From Behavioral Addictions to Digital Dependencies: A Bibliometric Analysis of Cryptocurrency, Online Gambling, and Gaming Disorder Research

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Abstract

Aim: This study aims to present a bibliometric mapping of three critical areas in digital addiction research (cryptocurrency, online gambling, and gaming disorder) spanning the period 2010-2025. Specifically, it aims to reveal the place of these three critical areas within academic production, their development trends, and their structural relationships.

Method: A total of 2,693 articles retrieved from the Web of Science database were examined following PRISMA guidelines, with publication trends, keyword clusters, country contributions, and co-authorship networks visualized.

Results: Digital addiction research has expanded rapidly, it has yet to achieve full theoretical and methodological maturity. The cryptocurrency domain remains relatively new and fragmented, online gambling experienced a marked increase during the COVID-19 period, and gaming disorder has emerged as the largest and comparatively more mature field. A common thread across these domains lies in shared psychodynamic processes—such as risk-taking and reward expectancy—that intersect with behavioral addictions.

Conclusion: This study underscores the need to address digital addictions not only at the individual level but also as a broader public health concern. It offers a holistic perspective on the current state and future directions of digital addictions, providing valuable implications for both policymakers and researchers.

Keywords: Behavioral addiction, digital addiction, cryptocurrency, online gambling, gaming disorder.

Davranışsal Bağımlılıklardan Dijital Bağımlılıklara: Kripto Para, Çevrimiçi Kumar ve Oyun Bozukluğu Araştırmalarının Bibliyometrik Analizi

Öz

Amaç: Bu çalışma, 2010-2025 dönemini kapsayan dijital bağımlılık araştırmalarındaki üç kritik alanın (kripto para, çevrimiçi kumar ve oyun bozukluğu) bibliyometrik haritalamasını sunmayı amaçlamaktadır. Özellikle kripto para, çevrimiçi kumar ve oyun bozukluğu olmak üzere üç kritik alanın akademik üretim içindeki yerini, gelişim eğilimlerini ve yapısal ilişkilerini ortaya koymayı hedeflemektedir.

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Yöntem: Web of Science veri tabanından alınan toplam 2.693 makale, PRISMA yönergeleri doğrultusunda incelenmiş ve yayın eğilimleri, anahtar kelime kümeleri, ülke katkıları ve ortak yazarlık ağları görselleştirilmiştir.

Bulgular: Dijital bağımlılık araştırmaları hızla artmakta, ancak henüz teorik ve metodolojik olarak tam olgunluğa ulaşmamıştır. Kripto para alanı nispeten yeni ve parçalı bir yapıdadır; çevrimiçi kumar COVID-19 döneminde belirgin bir artış göstermiştir ve oyun bozukluğu en büyük ve nispeten daha olgun alan olarak ortaya çıkmıştır. Bu alanlar arasındaki ortak nokta, davranışsal bağımlılıklarla kesişen risk alma ve ödül beklentisi gibi ortak psikodinamik süreçlerdir.

Sonuç: Çalışma, dijital bağımlılıkların yalnızca bireysel düzeyde değil, aynı zamanda daha geniş bir halk sağlığı sorunu olarak ele alınması gerektiğinin altını çizmektedir. Çalışma, dijital bağımlılıkların mevcut durumu ve gelecekteki yönleri hakkında bütünsel bir bakış açısı sunarak hem politika yapıcılar hem de araştırmacılar için değerli çıkarımlar sağlamaktadır.

Anahtar Sözcükler: Davranışsal bağımlılık, dijital bağımlılık, kripto para birimi, çevrimiçi kumar, oyun bozukluğu.

Introduction

Although the concept of addiction was for many years largely confined to substance use, this understanding has significantly evolved in recent decades. Beyond substance-related disorders, addictions characterized by an impaired ability to control the urge to repeat certain behaviors have gained increasing recognition[1]. In recent years, behavioral addictions extending beyond substance use have attracted growing attention both in society and in academic contexts. Under the umbrella of "non-substance addictions" behaviors such as love, eating, physical exercise, internet use, digital gaming, social media engagement, sexual behavior, and technology use have gained prominence in the literature[1]. These behavioral conditions share the core features of addiction, manifesting as repetitive patterns that impair daily functioning and give rise to symptoms resembling those of substance use disorders[2]. Internet addiction has a heterogeneous structure and may involve gambling, gaming, social media use, and shopping[3]. Indeed, both scholars and the broader public increasingly acknowledge that behavioral addictions—such as gambling, internet use, and video gaming—share important similarities with alcohol and drug dependence[4]. The expanding definition of addiction, coupled with digital technologies, has introduced a new dimension to the concept. With the proliferation of digital technologies, technology-based addictions have emerged as a distinct domain.

The rapid expansion of the internet, coupled with the increased reliance on digital platforms during the COVID-19 pandemic, has turned "digital addiction" into a pressing global public health concern[5]. This accelerated transformation of digital technologies has not only facilitated the emergence of new behavioral addiction patterns—such as information-digital addiction (IDA)—but also raised concerns that interactions with innovative technologies, including artificial intelligence, digital assistants, and metaverse platforms, may acquire pathological dimensions[6]. Over the past three decades, digital technologies have reshaped access to information, communication, and everyday practices, intensifying engagement with digital platforms[7]. This process further

accelerated during the COVID-19 pandemic[5]. Yet, excessive and uncontrolled use of digital platforms—such as the internet, social media, online gaming, video streaming, and cryptocurrency trading—can generate a wide range of negative consequences, including physical and psychological health problems, diminished academic performance, workplace difficulties, and strained social relationships[8,9]. In this context, the systematic classification and management of digital addictions through international diagnostic frameworks, such as the International Classification of Diseases (ICD-11), is of critical importance for effective prevention and treatment.

