly influence the onset and maintenance of gambling behaviors, it is also plausible that gambling can, over time, heighten dissociative experiences due to its escapist and mood-modifying effects. Therefore, the second aim of this dissertation was to address this 'chicken-or-egg' dilemma by implementing a two-way longitudinal study.

In conclusion, by combining measure validation with empirical research, this dissertation seeks to enhance understanding within the research strand concerning gambling behavior and its relationship with dissociation.

Chapter 2

Study 1 - The Italian adaptation of the Jacobs' Dissociative

Experience Questions

2.1 Introduction

As highlighted in the introduction of this dissertation, several theories advanced over the years have proposed that gambling behavior can be conceptualized as a form of escape. Notably, the six-component model proposed by Griffiths (2005, 2019) and the Pathway Model (Blaszczynski & Nower, 2002; Nower et al., 2022) offer significant insights into this phenomenon. Indeed, both models suggest that gamblers (or at least a subset of them) may engage in gambling as a way to escape negative emotions, using it as a mechanism for emotional relief. Moreover, research indicates that escape-related gambling can manifest in two distinct forms: one in which individuals seek refuge from pre-existing problems and chronic negative emotions, and another where gambling itself entails problems and emotional distress, from which individuals then attempt to escape (Dixon et al., 2019; Neophytou et al., 2023; Turner et al., 2006). Furthermore, there is a general consensus in the literature that such escape may be the result of dissociative experiences (Rogier et al., 2021), a narrowing of the focus of attention on gambling activity to the exclusion of everything else (Anderson & Brown, 1984), providing an "unthinking escape" from negative emotions (Dickerson, 1993).

In this regard, Jacobs (1986, 1988) proposed the General Theory of Addiction (see Chapter 1, paragraph 1.3), using the pathological gambler as the prototype of his theorization. In this theoretical framework, addiction was defined as a dependent state acquired over time to relieve chronic stress and conceptualized as a form of self-treatment.

Briefly summarizing, the General Theory of Addiction (Jacobs, 1986, 1988) assumes that individuals tend to develop a behavioral pattern of dependence in the presence of two coexisting and interacting predisposing factors in a conducive environment: (i) a state of unipolar physiological rest chronically and excessively depressed (i.e., hypoarousal) or excited (i.e., hyperarousal); and (ii) a psychological state characterized by feelings of inferiority, inadequacy, and rejection, arising from early relationships with parents, peers, and significant others. In particular, individuals with a chronically abnormal arousal state who also tend to cope with these feelings of inferiority and rejection by retreating into denial and compensatory fantasies are at the highest risk of developing addictive behaviors. Moreover, these individuals are particularly vulnerable during adolescence (Jacobs, 1988), a crucial transition period characterized by the presence of significant stressful changes at the physical, cognitive, emotional, and social levels (Erikson, 1968). In other words, according to Jacobs (1988), indulging in rewarding repetitive behaviors such as gambling provides the individual with a chance to escape from a physiological and/or psychological suffering, a mode of evasion of dissociative in nature. In his pioneering work, Jacobs (1988) sought to test the existence of this addiction-related dissociative state collecting data from groups of compulsive overeaters, alcoholics, and compulsive gamblers, and compared with responses from normative samples of adolescents and adults. To achieve this, he operationally defined the dissociative state based on the presence of one or more of four dissociative experiences occurring during or immediately after a period of indulgence. Thus, he developed a set of questions, known as the *Jacobs' Dissociative Experience Questions* (JDEQ; Jacobs, 1988), in which individuals were asked to report whether, during indulgence, they experienced: (i) a blurring of reality testing (as if in a trance), (ii) a shift in persona (assuming another identity), (iii) an out-of-body experience (observing themselves from the outside), or (iv) amnesic or fugue-like states (memory blackouts during indulgence).

Findings revealed that all three “addict” groups scored higher on addictive-related dissociative experiences than the normative samples, with gamblers reporting experiencing three aspects of dissociation (i.e., trance, altered identity, and out-of-body experiences) more frequently than alcoholics and compulsive overeaters.

Following this preliminary evidence, a wide range of empirical evidence has revealed the presence of a strong relationship between gambling and dissociation (see Rogier et al., 2021 for a review and meta-analysis), giving support to the General Theory of Addiction (Jacobs, 1986, 1988). However, dissociation is a complex and multifaceted phenomenon, and it is this nature that could explain the existence of conflicting results in its relationship with gambling (Rogier et al., 2021). Indeed, several studies have investigated general dissociative tendencies, usually assessed by the *Dissociative Experiences Scale* (Bernstein et al., 1986; Carlson & Putnam, 1993) (e.g., Gori & Topino, 2024; Rogier et al., 2022; Topino et al., 2023), while other studies have focused specifically on levels of dissociation during gambling, as measured by the *Jacobs’ Dissociative Experience Questions* (JDEQ; Jacobs, 1988) (Gee et al., 2005; Harris et al., 2021; Kuley & Jacobs, 1988; Wood et al., 2004). Therefore, greater clarity on the association between gambling and dissociation can be obtained from studies that have considered different facets of the latter, using simultaneously different measures. For instance, Diskin and Hodgins (2001) conducted a comparison between problem gamblers and occasional gamblers using both the *Dissociative Experiences Scale* (DES) and the *Jacobs’ Dissociative Experience Questions* (JDEQ). Their findings revealed no significant differences in DES scores between the two groups. However, notable differences were observed in JDEQ scores, with problem gamblers reporting higher levels of gambling-related dissociative experiences than occasional gamblers.

Based on this evidence, it is possible to assume that within the broader spectrum of dissociative experiences, those specifically associated with gambling could provide an elective perspective through which to examine the underlying processes of addiction related to gambling. Despite this interesting suggestion, the Italian version of the *Jacobs' Dissociative Experience Questions* (JDEQ) is unavailable, and its psychometric qualities in the Italian context are unknown. This is curious even considering the wide use of JDEQ on the international scene. Therefore, the main purpose of this study was to fill this gap, adapting the *Jacobs' Dissociative Experience Questions* (JDEQ) to the Italian context and evaluating their psychometric properties in terms of factorial structure, internal consistency, and convergent validity. Finally, the current study aimed to examine the measurement invariance across gender and age, allowing the JDEQ to serve as a useful tool in investigating gambling-related dissociative experiences within the entire population of gamblers.

2.2 Method

2.2.1 Procedure and participants

The recruitment of participants was carried out in both high schools and university courses. Specifically, as regards high schools, 9 institutes in the Arezzo area (Tuscany) and 5 in the Olbia area (Sardinia) were contacted (via email) and asked to participate in a study on gambling behaviors. Of these, only the principals of 3 high schools (one in Arezzo and two in Olbia) responded and agreed to participate in the study. As for the university, the project was presented during the lessons of several university courses from three different universities (University of Florence, University of Pisa, and University of Urbino), and students who wished to participate filled in the survey at the end of the course. In both cases, participants had to meet two criteria to be admitted to the study: being at least 14 years old and being able to speak and understand Italian fluently. Data collection was carried out via

an online platform. Specifically, on the first page of the survey, participants were informed about the purpose of the study, that participation was completely voluntary, that they could withdraw at any time without giving a reason and without any negative consequences, and that no formative credits or remunerative rewards were given for participation. Only after signing the informed consent form on the first page were participants redirected to the following pages containing basic demographic questions and the self-report questionnaires described below. The study was conducted in line with the principles of the Declaration of Helsinki. Overall, 517 high school students (74.50% females; $M_{age} = 16.14 \pm 1.53$) and 228 university students (65.40% females; $M_{age} = 21.60 \pm 3.43$) were recruited for this study, for a total of 745 participants (71.70% females; $M_{age} = 17.81 \pm 3.40$). Of these, 257 (51.40% females; $M_{age} = 18.85 \pm 3.72$) reported having gambled in the last year and filled out the gambling-specific part of the survey, which included information about gambling habits (see section 2.2.2.2 *Gambling habits*) and gambling behavior – with the *South Oaks Gambling Screen-Revised for Adolescents* (SOGS-RA; Winters et al., 1993) and the *South Oaks Gambling Screen* (SOGS; Lesieur & Blume, 1987) for high school and university students, respectively – and the *Jacobs' Dissociative Experience Questions* (JDEQ; Jacobs, 1988).

2.2.2 Measures

2.2.2.1 Socio-demographic information

An ad-hoc questionnaire was administered to collect socio-demographic information. In particular, data on age, gender, birthplace, and relationship status were collected for both high school and university students. Additional information regarding their parents' educational qualifications and employment status was gathered for high school students. In contrast, university students were asked about their work status and income using the Equivalent Economic Situation Indicator (ISEE).

2.2.2.2 *Gambling habits*

Both high school and university students were asked whether they had ever gambled in their lifetime and, if so, whether they had gambled in the past year. Only those who reported gambling within the last year were asked additional questions regarding their preferred mode of gambling (offline or online), the type of gambling they favored – either Games of Chance (i.e., non-strategic games in which the outcomes are determined by chance only such as lotteries and slot machines) or Games of Skill (i.e., strategic games in which the outcomes are determined by both skill and chance such as sports betting and poker) – and the amount of money spent on gambling.

2.2.2.3 *Gambling behaviors*

Gambling behavior among high school students was assessed using the Italian version (Colasante et al., 2014) of the *South Oaks Gambling Screen-Revised for Adolescents* (SOGS-RA; Winters et al., 1993). The SOGS-RA is a self-report measure composed of two sections. In the first section, participants were asked to report the frequency of gambling (*never, less than monthly, monthly, weekly, daily*) in a list of 11 gambling activities (i.e., cards for money, coin tosses for money, bets on games of personal skill, bets on sports teams, bets on horse or dog races, bingo, dice games for money, slot machines, scratch cards such as Scratch and Win/win for Life, lotteries, on-line games). This section enables classification between non-regular gamblers (those who gamble once a month or less) and regular gamblers (those who gamble weekly or more often). The second section consists of twelve items, each scored 1 (*affirmative*) or 0 (*non-affirmative*), concerning gambling-related problems (e.g., “Has your betting money, in the past 12 months, ever caused any problems for you such as arguments with family and friends, or problems at school or work?” and “In the past 12 months, have you ever felt bad about the amount you bet, or about what happens

when you bet money?”). The total score was given by the simple sum of the affirmative answers, with higher scores indicating more gambling-related problems. In addition, the score obtained allowed the classification of participants into non-problem gamblers (participants who obtain a score of 0 to 1), at-risk gamblers (participants who obtain a score of 2 to 3), and problem gamblers (participants who obtain a score of 4 or greater). In the present study, the internal consistency of the SOGS-RA was acceptable ($\alpha = .68$ and $\omega = .68$).

