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Mapping the Emotional and Psychological Dimensions of Fantasy Sports Betting: A Bibliometric Analysis

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Abstract. Given the significant growth in fantasy sports betting, which merges technology, business interests, and popular culture, the study aims to analyze how the volume of literature on this topic has evolved, identify leading contributors and their collaboration patterns, and uncover key themes in the research. Utilizing bibliometric analysis, data was sourced from Scopus and Web of Science databases. The findings indicate a substantial increase in research publications, particularly during 2020-2024, with heightened societal and academic concern over gambling behaviors and their consequences. Key themes include the normalization of gambling through marketing strategies, the significant risk of problem gambling among young male adults, and the complex interplay between psychological, emotional factors, and the mechanics of fantasy sports betting. This study underscores the growing need for comprehensive understanding and regulatory measures to mitigate the psychological implications of fantasy sports betting.

Keywords: Fantasy Sports Betting, Psychological Impact, Emotional Effects, Problem Gambling, Online Gambling, Gambling Addiction, Bibliometric Analysis, Behavioral Addictions.

Introduction

In recent years a tremendous growth of fantasy sports betting can be seen. It combines new technology, business interests, and popular culture. In fantasy sports, people create virtual teams using real athletes' performances. This activity has grown from a small hobby to a big social and economic activity that affects millions of people around the world (Bhatt et al., 2022). This evolution points to a very important question about how fantasy sports betting affects the psychological and emotional dimensions of the participant, especially now that we live in a digital world. The emotional impacts of sports betting often manifest as a spectrum of feelings ranging from excitement and thrill to stress and anxiety, potentially leading to problematic gambling behaviors (C. M. Jones & Noël, 2022). Similarly, the way people think, act, and feel about betting affects their choices and mental health (Newall & Cortis, 2021). The intersection of these emotional and psychological factors with the mechanics of fantasy sports betting creates a complex landscape of human behavior, necessitating a comprehensive scholarly review.

Given the growing popularity of fantasy sports betting, it's important to understand it as part of the general framework of sports gambling, which some cultures view negatively, and others see as normal (Petrota, 2023). Recent studies have shown that individuals who engage in fantasy sports with the primary goal of making money are more likely to perceive these activities as like gambling, highlighting the nuanced perceptions among participants (Balhara et al., 2023). Additionally, the rapid expansion of legal sports betting in the United States, with total wagers reaching about \$150 billion in 2024, has led to increased concerns about gambling addiction and financial instability, particularly among young men (The Guardian, 2025). This dichotomy underscores the importance of understanding how societal attitudes and legal frameworks influence gambling behaviors and the associated emotional and psychological responses. For instance, the National Council on Problem Gambling reports that the rate of gambling problems among sports bettors is at least twice as high as it is for other gamblers, indicating a significant public health concern (Stateline, 2024). Furthermore, the pervasive advertising and cultural normalization of gambling present significant challenges, as efforts to regulate and mitigate the harm caused by gambling, such as the SAFE Bet Act, aiming to create consumer protection (The Guardian, 2025).

The research on fantasy sports betting has significantly increased, yet gaps remain in our understanding of its full impact. Literature has extensively explored themes like addiction, risk behaviors, and market strategies, but less is known about the nuanced ways in which emotional and psychological factors intersect with these themes (Uzobo et al., 2023). Recent studies have highlighted that higher engagement in fantasy football correlates with increased anxiety, stress, and negative moods, yet also enhances positive moods, indicating a complex relationship between

participation and mental health outcomes (PsyPost, 2024). Furthermore, despite the global spread of fantasy sports betting, much of the research remains concentrated in specific geographic locales, suggesting a need for more diverse studies. The rapid expansion of fantasy sports in regions like Asia-Pacific and Latin America underscores the importance of conducting research that encompasses these diverse markets to fully understand the global implications of fantasy sports betting (Allied Market Research, 2025). A bibliometric study would be instrumental in mapping the existing literature, identifying underexplored areas, and guiding future research to address these gaps comprehensively. Presently there is only one bibliometric study conducted on fantasy sports in 2024 titled “A bibliometric analysis of fantasy sports research” by Luke Wilkins that provide an overview of fantasy sports research but do not focus on the dimension of betting and gambling in fantasy sports.

Conducting a bibliometric study on fantasy sports betting provides valuable insights for both academia and industry. Academically, it maps existing research, highlighting prevalent themes and identifying underexplored areas, thereby guiding future studies. For industry, understanding current research trends aids in strategic decision-making, allowing companies to align products with the latest findings and anticipate market shifts. This dual benefit fosters collaboration between scholars and practitioners, ensuring a comprehensive understanding of the fantasy sports betting landscape.

The objective of this study is to analyze how studies on the emotional and psychological effects within the sports betting domain have evolved in terms of themes, methodology, and geographic focus. This would include examining:

RQ1: How has the volume of literature on the effects of emotional and psychological on sports betting evolved over the years?

RQ2: Who are the leading contributors in the field of emotional and psychological effects of fantasy sports betting, and what are the patterns of their collaborations?

RQ3: What are the key themes at the intersection of psychological and emotional impacts of fantasy sports betting, and how have these themes evolved over time?

Through this endeavor, we anticipate uncovering not only the breadth and depth of existing research but also the potential areas needing further exploration, thus contributing to a more robust understanding of fantasy sports betting's implications for individual and public health.

Research Methodology

Bibliometric analysis is a quantitative approach to the study of literature in a specific academic or scientific domain (Broadus, 1987). It employs statistical methods to analyze books, articles, and other publications (Pritchard, 1969). This form of investigation can find proliferation of literature over a period of time, the key themes and trends

in a given field, who the key authors are as well as where they work, and how much researchers collaborate with each other (Cobo et al., 2011). Among the bibliographic techniques that may be employed are citation analysis, content analysis, co-citation analysis and mapping of topics through network analysis tools such as VOSviewer. Such approaches allow researchers to understand the extent and nature of research better; it also help reveal patterns within bodies of knowledge, thus providing an overall sense about current trends and future directions (Broadus, 1987; Donthu et al., 2021).

In this particular study data from Scopus and WOS databases were used because they cover wide range of scientific fields (Donthu et al., 2021). In order to procure data for studies conducted on emotional and psychological dimensions of fantasy sports betting, a search query is created based on relevant keywords i.e. (TITLE (fantas* AND cricket*) OR TITLE (fantas* AND sport*) OR TITLE (fantas* AND baseball*) OR TITLE (fantas* AND football*) OR TITLE (fantas* AND soccer*) OR TITLE (sport* AND bett*)) AND (LIMIT-TO (EXACTKEYWORD , "Gambling") OR LIMIT-TO (EXACTKEYWORD , "Sports Betting") OR LIMIT-TO (EXACTKEYWORD , "Problem Gambling") OR LIMIT-TO (EXACTKEYWORD , "Major Clinical Study") OR LIMIT-TO (EXACTKEYWORD , "Addiction") OR LIMIT-TO (EXACTKEYWORD , "Pathological Gambling") OR LIMIT-TO (EXACTKEYWORD , "Behavior, Addictive") OR LIMIT-TO (EXACTKEYWORD , "Betting") OR LIMIT-TO (EXACTKEYWORD , "Gambling Disorder") OR LIMIT-TO (EXACTKEYWORD , "Online Gambling") OR LIMIT-TO (EXACTKEYWORD , "Sports Gambling") OR LIMIT-TO (EXACTKEYWORD , "Sport Betting") OR LIMIT-TO (EXACTKEYWORD , "In-play Betting") OR LIMIT-TO (EXACTKEYWORD , "Online Sports Betting") OR LIMIT-TO (EXACTKEYWORD , "Match-fixing") OR LIMIT-TO (EXACTKEYWORD , "Internet Gambling")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "re") OR LIMIT-TO (DOCTYPE , "cp") OR LIMIT-TO (DOCTYPE , "ch"))

To further enhance the data collection and curation PRISMA guidelines are followed (Figure 1). PRISMA is an acronym that reads Preferred Reporting Items for Systematic Reviews and Meta-Analyses, and it serves as a guideline to literature search and data extraction. It includes the process of defining a research question, selecting and specifying databases, coming up with a search strategy, and lastly, screening and selecting the studies in accordance to eligibility criteria (Moher et al., 2009).

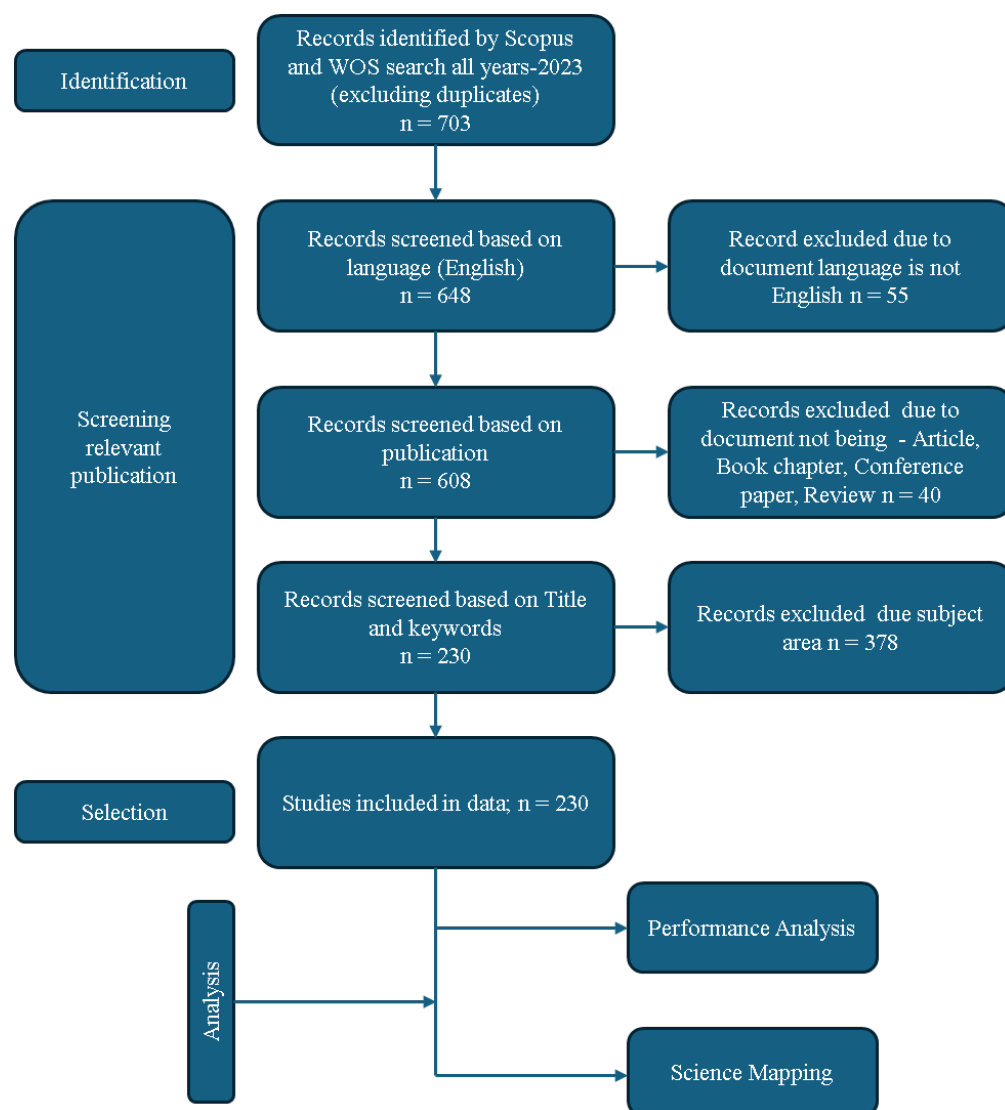


Figure 1 PRISMA

Alt text: A PRISMA flow diagram illustrating the identification, screening, and selection of 230 studies from 703 initial records based on language, publication type, title, and subject relevance.

