

# Comparative Analysis of Personality Traits in Online Gambling: Systematic Review

## Çevrimiçi Kumarda Kişilik Özelliklerinin Karşılaştırmalı Analizi: Sistemik Derleme

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### ABSTRACT

The global rise in internet usage has significantly altered how people spend their leisure time, including gambling—one of the oldest and most hazardous forms of entertainment. This transformation has given rise to online gambling, a modern counterpart to traditional land-based gambling. This study aimed to (a) review existing findings on personality traits associated with online gambling and (b) compare the personality profiles of online gamblers to those of land-based gamblers. A systematic review was conducted following PRISMA guidelines, utilizing databases such as PubMed, Scopus, Web of Science, ULAKBİM TR Index, Turkish Psychiatry Index, Asos Index, and SOBIAD Index. Of the studies screened, 12 met the inclusion criteria. Findings highlighted that online gamblers are predominantly male, with higher levels of education and income compared to land-based gamblers. Key personality traits associated with online gambling addiction include high levels of sensation seeking, novelty seeking, neuroticism, and impulsivity, alongside low levels of self-directedness, cooperativeness, and extraversion. While these traits are also linked to land-based gambling, online gamblers were found to score lower in extraversion and honesty-humility. Additionally, some studies noted that online gamblers tend to accumulate greater gambling debts and experience higher gambling-related harms. Clinical studies revealed that individuals who engaged in both types of gambling—online and land-based—were most closely associated with pathological gambling behaviors. These findings underscore the role of specific personality traits and the unique risks posed by online gambling in the development of gambling addiction.

**Keywords:** Personality traits, online gambling, land-based gambling, systematic review

### ÖZ

İnternet kullanımının çarpıcı bir şekilde artması, insanların boş zamanlarını değerlendirme biçimlerinde değişikliklere yol açmıştır. Bu artışla beraber, en eski riskli eğlence biçimlerinden biri olan kumar da değişime uğramıştır. Yeni bir kumar oynama biçimi olarak çevrimiçi kumar ortaya çıkmıştır. Söz konusu çalışmanın iki amacı bulunmaktadır: a) çevrimiçi kumarla ilgili kişilik özelliklerine dair bulguları sistemik olarak gözden geçirmek ve b) çevrimiçi kumar oyuncularının kişilik profilini fiziksel kumar oyuncularıyla karşılaştırmak. Sistemik İncelemeler ve Meta-Analizler İçin Tercih Edilen Raporlama Öğeleri (PRISMA) yönergelerine uygun olarak PubMed, Scopus, Web of Science, ULAKBİM TR Dizin, SOBIAD, Asos İndeks ve Türk Psikiyatri Dizini veri tabanları taranmıştır. Dahil edilme kriterlerini karşılayan 12 çalışma ile bazı kişilik özellikleri öne çıkmıştır. Çalışmalar, çevrimiçi kumar oynayanların çoğunlukla erkek olduklarını, fiziksel kumar oynayanlara kıyasla daha yüksek eğitim düzeyine ve daha yüksek gelire sahip olduklarını göstermiştir. Duyum arayışı, yenilik arayışı, nevroz, dürtüsellik gibi kişilik özelliklerinde yüksek seviyeler ve düşük düzeyde kendini yönetme, iş birliği yapma ve dışa dönüklük kişilik özelliklerinin çevrimiçi kumar oynama davranışının gelişmesinde önemli bir rol oynadığı görülmüştür. Bu kişilik özellikleri halihazırda fiziksel kumarla ilişkilendirilmiş olmasına rağmen, çevrimiçi kumar oyuncularının dışa dönüklük ve dürüstlük-alçakgönüllülük kişilik özelliklerinde daha düşük seviyelerde olduğu belirlenmiştir. Diğer spesifik bulgular, çevrimiçi kumar oyuncularının daha yüksek kumar borçlarına sahip olduklarını ve genel olarak kumardan daha fazla zarara uğradıklarını göstermiştir. Son olarak, klinik çalışmalarda, kumar bağımlılığına en yakın grubun her iki tür kumara da başvuran karma grubun olduğu görülmüştür. Bu sonuçlar, bazı kişilik özelliklerinin ve çevrimiçi kumarın kumar bağımlılığı riskini artırdığını göstermektedir.