Gambling behavior among university students was assessed using the Italian version (Capitanucci & Carlevaro, 2004) of the *South Oaks Gambling Screen* (SOGS; Lesieur & Blume, 1987). Like the version for adolescents, the SOGS is divided into two sections. The first section investigated the frequency of gambling (*not at all, less than once a week, once a week or more*) in ten gambling activities (i.e., cards for money, betting on horses, dogs or other animals, sports bets, dice games for money, casino, bet on traditional/instant lotteries, bingo, stock and/or commodities market bets, slot machines, poker machines or other gambling machines and games of skill for money). Based on their responses, participants were classified as non-regular gamblers (i.e., those who participated less than once a week in at least one gambling activity) and regular gamblers (i.e., those who participated once a week or more in at least one gambling activity). The second section is composed of 20 items based on the criteria of DSM-III (American Psychiatric Association, 1980) for problem gambling (e.g., “Did you ever gamble more than you intended to?” and “Have you ever felt like you would like to stop gambling but didn't think you could?”). Although based on the DSM-III, recent research conducted on a large cross-sectional random sample has demonstrated that the items are adequately aligned with the current DSM-5 criteria for Gambling Disorder (Granero et al., 2020; Lucas et al., 2024). Each of those items required a dichotomous answer (i.e., *no* = 0 or *yes* = 1), except three items, which have a 4-point or

3-point response that is dichotomized in the scoring phase (i.e., item 4: *never/some of the time [less than half the time] I lost* = 0, *most of the item I lost/every time I lost* = 1; item 5: *never [or never gamble]* = 0, *yes, less than half the time I lost/yes, most of the time* = 1; item 6: *no* = 0, *yes, in the past, but not now/yes* = 1). The total score on the SOGS is the sum of all 20 items, with higher scores indicating higher gambling problems. The SOGS can be used to classify individuals into three categories: non-problem gamblers (participants who obtain a score of 0 to 2), potential or problem gamblers (participants who obtain a score of 3 to 4), and probable pathological gamblers (participants who obtain a score of 5 or greater). In the current study, the internal consistency of the SOGS was acceptable ($\alpha = .69$ and $\omega = .70$) and in line with those found in studies conducted in the general population (Stinchfield, 2002).

2.2.2.4 Gambling-related dissociative experiences

The *Jacobs' Dissociative Experience Questions* (JDEQ; Jacobs, 1988) was used to investigate the specific dissociative state experienced during gambling among both the high school and university sample. The JDEQ is a unidimensional self-report questionnaire containing 4 items, rated on a 5-point Likert-type (0 = *Never*, 1 = *Rarely*, 2 = *Occasionally*, 3 = *Frequently*, 4 = *All the time*), reflecting four different experiences that can be experienced during or immediately after gambling: The first item represented a blurring of reality testing (i.e., Did you ever feel like you had been in a trance when you were gambling?), the second measured a shift in persona (i.e., Did you ever feel like you had taken on another identity when you were gambling?), the third was designed to capture an out-of-body experience (i.e., Did you ever feel like you were outside yourself - watching yourself when you were gambling?), and the fourth inquired about the presence of amnestic and fugue-like states (i.e., Did you ever experience a memory blackout for a period when you

were gambling?). The total score is calculated by summing the item scores, with higher scores indicating more gambling-related dissociative experiences.

The Italian translation of the JDEQ was prepared from the parent English version using a standard back-translation technique (Brislin, 1986). A bilingual individual unaffiliated with the study translated the scale from English to Italian, and a second individual then translated the Italian version back to English. Minor discrepancies were resolved through consensus. The items of the JDEQ in both languages and the values for internal consistency are reported in the results section.

2.2.2.5 *Tendency to general dissociation*

In the sample of high school students, dissociative proneness was assessed through the Italian version (Schimmenti, 2016a) of the *Adolescent Dissociative Experiences Scale* (A-DES; Armstrong et al., 1997). The A-DES is a self-report measure composed of 30 items rated on an 11-point Likert-type, ranging from 0 (*never*) to 10 (*always*). It assesses a global score of dissociation and four domains reflecting basic aspects of this construct (De Pasquale et al., 2016): (i) Dissociative amnesia (7 items, e.g., “People tell me I do or say things that I don’t remember doing or saying”), (ii) Absorption and imaginative involvement (6 items, e.g., “I get so wrapped up in watching TV, reading, or playing video games that I don’t have any idea what’s going on around me”), (iii) Depersonalization and derealization (12 items, e.g., “People tell me that I sometimes act so differently that I seem like a different person”), and (iv) Passive influence (e.g. of item: “I find myself doing something that I know is wrong, even when I really don’t want to do it”). For the total score and the four dimensions, the total is calculated as the average of the respective items, with higher scores indicating greater levels of dissociative proneness (or of the respective dimensions). In the present study, internal consistency of the A-DES was excellent ($\alpha = .95$ and $\omega = .96$) for the Total Score,

good ($\alpha = .83$ and $\omega = .83$) for dissociative amnesia score, good ($\alpha = .74$ and $\omega = .74$) for absorption and imaginative involvement score, excellent ($\alpha = .91$ and $\omega = .91$) for depersonalization and derealization score, and good ($\alpha = .81$ and $\omega = .81$) for passive influence score.

In the sample of university students, the tendency to dissociate was measured using the Italian version (Schimmenti, 2016b) of the *Dissociative Experiences Scale II* (DES-II; Carlson & Putnam, 1993). The DES-II is a self-report questionnaire and consists of 28 items rated on an 11-point Likert-type, ranging from 0% (*never*) to 100% (*always*), in which participants are asked for the rate of occurrence of various dissociative experiences. In addition to the total score, this questionnaire provides three sub-scales reflecting different aspects of dissociative phenomena: (i) Dissociative amnesia (8 items, e.g., “Some people find evidence that they have done things that they do not remember doing”), (ii) Absorption and imaginative involvement (9 items, e.g., “Some people find that sometimes they are listening to someone talk and they suddenly realize that they did not hear part or all of what was said”), and (iii) Depersonalization-derealization (6 items, e.g., “Some people sometimes feel as if they are looking at the world through a fog, so that people and objects appear far away or unclear”). Similar to its adolescent counterpart, for the total score and the three dimensions, the total is given by the average of the respective items, with higher scores reflecting higher levels of dissociative propensity. In the current study, internal consistency of the DES-II was excellent ($\alpha = .94$ and $\omega = .94$) for the Total Score, good ($\alpha = .77$ and $\omega = .79$) for dissociative amnesia score, good ($\alpha = .89$ and $\omega = .89$) for absorption and imaginative involvement score, and good ($\alpha = .84$ and $\omega = .84$) for depersonalization and derealization score.

2.2.3 Statistical analyses

A descriptive analysis of the JDEQ items was conducted, and both Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were performed to assess the factor structure. In particular, the sample of 257 gamblers was divided into two random subsamples balanced by gender ($\chi^2_{(1)} = 0.034, p = .852$) and age ($F_{(1,255)} = 0.616, p = .433$): the first composed of 128 participants (50.80% females; $M_{age} = 19.03 \pm 4.24$; 69 high school students and 59 university students) and the second consisted of 129 participants (51.90% females; $M_{age} = 18.67 \pm 3.13$; 68 high school students and 61 university students). This division allowed us to carry out the Exploratory and Confirmatory Factor Analysis (i.e., EFA and CFA) in separate samples, as recommended by the literature (Worthington & Whittaker, 2006). Specifically, the necessary sample size to perform these analyses was calculated based on the N:t rule of thumb, which recommends a minimum ratio between sample size (N) and number of items (t), a ratio of at least 10:1 (Mundfrom et al., 2005). Furthermore, since JDEQ contains 4 items, the minimum sample size had to be 40 participants (4×10), which is lower than the overorder threshold of 100 participants suggested by Zhang and Hong (1999). Therefore, the size of the subsamples (128 and 129 for EFA and CFA, respectively) in the present study met both criteria.

Therefore, the data from the first subsample of gamblers were subject to EFA, with principal axis factor analysis employed as the extraction method. The adequacy of the data for factor analysis was assessed using the Kaiser-Meyer-Olkin (KMO; Kaiser, 1970) criterion and Bartlett's test of sphericity (Bartlett, 1950). A KMO value greater than or equal to 0.80 and a significant Bartlett's Test ($p < .05$) were considered indicative of the appropriateness of the data for EFA. Factor loadings were considered adequate if they exceeded .30 (Osborne et al., 2008).

Then, a CFA was performed with the data from the second subsample using the lavaan package (Rosseel, 2012) for the R statistical software (version 4.2.1) with the Maximum Likelihood (ML) estimation method. The goodness of fit of the tested model was evaluated using the χ^2 (and its degrees of freedom and p-value), the Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), and the Standardized Root Mean Square Residual (SRMR) considering the following cutoff scores: RMSEA < 0.08, CFI > 0.95, and SRMR < 0.08 (Hu & Bentler, 1999; Kline, 2011). Moreover, regarding the χ^2 test, its non-significance is an indicator of a good fit. However, due to the test's sensitivity to sample size, when the χ^2 test is significant, a χ^2/df ratio below or equal to three is often considered acceptable (Hu & Bentler, 1999). Moreover, factor loadings were considered acceptable if they exceeded .30 (Hair et al., 2009).

Measurement invariance by gender and age (high school versus university students) was calculated using a multi-group CFA considering the total sample of gamblers. Hierarchically-nested models were applied to test configural, metric, and scalar invariance. Configural invariance assesses whether the same CFA model is valid across groups; metric invariance examines the equivalence of factor loadings across groups; and scalar invariance is established when both item intercepts and factor loadings are equally constrained across groups. The criteria for assessing the difference between the competing models were based on the scaled difference chi-square test (Satorra & Bentler, 2010) and on the difference in the CFIs and RMSEAs of nested models (Chen, 2007; Cheung & Rensvold, 2002). Specifically, if the Δ CFI and Δ RMSEA exceed 0.01 and 0.015 respectively between two nested models, it is assumed that the added constraints have resulted in a worse fit, leading to the rejection of the more constrained model.

The internal consistency was evaluated in the total sample through Cronbach's alpha (α) and Omega McDonald (ω), and values ≥ 0.60 (Lawshe, 1975) are considered acceptable.

Finally, convergent validity was examined by evaluating the bivariate correlations between the JDEQ scores and all the other measures (i.e., SOGS, SOGS-RA, A-DES, DES-II) in accordance with the criteria provided by Schober and colleagues (2018), namely: $r < .10$ negligible correlation, $.10 \geq r < .39$ weak correlation, $.40 \geq r < .69$ moderate correlation, $.70 \geq r < .89$ strong correlation, and $r \geq .90$ very strong correlation.

2.3 Results

2.3.1 Socio-demographics and gambling-related information

There was no missing data in the dataset, as the survey was administered online, and each question was set to mandatory, ensuring that participants could only submit their responses after answering all the items. The sample characteristics are shown in Table 2.1.