RQ1: Publication Evolution: For the first research question on what extent the literature that discusses the emotional and psychological impact of sports betting has grown in the last decade (RQ1), a performance analysis will be used to study the growth and trends of the publications. The datasets of Scopus and Web of Science upto, March 2024 shall be used for this analysis and bibliometric counts specifically the publication counts, and citation rates shall be used to identify the growth and interest phases within the given field. It remains to note that such a temporal analysis is especially helpful to understand changes in focus and the role of key works overtime (Pritchard, 1969).

RQ2: Key contributors: The analysis of leading contributors and their collaboration patterns (RQ3) will rely on co-authorship and network analyses to delineate the interactions among scholars and research clusters.

This aspect of the work will make identification of the most dominant authors and institutions together with collaboration trends easier. These are important for the early research career development to search for appropriate mentors and collaborators, as well for the experienced researchers to comprehend the network characteristics of subject area (Liu et al., 2015).

RQ3: Key Themes: Using scientific mapping in association with VOSviewer to analyze the identified key themes proposed in the study relating to the change in the psychological and emotional consequences of fantasy sports betting behaviour. This makes it possible to visualize the keyword density and distributions and the trends of how certain keywords are used in research, the developments made, and the changes done over time. Synchronization with these thematic trends helps in defining the essential and auxiliary research topics and points to the lack of literature (Cobo et al., 2011).

Each of these methodologies will draw from the rich data set provided by bibliometric databases, and the comprehensive analysis will contribute significantly to the understanding of the research landscape in fantasy sports betting. These methodologies not only answer pertinent research questions but also build a robust picture of the academic terrain that future researchers can navigate (van Eck & Waltman, 2010).

Results and discussion

RQ1: How has the volume of literature on the emotional and psychological effects of fantasy sports betting evolved over the years?

The evolution of scholarly interest in sports betting has significantly transitioned from traditional betting shops to the complex dynamics of online gambling. Marking the beginning of this scholarly journey, Jones, Clarke-Hill, and Hillier (2000) pioneered the exploration of how sports betting transformed from back streets to the digital "e-street," highlighting the migration from physical locations to the internet. Their seminal work, "Viewpoint: Back Street to side street to high street to e-street: Sporting betting on the Internet," traced the evolution and impact of this shift, discussing the challenges and opportunities it posed to the traditional betting shop business (P. Jones et al., 2000).

Over the years, research interest has increased dramatically, with the most prolific years being 2021, 2020, and 2022, during which 34, 33, and 31 publications were made respectively. These years marked a peak in scholarly attention, likely reflecting heightened societal and academic concern over gambling behaviors and their consequences (C. M. Jones & Noël, 2022; Petrotta, 2023; Uzobo et al., 2023). Given the current trend and the data available up to March 2024, it's reasonable to anticipate that by the end of the year, the publication count for the 2020-2024 interval could

increase substantially. If the current pace continues, an additional 20-30 publications could be expected, potentially raising the total closer to 160-170 publications for the 2020-2024 period, affirming its status as the most research-intensive period in the history of fantasy sports betting studies.

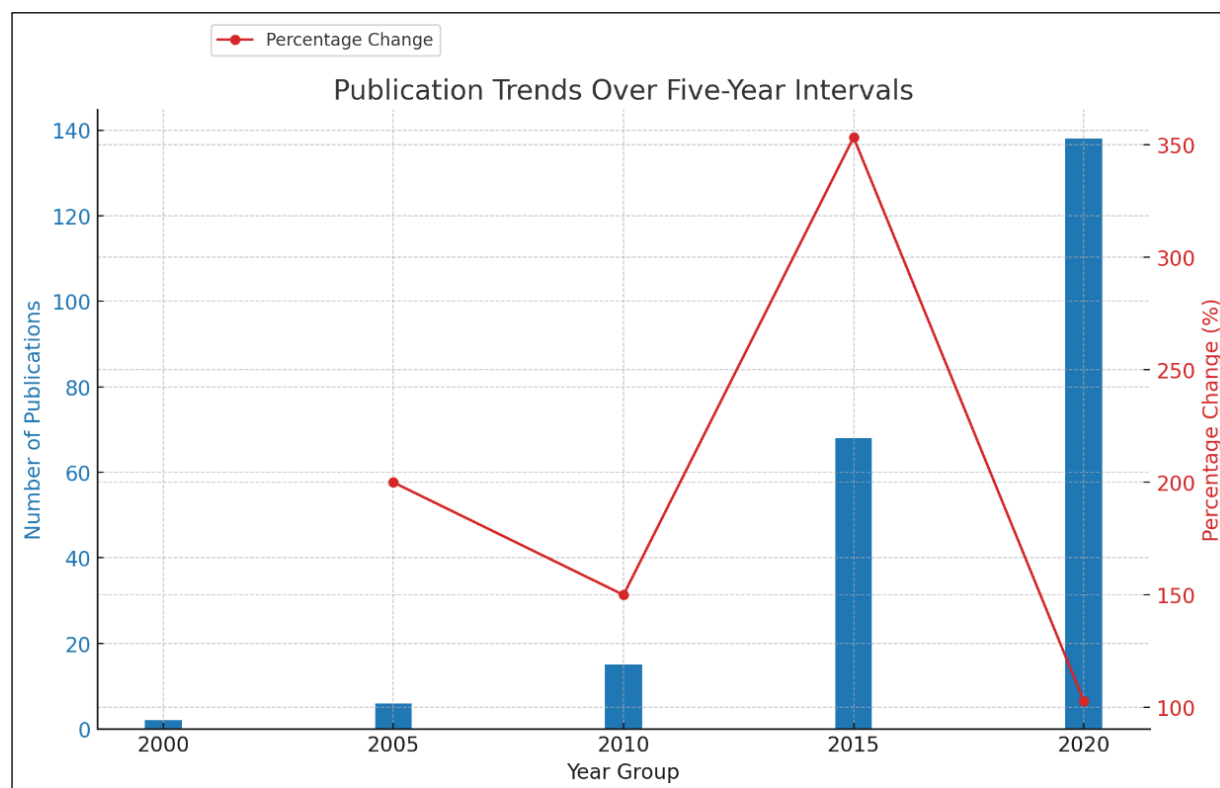


Figure 2 Publication Trend over five years intervals

Alt text: The chart shows publication trends over five-year intervals, with blue bars representing the number of publications and a red line indicating percentage change.

The visualization in figure 2 illustrates the publication trends over five-year intervals. The blue bars represent the number of publications, which have increased substantially over each interval, particularly noticeable in the jumps from 2010-2014 and from 2015-2019. Whereas the red line indicates the percentage change in publication volume, showing significant growth especially from 2015-2019, with over 353% increase, followed by a more modest but still substantial growth of about 103% from 2020-2024.

2000-2004 Internet Expansion Era: The early 2000s saw a surge in studies focusing on the burgeoning online gambling scene, driven by internet expansion and the initial exploration into its psychological impacts, reflecting a nascent academic interest in the field (P. Jones et al., 2000). During this period, the focus was primarily on understanding the basic impacts of online gambling, with early studies like those of Jones, Clarke-

Hill, and Hillier (2000), who explored the migration of betting to the internet and its broader societal implications. This period marked the beginning of recognizing the psychological challenges posed by online betting environments.

2005 to 2009 Deepening Insight Phase: This period experienced growth due to technological advances in online betting and increased societal concern over its impacts, necessitating further investigation into its psychological effects (Forrest et al., 2008). In this period, research began to delve deeper into the psychological impacts of online gambling. Forrest (2008) discussed the transformation in the framing of sports betting legalization in the United States, reflecting growing concerns about the influence of gambling on society.

2010 to 2014 Demographics and Participation: Overall, sports betting and gambling related research conducted from 2010 to 2014 explored different elements. (Humphreys & Perez, 2012) observed that sports bettors are mostly male, young, and have high incomes and also, if legal sports betting is extended, it may not cause significant harms. The study established that internet gambling motivations had similar results as motivation that was intrinsic or extrinsic (C.-K. Lee et al., 2014). Promotional techniques associated with live and televised events in sports betting evoked contentious elements of their impacts on community perceptions (Thomas et al., 2012).

2015 to 2019 Global Proliferation Period: The significant increase in publications can be attributed to the global proliferation of online betting platforms and legal changes, leading to deeper investigations into the societal and emotional consequences of gambling (Russell, Hing, Li, et al., 2019). Key studies like those by Newall et al. (2020) highlighted how bookmakers' profit strategies may enhance the emotional stakes for bettors, potentially leading to problematic behaviors. Dwyer, Shapiro, and Drayer(2018) noted varied emotional involvement across bettor segments, affecting gambling behaviors and risks

2020 to 2024 Pandemic Influence Era: From 2020 to 2024, the impact of the COVID-19 pandemic and technological advancements on online gambling has significantly influenced the focus of research on the psychological impacts of gambling. Studies by Brevers et al. (2024) demonstrated how digital gambling cues affect the brain's response, especially in problem bettors. Additionally, Vieira et al. (2023) explored the psychological profiles of in-play sports bettors, highlighting the emotional and impulse control challenges they face. Di Censo, Delfabbro, and King (2024) revealed how exposure to sports betting advertisements can escalate risky gambling behaviors among young adults, emphasizing the role of emotional engagement in gambling susceptibility.

The volume of literature investigating the emotional and psychological effects of fantasy sports betting has shown a pronounced upward trend over the years, culminating in a significant peak during the 2020-2024 period. This surge is closely linked to the rise of digital platforms

and heightened societal awareness of the consequences of online betting, further intensified by global events such as the COVID-19 pandemic. The compelling increase in research output underscores the evolving concern and interest in the intersection of psychological wellbeing and the expanding realm of fantasy sports betting. Moving forward, it appears likely that the trend in literature volume will continue to ascend, reflecting an enduring and intensifying scholarly and societal focus on the psychological implications of fantasy sports betting in an increasingly digital world.

RQ2: Who are the leading contributors in the field of emotional and psychological effects of fantasy sports betting, and what are the patterns of their collaborations?

Lotka's Law

Lotka's Law is a bibliometric law formulated by Alfred Lotka. It suggests that the number of authors publishing a certain number of papers decreases exponentially with the increase in the number of papers. Typically, it shows that a small number of authors produce a large number of papers, whereas the majority of authors write only a few papers (Osareh & Mostafavi, 2011).