**Anahtar sözcükler:** Kişilik özellikleri, çevrimiçi kumar, fiziksel kumar, sistemik derleme

## Introduction

The dramatic increase in internet usage since the beginning of the 21st century has significantly transformed leisure activities. Gambling, one of the oldest risky entertainment behaviors, has also changed with the rise of the internet. With the increasing number of online casinos, betting, and lottery platforms, a new type of gambling, online gambling (OG), has emerged. Unlike land-based gambling (LG), which requires physically visiting a casino or similar venue, OG offers the flexibility to gamble anywhere with internet access. Gambling disorder is defined as "a persistent and problematic gambling behavior pattern leading to significant distress or impairment" in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) by the American Psychiatric Association (APA) (APA 2013). While the DSM-5 does not explicitly differentiate OG, the World Health Organization (WHO) (WHO 2021) describes it as a "gambling disorder, predominantly online". Researchers believe that OG, unlike LG, presents a risk for gambling disorder due to its accessibility from anywhere and at any time through the internet, its ease of credit use, the insufficiency of legal restrictions, the similarity of some gambling types to online games, and the ubiquitous advertisements on the internet (Gainsbury et al. 2012, Tessier et al. 2021). Epidemiological studies have reported that 20% to 38% of online gamblers have a moderate risk for gambling disorder, and 2% to 8% meet the criteria for gambling disorder (Griffits et al. 2009, Castren et al. 2013, Gainsbury et al. 2014, Blaszczynski et al. 2016, Ivanova et al. 2019).

Demographic studies suggest that online gamblers are mostly men, more educated, and have more financial income than land-based gamblers. Furthermore, compared to land-based gamblers, internet gamblers engage in various gambling activities such as online casinos, poker rooms, and betting sites (Gainsbury et al. 2012, Elton-Marshall et al. 2016). These issues have led to an increase in the number of studies investigating the risks associated with online gambling. A study observed notable differences between online gamblers, land-based gamblers, and a mixed group (players who gamble with both methods). The study revealed that land-based gamblers were the oldest, mixed groups were the youngest, and online gamblers experienced more racing and sports betting issues. The mixed group exhibited the highest level of gambling-related pathology (Gainsbury et al. 2015). Another study using a similar method revealed that the mixed group was the group that gambled more frequently and suffered the most from gambling-related harms. This group's main characteristics included being male, single, and having lower education levels (Hing et al. 2022). Additional studies have also demonstrated that mixed gamblers are the closest group to pathological gambling (González-Roz et al. 2017, Papineau et al. 2018, Leslie and McGrath 2023). Collectively, these findings suggest that OG significantly contributes to the increased risk of pathological gambling.

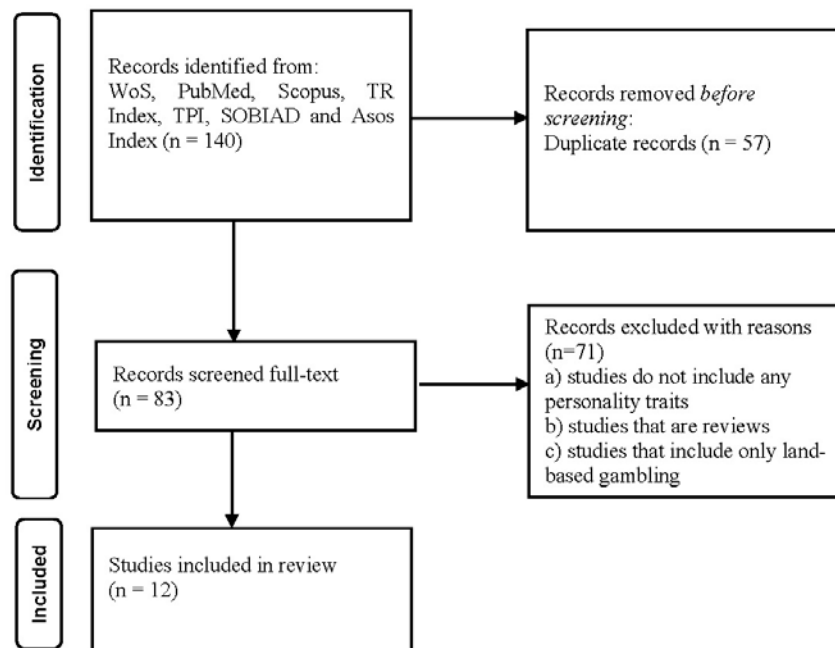
Researchers have extensively studied personality traits as explanatory variables for gambling behaviors. However, much of this research focuses on LG. In their Pathways Model, Blaszczynski and Nower (2001) identified the personality type of gambling disorder with a low tolerance for boredom, impulsivity, and antisocial personality traits. Zuckermann and Kuhlman (2000), on the other hand, associated gambling behavior with impulsivity, sensation seeking, sociability, and aggression. Studies comparing personality characteristics between gamblers who meet and do not meet the criteria for gambling disorder have reported that pathological gamblers significantly score higher in impulsivity, sensation seeking, openness to experience, and neuroticism than non-pathological gamblers (Bagby et al. 2007, Myseth et al. 2009). Lastly, regarding the Big Five Personality Traits Model, according to the results of two large-scale meta-analysis studies covering more than 50,000 participants in total, high neuroticism, low level of extraversion, low conscientiousness, low level of agreeableness, and low level of openness to experience were correlated with gambling addiction (Strømme et al. 2021, Dudfield et al. 2023).