The most recent revision of the International Classification of Diseases (ICD-11) by the World Health Organization (WHO) provides a framework for defining and classifying digital addictions. These disorders are categorized under behavioral addictions, including internet gaming disorder and gambling disorder. By situating digital addictions within the broader category of addictive disorders, ICD-11 aims to regulate treatment pathways and establish a structured framework for clinical interventions. Gambling and gaming addictions are typically characterized by impulse-control difficulties and obsessive behaviors, features that facilitate the development of appropriate therapeutic approaches[10]. Among children, adolescents, and adults who engage heavily with technology, such conditions generate multidimensional effects—physical, cognitive, and psychological—underscoring the necessity of addressing digital addictions through a multidisciplinary lens. Although cryptocurrency trading is not formally recognized as a diagnostic category in ICD-11, it is closely associated with psychological risk factors such as high volatility, pathological trading behaviors, and impulsivity[11]. Hence, it could be argued that cryptocurrency use should also be considered within this classificatory framework. While cryptocurrency trading may appear distinct from online gambling or gaming disorder, it is shaped by similar psychological mechanisms and behavioral dynamics. For this reason, these three domains warrant a holistic and integrated perspective.

Cryptocurrency, online gambling, and gaming disorder share common psychological processes, such as reward motivation and risk-taking tendencies. With the rapid evolution of digital technologies, both video gaming opportunities and monetary gambling options have expanded in scope and diversity[12]. It has been suggested that advances in digital media technologies have enabled a wide range of online gambling and gambling-like opportunities[13]. This expansion has blurred the boundaries between online gambling and digital gaming. In particular, in-game purchases, reward systems, loot boxes, and other chance-based mechanisms have introduced gambling-like features into video games, thereby obscuring distinctions between gaming and gambling addictions[14]. Research further shows that problematic video gaming is positively associated with subsequent problematic gambling behaviors[12]. The development of these behavioral patterns is not only driven by the increasing accessibility of digital technologies but also shaped by heightened tendencies toward risk-taking in economic decision-making. These factors fuel excessive and uncontrolled engagement in activities such as online gaming, digital gambling, and cryptocurrency trading. Digital addiction driven by motivational processes leads individuals to distance themselves from real-life

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relationships. Over time, this paves the way for broader social problems such as social isolation. Such tendencies extend beyond the individual level, highlighting digital addiction as a growing psychosocial concern[15]. Central to this escalation is the allure of rapid financial gain, which enhances the attractiveness of risky behaviors. During the COVID-19 pandemic, social isolation further magnified the appeal of high-risk digital activities such as online gambling, reinforcing individuals' addictive engagement with digital platforms[16]. Moreover, the rise of virtual communities around online gambling and gaming has introduced an additional layer of risk, as these communities normalize and sustain addictive behaviors—functioning as both triggers and reinforcers[14].

In recent years, research output across these three domains has grown considerably; yet the studies remain at different levels of theoretical maturity and methodological rigor, suggesting that the fields are still in a developmental stage. The literature is largely fragmented and dispersed, which makes it challenging to examine digital addictions from a holistic perspective or to develop an in-depth understanding of their underlying mechanisms.

Against this backdrop, the present study applies a bibliometric approach to analyze the scientific literature on cryptocurrency, online gambling, and gaming disorder in an integrated and comparative manner. By mapping their temporal development, country-level contributions, shared patterns, and existing research gaps, the study aims to provide a systematic and comprehensive overview of digital addiction research. In doing so, it offers not only an academic contribution to the field but also practical insights that may guide policymakers and practitioners in addressing the growing challenges posed by digital addictions.

Although previous studies have examined cryptocurrency, online gambling, and gaming disorder individually, these areas are generally addressed in isolation. As a result, the literature remains fragmented, and it is difficult to develop a more comprehensive understanding of digital addictions as an interconnected phenomenon. In particular, the shared psychological mechanisms and developmental patterns across these domains have not been sufficiently considered together. In this sense, the present study aims to contribute to the literature by bringing these three areas into a common analytical framework and offering a more integrated perspective.

Material and Methods

Data Source and Search Strategy

The data for this study were obtained from the Web of Science (WoS) Core Collection database. WoS was selected because it indexes high-impact journals and is widely regarded as one of the most reliable sources for bibliometric research[17,18]. The analysis was limited to publications between 2010 and 2025, as there was little meaningful academic output on cryptocurrency, online gambling, or gaming disorder prior to 2010. The data collection process included all publications indexed in the Web of Science database up to August 30, 2025, and all data were retrieved on the same day to ensure

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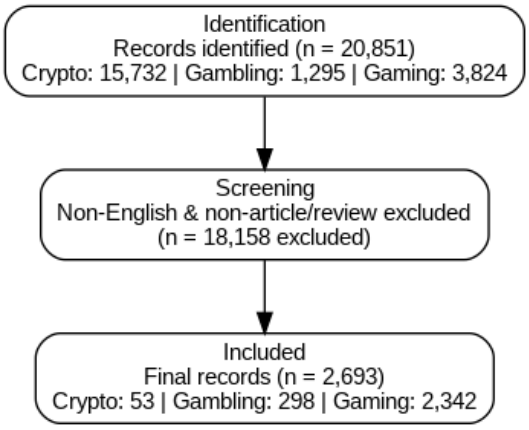
consistency. Three separate datasets were compiled: 53 records on cryptocurrency, 298 on online gambling, and 2,342 on gaming disorder. Only peer-reviewed journal articles and review papers were included in the analysis. Records were exported in plain text (.txt) format with complete metadata and citation information. Due to database export limitations, the records were downloaded in multiple batches and subsequently merged into a single dataset. The search strategy was developed using combinations of relevant keywords related to cryptocurrency, online gambling, and gaming disorder, applied within the "Topic" field.

The process of data selection followed the PRISMA guidelines[19]. Figure 1 illustrates the identification, screening, eligibility, and inclusion steps for the cryptocurrency, online gambling, and gaming disorder datasets. This procedure enhances transparency and enables researchers to reproduce the data selection process.

Figure 1. PRISMA flowchart outlining the identification, screening, eligibility, and inclusion steps for the three datasets (cryptocurrency, online gambling, and gaming disorder)



As shown in the flowchart, a substantial number of records were excluded due to language, document type, or scope limitations, and a total of 2,693 articles were ultimately included in the bibliometric analysis.

Data Processing and Analysis

Duplicate records were identified and removed during the data cleaning process. The exported records were first cleaned and standardized. Variations in author names, institutional affiliations, and keywords were consolidated. The bibliometric analysis combined performance indicators—such as annual publication trends, most prolific authors, countries, and journals—with science-mapping techniques, including co-authorship, keyword co-occurrence, and cross-country collaboration[20,21]. For the co-authorship analysis, the full counting method was applied, limiting each publication to a maximum of 25 authors and including only researchers with at least three publications. Keyword co-occurrence analysis considered both author-supplied terms and Keywords Plus, requiring a minimum of five occurrences to ensure that only concepts representing

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salient themes were retained and that weak or incidental links were minimized. The international collaboration analysis included only countries with at least three publications. Visualizations were produced with VOSviewer (v1.6.20), and descriptive statistics were generated using Microsoft Excel. The threshold values used in the analyses were selected to ensure clearer and more interpretable network structures by reducing the influence of low-frequency elements. All analytical procedures were conducted following established bibliometric practices, and the workflow is described in sufficient detail to allow replication.