The table displays data in line with Lotka's Law, showing that a large majority (78.9%) of authors have written a single document, with a rapidly declining proportion of authors contributing more documents, down to just 0.002% for those who have written 26 documents

Table 1 Author Publication Frequency Distribution According to Lotka's Law

Documents written	N. of Authors	Proportion of Authors
1	405	0.789
2	59	0.115
3	19	0.037
4	6	0.012
5	4	0.008
6	10	0.019
7	1	0.002
9	2	0.004
10	2	0.004
11	1	0.002
19	2	0.004
25	1	0.002
26	1	0.002

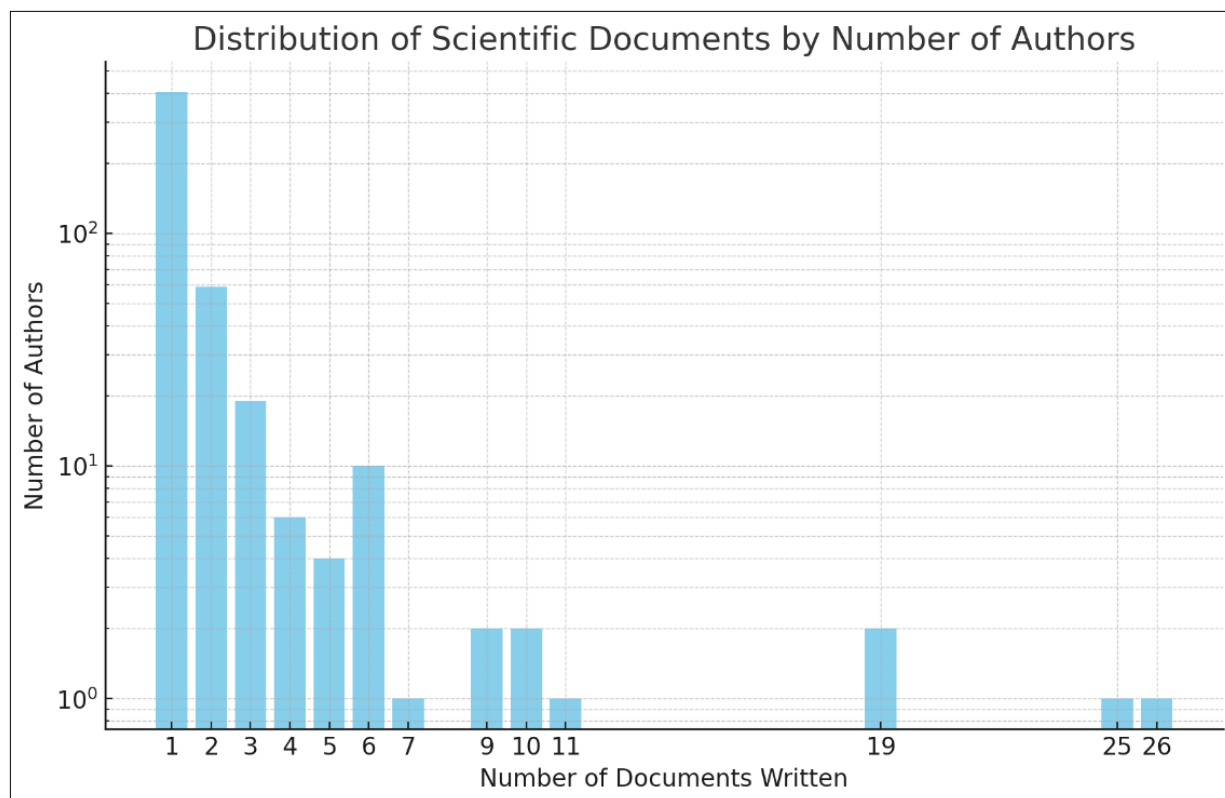


Figure 3 A Logarithmic Representation of the Number of Authors and Scientific Contributions

Alt text: The chart displays the number of authors against the number of documents they have written. The y-axis, plotted on a logarithmic scale, shows that most authors contribute to a small number of documents, with fewer authors producing a high volume of work. The distribution highlights a steep decline in the number of authors as the document count increases.

The plotted data in figure 3 shows the distribution of the number of scientific documents written by various authors on a logarithmic scale. It clearly illustrates the exponential decrease in the number of authors as the number of documents they write increases, which is consistent with the principle behind Lotka's Law.

Lotka's Law can be represented mathematically as: $n(k) = C/K^a$ where $n(k)$ is the number of authors writing “ K ” papers, “ C ” is a constant, and “ a ” is an exponent typically estimated from the data (Lotka, 1926).

“ a ” is calculated using a python code via curve fitting using `curve_fit` from `scipy.optimize`. This method minimizes the difference between observed and predicted author counts, adjusting “ a ” to best fit the data, thus quantifying the rate of author decline as document production increases.

The fitting of Lotka's Law to the data yields a value of “ a ” ≈ 2.78 , which describes the rate at which the number of authors falls as the number of documents increases. Figure 4 visualizes the observed number of authors against the number of documents they have written (shown in red) alongside

the fitted Lotka's Law model (shown in blue). The model, with an exponent of approximately 2.78, illustrates a typical bibliometric distribution, highlighting an exponential decline in the number of authors as document production increases.

The fitted model approximates the observed counts well for lower document counts (1 to 5). For higher counts of documents (especially above 10), the model underestimates the number of authors. The reason for this underestimation can be understood from the collaboration pattern shown in figure 5.

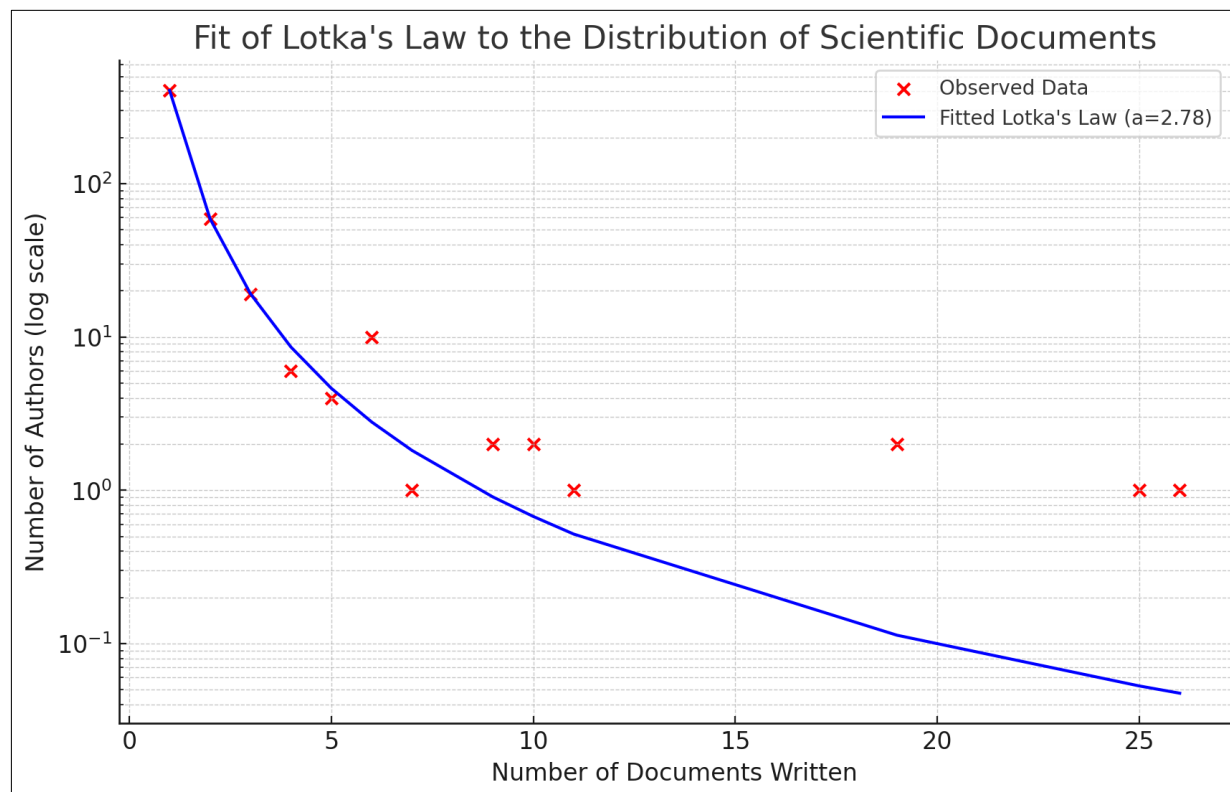


Figure 4 Fit of Lotka's Law to the Distribution of Scientific Documents

Alt text: The graph plots the number of authors (log scale) against the number of documents written. Red crosses represent observed data, while a blue curve shows the fitted Lotka's Law with a parameter $a=2.78$.

Figure 5 shows that single-author publications have remained relatively stable over the years, indicating a consistent level of individual contributions to the field. In contrast, there is a notable increase in multi-author papers starting around 2015, peaking sharply in 2023. Even in 2024, despite the data covering only up to March, there are already 12 articles by multiple authors, indicating that the trend towards collaboration remains strong. This suggests a growing trend towards collaboration in academic research, possibly driven by the increasing complexity of the subject matter that requires diverse expertise. This increase in collaboration pattern of authors leads to a larger number of authors per document than what Lotka's Law predicts.

Leading contributors: Figure 4 and table 1 suggest only 2 % (No. of documents >10) of the total no. of authors have written more documents than their peers and can be considered as most prolific contributors to the body of research. Moreover it is noteworthy that in order to identify most influential contributors it is important to analyze how many citations these author's publications has received. Section 3.2.2 will delve deeper to analyse most influential authors.

Collaborations: Total no. of contributing authors are 530 whereas the total no. of documents published are 230. The extent of collaboration of research constituent can be analyzed with the help of Collaboration index (CI) = $(NCA \div TP) \div TP$ (NCA – number of contributing authors and TP – total publication) and standardized the extent of author collaboration between 0 and 1 with the help of Collaboration coefficient (CC) = $1 - (TP \div NCA)$. A CI of 0.0097 and CC of 0.5517 suggest just over half of the works involve collaboration among authors, whereas figure 5 suggest an increase in multi-author papers starting around 2015, peaking sharply in 2023. From figure 5 and the scores of CI and CC it can be interpreted that though a pattern with growing collaboration is seen from 2015 onwards, the research area still lacks collaborative initiatives considering the increasing complexity of the subject matter that requires diverse expertise.