Despite these insights, there is a lack of research on the personality profiles of online gamblers compared to land-based gamblers, which raises questions about whether these profiles significantly differ from those of land-based or mixed gamblers. This systematic review aims to compile studies regarding the personality profiles of online gamblers and assess whether they differ significantly from those of land-based gamblers.

## Method

This study was conducted per PRISMA guidelines (Page et al. 2021). A systematic search was conducted on PubMed, Web of Science, and Scopus with the following keywords: "online gambling" or "online wagering," "online gamble" or "computer gambling," and "personality" or "personality traits" for English studies, and "çevrimiçi kumar" ve "kişilik," "çevrimiçi kumar" ve "kişilik özellikleri," "sanal kumar" ve "kişilik," and "sanal kumar" ve "kişilik özellikleri" for Turkish studies, between January and February 2024. The ULAKBİM Tr Index,

Turkish Psychiatry Index, SOBIAD Index, and Asos Index were screened with the same English and Turkish keywords in November 2024. Figure 1 presents the search diagram.



**Figure 1. Flow diagram of searching and selection process**

WoS= Web of Science, TR Index: ULAKBIM TR Index, TPI= Turkish Psychiatry Index, SOBIAD: Turkish Social Sciences Citation Index

The following inclusion criteria were used: a) studies published in peer-reviewed journals, b) studies that included at least one personality trait, and c) studies published in English or Turkish languages. Studies were excluded if they a) only analyzed LG, b) were published as theses, reviews, or book chapters, and c) did not include any personality traits.

## Results

The PRISMA flow chart indicates that this review included 12 studies that met the inclusion criteria. Four studies used the Temperament and Character Inventory-Revised (TCI-R), two used the Big Five Inventory (BFI) and Big Six Personality Inventory (HEXACO), and the remaining used different measurement tools. Table 1 provides the references, methods and objectives, samples, personality measurement tools, and main results of the studies.

### TCI-R

All four studies employed a group design and used TCI-R as a personality measurement instrument, except for one study. They aimed to investigate the differences between online and land-based gamblers or pathologic and non-pathologic online gamblers regarding temperament and character. Firstly, using the self-report method, Estevez et al. (2017) compared land-based gamblers, online gamblers, and online sports bettors based on clinical and sociodemographic variables and personality characteristics. According to the study results, all three groups showed low levels of self-directedness and cooperativeness and high levels of novelty-seeking personality traits. Second, online sports bettors reported having higher levels of persistence than the other two groups.

Additionally, OG and online betting players reported almost twice as much gambling debt as LG players. The study found no differences in personality traits between the groups, except for the trait of persistence. The results of the study showed that the online environment and persistence trait might be associated with increased gambling debt. In the second study, Granero et al. (2020), using a between-group design, divided OG players into two groups—those more affected by OG and those less affected—and compared them regarding personality characteristics. In the comparison, higher-level gamblers showed increased novelty-seeking but lower self-directedness and cooperativeness compared to lower-level gamblers. In the third study conducted with TCI-R, Mallorquí-Bagué et al. (2017) compared 261 OG addicts and 27 online gaming addicts in terms of personality, psychopathology, and body mass index. According to the results of the study, OG and online gaming addicts showed similar personality and psychopathology profiles. The study found no significant difference among the

participants in personality traits such as reward dependence, harm avoidance, and self-directedness. However, participants addicted to online gambling were higher on novelty seeking and lower on persistence when compared to gaming addicts. In the last study, Dinc et al. (2020) studied the relationship between OG and TCI-R among high school students. According to the study results, sentimentality, a subscale of reward dependence in TCI-R, negatively predicted OG behavior in high school students.