Ethical Statement

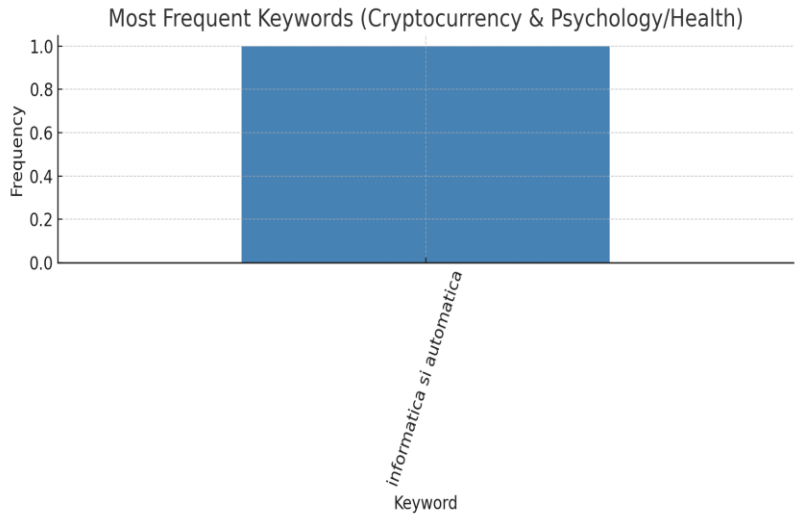
This study relied exclusively on publicly available bibliographic data. Because no human participants or personally identifiable information were involved, formal ethics committee approval was not required. The authors affirm that the data were used solely for scholarly purposes and that they have no conflicts of interest to declare.

Results

Cryptocurrency Publications

The analysis of the cryptocurrency dataset (n=53) revealed that this research field has emerged only recently. The first relevant studies appeared in 2019, with a notable increase observed in 2024 (14 publications). Although the overall number of studies remains small, the upward trend suggests growing academic attention.

Figure 2. Annual Distribution of Publications (Cryptocurrency & Psychology/Health)



Publications on the psychological and mental health aspects of cryptocurrency only emerged after 2019. Output increased after 2021, with a visible peak in 2024–2025, indicating growing scholarly attention to the behavioural and clinical consequences of crypto trading.

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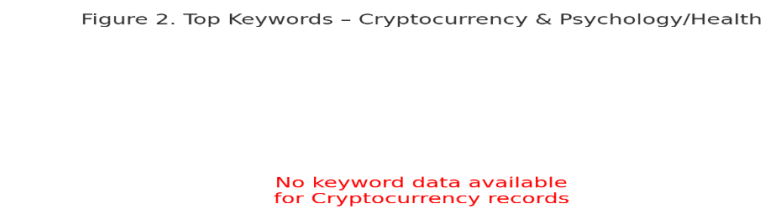
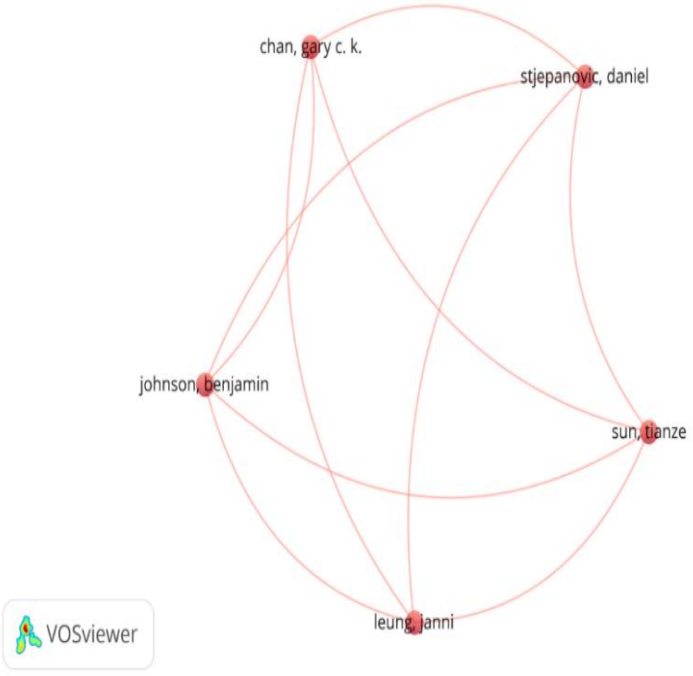
Figure 3. Most frequent keywords (cryptocurrency & psychology/health)



Keyword analysis did not yield consistent results because the majority of cryptocurrency records lacked standardized indexed terms. This limitation indicates that research in this area is still at an exploratory stage, with insufficient conceptual consolidation across studies. Instead, analysis highlighted fragmented author-level and country-level contributions, suggesting that the field is still immature and lacks consolidated research agendas.

Figure 4. Co-authorship network in cryptocurrency-related publications (VOSviewer visualization)



The co-authorship analysis revealed fragmented collaboration patterns among authors in the cryptocurrency and psychology/health domain. Only a few small clusters of researchers (e.g., Johnson, Chan, Leung, Stjepanovic, and Sun) were identified, indicating that the field is still emerging with limited cross-institutional collaboration. The absence of large and cohesive research networks suggests that knowledge production in crypto-psychology is highly fragmented, potentially limiting the development of cumulative scientific insights.