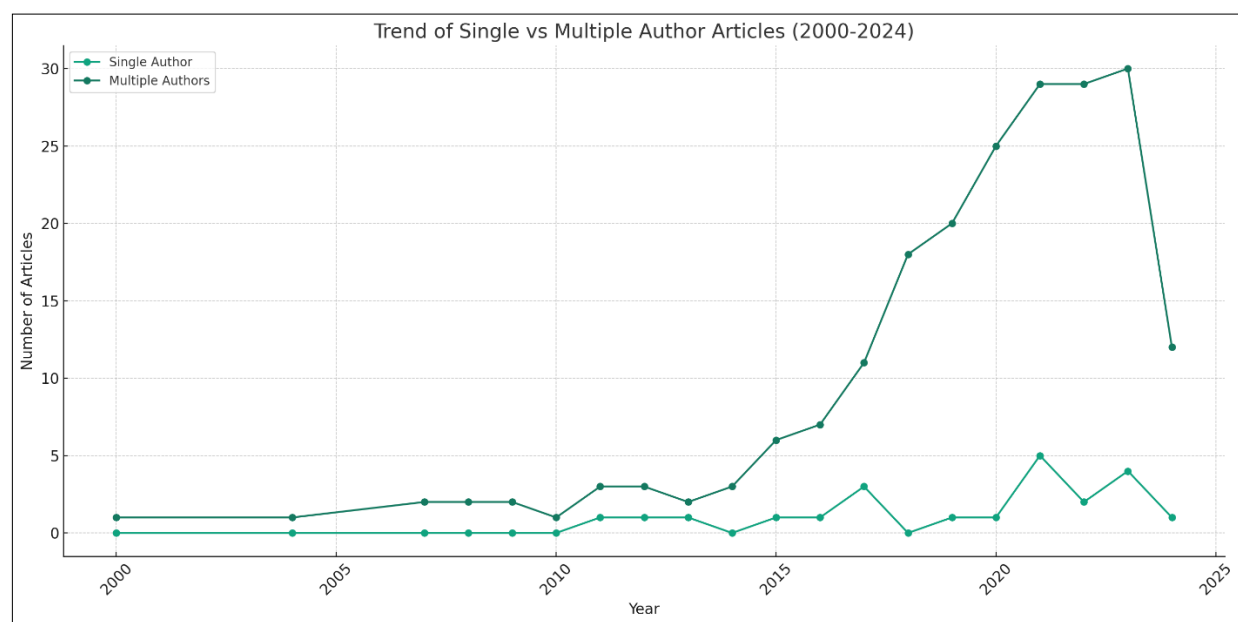


Figure 5 Evolution of Collaborative Trends: 2000-2024

Alt text: The line chart displays the number of articles published per year. It includes two trends: single-author articles and multiple-author articles. The data shows a significant increase in multiple-author articles after 2015, peaking around 2023, while single-author articles remain relatively low and stable with minor fluctuations.

Most Influential and Impactful Authors

According to donthu et. al. (2021), H-Index, developed by Jorge E. Hirsch in (2005), defined as the number of published papers that have been cited at

least h times is a measure of measure of influence where as G-Index, created in 2006 by Egghe, defined as the largest number such that the top “ g ” articles received together at least g^2 citations is a measure of impact (Donthu et al., 2021).

Table 2 Most influential and impactful author, TC - Total Citation, NP - Number of Publication and PY_Start - Publication start year

Author	h_index	g_index	m_index	TC	NP	PY_start
HING N	15	26	1.5	741	26	2015
GRIFFITHS MD	15	25	1.875	658	25	2017
LOPEZ-GONZALEZ H	12	19	1.5	523	19	2017
RUSSELL AMT	11	19	1.222	453	19	2016
ESTÉVEZ A	9	10	1.286	256	10	2018

HING N: Demonstrates considerable influence and impact, as evidenced by a high g-index and substantial total citations (741) since beginning to publish in 2015. This suggests significant scholarly impact within a relatively short period. HING N's research primarily investigates the psychological connections between participation in fantasy sports and an increase in gambling behaviors, with a specific focus on how fanship and materialism mediate this relationship.

GRIFFITHS MD: Equally matches HING N in terms of the h-index, albeit with a marginally lower g-index and fewer total citations. Having commenced his publication endeavors two years subsequent to HING N, GRIFFITHS MD nevertheless demonstrates considerable productivity and impactful citations. His research primarily delves into the emotional and psychological repercussions of sports betting advertising on gambling behaviors, as well as identifying the associated risk factors within fantasy sports betting.

LOPEZ-GONZALEZ H: Despite possessing a lower h-index and g-index compared to the top two authors, Lopez-Gonzalez H has accrued a significant number of total citations and publications since beginning their academic career in 2017, demonstrating substantial impact. Lopez-Gonzalez H's research critically examines the emotional effects of sports betting advertisements, highlighting how these ads not only integrate gambling with other high-risk behaviors but also foster an illusion of control among consumers.

RUSSELL AMT: With a g-index comparable to that of Lopez-Gonzalez H but a marginally lower h-index and total citations, having started their scholarly publications just a year earlier, Russell AMT delves into the cognitive distortions experienced by sports bettors. Russell's work focuses on the difficulties bettors encounter in aligning their perceived influence of skill on betting outcomes with the actual realities, thereby addressing fundamental misconceptions within gambling psychology.

ESTÉVEZ A: Exhibiting the lowest h-index and g-index among the authors discussed, Estévez A demonstrates a lesser degree of influence and impact in the field. Nonetheless, starting their publication record in 2018, their m-index indicates a promising academic trajectory. Estévez A's research scrutinizes the role of sports betting advertisements in shaping bettors' perceptions of control, exploring how these advertisements use metaphorical and conceptual framing to normalize gambling behaviors.

HING N, GRIFFITHS MD, LOPEZ-GONZALEZ H, RUSSELL AMT, and ESTÉVEZ A—are remarkably influential and impactful among their 525 peers. Each has demonstrated exceptional scholarly output and citation impact, as evidenced by their h-index and g-index figures. These authors have significantly contributed to their fields, surpassing the average publication and citation metrics of their contemporaries, marking them as key figures in order to understand the Emotional and Psychological Dimensions of Fantasy Sports Betting.

Collaboration Network

Co-authorship of a paper can be thought of as documenting a collaboration between two or more authors, and these collaborations form a “co-authorship network,” such as that depicted in Fig. 6, in which the network nodes represent authors, and two authors are connected by a line if they have coauthored one or more papers (Newman, 2004). Co-authorship analysis is widely used to understand and assess scientific collaboration patterns (Fonseca et al., 2016).

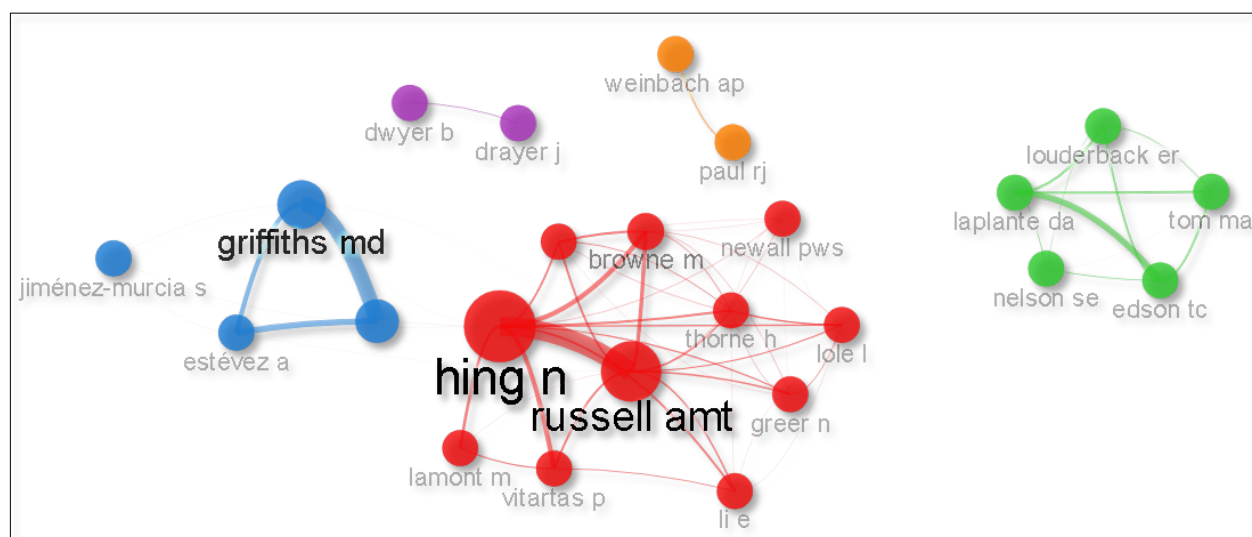


Figure 6 Author Collaboration Network

Alt text: The figure represents an author collaboration network, where nodes depict authors, and edges signify co-authorship links. Different colors indicate distinct clusters or research groups, with larger nodes representing highly connected authors.

Figure 6 depicts the author collaborations network, with 5 clusters highlighted in 5 different colors. Following is the cluster wise analysis to understand collaboration pattern better.

Cluster 1:

Pattern of Collaboration among authors: This cluster is highlighted with red color is the largest cluster of authors ($n=11$). The cluster features Hing N. and Russell A.M.T. as central figures, with the highest betweenness and PageRank scores of 0.0949 and 0.0814, respectively, indicating strong influence and connectivity. Li E., Thorne H., and Lole L. emerge as connectors, while Browne M., Vitartas P., and Lamont M. appear more peripheral with lower scores, reflecting their lesser degree of integration and influence within the group's research network.

Key research areas of collaboration: The key research areas of the cluster focus on enhancing gambling safety and understanding behavioral influences from platform structures. Key studies explore the efficacy of safer gambling messages and their design (Greer et al., 2022; Newall et al., 2023), addictive traits of betting features (Newall et al., 2022), and the impact of technology, like smartphones, on gambling behaviors (Hing et al., 2023, 2024). These contributions are pivotal for informing regulatory practices and interventions aimed at reducing gambling-related harms and promoting responsible gambling.

Pattern of Collaboration among countries: Australia collaborated most frequently with the UK (6 times), reflecting shared interests in cricket and rugby. Single collaborations with Spain and Malta, suggest broader connections, possibly driven by the universal appeal of football, a popular sport across all involved countries.

Cluster 2:

Pattern of Collaboration among authors: This cluster is highlighted in blue color with 4 authors collaboration network. The analysis highlights Mark D. Griffiths and Hibai Lopez-Gonzalez dominate the cluster with high betweenness (3.67) and PageRank scores (0.049 and 0.050), indicating strong influence and connectivity. Ana Estévez emerges as a notable contributor with a solid betweenness score (3.67) but lower PageRank (0.039). Susana Jiménez-Murcia, with a betweenness of 0 and lowest PageRank (0.011), is identified as a peripheral member with limited network influence and connectivity.

Key research areas of collaboration: The cluster primarily investigates gambling, focusing on regulatory impacts, psychological effects, and advertising influences. Studies examine mandatory play breaks and their effectiveness in curbing harmful gambling behaviors (Hopfgartner et al., 2022), the effect of COVID-19 on gambling activities (Auer et al., 2023), and the psychological impact of sports betting advertising (E. A. Killick & Griffiths, 2023). Additional research explores how gambling advertisements affect behavior through brand familiarity and narrative

identification (Lopez-Gonzalez & Griffiths, 2021). This collective work emphasizes a multifaceted approach to understanding and mitigating negative outcomes associated with gambling.

Pattern of Collaboration among countries: The dataset shows Austria, the UK, and Spain collaborating, with the UK being the most frequent collaborator due to its robust academic network. Shared interests in popular sports like soccer further enhance these academic partnerships, fostering a dynamic exchange of ideas and research across these countries.

Cluster 3

Pattern of Collaboration among authors: This cluster is highlighted in green color with 5 authors collaboration network. Analysis of the cluster reveals key Central figures include Edson T.C. (PageRank: 0.0527), Louderback E.R. (PageRank: 0.0527), and Tom M.A. (PageRank: 0.0360), who dominate the network's connectivity and influence. Emerging contributor Nelson S.E. (PageRank: 0.0272) is growing in influence, collaborating on several key papers. Peripheral member LaPlante D.A. (PageRank: 0.0527) participates less frequently, indicating a lesser degree of integration into the cluster's core activities.