**Table 1. General information about included studies**

Reference	Method and Aim	Sample	Measurement	Main Results
Carver and Mccarty 2013	Between groups design. Aim was to compare online gamblers, regular lottery players, heavy casino gamblers and non-gamblers in terms of personality and psychographics.	11518 participants (291 online gamblers, 1100 regular lottery players, 688 heavy casino gamblers and 9439 non-gamblers)	The Simmons NCS Questionnaire	All types of gamblers were higher on impulsivity when compared to non-gamblers. However, online gamblers, were higher on risk taking, sensation seeking, desire for control and self-centeredness when compared to casino gamblers, non-gamblers and lottery players.
Tessier et al. 2021	Correlational survey method. Aim was to investigate how social support; personality traits and advertisements play role in online gambling.	109 participants (45% problematic or moderate risk online gamblers)	Big Five Inventory	Neuroticism was significantly associated with shifting from non-risk online gambling to severe-risk online gambling. Also, lower level of extraversion was associated with online gambling compared to non-gamblers.
Mallorquí-Bagué et al. 2017	Between groups design. Aim was to compare patients with internet gambling disorder and those with online gaming disorder.	288 adult patients (261 online gambling disorder and 27 online gaming disorder)	Temperament and Character Inventory – Revised	Results show that online gamers and online gamblers show similarities in terms of emotional stress and personality traits. However online gamblers were higher on novelty seeking and persistence traits.
Leslie and McGrath 2023	Between groups design. Aim was to compare gamblers who play in online, offline and mixed-mode.	517 participants (166 online gamblers, 171 land-based gamblers and 180 mixed mode gamblers)	The Brief HEXACO Inventory of Personality	Online gamblers were lower on extraversion when compared to other two gambling modes. Secondly, mixed mode gamblers showed higher problematic gambling scores and lower honesty-humility trait.
Estevez et al. 2017	Between groups design. Aim was to compare offline gamblers, online sports bettors and other online gamblers.	2743 patients (2558 land-based gamblers, 64 online sports bettors and 121 other online gamblers)	Temperament and Character Inventory – Revised	All types of gamblers displayed high level of novelty seeking and low levels of self-directedness and cooperativeness. Although personality traits of three groups were similar, online gamblers seemed to possess distinct personality traits and high levels of debt.
Granero et al. 2020	Between group design. Aim was to investigate the differences between patients with problematic online betting and nonproblematic online betting.	323 patients (247 patients who were more affected from online betting and 76 who were less affected)	Temperament and Character Inventory – Revised	More problematic online sports betting group displayed lower scores in self-directedness and cooperativeness and higher scores on novelty seeking.

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Lopez-Torres et al. 2021	Between group design. Aim was to investigate the differences between online and land-based gamblers.	79 treatment seeking gamblers (29 online gamblers, 50 land-based gamblers)	The UPPS-P Impulsive Behavior Scale State-Trait Anxiety Inventory (STAI)	Online gamblers showed higher lack of premeditation levels compared to offline gamblers. Also, online gamblers were significantly younger than offline gamblers. There were no significant differences on depression, anxiety or other traits.
Mowen et al. 2009	Correlational survey method. Aim was to explore personality traits on four types of gambling (land-based gambling, online gambling, lottery, sports betting).	1158 participants	The 3M Model of Personality, Eysenck Impulsive Scale	Five factors were related with online gambling: Gambling propensity, financial conservatism, emotional instability (negative), openness and introversion. Land-based gamblers were more impulsive, less introvert, more materialistic and had more arousal needs.
Redondo 2015	Between groups design. Aim was to explore players characteristics between different types of gambling (online casino players, offline casino players, online lottery gamblers, offline lottery gamblers).	2197 offline lottery gamblers, 114 online lottery gamblers, 799 land-based casino gamblers, 216 online casino gamblers	Different 3 questions for each trait and characteristic	Online casino players were significantly more introverted, less religiously oriented, less ethically oriented and had less tendency to thriftlessness when compared to offline casino players. No significant difference was found for impulsivity
Dinc et al. 2020	Correlational survey method. Aim was to investigate the relationship between online gambling addiction, temperament and attachment styles.	790 high school students	Temperament and Character Inventory – Turkish Version (Turkish-TCI)	Sentimentality which is a subscale of reward dependence negatively predicted online gambling in high school students.
Barrault and Varescon 2013	Between groups design. Aim was to investigate differences between pathological, problematic and non-problematic online poker players regarding impulsive sensation seeking.	180 online poker players (112 non-pathological, 37 problematic and 31 pathological gamblers)	The Impulsive Sensation Seeking Scale (ImpSS)	All three groups displayed high impulsivity. However, pathological gamblers were more impulsive than other two groups. Although groups didn't differ regarding the sensation seeking, all three groups were high on this trait too.
Köksoy Vayisoğlu et al. 2019	Correlational survey method. Aim was to identify the prevalence of gambling and explore the relationship between gambling and sensation seeking in university students.	339 university students (52 online gamblers, 197 non-gamblers and 4 pathological gamblers)	Sensation Seeking Scale Form V (SSS-V)	Those who gamble online were significantly higher in subscales of disinhibition, boredom susceptibility as well as overall SSS-V total score.

## Big Five and Big Six Theories

Two studies investigated OG behavior using the Big Five or Big Six personality theories. In the first of these, Leslie and McGrath (2023) compared OG, LG, and a mixed group regarding personality and gambling motivation. According to the study, online gamblers differed from other groups in extroversion, scoring significantly lower. Additionally, the mixed group showed more pathological gambling behavior and a lower level of honesty-humility traits compared to other groups. No differences were found between groups in the remaining personality traits of the theory. In the second study, which used BFI as a measurement tool, Tessier (2021) tried to investigate the relationship between OG, social support, personality traits, and advertisements. The study showed that neuroticism is the key factor in shifting from moderate to problem OG. Also, similar to the first study, they found that lower levels of the extraversion trait were associated with OG compared to non-gamblers.