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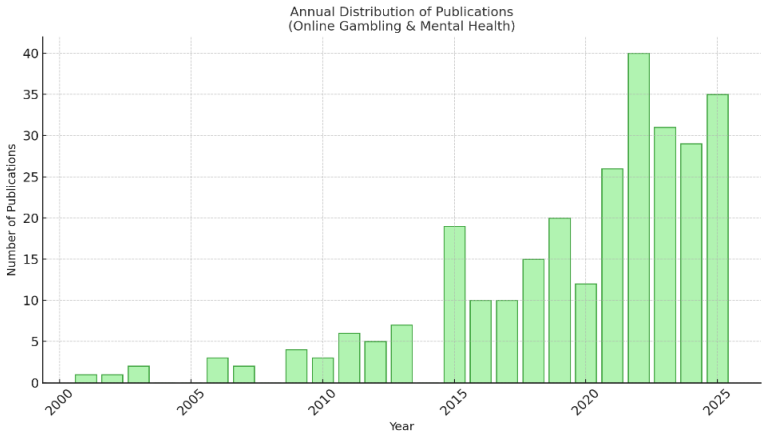
Online Gambling Publications

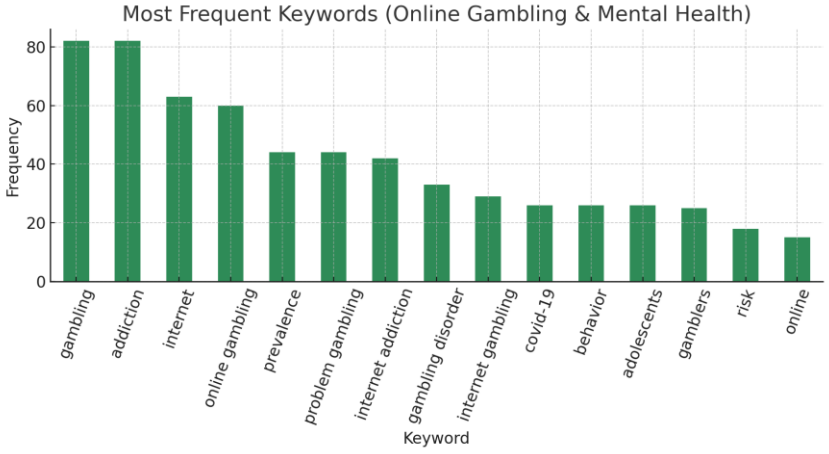
The gambling dataset (n=298) covers the years 2016–2025, with a peak observed in 2021 (40 publications). This indicates that gambling-related mental health research intensified during the COVID-19 period. The pandemic not only increased online gambling opportunities due to physical restrictions but also amplified psychological vulnerabilities, thereby accelerating scholarly attention to the topic. Keyword analysis shows strong focus on addiction, prevalence, adolescents, and public health aspects.

Figure 5. Annual distribution of publications (online gambling & mental health)



Research on online gambling has steadily increased since the mid-2010s. A sharp rise occurred during 2020–2022, coinciding with the COVID-19 pandemic, after which publication volume slightly normalized but continued on an upward trajectory.

Figure 6. Most frequent keywords (online gambling & mental health)



Frequent keywords include addiction, problem gambling, prevalence, adolescents, treatment, and public health. The dominance of these keywords reflects a strong clinical orientation, highlighting concerns about prevention, early intervention, and health

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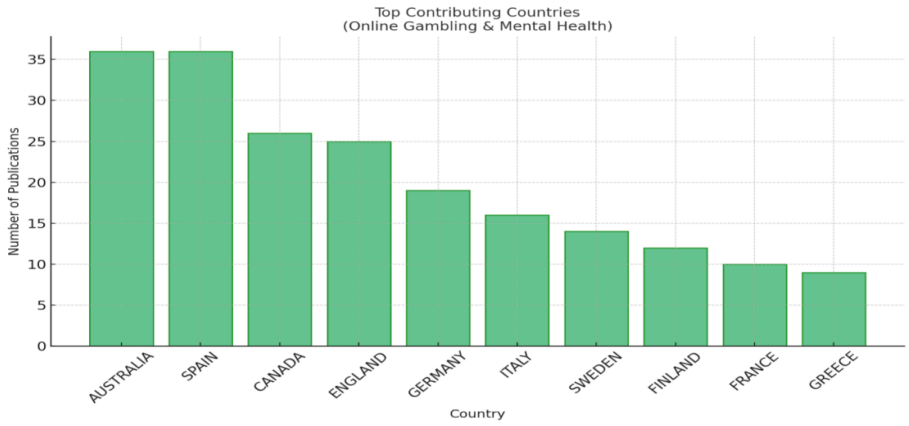
policy implications. The emphasis is predominantly on clinical consequences and vulnerable groups, particularly adolescents and young adults, underscoring the need for targeted prevention efforts.

Figure 7. Top contributing countries (online gambling & mental health)



Australia, Spain, Canada, England, and Germany are among the leading contributors in this field. These countries have both active gambling markets and robust academic or regulatory interest, which likely explains their high publication output.

Figure 8. Co-authorship network of authors in online gambling research (VOSviewer visualization)

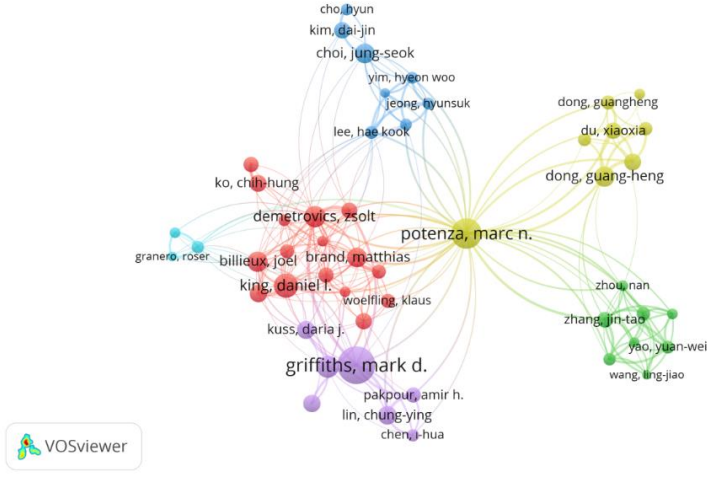


Figure 8 presents the co-authorship network of authors in online gambling research. The analysis reveals several distinct clusters of collaboration. Marc N. Potenza forms a large and highly connected cluster, while Mark D. Griffiths and Daniel L. King are also central figures, frequently co-authoring with other researchers. These findings indicate that research in this field is concentrated around a few prominent scholars and their networks. While this concentration fosters thought leadership, it also risks limiting diversity of perspectives and methodologies in the field.