Key research areas of collaboration: This cluster primarily investigates the dynamics of gambling behaviors and their psychological impacts. Key areas include the influence of early big wins on gambling addiction (Edson et al., 2023), risks associated with online gambling environments (McAuliffe et al., 2022), and the effects of modern online sports wagering (Nelson et al., 2022). Additionally, the efficacy of responsible gambling tools in mitigating problem gambling is examined (Nelson et al., 2022). This body of research highlights the need for a comprehensive approach to understanding and addressing gambling-related issues through interdisciplinary methods.

Pattern of Collaboration among countries: This cluster reveals the United States collaborated 36 times and Australia 4 times. This higher frequency for the U.S. likely reflects its significant research infrastructure and funding capabilities, which facilitate international collaborations, particularly in global research projects where U.S. institutions often take a leading role.

Cluster 4 and 5:

Cluster 4 and 5 are represented in orange and purple color in figure 6. The analysis of both the cluster reveals Dwyer B. and Drayer J. from Cluster 4, focuses on sports betting and daily fantasy sports. Their research often includes a third collaborator, Shapiro S.L., suggesting a shared interest in the economic and behavioral dimensions of sports gambling (Dwyer et al., 2023, 2024). In contrast, Cluster 5 comprises Paul R.J. and Weinbach A.P., who investigate behavioral biases in sports betting and allegations of pointshaving in professional sports (Paul & Weinbach, 2011, 2012). Although both clusters explore themes related to sports betting, there is no

overlap in authorship between them, indicating distinct collaborative networks with specific research foci.

The interaction patterns in the five established clusters also indicate specific emphases within gambling research activities. Cluster 1, the largest, includes safety and behavioral influence, and collaboration across different disciplines to shape the existence of regulations. As for cluster 2, devoted to the psychological and regulatory consequences of gambling, it should be noted that several authors stand out as leading in terms of influence on further research. Finally, Cluster 3 turns to the psychological aspects of gambling; focusing on intricate behavior patterns, with reference to the research potential of the U. S. Cluster 4 and especially cluster 5, although comprising fewer studies, are highly specific and focus on particular elements of the sports betting process, proving that contextualized cooperation can significantly enhance knowledge of such phenomena as economic behaviors or behavioral biases within gambling.

RQ3: What are the key themes at the intersection of psychological and emotional impacts of fantasy sports betting, and how have these themes evolved over time?

Co-Citation analysis: Co-citation analysis is a technique for science mapping that assumes publications that are cited together frequently are similar thematically (Hjørland, 2013). Co-citation analysis, as delineated by Donthu et al. (2021), is a bibliometric method designed to elucidate the relationships between scholarly documents by examining their mutual citations. This technique highlights studies that are frequently cited in tandem, suggesting a thematic or conceptual affinity between them (Kabyl et al., 2022). Such analysis is very instrumental in revealing the foundational works within a field, thereby highlighting the underlying knowledge network (Upham & Small, 2010). However, its focus primarily on highly cited literature often results in the exclusion of recent or more specialized publications, positioning it as particularly apt for scholars' intent on identifying seminal works and constructing a theoretical framework based on established research (Donthu et al., 2021).

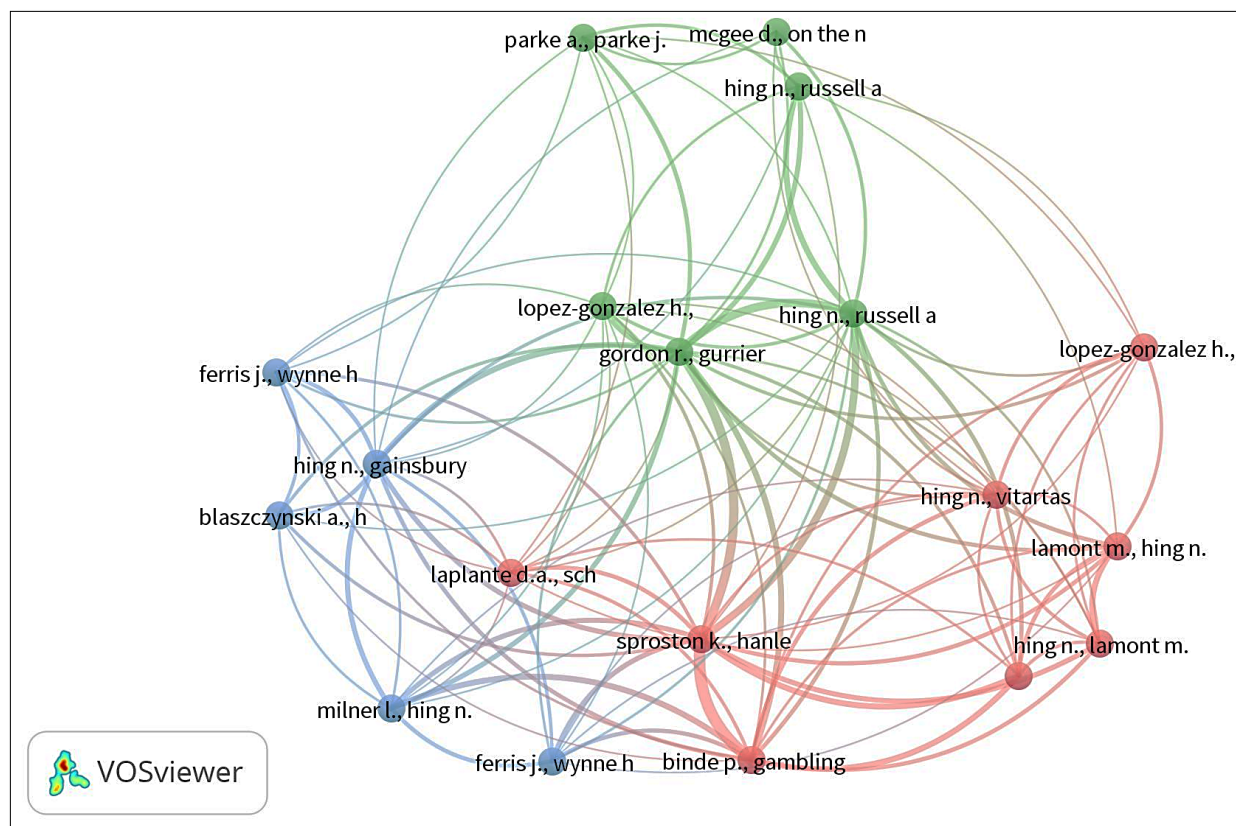


Figure 7: Co-Citation Analysis

Alt text: The figure shows a co-citation network visualization generated using VOSviewer, where nodes represent authors and edges indicate co-citations. Different colors denote distinct research clusters, showing the relationships and influence of authors within academic literature. Thicker connections indicate stronger co-citation links between authors.

Figure 7 represents co-citation analysis of documents that got at least 10 citations. The map represents 3 clusters highlighted in red, green and blue colors. The cluster formed represents seminal works that acted as conceptual building block for current and future studies.

Cluster1: The cluster is highlighted in green color in figure 7 with 6 documents. The cluster reveals Sophisticated marketing strategies and the common use of mobile apps for betting make gambling seem like a normal fun activity instead of a potential risk. This approach plays into people's psychological weaknesses and makes gambling a normal part of society (Lopez-Gonzalez et al., 2018; McGee, 2020). The analysis also reveals a complex interplay of psychological and emotional impacts. Studies highlight that frequent engagement and varied gambling activities significantly increase problem gambling risks, particularly among young male adults (Hing et al., 2016). The Cluster shows how personal psychological issues and wider social and cultural factors are connected when it comes to fantasy sports betting. They point out that solving gambling problems requires a combined effort. This includes psychological

help and rules set by regulatory bodies to control the social and marketing influences that lead to risky gambling behaviors.

Cluster2: This cluster is highlighted in red color with 8 documents. The cluster highlights a significant intersection where promotions not only influence betting behaviors but also impact mental health. The cluster also highlights an increase in gambling intentions, particularly among problem gamblers through sports-embedded gambling promotions (Hing et al., 2015b). In order to decrease the perceived risk and enhance perceived control, these advertisements use tactics that exploit emotional responses which can mislead individuals about the ease and safety of betting (Lopez-Gonzalez et al., 2017). Emotional manipulation is evident as advertisements manipulate feelings, from excitement to worry, which can affect people's decisions to gamble (Lamont et al., 2016). Lamont et al. (2011) suggested Regulatory intervention to mitigate these impacts, similar to controls placed on other harmful products like tobacco (Lamont et al., 2011). These interventions should focus on reducing exposure, especially among problem gamblers and at-risk groups, and address the misleading narratives of control and risk presented in gambling advertising.

Cluster 3: The cluster is shown in blue color in figure 7 and consists of 5 documents. This cluster highlights an urgent need for a very stringent regulatory framework and proactive public health strategies to address the evolving challenges in gambling behaviors. Blaszczynski and Hunt (2011) found a notable shift in the demographics problem gamblers, where young men can be observed as prominent user of online sports betting, due to the accessibility and convenience provided by advanced internet technologies. Ferris and Wynne (2001) in order to enhance the measurement of problem gambling developed a Canadian Problem Gambling Index, which integrates the broader social and environmental contexts (Ferris & Wynne, 2001). Hing et al. (2014) found that because of the extensive availability and the enticement offered by the online betting platforms, interactive gamblers, predominantly younger males, face increased risks (Hing et al., 2014). Moreover, Milner et al. (2013) discuss the extensive embedding of gambling promotions in televised sports, potentially optimizing their impact on this vulnerable demographic (Milner et al., 2013).

Bibliographic coupling: Bibliographic coupling is a technique of scientific mapping under bibliometric analysis that helps to measure the strength of association between documents based on their common references (Phan Tan, 2022). It identifies clusters of research by analyzing how papers cite the same earlier works, indicating related thematic focuses (Trang et al., 2023). This technique has been applied to various fields in order to identify the different research trends, patterns in publication and citation (J. Y. Lee & Chung, 2022).