## Other Measurement Tools

In one of the most comprehensive studies ever conducted, Carver and McCarty compared the personality and sociodemographic variables of online gamblers, casino gamblers, lottery players, and those who do not gamble, using national data from 11,518 participants. Firstly, the three groups' impulsivity was significantly higher than that of non-gamblers. Secondly, online gamblers have a different personality profile than casino or lottery players. Online gamblers showed higher levels of risk-taking, desire for control, self-centeredness, and sensation-seeking traits than all other groups. There was no difference between the groups in the extraversion trait (Carver and McCarty 2013). In another large-scale study, Redondo (2015) compared 2197 offline lottery gamblers, 114 online lottery gamblers, 799 offline casino gamblers, and 216 online casino gamblers in terms of some personality and sociodemographic variables. The study found that online gamblers were significantly more introverted than their land-based counterparts. The study also depicted OG players as less religiously oriented and less ethical. In terms of impulsivity, no difference was found between the groups.

Mowen et al. (2009) conducted the third study, which used a broad personality typology to predict various types of gambling, including OG, sports betting, lotteries, and sweepstakes. The study found that introversion, openness to experience, and emotional instability (negative) traits predicted OG behavior. Only OG players exhibited the introversion trait, which did not establish a significant relationship with other groups. Sports bettors, on the other hand, showed more impulsive, more extroverted, and less conscientious profiles than online gamblers. In another study, Lopez-Torres and his colleagues divided 79 gambling addicts seeking treatment into two groups: online and land-based. We then compared the two groups in terms of impulsivity, lack of premeditation, state-trait anxiety, and gambling debt. Online gamblers scored higher on the lack of premeditation trait than LG players.

Additionally, the age of onset of gambling addiction was much lower for online gamblers. Also, online gamblers had higher gambling debts compared to LG players. There was no difference between groups in personality traits such as trait anxiety, negative urgency, and positive urgency (Lopez-Torres et al. 2021).

In the last two studies, first Barrault and Varrescon (2013) found that more pathological online gamblers scored higher on impulsivity and that sensation-seeking played a crucial role in OG. In the second study, with a similar aim, Köksoy Vayisoğlu et al. (2019) tried to discover the relationship between gambling and sensation-seeking with a sample of 339 (52 online gamblers, four pathological gamblers and 197 non-gamblers). They also found that online gamblers were more prominent sensation-seekers compared to non-gamblers.

## Discussion

The increasing popularity of OG raises concerns about its potential to contribute to gambling addiction. Despite this, a few studies are exploring the risk factors for OG. In this study, we aimed to collate research on the personality factors of OG, using a comparative approach to identify similarities and differences with LG.

Online gamblers are predominantly male, and they have higher education, income, and gambling debt than land-based gamblers. Below are discussed the personality attributes of online gamblers, as well as their parallels and divergences from land-based gamblers.

Regarding TCI-R, studies consistently showed that online gamblers were high on novelty seeking and lower on self-directedness and cooperativeness (Estevez et al. 2017, Mallorquí-Bagué et al. 2017, Granero et al. 2020). Firstly, novelty seeking is one temperament factor that is thought to be a heritable bias in the activation or

initiation of behaviors like frequent exploration in response to novelty, impulsive decision-making, extravagance in approach to reward cues, and active avoidance of frustration and quick loss of temper (Cloninger et al. 1993). Novelty seeking has been associated with various addictive behaviors such as drug abuse, alcohol abuse, and pathological gambling (Bardo et al. 1996, Black et al. 2015, Wingo et al. 2016). Secondly, self-directedness refers to the ability to regulate, manage, and modify behavior in line with chosen ideals and goals, and it is usually associated with a mature personality. Individuals with low self-directedness have low self-esteem, a sense of inadequacy, and confusion about their identity (Cloninger et al. 1993). Lastly, regarding cooperativeness: people who cooperate are characterized by their social tolerance, empathy, and helpfulness.

Hassene et al. (1999) describe individuals who do not cooperate as socially intolerant, indifferent to others, unhelpful, and vengeful. Our study reveals a striking similarity between the personality traits of online gamblers and those of land-based gamblers and other individuals with addictive behaviors. This trio is associated with impulsivity, gambling severity, dishonest behavior, and overall personality disorders (Nordin and Nylander 2007, Forbush et al. 2008). These findings suggest that some personality traits of online gamblers are similar to those of land-based gamblers and individuals with other addictive behaviors, implying that online gamblers are also susceptible to problem gambling behaviors, which can persist due to these traits.