Table 2.1

Sociodemographic characteristics (n = 517)

	High school students			University students		
	Total (n=517)		Gamblers (n=137) n(%)	Total (n=228)		Gamblers (n=120) n(%)
	n(%)	Non-gamblers (n=380) n(%)		n(%)	Non-gamblers (n=108) n(%)	
Gender						
Women	385(74.50)	311(81.80)	74(54.00)	149(65.40)	91(84.30)	58(48.30)
Men	132(25.50)	69(18.20)	63(46.00)	79(34.60)	17(15.70)	62(51.70)
Birthplace						
Italy	502(97.10)	372(97.90)	130(94.90)	222(97.40)	105(97.20)	117(97.50)
Abroad	15(2.90)	8(2.10)	7(5.10)	6(2.60)	3(2.8)	3(2.50)
Sentimental status						
Single	354(68.50)	270(71.10)	84(61.30)	105(46.10)	48(44.40)	57(47.50)
Engaged	163(31.50)	110(28.90)	53(38.70)	121(53.10)	58(53.70)	63(52.50)
Married	0(0)	0(0)	0(0)	2(0.90)	2(1.90)	0(0)
Mother's educational level						
Unknown	71(13.70)	55(14.50)	16(11.70)	-	-	-
Primary school	5(1.00)	5(1.30)	0(0)	-	-	-
Middle school	95(18.40)	69(18.20)	26(19.00)	-	-	-
High school	243(47.00)	182(47.90)	61(44.50)	-	-	-
University or post-graduate degree	103(19.90)	69(18.20)	34(24.80)	-	-	-
Mother's Employment						
Unknown	19(3.70)	13(3.40)	6(4.40)	-	-	-
Housewife	68(13.20)	48(12.60)	20(14.60)	-	-	-
Employed	416(80.50)	308(81.10)	108(78.80)	-	-	-
Unemployed	11(2.10)	10(2.60)	1(0.70)	-	-	-
Retired	3(0.60)	1(0.30)	2(1.50)	-	-	-
Father's educational level						
Unknown	97(18.80)	73(19.20)	24(17.50)	-	-	-
Primary school	17(3.30)	14(3.70)	3(2.20)	-	-	-
Middle school	180(34.80)	132(34.70)	48(35.00)	-	-	-
High school	166(32.10)	125(32.90)	41(29.90)	-	-	-
University or postgraduate degree	57(11.00)	36(9.50)	21(15.30)	-	-	-

Table continues on the next page

		High school students			University students		
		Total (n=517)		Gamblers (n=137)	Total (n=228)		Gamblers (n=120)
		n(%)	Non-gamblers (n=380)		n(%)	Non-gamblers (n=108)	
Father's Employment	Unknown	44(8.50)	33(8.70)	11(8.00)	-	-	-
	Househusband	1(0.20)	1(0.30)	0(0)	-	-	-
	Employed	446(86.30)	327(86.10)	119(86.90)	-	-	-
	Unemployed	7(1.40)	5(1.30)	2(1.50)	-	-	-
	Retired	19(3.70)	14(3.70)	5(3.60)	-	-	-
Employment	Student	517(100)	380(100)	137(100)	153(67.10)	73(67.60)	80(66.70)
	Working student	0(0)	0(0)	0(0)	75(32.90)	35(32.40)	40(33.30)
Income	From 0 to 10,000 €	-	-	-	21(9.20)	12(11.10)	9(7.50)
	From 10,001 to 15,000 €	-	-	-	32(14.00)	22(20.40)	10(8.30)
	From 15,001 to 26,000 €	-	-	-	62(27.20)	32(29.60)	30(20.50)
	From 26,001 to 55,000 €	-	-	-	63(27.60)	28(25.90)	35(29.20)
	From 55,001 to 75,000 €	-	-	-	22(9.60)	7(6.50)	15(12.50)
	From 75,001 to 120,000 €	-	-	-	15(6.60)	6(5.60)	9(7.50)
	More than 120,000 €	-	-	-	13(5.70)	1(0.90)	12(10.00)

As mentioned in the Procedure and Participants section, 46.70% ($n = 348$) of the sample (35.80% of high school students, i.e., $n = 185$, and 71.50% of university students, i.e., $n = 163$) declared having gambled at least once in their life, while 34.50%, namely 257 participants (26.50% of high school students, i.e., $n = 137$, and 52.60% of university students, i.e., $n = 120$) did so in the last year.

Among those who have gambled in the last year, 82.10% ($n = 211$) were classified as non-regular gamblers, with 81.0% ($n = 111$) of high school students and 83.2% ($n = 100$) of university students falling into this category. The remaining 17.90% (19.00% of high school students, i.e., $n = 26$, and 16.80% of university students, i.e., $n = 20$) were regular gamblers.

Finally, according to the criterion of the SOGS-RA classification, among the high school students, 68.60% ($n = 94$) were non-problematic, 24.10% ($n = 33$) were at-risk gamblers, and 7.30% ($n = 10$) were problematic gamblers. Regarding the university students, according to the criterion of the SOGS classification, 88.30% ($n = 106$) were non-problematic, 9.20% ($n = 11$) were potential/problematic gamblers, and 2.50% ($n = 3$) were probable pathological gamblers.

More details regarding the gambling habits of the sample, separately for high school students and university students, are shown in Table 2.2.

Table 2.2*Gambling-related characteristics (n = 257)*

		High school gamblers (n=137) n(%)	University gamblers (n=120) n(%)
Mode of gambling	Exclusively Offline	59(43.10)	59(49.20)
	Mostly Offline	18(13.10)	14(11.70)
	Both Offline and Online	34(24.80)	27(22.50)
	Mostly Online	12(8.80)	2(1.70)
	Exclusively Online	14(10.20)	6(5.00)
Preferred type of gambling	Games of chance	66(48.20)	40(33.30)
	Games of skill	60(43.80)	64(53.30)
	Both	11(8.00)	16(13.30)
Average amount of money spent on gambling	1 € or less	96(70.10)	60(50.00)
	More than 1 but less than 10 €	27(19.70)	40(33.30)
	More than 10 but less than 100 €	13(9.50)	18(15.00)
	More than 100 euros, but less than 1000 €	1(0.70)	2(1.70)

2.3.2 Exploratory Factor Analysis

The data from the first subsample ($n = 128$) were subject to EFA. Descriptive statistics for the items of the JDEQ are reported in Table 2.3. As shown, all items had values within the accepted ranges ± 3 and ± 10 for skewness and kurtosis, respectively (Kline, 2023). Therefore, no item was excluded from the subsequent analyses.

Table 2.3
Descriptive Statistics of the Items of JDEQ

<i>Item</i>	<i>M(SD)</i>	<i>Skewness(SE)</i>	<i>Kurtosis(SE)</i>	<i>Corrected Item – Total correlation</i>
1. Ti sei mai sentito come se fossi stato in trance quando giocavi d'azzardo? (<i>Did you ever feel like you had been in a trance when you were gambling?</i>)	0.29(0.56)	1.18(0.21)	2.38(0.43)	.75
2. Ti sei mai sentito come se avessi preso un'altra identità quando giocavi d'azzardo? (<i>Did you ever feel like you had taken on another identity when you were gambling?</i>)	0.23(0.53)	2.20(0.21)	3.94(0.43)	.91
3. Ti sei mai sentito come fuori da te stesso a guardare te stesso che giocavi d'azzardo? (<i>Did you ever feel like you were outside yourself - watching yourself when you were gambling?</i>)	0.27(0.55)	2.00(0.21)	3.04(0.43)	.87
4. Hai mai sperimentato un blackout di memoria quando stavi giocando d'azzardo? (<i>Did you ever experience a memory blackout for a period when you were gambling?</i>)	0.22(0.52)	2.35(0.21)	4.66(0.43)	.92

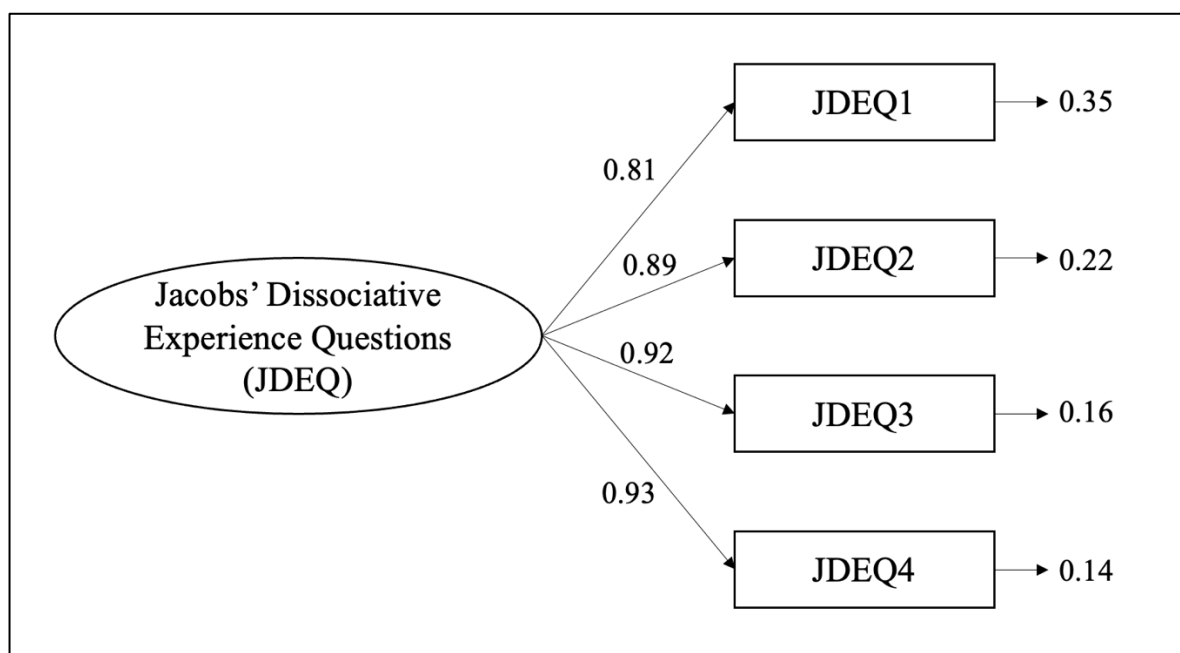
Moreover, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy ($KMO = .82$) and the significance of Bartlett's test of sphericity ($\chi^2_{(6)} = 533.28, p < 0.001$) showed that the data exhibit satisfactory factorability. Using the conventional criterion for retaining factors with eigenvalues >1.0 and the scree plot, the one-factor solution was confirmed, explaining 81.08% of the total variance. Concerning the factor loadings, all items showed values above .30 (.77, .95, .91, and .96 for items 1, 2, 3, and 4, respectively). Regarding internal consistency, the values were excellent ($\alpha = .93$ and $\omega = .93$).

2.3.3 Confirmatory Factor Analysis

With the data from the second subsample ($n = 129$), a CFA was performed. CFA results indicated a good overall fit indices [$\chi^2 = 2.28, df = 2, p = .319$; RMSEA = 0.03 (90% C.I. = 0.01–0.08), CFI = 0.99, SRMR = 0.01]. Standardized factor loadings ranged from 0.81 to 0.93, all of which were statistically significant, with p-values below .001 (Figure 3).

Figure 2.1

Path diagram from the CFA of the Italian version of the JDEQ



2.3.4 Gender Invariance

The gender invariance analyses were conducted using data from the total sample of gamblers (males = 125; females = 132). The overall and comparative fit statistics of gender-invariant models are presented in Table 2.4. Results showed adequate fit for the configural model, indicating that the same pattern of common fixed and free parameters holds across groups. Metric invariance was also supported, confirming equal factor loadings across genders. The scaled difference chi-square tests supported scalar invariance. The differences in CFI values between the nested models were not greater than 0.01, and the differences in RMSEA did not exceed 0.015. Having preliminarily verified measurement equivalence of the scale across genders, we tested for possible differences in the JEDQ scores. The results showed statistically significant gender differences ($F_{(1,255)} = 4.579$, $p = .033$, $\eta^2 = 0.018$), with males ($M = 1.22 \pm 2.15$) reporting higher scores than females ($M = 0.71 \pm 1.66$).

2.3.5 Age Invariance

Age invariance was tested using data from the total sample of gamblers comparing high school students to university students (137 and 120 students, respectively). Table 2.5 shows the fit statistics of age-invariant models. Results showed an adequate fit to the configural model, indicating that the same pattern of fixed and free parameters holds across groups. $\Delta\chi^2$ was not significant when comparing the configural model with the next model, indicating factor loading invariance between adolescents and undergraduates (i.e., metric invariance). Therefore, the scaled difference chi-square tests supported the scalar invariance hypothesis. Moreover, the $\Delta CFI < 0.01$ and the $\Delta RMSEA < 0.015$ criteria were satisfied. After the verification of the measurement equivalence of the JDEQ scores across age, differences in JDEQ scores were examined. The results showed no statistically significant differences ($F_{(1,255)} = 0.315$, $p = .575$) in scores between high school ($M = 0.90 \pm 1.83$) and university ($M = 1.03 \pm 2.04$) students.