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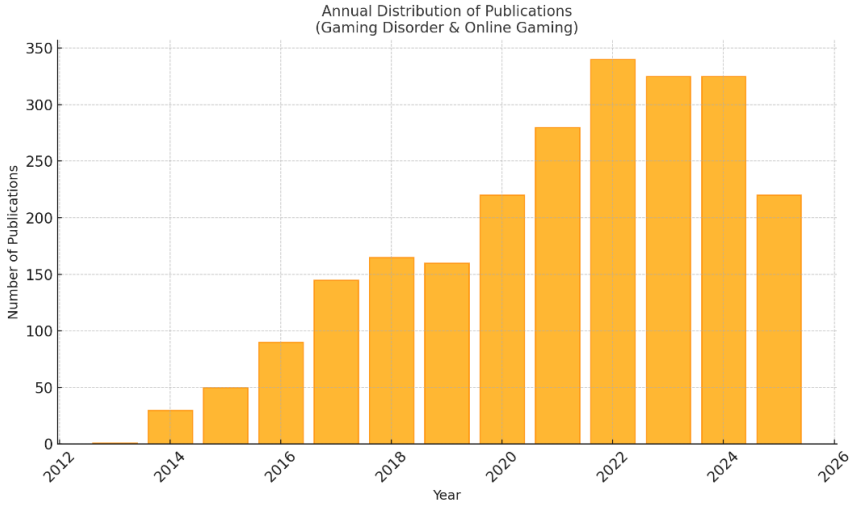
The co-authorship analysis shows clusters of collaboration among leading authors in online gambling research. Larger nodes represent authors with more publications, and the links represent co-authorship connections. For example, Marc N. Potenza, Mark D. Griffiths, and Daniel L. King appear as central nodes, indicating their influential role in the field.

Gaming Disorder and Loot Box Publications

The gaming disorder dataset (n=2,342) constitutes the largest share of publications. Research has grown substantially since 2016, peaking in 2022 (339 publications). This rapid growth coincides with both the formal recognition of gaming disorder in ICD-11 and the rising prevalence of monetization mechanisms such as loot boxes, which have drawn policy and clinical attention. Thematic analysis shows two major clusters: psychological/clinical outcomes (addiction, depression, anxiety) and epidemiological/assessment aspects (prevalence, validation, scale).

Figure 9. Annual distribution of publications (Gaming Disorder & Online Gaming)



Publications on gaming disorder expanded rapidly after 2016, reaching a peak in 2022–2023 with more than 300 papers per year. The surge coincides with the formal recognition of "gaming disorder" in the ICD-11 (2018) and the increased digital engagement during the pandemic.

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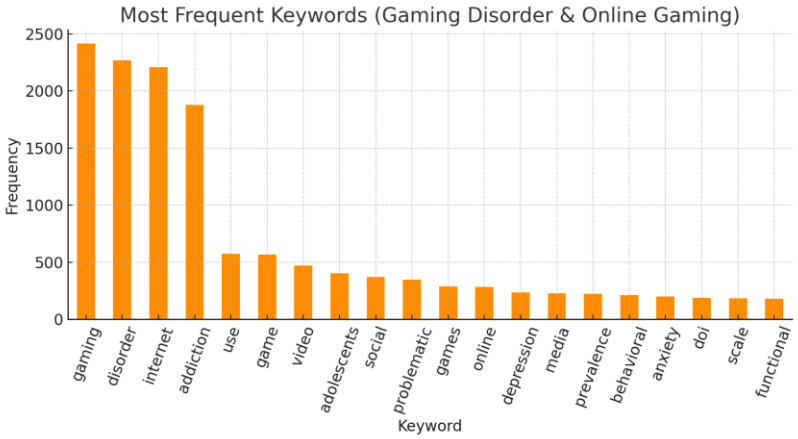
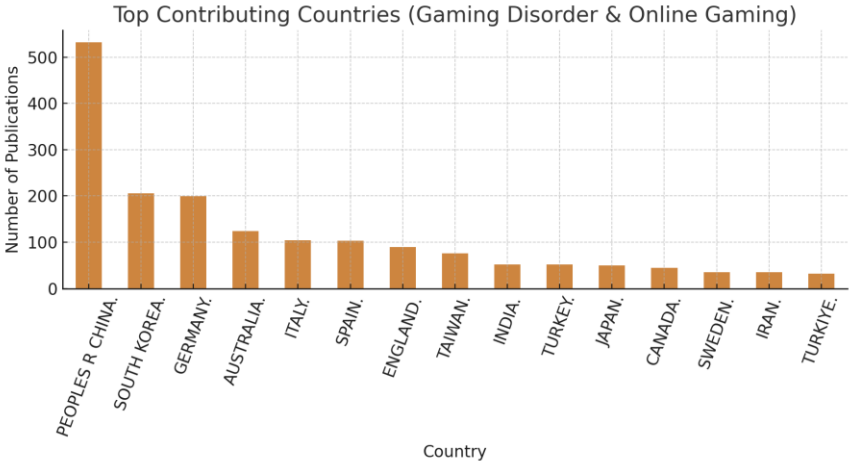
Figure 10. Most frequent keywords (gaming disorder & online gaming)



Keyword analysis indicates two dominant clusters: (i) clinical outcomes such as addiction, depression, anxiety, impulsivity, and sleep problems; and (ii) epidemiological and methodological terms such as prevalence, scale, and validation. The coexistence of these clusters suggests that the field is simultaneously addressing individual-level clinical consequences and system-level measurement challenges, indicating a maturing but still diversifying research agenda.

Figure 11. Top contributing countries (gaming disorder & online gaming)



The United States, China, the United Kingdom, Australia, and Germany dominate the field. Their leadership reflects high gaming penetration, well-established clinical research infrastructures, and strong epidemiological surveillance systems.