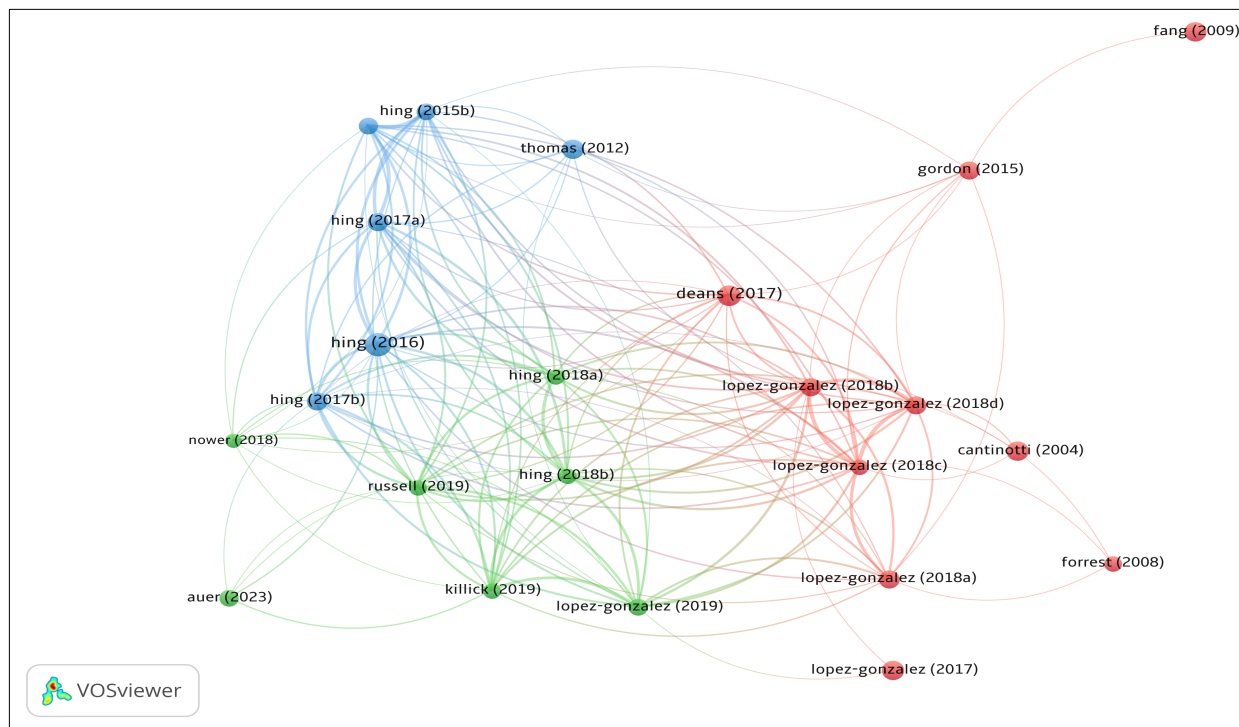


Figure 8: Bibliographic Coupling

Alt text: The figure shows a bibliographic coupling network visualization generated using VOSviewer, where nodes represent academic papers and edges indicate shared references. Different colors signify clusters of closely related publications. Larger nodes correspond to highly connected papers, showing strong bibliographic coupling, while thicker edges indicate a higher degree of shared citations between documents.

Cluster 1: This is the largest cluster with 10 documents and is highlighted in red color in figure 8. The cluster suggests the need for and importance of a comprehensive approach to address and mitigate gambling harm. This is because the issue involves not only personal psychological factors but also social and cultural influences, and the ways gambling is marketed. An exploration into the illusion of control among sports bettors, highlights that their perceived skills for betting are actually the cognitive distortions which is reinforced by near-misses (almost winning games) and misconceptions about gambling expertise (Cantinotti et al., 2004).

Forrest, Mchale, and Mcauley (2008) highlight the integrity risks that is posed by sports betting. They studied how likely it is for some sports markets to be manipulated and also suggest the ways that can help to lower these risks (Forrest et al., 2008). Fang and Mowen (2009) revealed the motives why people gamble and the personality traits that affect gambling behavior. They also highlighted how demographic factors shape the participation in different gambling activities (Fang & Mowen, 2009).

Gordon, Gurrieri, and Chapman (2015) advocating for a broader understanding of gambling within lifestyle consumption communities among young adults in Australia, shifted the focus from individual to socio-cultural factors (Gordon et al., 2015). Similarly, Lopez-Gonzalez, Estevez, and Griffiths (2017) critique the marketing tactics of online betting,

emphasizing the role of advertising in normalizing gambling and increasing its risk potential, particularly among minors and vulnerable groups (Lopez-Gonzalez et al., 2017).

Cluster 2: This cluster is highlighted in green color in figure 8 with 7 documents. This cluster highlights the significant influence of the external factors like marketing and technological advances on gambling behaviors, while also highlighting individual traits and vulnerabilities that play a key role in leading some people towards problematic gambling. Marketing strategies, specifically wagering inducements, are found to greatly encourages impulse betting, especially during the play, with a stronger effect seen in problem gamblers and younger adults, suggesting a regulatory review to mitigate gambling harms (Hing, Russell, et al., 2018).

Furthermore, the promotion of sports betting through advertising correlates strongly with positive betting attitudes and behaviors, especially among high-risk gamblers, indicating the potent influence of marketing (Killick & Griffiths, 2021). Technological innovations in betting platforms, such as live in-play betting and mobile betting, also correlate with increased gambling severity, pointing to technology's role in facilitating intense gambling practices (Lopez-Gonzalez et al., 2018).

Furthermore, fantasy sports betting is found to be associated with higher gambling frequency and severity like, fantasy sports players usually show a significant problem gambling behaviors and related issues like suicidal thoughts (Nower et al., 2018). Problem gambling among sports bettors is driven more by psychological relationships to betting, such as mistaken beliefs and impulse control problems, rather than just the act of betting itself. (Russell, Hing, & Browne, 2019). This body of research calls for strategic interventions and health promotion efforts to address and mitigate the impulse and problematic betting behaviors (Hing, Li, et al., 2018).

Cluster 3: This cluster is highlighted in blue color in figure 8 with 6 documents. The cluster highlights the need for specific public health actions and rules to reduce gambling harms, especially among high-risk groups like young men and frequent bettors. For instance, young males are pinpointed as particularly vulnerable to the gambling problems, with an increased risk associated with greater betting frequency and expenditure, diversity in gambling activities, and impulsive responses to in-play betting opportunities (Hing et al., 2016).

Marketing strategies, especially during the televised sports, significantly influence the gambling behavior among fantasy sports users. Promotions during the broadcasts are linked to more gambling problems among vulnerable groups like young men and problem gamblers, this suggests that these promotions enhance a positive attitude toward gambling and exacerbate the problem gambling behaviors (Hing, Russell, Lamont, et al., 2017).

Online gambling studies has also shown similar concerns and highlights importance of differentiating between the online and offline

gambling behaviors. Specific online gambling forms, have unique risk factors, including frequent betting and negative attitudes towards gambling (Hing, Russell, & Browne, 2017). Marketing strategies at sporting events also heavily integrate betting promotions, often without sufficient responsible gambling messages, potentially increasing impulsive betting behaviors (Thomas et al., 2012).

Keyword Co-Occurrence analysis

Co-word analysis in scientometrics particularly in bibliometric analysis done with VOSviewer is a fundamental technique in establishing connections between terms in a given body of literature. This method acts as a key that enables delineation and analysis of the semantic structure of scientific fields (van Eck & Waltman, 2010). By meticulously examining the frequency and co-occurrence of keywords, researchers can unravel the underlying relationships and thematic patterns that characterize a particular research domain (van Eck & Waltman, 2014).

When employing VOSviewer, a bibliometric software tool, co-occurrence analysis facilitates the creation of visual maps where nodes represent keywords and edges signify their co-occurrence within documents (van Eck & Waltman, 2017). The relative position of these nodes within the map signifies the degree of connection between them and thereby reveal areas where there are dense connections (usually between terms that are known to co-occur in the literature) (Jan van Eck & Waltman, 2019). This graphical representation aids in discerning the intellectual structure and emerging trends within a field, enabling scholars to identify core research areas and their interrelations (Jan van Eck & Waltman, 2019). Figure 9 represent keyword co-occurrence map with a total of 62 keywords forming 4 clusters.

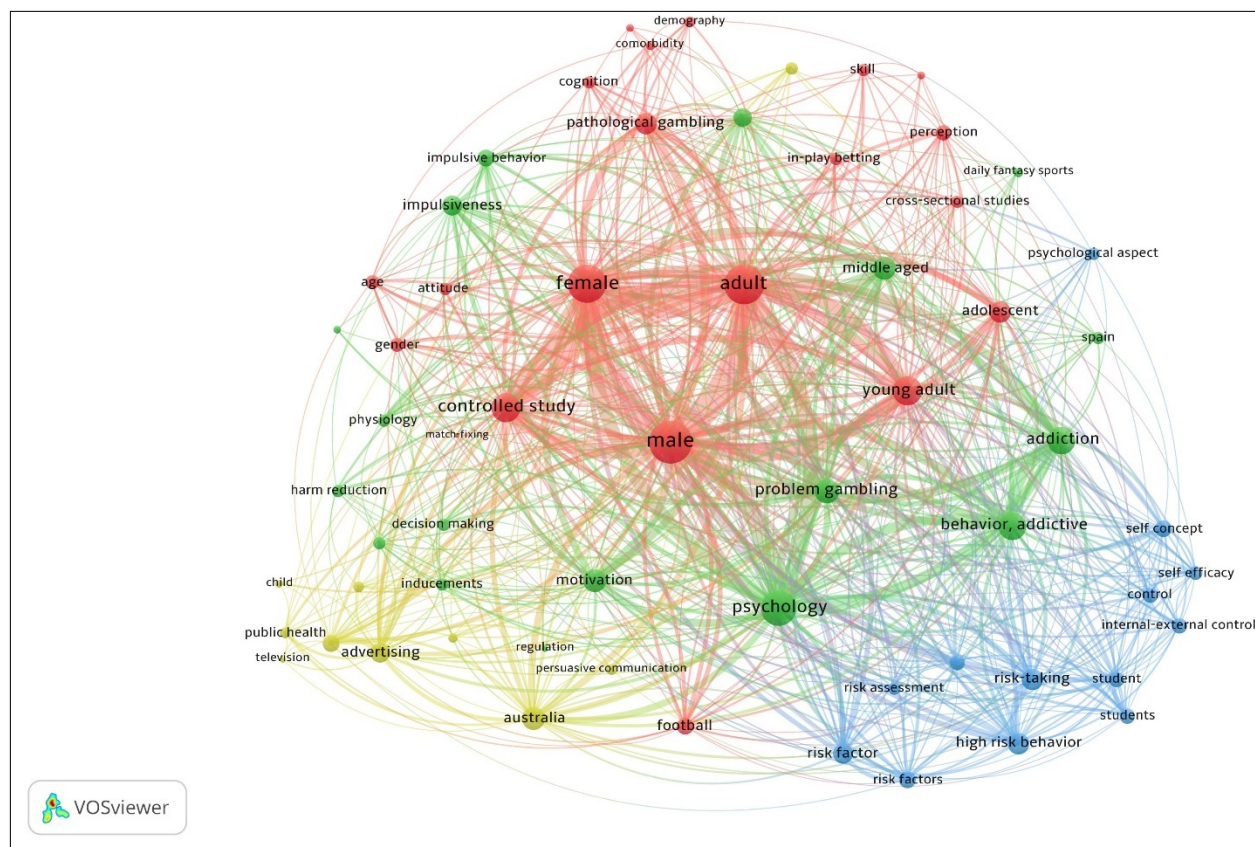


Figure 9 Keyword Co-Occurrence

Alt text: The image is a co-occurrence network visualization generated using VOSviewer, where nodes represent keywords, and edges indicate their co-occurrence in academic literature. Different colors signify thematic clusters, with larger nodes highlighting frequently occurring terms. The network reveals relationships among key topics, such as gender, psychology, addiction, and risk behavior, showcasing research trends and interconnected concepts.

Cluster 1: The co-occurrence map cluster 1, encapsulating keywords like male, adult, female, controlled study, young adult, pathological gambling, adolescent, football, perception, age, gender, in-play betting, skill, cognition, attitude, cross-sectional studies, demography, comorbidity, consumer behavior, personality, and match-fixing, reveals a profound and multifaceted intellectual structure within the domain of sports betting and gambling research.

It was found that sports betting is predominantly a male pursuit, intricately linked with heightened impulsivity and concomitant substance use disorders. The most vulnerable population to this problems involves young males particularly in their twenties who are employed and tend to have gambling addictions (Valenciano-Mendoza et al., 2023). Rigorous controlled studies elucidate that males with pronounced impulsivity are especially vulnerable to gambling maladies (Snaychuk et al., 2023).