Table 2.4

Fit statistics of the JDEQ gender-invariant models

Model	χ^2 (df)	p	CFI	RMSEA (90% C.I.)	$\Delta\chi^2$	Δdf	p	ΔCFI	$\Delta RMSEA$
Configural Invariance	6.576(4)	.160	0.99	0.07 (0.01 - 0.16)					
Metric Invariance	12.571(7)	.083	0.99	0.08 (0.01 - 0.15)	5.994	3	.112	-0.003	0.008
Scalar Invariance	12.914(10)	.229	0.99	0.05 (0.01 - 0.11)	2.921	3	.952	0.003	-0.031

Note. df = degrees of freedom; CFI = comparative fit index; $RMSEA$ = root mean square error of approximation; $\Delta\chi^2 = \chi^2$ scaled difference; Δdf = difference in degree of freedom between nested models; p = probability values of $\Delta\chi^2$ test; ΔCFI = difference in CFI s between nested models

Table 2.5

Fit statistics of the JDEQ age-invariant models

Model	χ^2 (df)	p	CFI	RMSEA (90% C.I.)	$\Delta\chi^2$	Δdf	p	ΔCFI	$\Delta RMSEA$
Configural Invariance	5.966(4)	.202	0.99	0.06 (0.01 - 0.16)					
Metric Invariance	10.479(7)	.163	0.99	0.06 (0.01 - 0.14)	4.512	3	.211	-0.002	0.000
Scalar Invariance	13.400(10)	.202	0.99	0.05 (0.01 - 0.12)	2.921	3	.404	0.000	-0.011

Note. df = degrees of freedom; CFI = comparative fit index; $RMSEA$ = root mean square error of approximation; $\Delta\chi^2 = \chi^2$ scaled difference; Δdf = difference in degree of freedom between nested models; p = probability values of $\Delta\chi^2$ test; ΔCFI = difference in CFI s between nested models

2.3.6 Convergent Validity

The convergent validity was evaluated by examining bivariate correlations between the JDEQ scores and all the other measures on the total sample of gamblers. Descriptive statistics and Pearson's correlation coefficients are presented separately for high school (Table 2.6) and university (Table 2.7) students.

For high school students, moderate correlations emerged between the JDEQ and the SOGS-RA scores and weak correlations between the former and the A-DES scores (both total and in its dimensions). Otherwise, no significant correlations were found between the SOGS-RA and A-DES scores (except for the significant but negligible correlation between the SOGS-RA and the A-DES total score).

As regards the university students' group, the JDEQ showed strong correlations with the SOGS and moderate correlations with different DES-II scores. Furthermore, in university students, the SOGS score was significantly – although weakly – correlated with DES-II scores (especially the “Absorption and imaginative involvement” dimension), except for the Dissociative amnesia dimension.

Table 2.6

Descriptive statistics and bivariate correlations among the study variables in high school gamblers (n = 137)

<i>Variables</i>	<i>M(SD)</i>	<i>Skewness(SE)</i>	<i>Kurtosis(SE)</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
1. JDEQ	0.90(1.83)	2.22(0.21)	4.51(0.41)	-					
2. SOGS-RA	1.20(1.67)	2.61(0.21)	10.07(0.41)	.65**	-				
3. A-DES	2.49(2.18)	0.87(0.21)	-0.25(0.41)	.35**	.17*	-			
4. A-DES_ Dissociative amnesia	2.39(2.27)	0.88(0.21)	-0.12(0.41)	.35**	.04	.94**	-		
5. A-DES_ Absorption and imaginative involvement	2.59(2.16)	0.82(0.21)	-0.12(0.41)	.35**	.10	.94**	.87**	-	
6. A_DES_ Depersonalization and derealization	2.42(2.32)	0.90(0.21)	-0.03(0.41)	.31**	.14	.97**	.86**	.87**	-
7. A_DES_ Passive influence	2.70(2.45)	0.854(0.21)	-0.18(0.41)	.33**	.14	.94**	.85**	.84**	.89** -

Note. JDEQ = Jacobs' Dissociative Experience Questions; SOGS-RA = South Oaks Gambling Screen-Revised for Adolescents; A-DES = Adolescent Dissociative

Experiences Scale; ** = $p < .01$; * = $p < .05$.

Table 2.7

Descriptive statistics and bivariate correlations among the study variables in university gamblers (n = 120)

<i>Variables</i>	<i>M(SD)</i>	<i>Skewness(SE)</i>	<i>Kurtosis(SE)</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
1. JDEQ	1.03(2.04)	2.34(0.22)	4.60(0.44)	-					
2. SOGS	0.79(1.37)	2.08(0.22)	4.34(0.44)	.70**	-				
3. DES-II	14.31(12.10)	1.37(0.22)	1.37(0.44)	.49**	.23*	-			
4. DES_ Dissociative amnesia	6.72(7.56)	1.56(0.22)	1.82(0.44)	.41**	.18	.82**	-		
5. DES_ Absorption and imaginative involvement	23.24(18.11)	1.15(0.22)	0.92(0.44)	.47**	.34**	.96**	.71**	-	
6. DES_ Depersonalization and derealization	8.11(13.57)	2.61 (0.22)	7.68(0.44)	.44**	.22*	.83**	.61**	.73**	-

Note. JDEQ = Jacobs' Dissociative Experience Questions; SOGS = South Oaks Gambling Screen; DES-II = Dissociative Experiences Scale II; ** = $p < .01$; * = p

< .05

2.4 Brief Discussion

Given the multifaceted nature of dissociative experiences and the preliminary empirical evidence suggesting that gambling-specific dissociation plays a key role in gambling behavior (Diskin & Hodgins, 2001), the present study aimed to adapt the *Jacobs' Dissociative Experience Questions* (JDEQ) to the Italian context while also evaluating its psychometric properties.

Before delving into the main results, it is important to consider the data obtained regarding gambling habits and behaviors. Specifically, more than a third of high school students (35.80%, $n = 185$) and almost three-quarters (71.50%, $n = 163$) of university students declared that they had gambled at least once in their life, representing almost half of the total sample (46.70%, $n = 348$). Furthermore, in the last year gambling was practiced by one-third of the total sample (34.50%, $n = 137$) and also in this case there is a non-negligible prevalence of adolescents, that is, which is about a quarter (26.50%, $n = 137$). Overall, these data highlight the fact that gambling is a very widespread phenomenon not only among adults but also among adolescents. This data is worrying, considering that gambling is prohibited to minors. Furthermore, a non-negligible percentage of gamblers was found to be at risk of developing gambling problems, with 7.30% ($n = 10$) of adolescents classified as problem gamblers and 2.5% ($n = 3$) of young adults classified as probable pathological gamblers according to the respective SOGS-RA and SOGS criteria. These data, in line with the prevalence data present in the literature (Calado et al., 2017; Mora-Salgueiro et al., 2021; Tran et al., 2023), highlight how gambling should be considered a public health issue also in the specific Italian context.

Upon examining the main findings of this study, the results from the analyses conducted for the validation of the JDEQ indicate excellent psychometric properties, confirming its one-dimensional structure and demonstrating a high internal consistency.

Gender invariance, considered a prerequisite for making quantitative comparisons (Meuleman et al., 2023), adds important support for the validity of the Italian version of the JDEQ because it indicates that the measurement model is comparable in both genders. This implies that the presence of gender differences in observed scores reflects an actual presence of differences in gambling-related dissociation levels and not an artefact of the measurement method. In particular, results showed that males reported higher scores than females in the JDEQ scores. This result is not surprising since, although there are generally no gender differences in relation to dissociative experiences (Ferrante et al., 2022; Schimmenti, 2016a, 2016b), empirical evidence has highlighted the presence of gender differences regarding gambling problems in both adolescents and adults (Andrie et al., 2019; Carneiro et al., 2020; Tani et al., 2021). Specifically, a systematic review and meta-analysis of longitudinal studies aimed at assessing the early protective and risk factors for problematic gambling has shown that the male gender showed an average effect size associated with subsequent problematic gambling behaviors (Dowling et al., 2017). Therefore, it is possible to assume that the presence of higher levels in males than females of gambling-related dissociation reflects the greater tendency of the former to engage in gambling behaviors also in a problematic way.

Also, age invariance adds support for the validity of the JDEQ scale. This implies that the absence of differences in observed scores between high school and university students can be interpreted as a real absence of differences in the levels of gambling-related dissociation.

Moreover, the Italian JDEQ also showed good convergent validity. In particular, the presence of moderate to strong correlations between gambling-related dissociative experiences scores and gambling levels (evaluated with both SOGS-RA and SOGS) confirmed the close association between these two phenomena, giving support to what is asserted by the General Theory of Addiction (Jacobs, 1986, 1988), according to which

dissociative phenomena are strictly implicated in the etiology of gambling problems. Furthermore, the weak-moderate correlations between JDEQ scores and the dimensions related to the tendency toward general dissociation (measured with the A-DES and the DES-II) give rise to theoretical speculations that see in the plurality of dissociative experiences the presence of nuances not necessarily interconnected (Allcock et al., 2006). In this regard, for example, Diskin & Hodgins (2001) did not find any significant correlation between DES scores and JDEQ scores in a sample of gamblers. Lastly, the results of the correlations between the scores of the measures related to gambling behaviors and those related to the tendency to dissociation are worthy of note. In particular, in the sample of high school students, gambling was not found to be associated with dissociation (both as a unit score and in its different manifestations), while in the sample of university students, only weak associations emerged and mainly with the dimension of absorption and imaginative involvement which is the one most frequently found in the general population (Carlson, 2005). Overall, these findings suggest that gambling primarily involves dissociative mechanisms closely related to the behavior itself rather than a general tendency toward dissociation.

Despite the undoubted interest of the results obtained, the present study has some limitations that should be noted. First, the use of a convenience sample composed of non-clinical and non-regular gamblers limits the generalizability of the findings, as the results may not be representative of the broader population of gamblers. Second, reliability needs to be further explored to determine test-retest reliability. Third, additional studies should be conducted to strengthen the validity of the scale. For instance, future research should examine the relationship between gambling-related dissociative experiences and other variables commonly linked to both gambling and dissociation, such as psychological distress, well-being, and alexithymia. Fourth, future studies should be conducted in order to

test the presence of possible differences between gamblers both in terms of non-regular/regular gamblers and the severity of gambling problems. In line with this, it would be worthwhile to investigate whether certain gambling characteristics, such as the mode of gambling, contribute to differences in gambling-related dissociative experiences. For example, it is plausible that individuals more engaged in online gambling report heightened dissociative experiences due to the immersive nature of virtual environments (Schimmenti & Caretti, 2017; Schimmenti, 2023).