Regarding the Big Five and Big Six Personality theories, the first interesting finding in this study is that online gamblers are consistently lower on extraversion when compared to land-based gamblers and mixed-mode gamblers (Mowen et al. 2008, Tessier et al. 2021, Redondo 2015). Since extraversion is associated with social interactions and positive self-regard, one motivation for land-based gamblers to gamble may be the social environment (Leslie and McGrath, 2023). However, because of the nature of OG, it seems that online gamblers prefer to gamble in serenity. Also, one study found that the family orientation of online gamblers is lower than that of land-based gamblers (Redondo 2015). Since social support is important in preventing addictions, online gamblers may have a greater risk of pathological gambling because of their introverted personality profile.

In summary, since online gamblers are younger and less experienced, Carver and McCarty (2013) might be accurate when describing online gamblers as "youthful and antisocial introverts." The second intriguing finding regarding the Big Five and Big Six is that online and mixed-mode gamblers had lower honesty-humility traits than land-based gamblers (Leslie and McGrath, 2023). Honesty-humility defines people who are high as "sincere, fair, and unassuming" and low as "sly, greedy, and pretentious." People who are low on this trait are likelier to lie to achieve personal goals and be more materialistic (Ashton and Lee 2005). Kim et al. (2018) and McGrath et al. (2018) found a negative association between this trait and gambling severity among land-based gamblers. Given that previous research indicates that problem gamblers typically lie about their gambling-related status, such as debt or amount of time spent playing, it is likely that problematic gamblers will have lower levels of this trait (Toce-Gerstein et al. 2003). Since online gamblers tend to be less ethical (Redondo 2015) and are lower on this trait, they may have an elevated risk of pathological gambling.

Researchers have also explored other personality traits like impulsivity or sensation seeking. Impulsivity has already been associated with gambling disorder in previous studies (Nower and Blaszczynski 2006, Hodgins and Holub 2015). In the current review, some conflicting findings emerged. Carver and McCarty (2013) found that casino players, online gamblers, and regular lottery players exhibited similar levels of impulsivity, which were higher than casual gamblers or non-gamblers. Conversely, Lopez-Torres et al. (2021) reported that online gamblers scored higher on lack of premeditation—a facet of impulsivity involving decisions made without considering consequences. However, the small sample size in this study (29 online and 50 offline gamblers) limits the generalizability of this conclusion. Further research is necessary to determine whether online gamblers are equally or more impulsive than land-based gamblers, given the multifaceted nature of impulsivity and inconsistent findings across studies (Mestre-Bach et al. 2020). Sensation seeking, another important personality trait, refers to a preference for complex, unique, or varied experiences (Zuckerman 1979). Previous studies related it to land-based gambling (Coventry and Brown 1993). This review reveals a correlation between OG and sensation seeking. In the study by Carver and McCarty (2013), online gamblers were higher on sensation seeking compared to land-based gaming. Similarly, Köksoy-Vayısoğlu et al. (2019) found that online gamblers scored higher on subscales of disinhibition, susceptibility, and overall sensation-seeking total score compared to non-gamblers. In sum, it seems that sensation-seeking plays a crucial role in all types of gambling.

The first limitation of this study is the small number of available studies in OG, reflecting its status as a relatively new phenomenon. The sample sizes of online gamblers and the diversity of personality assessment tools employed also constrain generalizability. Given that all the studies were created in a cross-sectional manner, the absence of longitudinal studies would be another limitation in this systematic review.

## Conclusion

This study aimed to examine the personality traits of online gamblers and explore the personality differences between OG and LG, given that OG is a relatively recent phenomenon. Our findings suggest that online gamblers share several personality traits with land-based gamblers, including impulsivity, novelty-seeking, neuroticism, sensation-seeking, and lower levels of self-directedness and cooperativeness. However, a notable difference is that online gamblers tend to be more introverted. Since OG can be accessed from home, this suggests that introversion may be a potential risk factor for engaging in OG.

Mallorquí-Bagué et al. (2017) observed that individuals addicted to OG and online gaming share similar personality traits. This finding supports the idea that OG may feel like a game to internet users, particularly as many OG platforms are intentionally designed to resemble casual games. Despite this, research consistently shows that OG significantly elevates the risk of gambling disorder. Online gamblers are more likely to incur higher debts and suffer greater gambling-related harms compared to land-based gamblers.

In conclusion, we urge researchers to focus more on the OG phenomenon, taking into account cultural, clinical, and social variables. This is crucial as OG appears to heighten the risk of gambling disorder, yet there remains a lack of comprehensive studies on this subject. Large-scale, longitudinal research could provide critical insights into the development and persistence of pathological OG.