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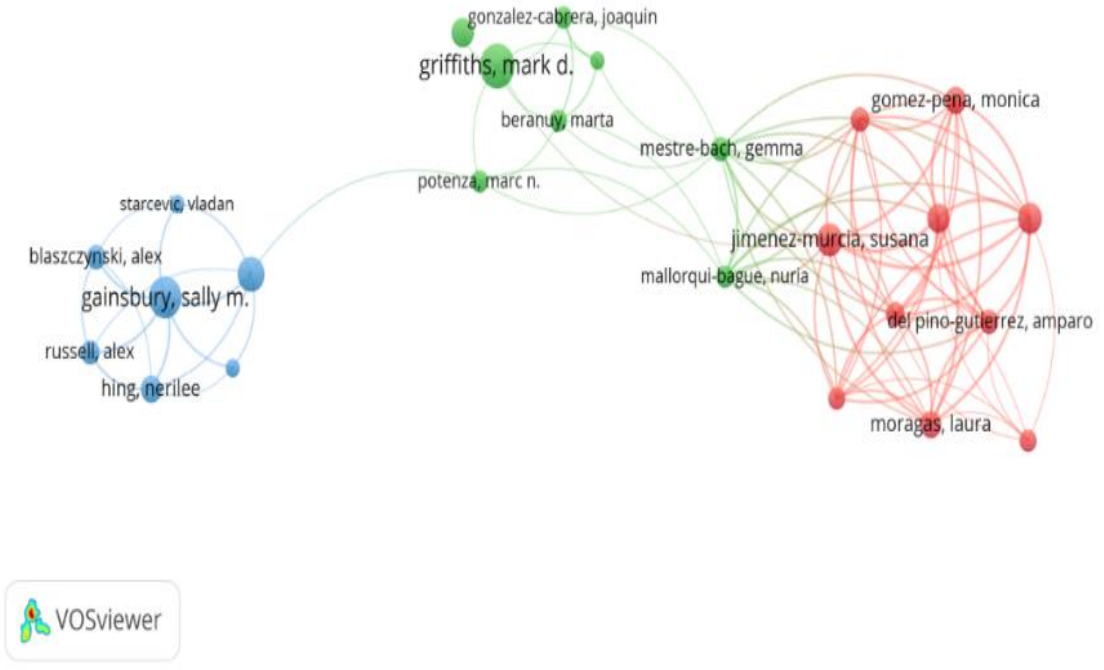
Figure 12. Co-authorship Network of Authors in Gaming Disorder Research (VOSviewer visualization)



The visualization shows distinct clusters of collaboration. One group is centered around Daniel King and Sally Gainsbury (Australia), another around Mark Griffiths (UK), and a third cluster around Susana Jimenez-Murcia and colleagues (Spain). The fragmented structure indicates that the field lacks a fully integrated global research network. This fragmentation may slow the consolidation of universal diagnostic criteria and hinder the development of coordinated international prevention strategies.

Discussion

This study provides a comparative assessment of bibliometric trends in cryptocurrency, online gambling, and gaming disorder research, offering a comprehensive view of the current landscape of digital-addiction scholarship. The findings demonstrate that scholarly output in all three domains has accelerated markedly over the past decade, yet each field remains in a developmental stage both theoretically and methodologically. This pattern aligns with the "early-stage" characterization frequently highlighted in the literature[17]. Against this backdrop, it is useful to first consider developments in cryptocurrency research.

The cryptocurrency literature has gained momentum particularly since 2019, with publications focusing on psychological and mental-health aspects becoming more visible after 2021. This trajectory suggests that cryptocurrency use is increasingly being conceptualized not merely as a financial activity but as a practice exhibiting features akin to behavioral addiction. Recent studies indicate that cryptocurrency trading may share psychological mechanisms with sports betting, high-risk stock speculation, and gambling

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disorder. Among individuals heavily engaged in crypto trading, hallmark indicators of behavioral addiction—salience, mood modification, tolerance, withdrawal, and relapse—are frequently observed[22]. Beyond its inherently risky investment profile, cryptocurrency trading can therefore pose significant mental-health challenges over time[23]. Previous research has similarly linked crypto investment to heightened risk-taking, anxiety, depression, and stress[24-26].

Despite this growing body of work, the absence of a shared conceptual framework is evident, as reflected in fragmented keyword structures and limited collaborative networks identified in our analysis. However, it should also be noted that the limited number of studies in this domain may restrict the generalizability of these findings. The fragmented nature of the literature suggests that current interpretations should be approached with caution, particularly given the rapid evolution of cryptocurrency markets and user behaviors. Consequently, the cryptocurrency literature requires theoretical models that, while intersecting with gambling addiction, also establish an independent conceptual foundation[27,28]. Following these developments in the cryptocurrency domain, notable shifts are also apparent in the field of online gambling.

In the field of online gambling, the marked increase in publication volume during the COVID-19 pandemic is particularly noteworthy. This trend aligns with the surge in digital-platform use and the heightened psychological vulnerabilities observed during the pandemic period. Existing literature consistently underscores that online gambling constitutes a high-risk behavior—especially for adolescents and young adults—and is closely linked to addiction and public-health concerns[29]. Findings from the present study further indicate that scholarship in this area is predominantly clinical in orientation, with a strong emphasis on prevention and early-intervention strategies. As Kuss and Gainsbury (2020)[24] argue, online gambling and gaming behaviors warrant recognition as escalating public-health challenges that demand policy-level attention. Nevertheless, the concentration of research around a small number of leading scholars may limit methodological diversity and the breadth of theoretical perspectives in the field. In addition, this concentration may lead to a narrower range of methodological approaches and theoretical perspectives, potentially constraining the diversity of findings within the field.

Compared with this profile, the literature on gaming disorder reflects a different stage of maturity and breadth. Among the three domains examined, gaming disorder research exhibits the highest publication volume-a trend that can be attributed both to the formal inclusion of “gaming disorder” as an ICD-11 diagnostic category in 2018 and to the pandemic-driven rise in digital gaming. The evidence points to dual focal areas: clinical outcomes (e.g., depression, anxiety, impulsivity) and epidemiological or methodological issues (e.g., prevalence, scale development). This dual emphasis supports the view that gaming-disorder scholarship is maturing yet continues to diversify[30,31]. However, the fragmented nature of global collaborations hinders the establishment of universal diagnostic criteria and impedes the development of coordinated international prevention strategies. This limitation highlights the need for more coordinated and cross-cultural

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research efforts to ensure the development of more comprehensive and globally applicable frameworks.