Despite these limitations, the current results indicate that the Italian version of the JDEQ is a useful tool with good psychometric properties to assess dissociative experiences related to gambling in the Italian context. Greater knowledge of this specific aspect turns out to have important implications not only theoretical, as we have seen, but also practical. In this regard, a recent study (Korvuo et al., 2023) aimed at evaluating the effectiveness of an eight-week CBT-based Internet therapy program for problem gambling confirmed that gambling-related dissociation (measured by JDEQ) is an integral sign of problem gambling severity and prolonged dissociative experiences significantly reduce the long-term effectiveness of treatments. Therefore, a deeper understanding of gambling-specific dissociative experiences may contribute to more effective prevention and treatment strategies for gambling disorders.

Chapter 3

Study 2 – Gambling and dissociation: Which comes first?

3.1 Introduction

Dissociation is a complex and multifaceted phenomenon that has been conceptualized in various ways over the years, both from a dimensional perspective, where it is seen as existing along a continuum, and from a categorical perspective, where it is understood in taxonomic terms (see paragraph 1.2.2). Despite these theoretical differences, there is a general consensus in the literature about the significant role of dissociative experiences in the psychopathology of addiction (Gori et al., 2023; Somer et al., 2010). Supporting this perspective is a growing body of empirical evidence highlighting the frequent co-occurrence of various addictive behaviors (Barnes et al., 2015; Müller et al., 2022; Walther et al., 2012), suggesting the existence of a common psychological substrate involved in the development and maintenance of these behaviors. Moreover, individuals engaging in addictive behaviors often report experiencing dissociative states as a means of escaping distressing emotions or psychological pain (Jacobs, 1986, 1988), further underscoring the potential of dissociation as a core element in the etiology and persistence of addiction-related psychopathology.

In the specific context of gambling behavior, its association with dissociative experiences has been well documented (see Rogier et al., 2021 for a review and meta-analysis). Moreover, Study 1 (Chapter 2) of the present dissertation demonstrated that it is not the general tendency to dissociate which is primarily linked to gambling behavior, but rather the specific dissociative experiences directly associated with gambling activities themselves.

Despite these interesting findings, to the best of our knowledge, no longitudinal studies have yet investigated the relationship between gambling and dissociation. Indeed, to date, aside from a study that included a 1- or 2-week follow-up (Gee et al., 2005) and another investigating the effectiveness of an intervention (Korvuo et al., 2023), no other research has explored the long-term persistence of the gambling-dissociation relationship, making it difficult to draw empirical conclusions on the relationship among these variables over time. Therefore, it is plausible to assume that dissociation may be either a risk factor for the development of gambling behavior or, on the contrary, a consequence of involvement in such activities, or that the relationship between the two is bidirectional (Rogier et al., 2021).

The first perspective, which views dissociation as a risk factor and in line with the General Theory of Addiction proposed by Jacobs (1986, 1988) (see paragraph 1.3), emphasizes the pivotal role of dissociation in the onset and maintenance of problematic gambling behaviors, to the point of becoming a deeply ingrained maladaptive coping mechanism (Cartmill et al., 2015).

The other perspective, which views dissociation as a consequence of gambling involvement, is in line with some theoretical speculations according to which the dissociative experiences may arise from the changes in the arousal levels triggered by gambling behavior (Kuley & Jacobs, 1988). Moreover, an experimental study (Murch et al., 2017) conducted in a laboratory environment with Electronic Gaming Machine (EGM) showed that both novice and regular EGM gamblers experienced a trance-like state or complete absorption with the game. This perspective aligns with findings in the field of substance addictions. For instance, Van Heugten-Van der Kloet and colleagues (2015) empirically demonstrated that certain drugs of abuse, including cannabis, cocaine, and MDMA, can produce dissociative symptoms. This suggests that addictive behaviors may possess dissociative qualities, enabling individuals to manage negative and unregulated

emotions. Indeed, according to the “chemical dissociation” hypothesis (Somer et al., 2010), drug- or substance-induced dissociation arises from a detachment from reality. In particular, individuals may turn to drugs or illicit substances, as well as indulge in gambling behaviors, to numb negative feelings and shield themselves from painful intrusions. In other words, engaging in addictive behaviors may represent a coping strategy developed to handle intolerable experiences and provide rapid relief from emotional pain.

In light of the different perspectives through which the relationship between gambling behavior and dissociation can be considered, the present study aims to fill the gap in the literature on this topic. Therefore, the main aim of the present study is to clarify the nature of this relationship by investigating whether it is unidirectional or bidirectional. To achieve this, a two-wave longitudinal design was employed. Moreover, since the previous study has revealed that gambling behavior is more closely linked to gambling-specific dissociative experiences than the general tendency toward dissociation, this study examined this specific relationship (gambling behaviors and gambling-related dissociative experiences). Furthermore, since dissociation is a complex and multifaceted phenomenon, by adopting an integrative approach (Goldberg & Goodyer, 2014) this association has been investigated by taking into account other dissociative-like aspects, namely the general tendency to dissociation in its three main manifestations (i.e., dissociative amnesia, depersonalization-derealization, absorption and imaginative involvement) and maladaptive daydreaming. The decision to include this last aspect, in addition to being a manifestation of the dissociative spectrum (Soffer-Dudek & Somer, 2022), is also supported by recent findings (Pezzi et al., 2024) that highlight its association with (online) gambling.

Considering that the present study is the first to examine the directionality of effects in the association between gambling behaviors and gambling-related dissociative experiences, no specific hypothesis about directionality was formulated in this context.

3.2 Method

3.2.1 Procedure and participants

The recruitment of participants was carried out at university courses. Specifically, similarly to study 1, professors from three different universities (University of Florence, University of Pisa, University of Urbino) were contacted and asked to collaborate in the realization of a longitudinal research project. To be admitted to the study, participants had to meet only one inclusion criterion, namely being able to speak and understand Italian fluently. Data collection was carried out via an online platform. Given the longitudinal nature of the study and the need to be able to match the responses of participants from the two data collections, some arrangements have been made to ensure anonymity. Specifically, data collection was carried out in two distinct phases, separated by a six-month interval (T1 and T2). During the first phase – conducted between March and December 2023 – participants were provided with access to a Google Form. Through this platform, they were asked to provide an email address so that they could be contacted for the second phase of the study. This email address was used solely for this purpose and was not linked in any way to the responses given in the questionnaires, thereby ensuring complete participant anonymity. Approximately six months after the first administration, an email was sent to the addresses collected containing a link to access the survey for the second data collection. After submitting their email addresses, participants were invited to select a second link, which redirected them to the survey's page, completely unconnected from the previous one. This system, which separated email contact from the survey link, ensured that the responses provided could not be associated with the email address, thereby safeguarding the confidentiality of the collected data. Before proceeding with the questionnaires, participants were provided with detailed information on the purpose of the study and the conditions of participation in the introductory page of the survey. Specifically, participants were informed

that participation was entirely voluntary and that they retained the right to withdraw at any time without giving any explanation and without facing negative consequences. Moreover, it was clarified that no incentives, either in the form of academic credits or monetary rewards, were offered for participation in the study. To continue, participants were required to express their consent by signing the informed consent. Once the consent form was signed, participants were redirected to a second page where they were asked to create an alphanumeric identification code (ID). This code, designed to be simple yet effective in ensuring anonymity, was composed as follows: the first letter of the mother's name, the first letter of the mother's surname, and the last three digits of a phone number. The participants were told that this code would then be requested for the second data collection, thus allowing the two-time responses to be matched. Finally, once the ID was created, participants were redirected to the following pages containing basic demographic questions and the self-report questionnaires described below.

The same procedure was followed also with students from one high school in the province of Arezzo (Tuscany). However, of the 358 students (76.50% female; $M_{age} = 16.42 \pm 1.42$) recruited in the first data collection, only 84 (90.50% female; $M_{age} = 16.02 \pm 1.10$) completed the second phase. Moreover, of these, only 6 participants (100% female; $M_{age} = 16.17 \pm 0.99$) reported engaging in gambling in both data collections. Since having gambled in both data collections is a fundamental condition in this study (as will be discussed), we focused only on the data obtained from university students.

The present study was conducted in agreement with the guidelines for the ethical treatment of human participants of the Italian Psychological Association and conducted in line with the principles of the Declaration of Helsinki. In the first wave of data collection, the survey was completed by 395 participants (67.60% female; $M_{age} = 22.20 \pm 3.56$), while in the second wave by 174 (68.40% female; $M_{age} = 23.08 \pm 3.55$), representing 44.05% of

the original sample. More information regarding the demographic characteristics of the sample can be found in Table 3.1. Of the 174 participants who participated in both data collections, 86 reported gambling at T1 and 98 reported gambling at T2, while 76 reported gambling at both data collections. In other words, 10 participants reported that they stopped gambling between T1 and T2, while 13 reported that they started gambling during that period. Reporting past-year gambling was mandatory for participants to complete the gambling-specific section of the survey. As this study required data on gambling activity in both data collections to carry out the appropriate analyses, the final sample of the present study consisted of 76 participants (47.40% female; $M_{age} = 24.07 \pm 3.82$).

3.2.2 Measures

3.2.2.1 Socio-demographic information

At T1, an ad-hoc questionnaire was administered to collect socio-demographic information. In particular, the following data were collected: age, gender, birthplace, relationship status, employment status, and income in terms of Equivalent Economic Situation Indicator (ISEE).

3.2.2.2 Gambling habits

Similar to Study 1, participants were asked in both data collections if they had ever gambled in their lifetime and, if so, whether they had gambled in the past year. Only those who reported gambling in the past year were asked questions about the mode of gambling, the types of gambling preferred among Games of chance and Games of skill, the amount of money spent on gambling, and, additionally, the frequency of gambling behaviors (0 = *less than once a week*, 1 = *1 day a week*, 2 = *2 days a week*, 3 = *3 days a week*, 4 = *4 days a week*, 5 = *5 days a week*, 6 = *6 days a week*, 7 = *7 days a week*).

3.2.2.3 Gambling behaviors

In both data collection, gambling behavior was assessed through the Italian version (Capitanucci & Carlevaro, 2004) of the *South Oaks Gambling Screen* (SOGS; Lesieur & Blume, 1987). As previously described in the first study, the SOGS is divided into two sections: the first one allows for the classification of gamblers non-regular and regular gamblers, and the second section allows the evaluation of the levels of problematic gambling and can be used to classify subjects into three categories, namely non-problem gamblers, potential or problem gamblers, and probable pathological gamblers. For the scores in this study, the internal consistency of SOGS was good at both T1($\alpha = .79$ and $\omega = .80$) and T2 ($\alpha = .84$ and $\omega = .84$).

3.2.2.4 Gambling-related dissociative experiences

Both at T1 and T2, the Italian version (see Study 1) of the *Jacobs' Dissociative Experience Questions* (JDEQ; Jacobs, 1988) was used to investigate the specific dissociative state experienced during gambling. In the present study, internal consistency values were good at T1 ($\alpha = .89$ and $\omega = .90$) and excellent at T2 ($\alpha = .91$ and $\omega = .91$).

3.2.2.5 Tendency to general dissociation

Dissociative proneness was measured only in the first data collection in its three manifestations – (i) dissociative amnesia, (ii) absorption and imaginative involvement, and (iii) depersonalization-derealization – through the Italian version (Schimmenti, 2016b) of the *Dissociative Experiences Scale II* (DES-II; Carlson & Putnam, 1993). For a detailed description, see Study 1. In the present study, internal consistency was good for the dissociative amnesia score ($\alpha = .71$, $\omega = .71$), for the absorption and imaginative involvement score ($\alpha = .81$, $\omega = .81$), and for the depersonalization and derealization score ($\alpha = .77$, $\omega = .76$).