## References

- APA (2013) *Diagnostic and Statistical Manual of Mental Disorders, 5th ed. (DSM-5)*. Washington DC, American Psychiatric Association.
- Ashton MC, Lee K (2005) Honesty-humility, the Big Five, and the Five-Factor Model. *J Pers*, 73:1321-1354.
- Bach G, Valero-Solis S, Rivas S, Agüera Z, Vintró-Alcaraz C, Lozano-Madrid M et al. (2020) Gambling phenotypes in online sports betting. *Front Psychiatry*, 11:482.
- Bagby M, Vachon D, Bulmash EL, Toneatto, T, Quilty LC, Costa PT. (2007) Pathological gambling and the five-factor model of personality. *Pers Individ Dif*, 43:873-880.
- Barrault S, Varescon I (2013) Impulsive sensation seeking and gambling practice among a sample of online poker players: Comparison between non pathological, problem and pathological gamblers. *Pers Individ Dif*, 55:502-507.
- Black D, W Coryell, Crowe R. R, Shaw, McCormick B, Allen J (2015) Personality disorders, impulsiveness, and novelty seeking in persons with DSM-IV pathological gambling and their first-degree relatives. *J Gambl Stud*, 31:1201-1214.
- Blaszczynski A, Russell A, Gainsbury S, Hing N (2016) Mental health and online, land-based and mixed gamblers. *J Gambl Stud*, 32:261-275.
- Brunborg GS, Hanss D, Mentzoni RA, Molde H, Pallesen S (2016) Problem gambling and the five-factor model of personality: a large population-based study. *Addiction*, 111:1428-1435.
- Carver A, Mccarty AJ (2013) Personality and psychographics of three types of gamblers in the United States. *Int Gambl Stud*, 13:338-355.
- Cloninger CR, Przybeck TR, Svrakic DM, Wetzel RD (1994) *The Temperament and Character Inventory (TCI): A guide to its development and use*, St. Louis, MO Center for Psychobiology of Personality, Washington University.
- Cloninger CR, Svrakic DM, Przybeck, TR (1993) A psychobiological model of temperament and character. *Arch Gen Psychiatry*, 50:975-990.
- Coventry KR, Brown RIF (1993) Sensation seeking, gambling and gambling addictions. *Addiction*, 88:541-554.
- Dinc M, Eksi H, Aricak, O (2020) Temperament and character dimensions of personality in individuals with online gambling disorder in a high school student sample from Turkey. *Psychiatry Clin Psychopharmacol*, 30:396-402.
- Dudfield FW, Malouff JM, Meynadier J (2023) The association between the five-factor model of personality and problem gambling: A meta-analysis. *J Gambl Stud*, 39:669-687.
- Elton-Marshall T, Leatherdale ST, Turner NE (2016) An examination of internet and land-based gambling among adolescents in three Canadian provinces: Results from the youth gambling survey (YGS). *BMC Public Health*, 16:277.
- Estevez A, Rodríguez R, Díaz N, Granero R, Mestre-Bach G, Steward T et al. (2017) How do online sports gambling disorder patients compare with land-based patients? *J Behav Addict*, 6:639-647.
- Forbush KT, Shaw M, Graeber MA, Hovick L, Meyer VJ, Moser DJ et al. (2008) Neuropsychological characteristics and personality traits in pathological gambling. *CNS Spectr*, 13:306-315.
- Gainsbury SM, Russell A, Blaszczynski A, Hing N (2015) The interaction between gambling activities and modes of access: a comparison of Internet-only, land-based only, and mixed-mode gamblers. *Addict Behav*, 41:34-40.