The phenomenon of in-play betting has emerged as a very important cause for gambling addiction due to its ability to create continuous engagement, which in turn increase impulsive behavior and the number of

times betting is done (E. Killick & Griffiths, 2021). Cognitive distortions such as overestimation of one's abilities by the bettors combined with personality traits like sensation seeking further increase gambling behaviors (Lamont & Hing, 2020). This behavioural tendency is also supported by social dynamics such as peer pressure and the normalisation of betting amongst male groups (Lopez-Gonzalez et al., 2019).

Study conducted among university students, aspects of biological age and academic focus are also important although there are other factors such as gender that determine probability reliably well. For example, according to Snopek and Bejtkovský (2023), young males tend to bet more than females. These results imply that sporting bets are interrelated with demographic, psychological and social factors. It is important to comprehend these complexities in order to design measures and policies that can reduce risks associated with gambling.

Cluster 2: The co-occurrence map cluster 2 encapsulate words such as psychology, behavior, addictive, addiction, problem gambling, motivation, middle aged, impulsiveness, gambling disorder, impulsive behavior, physiology, inducements etc., which represent the intellectual structure of study on gambling.

The Research cluster revolves around the psychology behind gambling behaviour; how rewards may influence it; also, how addiction towards betting can be minimized. Some studies have found that impulsiveness together with motivation may cause someone become addicted to sports gambling (Lopez-Gonzalez et al., 2020). Literature on Impulse control disorders shows that decisions making process are affected by impulsive behaviors as well as availability of incentives like bonus bet or discount thus promoting risky betting and causing harm from this activity (Hing, Russell, et al., 2018).

Daily Fantasy Sports has brought complications because people are not sure whether it's a game of chance or skill. Regardless of categorization though there seem to be features within daily fantasy sports which encourage excessive use and related harms therefore requiring strategies for minimizing these effects (Pickering et al., 2016).

Psychological distress among middle-aged persons in combination with lower self-control often leads them into higher risk-taking when they gamble. Such clients from Spain show different reactions towards treatment depending on their age bracket hence calling for more specific approaches while offering therapeutic services (Mestre-Bach et al., 2022).

Regulating marketing activities involving responsible gaming should include controlling inducements too. According to Lopez-Gonzalez (2019), there is need for strict regulations aimed at reducing harm caused by advertising stimuli which greatly affect betting behavior.

Cluster 3: The co-occurrence map cluster 3, which includes keywords such as high-risk behavior, risk-taking, risk factor, risk factors, self-concept, student, students, control, United States, internal-external control, self-efficacy, risk assessment and psychological aspect depicts the

intellectual structure of research on understanding risk behaviors in students.

The primary study areas in this cluster stress on the significance of psychological aspects when it comes to comprehending and mitigating against high risks among students with particular reference to US context.

Studies have found that many learners engage themselves into high risk behaviors that may be influenced by their own confidence in their abilities (self-efficacy), personal perception about themselves (self-concept), or environmental pressures. In American colleges for example some people take more risky behavior than others depending on whether they believe that everything that happens around them is controlled internally or externally (Shen, 2023). Internally controlled individuals with higher levels of self-efficacy usually have better skills at evaluating risks involved before making decisions about what action should be taken than those who attribute everything outside themselves.

Psychological dimensions play a particularly important role in understanding gambling among college going youths. According to a recent survey carried out by Nabifo et al. (2021), it was discovered that problem gamblers were less likely among students perceiving greater self-efficacy while having positive views about their own worth or abilities. Furthermore, peer pressure can also come into play because most young people like doing things together especially when there are no strict rules governing them so each person tends copy from others without considering consequences leading into risky behaviors which eventually becomes normative thus affecting even those who originally had negative attitudes towards taking risks (Acheampong et al., 2022).

Samuel Russell and his associates conducted research in 2019 suggested that there should be all rounded frameworks for assessing hazards as this will help in understanding how different factors interrelate with one another. They argued that many scholars have only focused on individual-level risk assessments without considering contextual influences such as peer groups which may influence an individual's behavior (Russell, Hing, & Browne, 2019).

Cluster 4: The co-occurrence map cluster 3, encompassing keywords such as Australia, advertising, marketing, qualitative research, public health, persuasive communication, prevention and control, procedures, child, and television, highlights the intellectual structure and emerging trends in the field of advertising's impact on public health, particularly in Australia.

The core research areas within this cluster include examining the effectiveness of current advertising regulations, understanding the psychological impact of persuasive communication on different demographic groups, and developing strategies for public health interventions. The interrelation of these areas underscores the critical need for a multidisciplinary approach to address the public health implications of advertising in the context of gambling.

Research in this cluster reveals that advertising, especially sports betting ads, significantly influences public perception and behavior. Qualitative studies indicate that the pervasive nature of sports betting advertisements on television normalizes betting behavior among children and young adults (Pitt et al., 2017). This normalization is facilitated through persuasive communication techniques, such as humor and celebrity endorsements, which make betting appear harmless and socially acceptable (Hing, Vitartas, & Lamont, 2017).

Public health studies emphasize the need for stricter regulation and preventive measures to mitigate the harmful effects of such advertising. The exposure of children to gambling advertisements during sports events has raised significant concerns about the long-term impact on their psychological well-being and behavior (Lopez-Gonzalez et al., 2018). Consequently, there is a growing call for public health policies that focus on reducing the exposure of vulnerable populations to these advertisements and promoting responsible gambling messages (Deans et al., 2017).

The key themes at the intersection of psychological and emotional impacts of fantasy sports betting include sophisticated marketing strategies that normalize gambling, playing into psychological weaknesses (Lopez-Gonzalez et al., 2017; McGee, 2020). Frequent engagement in varied gambling activities significantly increases problem gambling risks, particularly among young male adults (Hing et al., 2016). Sports-embedded gambling promotions exploit emotional responses, reducing perceived risk and enhancing perceived control, thereby influencing mental health (Hing et al., 2015a; Lopez-Gonzalez et al., 2018). There's a notable demographic shift, with young men as prominent online sports bettors due to technological advances (Blaszczynski & Hunt, 2011; Ferris & Wynne, 2001; Hing et al., 2014; Milner et al., 2013).

Discussion

There is increasing interest from scholars regarding the emotional and psychological dimensions of phenomena such as fantasy sports betting, which clearly shows a spike during 2020 to 2024. This pattern corresponds with the increased phenomena of online betting and gambling related apprehensions in society (Jones & Noël, 2022). The key research themes found were the normalization of gambling through marketing strategies, the psychological risks associated with young male bettors, and the interplay between cognitive distortions, impulsivity, and problem gambling (Hing et al., 2015; Lopez-Gonzalez et al., 2018). The growth in the number of documents published through multiple authors and changes to the collaboration patterns indicates that portions of the field are no longer concentrating only on singular studies but are adopting a more interdisciplinary approach to studying responses to gambling.

The results highlighted that the advertisements related to gambling has an important role to play in shaping the behavior of the better. The emotional engagement and the illusion of self-control created by these

advertisements results in a higher rates of problem gambling (Lopez-Gonzalez et al., 2017). Bibliographic coupling has also noted that, similar to problem gambling, fantasy sports betting has associations with behavioral addiction, substance abuse, and risky behavior.

The implications of these findings are multifaceted, touching on regulatory, psychological, and social aspects of sports betting. The consistent growth in research indicates that fantasy sports gambling is no longer considered a mere form of entertainment, but rather a multifaceted phenomenon which carries important public health issues (Hing et al., 2016). The advertising of sports betting in mass media normalizes gambling activities, which can foster gambling disorders in susceptible groups (Deans et al., 2017). Additionally, platforms that facilitate fantasy sports betting could be encouraged to implement responsible gambling tools, such as deposit limits and reality checks, to help mitigate addictive behaviors (Newall et al., 2022).

The research indicates the necessity of increased intervention measures and their understanding from a psychological point of view in order to address the gambling-related cognitive distortions. The tendency of bettors to overestimate their skills and control over betting outcomes fosters a cycle of risk-taking, which can lead to severe financial and emotional distress (Cantinotti et al., 2004). Public information campaigns can help reduce harm by effectively debunking common myths associated with gambling, such as ‘hot streaks’ and ‘near wins’.

The results of the research correlate with past studies pointing out the immense contribution of advertisement and marketing towards an increase in gambling behavior. Hing et al. (2015) noted that the integration of gambling advertising into sports broadcasts contributes to a significant increase in betting intentions, especially amongst problem gamblers. Similarly, Lopez-Gonzalez et al. (2017) emphasized how via various marketing practices, gambling firms utilize emotional involvement by making betting seem like a safe thing to do.

Moreover, this study provides a congruent validity of the earlier research on the demographic risk factors for problem gambling. Humphreys and Perez (2020) found that young male bettors, particularly those with higher disposable incomes, are at greater risk of developing gambling-related issues. This correlates well with results from the present study, which indicated that younger adult males are a high-risk group because of cognitive distortions associated with their frequent participation in fantasy sports betting.

Although this research offers important insights, still some limitations need to be considered. Firstly, bibliometric analysis is heavily dependent on the citation patterns and publication volumes which may not fully reflect the emerging themes. The emphasis on scholarly articles with a very high citation index might result in the neglect of more recent papers that have not yet made a name for themselves in the academic sphere (Donthu et al., 2021). Additionally, the concentration of research on a

specific location is another limitation. Most of the analyzed studies are from Western countries such as the United States, the United Kingdom, and Australia. This brings up worries about the application of the findings to areas with a vastly different gambling culture or regulation. Future research should aim to include a more diverse range of studies to capture cultural variations in gambling behaviors.

Although bibliometric analysis offers a broad view on research activities, it does not explore in detail the qualitative dimensions of gambling experiences. Further research employing both qualitative and quantitative methods like interviews and ethnography can provide greater depth of understanding of the experiences of fantasy sports gamblers.

Considering these findings, future work needs to explore cross-cultural factors in online sports betting, evaluating how cultural norms shape risk and protective measures. Longitudinal research would examine the long-term psychological and financial effects of participating in fantasy sports, while an evaluation of restrictions on advertising and deposit limits could offer insight into policies that may be effective. Research on cognitive and emotional processes, like the role of enthusiasm or regret, would improve models of problem gambling. Additionally, the evolution of technology, especially mobile applications and in-play characteristics, calls for attention as features like push notifications and live odds can exacerbate risk factors in different settings.

Conclusion

The volume of literature on the emotional and psychological effects of sports betting has seen a substantial increase over the years, especially with the rise of online platforms and the global proliferation of fantasy sports betting. Research has shown that there are a number of emotional impacts from sports betting, which can range from excitement to stress and anxiety, often leading to problem gambling behaviors (Jones & Noël, 2022). Notable figures who have contributed significantly to this area include Hing N., Griffiths MD and Lopez-Gonzalez H; their work has covered addiction, risk behaviors as well as how marketing strategies affect gambling behavior (Hing et al., 2015; Lopez-Gonzalez & Griffiths, 2021). Joint publishing shows an upward trend of multi-authored papers which indicates the growing recognition of the breadth needed when dealing with such complex topics. Amongst other factors one such theme at the crossroads between psychological and emotional impacts on fantasy sports betting is sophisticated marketing strategies used to normalize gambling while preying upon weak points in individual psychology, frequent participation across different types of bets leading to higher risks for problem gamblers and sport embedded promotions designed to manipulate emotions (Hing et al., 2015; Lopez González et al., 2018). Closely related areas now also encompass demographic changes where young men have become more prominent online bettors due mainly because technological advancements have made it easier for them (Blaszczynski & Hunt, 2011; Hing et al., 2014).