3.2.2.6 *Maladaptive Daydreaming*

The tendency to maladaptive daydreaming was assessed at T1 through the Italian version (Schimmenti et al., 2020) of the *Maladaptive Daydreaming Scale-16* (MDS-16; Somer, 2018). The MDS-16 is a self-report questionnaire containing 16 items rated on an 11-point Likert-type, ranging from 0% (*never/none of the time*) to 100% (*all of the time/extreme amounts*), that assesses a global score of maladaptive daydreaming or two main dimensions of this construct: Interference with life (8 items, e.g., “Some people have the experience of their daydreaming interfering with their academic/occupational success or personal achievements. How much does your daydreaming interfere with your academic/occupational success?”) and Somato-sensory retreat (8 items, e.g., “Some people feel a need to continue a daydream that was interrupted by a real-world event at a later point. When a real-world event has interrupted one of your daydreams, how strong was your need or urge to return to that daydream as soon as possible?”). For the purpose of the study, only the total score obtained from the average of each item was considered, with higher scores indicating higher levels of maladaptive daydreaming. In the present study, internal consistency values were excellent ($\alpha = .94$ and $\omega = .93$).

3.2.3 *Statistical analyses*

All analyses were conducted with SPSS version 29.0.2.0. First, descriptive analyses of the socio-demographic information of the sample were conducted, considering both the total sample ($n = 395$) and separately those who participated only in the first data collection ($n = 221$) and those who participated in both data collections ($n = 174$). To assess the presence of possible differences between those who participated only in T1 and those who also participated in T2, a series of χ^2 tests or t tests were conducted, depending on the categorical or continuous nature of the variables.

Descriptive statistics were calculated only in those who participated in both data collections, exploring the presence of any differences between who never gambler ($n = 98$) and who gambler at both data collections ($n = 76$). Furthermore, descriptive statistics and bivariate correlations between all assessed variables were calculated only in the latter group. Finally, two hierarchical regression analyses were conducted to evaluate the predictive role of gambling behaviors on gambling-related dissociative experiences, and vice-versa. In particular, the first hierarchical regression was conducted to determine whether gambling behaviors at T1 predict gambling-related dissociative experiences at T2 (Step 4), after controlling for gambling frequency (Step 3), over and above other forms of dissociative experiences (as assessed at T1) such as the three manifestations of dissociation proneness and maladaptive daydreaming (Step 2), and the initial levels of gambling-related dissociative experiences at T1 (Step 1). The second hierarchical regression was conducted to determine the reverse pattern, namely whether gambling-related dissociative experiences at T1 predict gambling levels at T2 (Step 4), beyond other forms of dissociative experiences at T1 (Step 3), and after controlling for gambling frequency (Step 2), and gambling levels at T1 (Step 1). Overall, 7 predictor variables were entered into both regressions and despite the small sample size of the present study ($n = 76$) the general rule according to which a minimum of 10 participants per predictor variable is required was respected (Tabachnick et al., 2013).

3.3 Results

3.3.1 Socio-demographics and gambling-related information

The online survey made it possible to make the questions mandatory, and, as a result, there were no missing data. The characteristics of the original sample and the comparison between those who answered only T1 and those who completed both data collections are shown in Table 3.1.

Table 3.1

Socio-demographic characteristics of the sample and comparison between those who participated at T1 only and those who participated in both data collections

		Total (n=395)		Only first data collection (n=221)		Both data collection (n=174)	
		<i>M (SD)</i>	<i>n(%)</i>	<i>M (SD)</i>	<i>n(%)</i>	<i>M (SD)</i>	<i>t (393)</i>
Age		22.20(3.56)		21.51(3.42)		23.08(3.55)	<i>p</i>
			<i>n(%)</i>		<i>n(%)</i>		<i>χ² (df)</i>
Gender	Women	267(67.60)		148(67.00)		119(68.40)	0.090(1) .764
	Men	128(32.40)		73(33.00)		55(31.60)	
Birthplace	Italy	388(98.20)		215(97.30)		173(99.40)	2.563(1) .106
	Abroad	7(1.80)		6(2.70)		1(0.60)	
Sentimental status	Single	169(42.80)		103(46.60)		66(37.90)	3.302(2) .192
	Engaged	221(55.90)		116(52.50)		105(50.30)	
	Married	5(1.30)		2(0.90)		3(1.70)	
Employment	Student	257(65.10)		149(67.40)		108(62.10)	1.227(1) .268
	Working student	138(34.90)		72(32.60)		66(37.90)	
Income	From 0 to 10,000 €	36(9.10)		20 (9.00)		16(9.20)	6.020(4) .421
	From 10,001 to 15,000 €	47(11.90)		33(14.90)		14(8.00)	
	From 15,001 to 26,000 €	121(30.60)		64(29.00)		57(32.80)	
	From 26,001 to 55,000 €	109(27.60)		56(25.30)		53(30.50)	
	From 55,001 to 75,000 €	38(9.60)		22(10.00)		16(9.20)	
	From 75,001 to 120,000 €	24(6.10)		13(5.90)		11(6.30)	
Lifetime Gambling	More than 120,000 €	20(5.10)		13(5.90)		7(4.00)	0.159(1) .690
	No	113(28.60)		65(29.40)		48(27.60)	
Gambled in the Past Year	Yes	282(71.40)		156(70.60)		126(72.40)	0.113(1) .736
	No	196(49.60)		108(48.90)		88(50.60)	
	Yes	199(50.40)		113(51.10)		86(49.40)	

As shown in the table, there were no statistically significant differences between the two groups regarding socio-demographic characteristics, except for age. Specifically, those who completed only the first data collection were significantly younger than those who completed both data collections.

Moreover, considering gambling habits at T1 of the total sample, among those who have claimed to gamble in the past years ($n = 199$), 81.40% ($n = 162$) were non regular gamblers and 18.60% ($n = 37$) were regular gamblers. Considering that non-regular gamblers may also include those who have gambled only once in the past year, potential differences in various forms of dissociative experiences (i.e., the three manifestations of dissociative proneness and maladaptive daydreaming) in relation to gambling engagement were explored by comparing non-gamblers and regular gamblers (i.e., those who participated in at least one gambling activity once a week or more). The decision to exclude non-regular gamblers was made to ensure a clearer comparison between the two groups. The results of the univariate analyses of variance (ANOVAs) conducted did not highlight any statistically significant differences between non-gamblers and regular gamblers in the levels of the dimensions of the tendency to general dissociation – i.e., dissociative amnesia ($F_{(1,231)} = 0.323, p = .570$), absorption and imaginative involvement ($F_{(1,231)} = 1.433, p = .232$), and depersonalization-derealization ($F_{(1,231)} = 3.781, p = .054$) – and Maladaptive Daydreaming ($F_{(1,231)} = 2.824, p = .094$).

Table 3.2 shows the socio-demographic characteristics of the sample of participants who completed both data collections and the comparison between those who never gambled ($n = 98$) and those who gambled at both time points ($n = 76$).

Table 3.2

Socio-demographic characteristics of the sample and comparison between who never gambled and who gambled at both data collections

		Never gambled (n=98)				Gambled at both data collection (n=76)			
		M (SD)		n(%)		M (SD)		t (172)	
Age		22.32(3.14)				24.07(3.82)		-3.317	
				n(%)				$\chi^2(df)$	
Gender	Women	83(84.70)				40(52.60)		27.586(1)	
	Men	15(15.30)				36(47.40)			
Birthplace	Italy	97(99.00)				76(100.00)		0.780(1)	
	Abroad	1(1.00)				0(0)			
Sentimental status	Single	39(39.80)				27(35.50)			
	Engaged	58(59.20)				47(61.80)		0.900(2)	
	Married	1(1.00)				2(2.60)			
Employment	Student	73(74.50)				35(46.10)		14.703(1)	
	Working student	25(25.50)				41(53.90)			
Income	From 0 to 10,000 €	8(8.20)				8(10.50)		6.020(4)	
	From 10,001 to 15,000 €	8(8.20)				6(7.90)			
	From 15,001 to 26,000 €	38(38.80)				19(25.00)			
	From 26,001 to 55,000 €	29(29.60)				24(31.60)			
	From 55,001 to 75,000 €	8(8.20)				8(10.50)			
	From 75,001 to 120,000 €	6(6.10)				5(6.60)			
Lifetime Gambling	More than 120,000 €	1(1.00)				6(7.90)			
	No	48(49.00)				0(0)		-	
	Yes	50(51.00)				76(100.00)			

As shown, the t test conducted highlighted that those who have claimed to have never gambled results to be younger than those who have claimed to have gambled both at T1 and T2. Moreover, the chi-square tests conducted showed statistically significant differences for gender and employment variables. Regarding gender, results showed in the gamblers group a substantial overrepresentation of men (standardized residual = 3.3) and an underrepresentation of women (standardized residual = -2.2), suggesting a significant link between being men and gambling engagement. As regards the employment status, data indicated that working students who gambled were overrepresented (standardized residual = 2.3), while non-working students who gambled were underrepresented (standardized residual = -1.8), suggesting that having a job is associated with a higher probability of gambling.

Regarding gambling habits, according to the SOGS classification criteria, 81.60% ($n = 62$) were non-problematic gamblers, 10.50% ($n = 8$) were potential/problematic gamblers, and 7.90% ($n = 6$) were probable pathological gamblers. In addition, 75% ($n = 57$) of the participants were non-regular gamblers, which means they gambled once a month or less, while the remaining 25% ($n = 19$) were regular gamblers, meaning they gambled weekly or more often.

More details regarding the gambling habits are shown in Table 3.3.

Table 3.3*Gambling habits of the subsample that gambled at both data collection (n = 76)*

		n(%)
Mode of gambling	Exclusively Offline	37(48.70)
	Mostly Offline	9(11.80)
	Both Offline and Online	17(22.40)
	Mostly Online	12(15.80)
	Exclusively Online	1(1.30)
Preferred type of gambling	Games of chance	32(42.10)
	Games of skill	31(40.80)
	Both	13(17.10)
Average amount of money spent on gambling	1 € or less	39(51.30)
	More than 1 but less than 10 €	22(28.90)
	More than 10 but less than 100 €	14(18.40)
	More than 100 euros, but less than 1000 €	1(1.30)

3.3.2 Descriptive statistics and bivariate correlations

Descriptive statistics and bivariate Pearson correlations between the study variables are reported in Table 3.4.

Table 3.4*Descriptive statistics and bivariate correlations among the study variables*

<i>Variables</i>	<i>M(SD)</i>	<i>Skewness(SE)</i>	<i>Kurtosis(SE)</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>
1. Age	24.07(3.82)		-	-									
2. Frequency of gambling	0.49(1.02)		-	-.16	-								
3. JDEQ_T1	0.88(1.88)	2.84(0.28)	7.99(0.55)	.13	.05	-							
4. SOGS_T1	1.25(1.96)	2.03(0.28)	4.10(0.55)	-.20	.42**	.62**	-						
5. DES_DisAm_T1	7.71(7.20)	1.10(0.28)	0.66(0.55)	-.13	-.06	.14	.14	-					
6. DES_AblmIn_T1	23.19(14.17)	0.79(0.28)	0.32(0.55)	-.30**	-.05	.02	.12	.63**	-				
7. DES_DepDer_T1	7.11(10.72)	1.98(0.28)	3.59(0.55)	-.23*	-.17	.03	-.14	.37**	.64**	-			
8. MDS_T1	15.80(16.10)	1.34(0.28)	1.07(0.55)	-.17	-.09	.15	.02	.25*	.56**	.52**	-		
9. JDEQ_T2	1.20(2.27)	2.01(0.28)	3.31(0.55)	-.14	.25*	.59**	.72**	.19	.27*	.06	.13	-	
10. SOGS_T2	1.21(2.17)	2.50(0.28)	6.84(0.55)	-.15	.37**	.40**	.75**	.07	.09	-.17	-.10	.69**	-

Note. JDEQ = Jacobs' Dissociative Experience Questions; SOGS = South Oaks Gambling Screen; DES = Dissociative Experiences Scale II; DisAm = Dissociative amnesia; AblmIn = Absorption/imaginative involvement; DepDer = Depersonalization/derealization; MDS = Maladaptive Daydreaming Scale; ** = $p < .01$; * = $p < .05$.