Considering all three domains together highlights both convergent and divergent features of digital-addiction research. Common to each are problematic use patterns shaped by motivational processes such as reward anticipation, pleasure seeking, impulsivity, risk taking, social isolation, and loss of control—underscoring shared psychodynamic foundations across digital addictions[32-34]. Divergences stem from differences in conceptual frameworks, theoretical orientations, and methodological priorities. These distinctions are also evident in our findings: psychological studies on cryptocurrency remain at an early developmental stage; online gambling research occupies an intermediate, evolving phase; and gaming-disorder studies represent a comparatively mature field. Such developmental differences reflect each domain's unique methodological approaches, research priorities, and the historical contexts in which investigations have unfolded. This suggests that these differences may not only stem from theoretical variations but also from disparities in data availability and the relative maturity of each research domain. For addiction types that have yet to reach conceptual maturity, fostering interdisciplinary collaboration is critical to achieving a coherent theoretical foundation and enabling more integrated scientific progress.

As our findings indicate, one of the key factors underlying these differences is the continuing fragmentation of digital-addiction research. Many emerging subfields remain at an early stage of development and are pursued across disparate disciplines. This disciplinary dispersion and lack of collaboration impede conceptual integration and limit opportunities for mutual learning across domains[17]. Yet despite this fragmented landscape, several noteworthy cross-cutting themes emerge.

Among the most striking is the trend toward "gamblification", a term denoting the incorporation of gambling-like mechanisms into non-gambling contexts such as video games[35]. The trading of cryptocurrencies—volatile, decentralized digital assets—may meet conditions analogous to gambling[36]. Speculative behaviors in crypto markets, the risk-taking patterns inherent in online gambling, and micro-payment features such as in-game "loot boxes" all appear to engage similar addiction mechanisms. Prior research frequently highlights the overlap between in-game reward systems, chance-based digital content, and gambling-like behaviors[37,38].

Recent studies reveal that (a) individuals who play video games often also engage in gambling, and (b) cryptocurrency investors exhibit a higher likelihood of gambling involvement[36]. However, the intersection between cryptocurrency investment and gaming behaviors remains insufficiently explored, a gap partly attributable to the relatively recent emergence of cryptocurrencies and their still-limited user base.

Moreover, cryptocurrency investors have been found to exhibit higher rates of gambling, gaming, and excessive alcohol consumption than non-investors. This pattern is particularly concerning for adolescents and socially marginalized individuals, who can

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access digital platforms with ease and anonymity[35]. Indeed, moving from one digital activity to another often requires only a few clicks[39].

Today, many digital applications are evolving into hybrid environments in which multiple forms of addiction converge. The growing accessibility and appeal of gamblification and tokenization—especially for those under 25—suggest that these structures will become even more widespread in the future[39]. Despite rising scholarly interest in the potential for gaming to facilitate transitions into gambling behavior, experimental studies, clinical intervention approaches, and psychological prevention strategies remain scarce[40].

The present findings enable multifaceted inferences about digital addictions. Although academic attention to this topic is steadily increasing, the protection of children and adolescents has become an urgent priority for policymakers. The accessibility of cryptocurrency platforms, in-game rewards such as loot boxes, and online gambling content to minors necessitates a thorough reevaluation of age restrictions, labeling practices, and transparency measures to ensure that vulnerable groups are adequately protected and informed[41].

While the present study provides a comprehensive overview of digital addiction research, several limitations should be considered. First, the analysis was limited to the Web of Science database, which may not fully capture all relevant publications in the field. Second, the reliance on bibliometric methods restricts the interpretation to publication patterns rather than in-depth qualitative insights. Finally, the rapidly evolving nature of digital technologies means that the findings reflect a dynamic and continuously changing research landscape. Future studies may benefit from integrating multiple databases and methodological approaches to provide a more comprehensive understanding of digital addictions.

Conclusion

In sum, this study demonstrates that digital-addiction research has expanded rapidly over the past decade, reflecting the growing integration of digital technologies into everyday life. However, this expansion has not occurred uniformly across domains, resulting in notable differences in theoretical maturity and methodological consolidation. Gaming disorder research has emerged as the most developed field, characterized by a broad clinical focus and relatively coherent research agendas. In contrast, studies on online gambling occupy an intermediate position, while cryptocurrency-related research remains fragmented and conceptually underdeveloped. Taken together, these findings indicate that digital addictions constitute an interconnected yet uneven research landscape that requires stronger theoretical integration and coordinated scholarly efforts.

Future investigations should (i) clarify conceptual models, (ii) adopt interdisciplinary approaches, (iii) conduct cross-cultural and longitudinal analyses, (iv) incorporate age- and gender-based perspectives, and (v) develop targeted policy and regulatory

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recommendations, particularly for youth. Within this framework, bibliometric analyses can play a vital role in illuminating emerging trends, research gaps, and future directions, thereby advancing scientific understanding of digital addictions.

AI Declaration

The authors used DeepL translation tools to support the translation of the manuscript from Turkish to English and subsequently reviewed the text carefully to ensure clarity and accuracy.

REFERENCES

1. Reichert RA, Martins GDG, da Silva AMB, et al. New forms of addiction: Digital media. In: *Psychology of Substance Abuse: Psychotherapy, Clinical Management and Social Intervention*. Cham: Springer; 2021:43-53.

2. Grant JE, Potenza MN, Weinstein A, Gorelick DA. Introduction to behavioral addictions. *Am J Drug Alcohol Abuse*. 2010;36(5):233-241. doi: 10.3109/00952990.2010.491884.

3. Starcevic V, Aboujaoude E. Internet addiction: Reappraisal of an increasingly inadequate concept. *CNS Spectr*. 2017;22(1):7-13. doi: 10.1017/S1092852915000863.

4. Yau YH, Potenza MN. Gambling disorder and other behavioral addictions: Recognition and treatment. *Harv Rev Psychiatry*. 2015;23(2):134-146.

5. Ding K, Shen Y, Liu Q, Li H. The effects of digital addiction on brain function and structure of children and adolescents: A scoping review. *Healthcare (Basel)*. 2023;12(1):15.

6. Griţenco E, Şeptiţchi V, Borshev Y. Info-digital addiction: An interdisciplinary analysis of the phenomenon, its criteria, and consequences. *Stud Univ Moldav (Ser Şti Reale Naturi)*. 2025;181(1):107-113.

7. Small GW, Lee J, Kaufman A, et al. Brain health consequences of digital technology use. *Dialogues Clin Neurosci*. 2020;22(2):179-187. doi: 10.31887/DCNS.2020.22.2/gsmall.