- Gainsbury SM, Russell A, Hing N, Wood R, Lubman DI, Blaszczynski A (2014) The prevalence and determinants of problem gambling in Australia: assessing the impact of interactive gambling and new technologies. *Psychol Addict Behav*, 28:769-779.
- Gainsbury S, Wood R, Russell A, Hing N, Blaszczynski A (2012) A digital revolution: Comparison of demographic profiles, attitudes and gambling behavior of internet and non-internet gamblers. *Comput Hum Behav*, 28:1388-1398.
- Granero R, Jiménez-Murcia S, del Pino-Gutiérrez A, Mora B, Mendoza-Valenciano E, Baenas-Soto et al. (2020) Gambling phenotypes in online sports betting. *Front Psychiatry*, 11:482.
- Griffiths M, Wardle H, Orford J, Sproston K, Erens B (2009). Sociodemographic correlates of internet gambling: findings from the 2007 British gambling prevalence survey. *Cyberpsychol Behav*, 12:199-202.
- González-Roz A, Fernández-Hermida JR, Weidberg S, Martínez-Loredo V, Secades-Villa R (2017) Prevalence of problem gambling among adolescents: A comparison across modes of access, gambling activities, and levels of severity. *J Gambl Stud*, 33:371-382.
- Hansenne M, Reggers J, Pinto E, Kjiri K, Ajamier A, Ansseau M (1999) Temperament and Character Inventory (TCI) and depression. *J Psychiatr Res*. 33:31-36.
- Hing N, Russell AM, Black A, Rockloff M, Browne M, Rawat et al. (2022) Gambling prevalence and gambling problems amongst land-based-only, online-only and mixed-mode gamblers in Australia: A national study. *Comput Hum Behav*, 132:107269.
- Hodgins DC, Holub A (2015) Components of impulsivity in gambling disorder. *Int J Ment Health Addict*, 13:699-711
- Ivanova E, Rafi J, Lindner P, Carlbring, P (2019) Experiences of responsible gambling tools among non-problem gamblers: A survey of active customers of an online gambling platform. *Addict Behav Rep*, 9:100161.
- Kim HS, Rash CL, McGrath DS (2018) The dishonest gambler: Low HEXACO honesty-humility and gambling severity in a community sample of gamblers. *Pers Ment Health*, 12:355-364.
- Köksoy Vayısöğlü S, Öncü E, Güven Y (2019) The frequency of gambling among university students and its relationships to their sensation-seeking behaviors. *Addicta: The Turkish Journal on Addictions*, 6:69-90.
- Leslie RD, McGrath DS (2023) A comparative profile of online, offline, and mixed-mode problematic gamblers' gambling involvement, motives, and HEXACO personality traits. *J Gambl Stud*, 40:237-253.
- Lopez-Torres I, León-Quismondo L, Ibáñez A (2021) Impulsivity, lack of premeditation, and debts in online gambling disorder. *Front Psychiatry*, 11:618148.
- Mallorquí-Bagué N, Fernández-Aranda F, Lozano-Madrid M, Granero R, Mestre-Bach G, Baño M et al. (2017) Internet gaming disorder and online gambling disorder: Clinical and personality correlates. *J Behav Addict*, 6:669-677.
- McGrath DS, Neilson T, Lee K, Rash CL, Rad M (2018) Associations between the HEXACO model of personality and gambling involvement, motivations to gamble, and gambling severity in young adult gamblers. *J Behav Addict*, 7:392-400.
- Mestre-Bach G, Steward T, Granero R, Fernández-Aranda F, Mena-Moreno T, Vintró-Alcaraz C, Lozano-Madrid M, Menchón J.M, Potenza M et al. (2020) Dimensions of Impulsivity in gambling disorder. *Sci Rep*, 10:397.
- Mowen JC, Fang X, Scott, K (2009) A hierarchical model approach for identifying the trait antecedents of general gambling propensity and of four gambling-related genres. *J Bus Res*, 62:1262-1268.
- Myrseth H, Pallesen S, Molde H, Johnsen B. H, Lorvik, M (2009). Personality factors as predictors of pathological gambling. *Pers Individ Diff*, 47:933-937.
- Nordin C, Nylander PO (2007). Temperament and character in pathological gambling. *J Gambl Stud*, 23:113-120.
- Nower L, Blaszczynski A (2006). Impulsivity and pathological gambling: A descriptive model. *Int Gambl Stud*, 6:61-75.
- Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD et al. (2021) The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *Int J Surg*, 88:105906.
- Papineau E, Lacroix G, Sevigny S, Biron J. F, Corneau-Tremblay N, Lemétayer F (2018) Assessing the differential impacts of online, mixed, and offline gambling. *Int Gambl Stud*, 18:69-91.
- Redondo I (2015). Assessing the risks associated with online lottery and casino gambling: A comparative analysis of players' individual characteristics and types of gambling. *Int J Ment Health Addict*, 13:584-596.
- Strømme R, Børstad KH, Rø AE, Erevik EK, Sagoe D, Chegeni, R et al. (2021) The relationship between gambling problems and the five-factor model of personality: A systematic review and meta-analysis. *Front Psychiatry*, 12:740235.
- Tessier S, Romo L, Zerhouni O (2021) Impact of advertising campaigns among online gamblers: the role perceptions of social support and personality traits. *Front Psychiatry*, 12:599988.
- Toce-Gerstein M, Gerstein DR, Volberg RA (2003) A hierarchy of gambling disorders in the community. *Addict*, 98:1661-1672.
- von der Heiden JM, Egloff B (2021) Associations of the Big Five and locus of control with problem gambling in a large Australian sample. *PloS One*, 16:e0253046.
- Whiting SW, Hoff RA, Balodis IM, Potenza MN (2019) An exploratory study of relationships among five-factor personality measures and forms of gambling in adults with and without probable pathological gambling. *J Gambl Stud*, 35:915-928.
- Wingo T, Nesil T, Choi JS, Li, MD (2016) Novelty seeking and drug addiction in humans and animals: from behavior to molecules. *J Neuroimmune Pharmacol*, 11:456-470.

WHO (2021) International Statistical Classification of Diseases and Related Health Problems 11th Revision (ICD-11). Geneva, World Health Organization.

Zuckerman M, Kuhlman DM (2000) Personality and risk-taking: common bisocial factors. *J Pers*, 68:999-1029.

Zuckerman M (1979) *Sensation Seeking: Beyond the Optimal Level of Arousal*, Hillsdale, NJ, Erlbaum.

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