As shown, all variables had values within the accepted ranges ± 3 and ± 10 for skewness and kurtosis, respectively (Kline, 2023). Significant weak-to-strong correlations (Schober et al., 2018) in the expected direction were found. In particular, the score of JDEQ at first data collection was moderately correlated with the SOGS score ($r = .62, p < .01$) at the same time point and the scores of JDEQ ($r = .59, p < .01$) and SOGS ($r = .59, p < .01$) at second data collection. Similarly, the SOGS scores at T1 were found to be strongly correlated with the SOGS ($r = .75, p < .01$) and JDEQ ($r = .72, p < .01$) scores at T2.

3.3.3 Hierarchical regression analysis

The results of the hierarchical regression analysis with JDEQ at T2 as dependent variable are shown in Table 3.5.

Table 3.5*Summary of the hierarchical multiple regression analyses for JDEQ at T2*

	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	<i>Adj R</i> ²
Step 1						.333
JDEQ_T1	0.708	0.114	0.585	6.207	< .001	
Step 2						.414
JDEQ_T1	0.749	0.111	0.619	6.774	< .001	
DES_DisAm_T1	-0.044	0.037	-0.141	-1.194	.237	
DES_AbImIn_T1	0.086	0.024	0.537	3.556	< .001	
DES_DepDer_T1	-0.039	0.025	-0.185	-1.554	.125	
MDS_T1	-0.018	0.016	-0.125	-1.106	.272	
Step 3						.447
JDEQ_T1	0.730	0.108	0.604	6.780	< .001	
DES_DisAm_T1	-0.038	0.036	-0.122	-1.060	.293	
DES_AbImIn_T1	0.080	0.024	0.497	3.367	< .001	
DES_DepDer_T1	-0.029	0.025	-0.138	-1.176	.244	
MDS_T1	-0.016	0.016	-0.113	-1.023	.310	
Frequency of gambling	0.445	0.194	0.201	2.292	.025	
Step 4						.555
JDEQ_T1	0.338	0.134	0.279	2.520	.014	
DES_DisAm_T1	-0.031	0.032	-0.100	-0.971	.335	
DES_AbImIn_T1	0.048	0.022	0.298	2.123	.037	
DES_DepDer_T1	0.001	0.023	0.005	0.050	.961	
MDS_T1	-0.008	0.014	-0.059	-0.593	.555	
Frequency of gambling	0.053	0.198	0.024	0.270	.788	
SOGS_T1	0.599	0.142	0.518	4.218	< .001	

Note. JDEQ = Jacobs' Dissociative Experience Questions; SOGS = South Oaks Gambling Screen;

DES = Dissociative Experiences Scale II; DisAm = Dissociative amnesia; AbImIn = Absorption/imaginative involvement; DepDer = Depersonalization/derealization; MDS = Maladaptive Daydreaming Scale

The model in Step 1 was statistically significant ($\Delta R^2 = .342$, $\Delta F_{(1,74)} = 38.528$, $p < .001$) and the initial levels of JDEQ were significantly associated with their counterparts at T2. In Step 2, the other forms of dissociative experiences at T1 (i.e., the three manifestations of dissociative proneness and maladaptive daydreaming) were included, increasing the variance explained ($\Delta R^2 = 0.110$, $\Delta F_{(4,70)} = 3.525$, $p = .011$). Yet only the absorption and imaginative involvement dimension resulted to be significantly associated with the levels JDEQ at T2 along with its initial levels. In Step 3, the inclusion of the frequency of gambling behaviors increased the variance explained in the model ($\Delta R^2 = 0.039$, $\Delta F_{(1,69)} = 5.252$, $p = .025$): the initial levels of gambling-related dissociative experiences, the absorption and imaginative involvement dimension of dissociative proneness, and gambling frequency were significantly associated with the dependent variable. Finally, in Step 4, the initial level of gambling behaviors was included, increasing the variance explained in the model ($\Delta R^2 = .105$, $\Delta F_{(1,68)} = 17.789$, $p < .001$). At the last step of the regression analysis, the JDEQ scores at T2 were associated with its initial scores, the absorption and imaginative involvement dimension of dissociation, and the initial levels of gambling behaviors. The higher the levels of gambling-related dissociative experiences at T2, the higher its score, the tendency to be absorbed and involved in activities and gambling behaviors in T1.

Table 3.6 shows the results of the hierarchical regression analysis with SOGS at T2 as a dependent variable.

Table 3.6*Summary of the hierarchical multiple regression analyses for SOGS at T2*

	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	<i>Adj R</i> ²
Step 1						.556
SOGS_T1	0.829	0.085	0.750	9.743	< .001	
Step 2						.554
SOGS_T1	0.799	0.094	0.722	8.512	< .001	
Frequency of gambling	0.141	0.179	0.067	0.784	.435	
Step 3						.557
SOGS_T1	0.786	0.098	0.710	8.045	<.001	
Frequency of gambling	0.101	0.181	0.048	0.557	.579	
DES_DisAm_T1	-0.027	0.030	-0.090	-0.893	.375	
DES_AbImIn_T1	0.032	0.020	0.206	1.568	.121	
DES_DepDer_T1	-0.016	0.022	-0.081	-0.747	.457	
MDS_T1	-0.022	0.013	-0.161	-1.660	.102	
Step 4						.551
SOGS_T1	0.807	0.137	0.729	5.911	< .001	
Frequency of gambling	0.089	0.190	0.042	0.469	.640	
DES_DisAm_T1	-0.026	0.031	-0.086	-0.832	.408	
DES_AbImIn_T1	0.030	0.022	0.195	10.382	.171	
DES_DepDer_T1	-0.015	0.023	-0.075	-0.676	.501	
MDS_T1	-0.021	0.013	-0.156	-10.554	.125	
JDEQ_T1	-0.029	0.129	-0.025	-0.225	.823	

Note. SOGS = South Oaks Gambling Screen; JDEQ = Jacobs' Dissociative Experience Questions;

DES = Dissociative Experiences Scale II; DisAm = Dissociative amnesia; AbImIn = Absorption/imaginative involvement; DepDer = Depersonalization/derealization; MDS = Maladaptive Daydreaming Scale

Results showed that only the model at Step 1 ($\Delta R^2 = .562$, $\Delta F_{(1,74)} = 94.934$, $p < .001$) in which the initial levels of SOGS were entered was found to be statistically significant, whereas it was not when gambling frequency (Step 2, $\Delta R^2 = .004$, $\Delta F_{(1,73)} = 0.615$, $p = .435$), others dissociative facets (Step 3, $\Delta R^2 = .027$, $\Delta F_{(4,69)} = 1.112$, $p = .353$), and gambling-related dissociation (Step 4, $\Delta R^2 = .001$, $\Delta F_{(1,68)} = 0.050$, $p = .823$) were entered. Overall, in the last step of the regression analysis, SOGS scores at T2 were positively associated only with his initial scores.

3.4 Brief Discussion

The present study is built upon well-established theoretical speculations (Jacobs, 1986, 1988; Somer et al., 2010) and empirical evidence (Rogier et al., 2021) suggesting the close link between dissociative experiences and gambling behaviors. However, there is a lack of scientific consensus regarding the nature and directionality of this relationship. Therefore, the present study aimed to fill this gap by exploring whether it is the tendency toward dissociation that promotes the onset of gambling or vice versa, or whether the existing link is bidirectional. Moreover, within the broad spectrum of dissociative experiences (Goldberg & Goodyer, 2014), the present study focused on gambling-related dissociative experiences since they were found to be the ones most closely associated with gambling also in the first study of the present dissertation. In particular, this investigation was conducted through a two-wave longitudinal study, accounting not only for gambling behaviors and gambling-related dissociative experiences but also for a broader range of dissociative experiences, such as the general tendency to dissociate and maladaptive daydreaming, in order to capture the multifaceted nature of the phenomenon.

An examination of the preliminary comparison between participants from the entire sample with respect to their tendency toward dissociation in relation to gambling

involvement reveals noteworthy findings. Indeed, the lack of statistically significant differences between non-gamblers and regular gamblers across various facets of the general tendency toward dissociation (dissociative amnesia, depersonalization-derealization, absorption and imaginative involvement, and maladaptive daydreaming) supports – similarly to what was found in Study 1 – the hypothesis that specific dissociative aspects of gambling behavior, rather than a general predisposition to dissociation, are implicated in the addictive nature of gambling. Moreover, consistent with our results of the Study 1 and with previous research (Gee et al., 2005; Harris et al., 2021; Kuley & Jacobs, 1988; Wood et al., 2004), the findings indicated stable cross-sectional relationships between gambling behaviors and gambling-related dissociative experiences. These robust relationships suggested that gamblers with higher severity of gambling behaviors reported more gambling-related dissociative experiences, which was also consistent with the General Theory of Addiction (Jacobs, 1986, 1988).

Beyond supporting previous findings, our results provide further insight into the predictive associations between these two variables. In particular, gambling was not predicted by dissociation in all its measured manifestations but only by its initial levels. In contrast, gambling-related dissociation was influenced not only by its own levels, as well as by a general tendency toward absorption and imaginative involvement, but also by the extent of gambling behavior itself.

Taken together, these findings support the theoretical speculations that it is gambling behavior that predicts dissociative experiences over time rather than the reverse. Similar to substance addictions (Van Heugten-Van der Kloet et al., 2015), gambling appears to have the capacity to induce dissociative symptoms due to its ability to detach individuals from reality (Somer et al., 2010). Therefore, the repetitive and immersive nature of gambling activities may create a psychological escape that fosters dissociative states. These

dissociative-like states likely emerge as a response to the highly stimulating and mood-altering environment that gambling provides, characterized by the excitement of potential wins and the distraction from negative emotions. Furthermore, the immersive qualities of gambling, especially in fast-paced forms like slot machines or online gambling, may intensify dissociative experiences by encouraging a loss of time awareness and self-absorption, which aligns with dissociative mechanisms seen in other behavioral addictions. This suggests that gambling serves as a mood-modifying behavior, heightening the propensity for dissociation as individuals use it as a maladaptive coping strategy to evade reality and regulate their emotions (Cartmill et al., 2015). Therefore, it can be hypothesized that the reinforcing nature of gambling-related dissociative experiences may further exacerbate the addiction cycle, contributing to the persistence – but not worsening– of gambling behaviors.