8. Baciu AB. Medical and social consequences of digital addiction. *Proc Rom Acad*. 2020;22:141-147.

9. Singh AK, Singh PK. Digital addiction: A conceptual overview. *Libr Philos Pract (E-journal)*. 2019;3538.

10. World Health Organization. International Classification of Diseases 11th Revision (ICD-11). World Health Organization; 2018. Accessed August 15, 2025. https://www.who.int/classifications/icd/en/.

11. Sonkurt HO, Altinoz AE. Cryptocurrency investment: A safe venture or a new type of gambling? *J Gambl Issues*. 2021;47:199-216. doi: 10.4309/jgi.2021.47.8.

12. Molde H, Holmøy B, Merkesdal AG, et al. Are video games a gateway to gambling? A longitudinal study based on a representative Norwegian sample. *J Gambl Stud*. 2019;35(2):545-557. doi: 10.1007/s10899-018-9781-z.

13. Gainsbury SM, King DL, Russell AM, Delfabbro P, Hing N. Virtual addictions: An examination of problematic social casino game use among at-risk gamblers. *Addict Behav*. 2017;64:334-339.

14. Sirola A, Savela N, Savolainen I, Kaakinen M, Oksanen A. The role of virtual communities in gambling and gaming behaviors: A systematic review. *J Gambl Stud*. 2021;37(1):165-187.

15. Rugai J, Hamiliton-Ekeke JT. A review of digital addiction: A call for safety education. *J Educ e-Learn Res*. 2016;3(1):17-22.

16. Lyn NLW, Yeo HY, Startup CC, et al. Stock and cryptocurrency trading and problem gambling behavior during early phases of the COVID-19 pandemic: A narrative literature review. *Front Psychol*. 2025;16:1585094. doi: 10.3389/fpsyg.2025.1585094.

17. Donthu N, Kumar S, Mukherjee D, Pandey N, Lim WM. How to conduct a bibliometric analysis: An overview and guidelines. *J Bus Res*. 2021;133:285-296.

18. Mongeon P, Paul-Hus A. The journal coverage of Web of Science and Scopus: A comparative analysis. *Scientometrics*. 2016;106(1):213-228.

19. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*. 2021;372:n71. doi: 10.1136/bmj.n71.

20. Aria M, Cuccurullo C. Bibliometrix: An R-tool for comprehensive science mapping analysis. *J Informetr*. 2017;11(4):959-975. doi: 10.1016/j.joi.2017.08.007.

21. Van Eck NJ, Waltman L. Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*. 2010;84(2):523-538.

22. Şentürk E, Coşar B, Arıkan Z. Relationship of cryptocurrencies with gambling and addiction. *Psikiyatride Guncel Yaklasimlar*. 2023;15(2):348-355.

23. Johnson B, Co S, Sun T, et al. Cryptocurrency trading and its associations with gambling and mental health: A scoping review. *Addict Behav*. 2023;136:107504.

24. Kuss DJ, Gainsbury S. Debate: Behavioural addictions and technology use – Risk and policy recommendations for problematic online gambling and gaming. *Child Adolesc Ment Health*. 2020;25(4):307-309. doi: 10.1111/camh.12449.

25. Makarov I, Schoar A. Trading and arbitrage in cryptocurrency markets. *J Financ Econ*. 2020;135(2):293-319. doi: 10.1016/j.jfineco.2019.07.001.

26. Meng J, Fu F. Understanding gambling behavior and risk attitudes using cryptocurrency-based casino blockchain data. *arXiv*. Published online 2020. doi: 10.48550/arXiv.2008.05653.

27. Ante L. Smart contracts on the blockchain – A bibliometric analysis and review. *Telemat Inf*. 2021;57:101519. doi: 10.1016/j.tele.2020.101519.

28. Xu L, Wang Y, Li X. From Fomo3D to lottery DAPP: Analysis of Ethereum-based gambling applications. *arXiv*. Published online 2025. doi: 10.48550/arXiv.2508.12303.

29. Håkansson A. Impact of COVID-19 on online gambling – A general population survey during the pandemic. *Front Psychol*. 2020;11:568543. doi: 10.3389/fpsyg.2020.568543.

30. King DL, Delfabbro PH. Video game monetization (e.g., 'loot boxes'): A blueprint for practical social responsibility measures. *Int J Ment Health Addict*. 2018;17(1):166-179.

31. Paulus FW, Ohmann S, von Gontard A, Popow C. Internet gaming disorder in children and adolescents: A systematic review. *Dev Med Child Neurol*. 2018;60(7):645-659.

32. Dong G, Potenza MN. A cognitive-behavioral model of Internet gaming disorder: Theoretical underpinnings and clinical implications. *J Psychiatr Res*. 2014;58:7-11.

33. Brand M, Young KS, Laier C, Wölfling K, Potenza MN. Integrating psychological and neurobiological considerations regarding the development and maintenance of specific Internet-use disorders: An I-PACE model. *Neurosci Biobehav Rev*. 2019;71:252-266.

34. Chamberlain SR, Lochner C, Stein DJ, et al. Behavioural addiction- a rising tide? *Eur Neuropsychopharmacol*. 2016;26(5):841-855.

35. Andrade M, Newall PWS. Cryptocurrencies as gamblified financial assets and cryptocasinos: Novel risks for a public health approach to gambling. *Risks*. 2023;11(3):49.

36. Davies N, Ferris S. Cryptocurrency and new financial instruments: Unquantified public health harms. *Lancet Public Health*. 2022;7(8):e655.

37. Zendle D, Cairns P. Video game loot boxes are linked to problem gambling: Results of a large-scale survey. *PLoS One*. 2018;13(11):e0206767.

38. Drummond A, Sauer JD. Video game loot boxes are psychologically akin to gambling. *Nat Hum Behav*. 2018;2(8):530-532. doi: 10.1038/s41562-018-0360-1.

39. Delfabbro P, King D. The evolution of young gambling studies: Digital convergence of gaming, gambling and cryptocurrency technologies. *Int Gambl Stud*. 2023;23(3):491-504.

40. Siste K, King DL, Hanafi E, et al. Scrutinizing the gateway relationship between gaming and gambling disorder: Scoping review with a focus on the Southeast Asian region. *JMIR Serious Games*. 2025;13:e59740.

41. Swanton TB, Blaszczynski A, Forlini C, Starcevic V, Gainsbury SM. Problematic risk-taking involving emerging technologies: A stakeholder framework to minimize harms. *J Behav Addict*. 2021;9(4):869-875. doi: 10.1556/2006.8.2019.52.