The finding that gambling behaviors predicted gambling-related dissociative experiences and not vice versa seems to only apparently contradict what is postulated by the General Theory of Addiction (Jacobs, 1986, 1988). According to this theory, individuals with chronically abnormal arousal states who respond to feelings of inferiority or rejection by retreating into denial and engaging in compensatory fantasies are particularly vulnerable to developing addictive behaviors. However, dissociation is a phenomenon with many faces that are not necessarily interconnected (Goldberg & Goodyer, 2014), and these may play different roles in the etiology of gambling. For instance, while gambling-related dissociation may be a specific dissociative facet exacerbated by engagement in gambling, as found in the present study, other dissociative manifestations may be more involved in the initial onset of gambling behavior, as suggested by Jacobs.

Overall, these results emphasize that certain patterns emerged when a snapshot of a phenomenon (i.e., the relationship between gambling and dissociation) was considered

based on a single data collection. However, when the phenomenon was viewed as a dynamic process over time, a different perspective arose, underscoring the need for longitudinal studies to capture the evolving nature of this relationship. In other words, this shift in insight supports the idea that cross-sectional studies may provide only a limited understanding of complex psychological processes, whereas longitudinal approaches offer a more comprehensive view of how these processes may develop and change.

Despite the valuable insights provided by the present study, it is not without its limitations. The first pertains to the sample size, which comprised only 76 participants, most of whom were non-regular gamblers who gambled exclusively or primarily offline. This relatively small and homogeneous sample hindered the possibility of exploring potential differences in gambling behavior, such as variations in frequency and preferred gambling type. Indeed, it is possible to assume that those who are involved in highly immersive gambling activities (such as slot machines) are at greater risk of incurring dissociative experiences than those who are more involved in other types of games (such as sports betting and bingo). This is because slot machines are a type of gambling more capable of inducing a dissociative-like experience due to their use of ambient sound, flashing lights, and rhythmic gameplay, which can enhance psychological immersion (McCormick et al., 2012; Murch et al., 2020). Another limitation related to the sample size concerns the type of analyses conducted. In fact, a larger sample would have allowed for more sophisticated analyses, such as cross-lagged panel model analyses. Therefore, future studies should investigate the association between gambling and gambling-related dissociative experiences using a larger sample with multiple data collections in order to consolidate our understanding of the stability of their link over time. Finally, in the present study, only different facets of dissociative experiences (dissociative amnesia, depersonalization-derealization, absorption and imaginative involvement, maladaptive daydreaming, and gambling-related) and

gambling behaviors were examined. However, as suggested by previous research, gambling behavior is one of the multiple and complex outcomes of mental disintegration induced by childhood trauma (Imperator et al., 2017). Therefore, in future research, other variables, such as childhood trauma and aspects of mental disintegration (e.g., self-concept clarity), should be examined as potential factors contributing to the complex association between gambling and dissociation.

Despite these limitations, the present study makes a significant contribution to the growing body of literature on the dissociative potential of gambling behaviors, highlighting their similarities with substance use disorders. The findings suggest that individuals may engage in gambling not only for the thrill of the activity itself but also as a means of achieving a dissociative state. This mentally detached state, where concepts of space and time become blurred, may offer a temporary escape from reality and emotional distress. Such detachment is reminiscent of the dissociative states induced by substances of abuse, where individuals seek relief from their psychological burdens. Thus, the study reinforces the idea that gambling can serve as a maladaptive coping mechanism, offering a form of psychological escape that mimics the dissociative effects observed in substance addictions, an aspect that should be taken into account by clinicians dealing with gamblers.

Chapter 4

Conclusion

4.1 General Discussion

Gambling is a socially acceptable form of entertainment in many countries, so widespread that most people have gambled at least once in their lives (Calado & Griffiths, 2016; Molinaro et al., 2018). In addition, although gambling is often considered a typical adult activity, a plethora of studies have shown the popularity and spread of gambling behaviors even among adolescents (Heinz et al., 2019; Tran et al., 2024) despite legislation generally prohibiting minors from participating in any form of gambling activity. This evidence is alarming since adolescents who gamble are at a higher risk of developing more severe gambling problems during adulthood (Granero et al., 2014). Moreover, despite many adolescents and adults engaging in gambling in a non-regular or recreational manner (Emond et al., 2020; Tani et al., 2021; Tran et al., 2024), some individuals develop cognitive and behavioral symptoms (e.g., preoccupation with gambling, difficulties in quitting gambling, financial problems, and relationship breakdowns), to the point of manifesting a full-blown Gambling Disorder (APA, 2024). Therefore, considering the worldwide diffusion of gambling (Gabellini et al., 2023; Mora-Salgueiro et al., 2021; Tran et al., 2024) and the plethora of negative consequences of such behavior (Langham et al., 2015), it is not surprising that literature has focused on recognizing possible risk factors involved in the onset and maintenance of gambling behaviors. Among the psychological variables considered (see Dowling et al., 2017), dissociation stands out as a critical factor warranting focused attention in both theoretical and empirical research, as well as clinical practice (Rogier et al., 2021). In this regard, the General Theory of Addiction (Jacobs, 1986, 1988) assumes that individuals tend to develop a behavioral pattern of dependence in the presence

of two predisposing factors: (i) a state of unipolar physiological rest chronically and excessively depressed (i.e., hypoarousal) or excited (i.e., hyperarousal); and (ii) a psychological state characterized by feelings of inferiority, inadequacy and rejection, arising from early relationships with other significant others from which the individual is protected by escaping into fantasy. Therefore, according to Jacobs (1986, 1988), indulging in rewarding repetitive behaviors such as gambling provides the individual with a chance to escape from a physiological and/or psychological suffering, a mode of evasion that seems to be dissociative in nature. In support of this hypothesis, a recent systematic review of the literature has highlighted the association between dissociative experiences and gambling (Rogier et al., 2021). However, dissociation is a complex and multifaceted phenomenon, and this complexity may explain the mixed findings regarding its relationship with gambling (Rogier et al., 2021). Some studies have focused on general dissociative tendencies, typically measured by the *Dissociative Experiences Scale* (DES) (Bernstein et al., 1986; Carlson & Putnam, 1993), while others have examined dissociation specifically related to gambling, often using the *Jacobs' Dissociative Experience Questions* (JDEQ; Jacobs, 1988). Therefore, greater clarity on this association can be achieved through studies that have considered different facets of dissociative experiences using different measures simultaneously. For example, Diskin and Hodgins (2001) found no significant differences in DES scores between problem and occasional gamblers, but problem gamblers reported significantly higher levels of gambling-specific dissociation on the JDEQ. This highlights the importance of distinguishing between general dissociation and substance/behavior specific dissociation when studying addiction processes, in this case gambling. Indeed, it can be assumed that within the wider spectrum of dissociative experiences, those specifically associated with gambling could provide an elective perspective through which to examine the underlying processes of gambling behaviors.

Therefore, the first study of the present dissertation aimed to address a gap in the literature by adapting the JDEQ to the Italian context and evaluating its psychometric properties. The results indicated that the JDEQ has excellent psychometric properties, confirming its one-dimensional structure and demonstrating high internal consistency. These findings contribute to the growing body of literature by providing a validated tool to measure gambling-related dissociative experiences in an Italian sample. In addition, the results showed that specific dissociative experiences related to gambling were found to be strongly associated with the severity of gambling behaviors. In contrast, gambling was only (weakly) associated with the general dissociation tendency in university students and not at all in high school students. In particular, this association was found to be stronger with respect to the dissociative dimension of absorption and imaginative involvement, the most common form of dissociation in the general population (Carlson, 2005). Overall, this suggests that gambling behaviors are more closely related to specific dissociative experiences associated with such behaviors than to a broader and more general tendency towards dissociation.

Despite the preliminary evidence, the nature of the existing link between dissociation and gambling is not yet clear as all the studies conducted are of a cross-sectional nature and therefore it is not possible to establish whether it is the tendency towards dissociation that favors the onset of gambling or vice versa, or whether the existing link is of a bidirectional nature. Therefore, the second study of this dissertation aimed to fill this gap by employing a two-wave longitudinal study to explore the directionality of the relationship between gambling behavior and gambling-related dissociative experiences beyond other well-known facets of dissociation (dissociative amnesia, depersonalization-derealization, absorption and imaginative involvement, and maladaptive daydreaming). Results indicated that gambling behaviors predicted gambling-related dissociative experiences, while the reverse was not true. This supports the notion that gambling, much like substance use (Somer et al., 2010),

can induce dissociative symptoms, providing individuals with a temporary escape from distressing emotions (Van Heugten-Van der Kloet et al., 2015). The immersive nature of gambling, with its potential to create a psychological escape, may foster dissociative states that reinforce the behavior over time. In other words, it is possible to see gambling as an opportunity to reach a psychic refuge, a place of the mind where one can detach from the distressing reality and find relief, representing an inappropriate utilization of “psychic retreats” (Steiner, 1993). Therefore, the findings suggest that gambling might not be a byproduct of pre-existing dissociative tendencies (at least when it comes to general population samples) but can rather actively trigger dissociative states, further emphasizing its addictive potential. This dissociative mechanism, characterized by a detachment from reality, may play a crucial role in the maintenance of gambling behaviors, making dissociation both a consequence and a reinforcing factor in the cycle of addiction.

4.2 Limitations and Future Directions

Although the results of this dissertation support the well-established association between gambling and dissociative experiences and offer greater clarity regarding its directionality, several methodological limitations deserve mention.

A first limitation concerns the sampling methodology. In both studies the sample was a convenience sample composed of students (high school and university students in Study 1, and only university students in Study 2). This aspect hinders the generalizability of the results to the broader population of gamblers.

Furthermore, both samples consisted mainly of non-regular gamblers. In this regard, it is important to emphasize that the present dissertation employed a strictly conservative criterion for classifying regular gamblers. Specifically, we defined regular gamblers as individuals who engaged in gambling weekly or more frequently, while many studies in the

literature categorize individuals as regular gamblers if they have gambled at least once per month (Harris et al., 2021; Mazar et al., 2020). On one hand, this conservative approach justifies the limited number of regular gamblers found by the present study. On the other hand, it strengthens our findings that specific dissociative experiences relate more to gambling compared with a general tendency towards dissociation. This is further emphasized by the absence of significant differences between non-gamblers and regular gamblers across various facets of general dissociative tendencies (see Study 2). An important limitation related to this is the absence of a clinical sample. Future research would benefit from including individuals diagnosed with Gambling Disorder, as this could provide valuable insights into the association between gambling and dissociation, particularly in a longitudinal context. Indeed, a longitudinal investigation of such association would allow researchers to evaluate the hypothesis that a general tendency toward dissociation may represent a risk factor for the onset of gambling (i.e., General Theory of Addiction), while gambling-related dissociation may represent a negative consequence of engaging in such behavior (as emerged in Study 2).

Another interesting point to investigate by referring to the clinical population would be to explore the gambling-dissociation link taking into account the three types of gamblers proposed by the Pathways Model (Blaszczynski & Nower, 2002; Nower et al., 2022), namely Behaviorally Conditioned Problem Gamblers, Emotionally Vulnerable Problem Gamblers, and Antisocial-Impulsive Problem Gamblers. Indeed, if the research did not reveal significant differences in gambling-related dissociation between these groups, this would reinforce current findings according to which gambling-related dissociation is a deleterious consequence of such behaviors, arising from its intrinsic dissociative characteristics and properties.

Moreover, both studies relied on self-report measures. Although self-reports are widely used in psychological research, future studies should consider incorporating other robust methods, such as clinical interviews, to overcome defensive or self-representative biases.

Finally, it would be interesting if future studies could investigate the relationship between gambling and dissociation by conducting experiments using different types of gambling activity (e.g., slot machine versus poker) to test their different dissociative properties.

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