In general terms what all these studies suggest is that not enough attention has been paid towards considering what effects engaging with fantasy sports might have on participants' mental health – so far only some researchers recognize this fact through their increasing numbers but more needs to be done if we want people take notice about how dangerous these activities really are and therefore regulate them accordingly.

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None.

Author's contributions

Neeraj Bhanot and Rahul Sharma jointly conceived the study. Neeraj Bhanot prepared the manuscript, conducting the literature review and drafting all sections. Rahul Sharma critically reviewed each draft, provided substantive edits to enhance clarity and rigor, and improved overall quality. Both authors read and approved the final version.

Ethics Approval

Not required. This study used secondary de-identified data.

Research Promotion

The study helps understand increasing attention to fantasy sports betting research and its cultural, technological, and psychological implications. Using the bibliometric analysis of literature in Scopus and Web of Science, the study identified the rise of publication between 2020 and 2024 discovering major themes of normalization of gambling, risk in the younger male population, and the emotion and psychological complications associated.

References

- Acheampong, E. Y., Sarpong, E. O., & Mahamah, M. (2022). Understanding sports betting among young male student-teachers in Ghana. *Journal of Gambling Issues*, 49, 174–200. <https://doi.org/10.4309/jgi.2022.49.8>
- Auer, M., Malischinig, D., & Griffiths, M. D. (2023). Gambling Before and During the COVID-19 Pandemic Among European Regular Sports Bettors: An Empirical Study Using Behavioral Tracking Data. *International Journal of Mental Health and Addiction*, 21(1), 20–27. <https://doi.org/10.1007/s11469-020-00327-8>
- Bhatt, V., Aggarwal, U., & Kumar, C. N. S. V. (2022). Sports Data Visualization and Betting. 2022 *International Conference on Smart Generation Computing, Communication and Networking, SMART GENCON 2022*. <https://doi.org/10.1109/SMARTGENCON56628.2022.10083831>
- Blaszczynski, A., & Hunt, C. (2011). Online sports betting has created new generation of problem gamblers. *The University of Sydney*.
- Brevers, D., Baeken, C., Bechara, A., He, Q., Maurage, P., Sescousse, G., Vögele, C., & Billieux, J. (2024). Increased ventral anterior insular connectivity to sports betting availability indexes problem gambling. *Addiction Biology*, 29(3). <https://doi.org/10.1111/adb.13389>
- Broadus, R. N. (1987). Toward a definition of “bibliometrics.” *Scientometrics*, 12(5–6), 373–379. <https://doi.org/10.1007/BF02016680>
- Cantinotti, M., Ladouceur, R., & Jacques, C. (2004). Sports betting: Can gamblers beat randomness? *Psychology of Addictive Behaviors*, 18(2), 143–147. <https://doi.org/10.1037/0893-164X.18.2.143>
- Cobo, M., López-Herrera, A., Herrera-Viedma, E., & Herrera, F. (2011). Science mapping software tools: Review, analysis, and cooperative study among tools. *Journal of the American Society for Information Science and Technology*, 62(7), 1382–1402.
- Deans, E. G., Thomas, S. L., Derevensky, J., & Daube, M. (2017). The influence of marketing on the sports betting attitudes and consumption behaviours of young men: Implications for harm reduction and prevention strategies. *Harm Reduction Journal*, 14(1). <https://doi.org/10.1186/s12954-017-0131-8>
- Di Censo, G., Delfabbro, P., & King, D. L. (2024). Mapping Youth Awareness of Sports Betting Advertising During the 2022 FIFA World Cup. *Journal of Gambling Studies*. <https://doi.org/10.1007/s10899-024-10299-2>
- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). *How to conduct a bibliometric analysis: An overview and guidelines*. <https://doi.org/10.1016/j.jbusres.2021.04.070>
- Dwyer, B., Shapiro, S. L., & Drayer, J. (2023). A Segmentation Analysis of American Sports Bettors by Involvement. *Journal of Sport Management*, 37(3), 203–216. <https://doi.org/10.1123/JSM.2021-0335>
- Dwyer, B., Shapiro, S. L., & Drayer, J. (2024). Fan conflict or complement? Exploring the intersection of sports betting and team loyalty. *International Journal of Sports Marketing and Sponsorship*. <https://doi.org/10.1108/IJSMS-07-2023-0138>
- Dwyer, B., & Weiner, J. (2018). Daily Grind: A Comparison of Causality Orientations, Emotions, and Fantasy Sport Participation. *Journal of Gambling Studies*, 34(1), 1–20. <https://doi.org/10.1007/s10899-017-9684-4>
- Edson, T. C., Louderback, E. R., Tom, M. A., McCulloch, S. P., & LaPlante, D. A. (2023). Exploring a multidimensional concept of loss chasing using online sports betting records. *International Gambling Studies*. <https://doi.org/10.1080/14459795.2023.2276741>
- Egghe, L. (2006). Theory and practise of the g-index. *Scientometrics*, 69(1), 131–152. <https://doi.org/10.1007/s11192-006-0144-7>

- Fang, X., & Mowen, J. C. (2009). Examining the trait and functional motive antecedents of four gambling activities: Slot machines, skilled card games, sports betting, and promotional games. *Journal of Consumer Marketing*, 26(2), 121–131. <https://doi.org/10.1108/07363760910940483>
- Ferris, J., & Wynne, H. (2001). *The Canadian Problem Gambling Index*. Canadian Centre on Substance Abuse (CCSA).
- Fonseca, B. de P. F. e, Sampaio, R. B., Fonseca, M. V. de A., & Zicker, F. (2016). Co-authorship network analysis in health research: method and potential use. *Health Research Policy and Systems*, 14(1), 34. <https://doi.org/10.1186/s12961-016-0104-5>
- Forrest, D., Mchale, I., & Mcauley, K. (2008). Say it ain't so": Betting- Related malpractice in sport. *International Journal of Sport Finance*, 3(3), 156–166. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-70349342809&partnerID=40&md5=364b9f551b95c9fbd55cb4bfd96f6d4>
- Gordon, R., Gurrieri, L., & Chapman, M. (2015). Broadening an understanding of problem gambling: The lifestyle consumption community of sports betting. *Journal of Business Research*, 68(10), 2164–2172. <https://doi.org/10.1016/j.jbusres.2015.03.016>
- Greer, N., Rockloff, M. J., Russell, A. M. T., & Lole, L. (2022). Are esports bettors a new generation of harmed gamblers? A comparison with sports bettors on gambling involvement, problems, and harm. *Journal of Behavioral Addictions*. <https://doi.org/10.1556/2006.2021.00039>
- Hing, N., Browne, M., Rockloff, M., Russell, A. M. T., Tulloch, C., Lole, L., Thorne, H., & Newall, P. (2023). Situational features of smartphone betting are linked to sports betting harm: An ecological momentary assessment study. *Journal of Behavioral Addictions*, 12(4), 1006–1018. <https://doi.org/10.1556/2006.2023.00065>
- Hing, N., Gainsbury, S., Blaszczynski, A., Wood, R., Lubman, D., & Russell, A. (2014). *Interactive Gambling*.
- Hing, N., Lamont, M., Vitartas, P., & Fink, E. (2015a). Sports bettors' responses to sports-embedded gambling promotions: Implications for compulsive consumption. *Journal of Business Research*, 68(10), 2057–2066. <https://doi.org/10.1016/j.jbusres.2015.03.003>
- Hing, N., Lamont, M., Vitartas, P., & Fink, E. (2015b). Sports-embedded gambling promotions: A study of exposure, sports betting intention and problem gambling amongst adults. *International Journal of Mental Health and Addiction*, 13(1), 115–135. <https://doi.org/10.1007/s11469-014-9519-9>
- Hing, N., Li, E., Vitartas, P., & Russell, A. M. T. (2018). On the Spur of the Moment: Intrinsic Predictors of Impulse Sports Betting. *Journal of Gambling Studies*, 34(2), 413–428. <https://doi.org/10.1007/s10899-017-9719-x>
- Hing, N., Russell, A. M., & Browne, M. (2017). Risk factors for gambling problems on online electronic gaming machines, race betting and sports betting. *Frontiers in Psychology*, 8(MAY). <https://doi.org/10.3389/fpsyg.2017.00779>
- Hing, N., Russell, A. M. T., Lamont, M., & Vitartas, P. (2017). Bet Anywhere, Anytime: An Analysis of Internet Sports Bettors' Responses to Gambling Promotions During Sports Broadcasts by Problem Gambling Severity. *Journal of Gambling Studies*, 33(4), 1051–1065. <https://doi.org/10.1007/s10899-017-9671-9>
- Hing, N., Russell, A. M. T., Li, E., & Vitartas, P. (2018). Does the uptake of wagering inducements predict impulse betting on sport? *Journal of Behavioral Addictions*, 7(1), 146–157. <https://doi.org/10.1556/2006.7.2018.17>
- Hing, N., Russell, A. M. T., Tulloch, C., Lole, L., Rockloff, M., Browne, M., Thorne, H., & Newall, P. (2024). Feature preferences of sports betting platforms: A discrete choice experiment shows

- why young bettors prefer smartphones. *Journal of Behavioral Addictions*, 13(1), 134–145.
<https://doi.org/10.1556/2006.2023.00073>
- Hing, N., Russell, A. M. T., Vitartas, P., & Lamont, M. (2016). Demographic, behavioural and normative risk factors for gambling problems amongst sports bettors. *Journal of Gambling Studies*, 32(2), 625–641. <https://doi.org/10.1007/s10899-015-9571-9>
- Hing, N., Vitartas, P., & Lamont, M. (2017). Understanding persuasive attributes of sports betting advertisements: A conjoint analysis of selected elements. *Journal of Behavioral Addictions*, 6(4), 658–668. <https://doi.org/10.1556/2006.6.2017.062>
- Hirsch, J. E. (2005). An index to quantify an individual's scientific research output. *Proceedings of the National Academy of Sciences*, 102(46), 16569–16572.
<https://doi.org/10.1073/pnas.0507655102>
- Hjørland, B. (2013). Citation analysis: A social and dynamic approach to knowledge organization. *Information Processing & Management*, 49(6), 1313–1325.
<https://doi.org/10.1016/j.ipm.2013.07.001>
- Hopfgartner, N., Auer, M., Santos, T., Helic, D., & Griffiths, M. D. (2022). The Effect of Mandatory Play Breaks on Subsequent Gambling Behavior Among Norwegian Online Sports Betting, Slots and Bingo Players: A Large-scale Real World Study. *Journal of Gambling Studies*, 38(3), 737–752. <https://doi.org/10.1007/s10899-021-10078-3>
- Humphreys, B. R., & Perez, L. (2020). Who Bets on Sports? Characteristics of Sports Bettors and the Consequences of Expanding Sports Betting Opportunities. *Studies of Applied Economics*, 30(2), 579. <https://doi.org/10.25115/eea.v30i2.3542>
- Jan van Eck, N., & Waltman, L. (2019). *VOSviewer Manual*.
- Jones, C. M., & Noël, B. (2022). Skin in the game - Erroneous beliefs and emotional involvement as correlates of athletes' sports betting behavior and problems. *Journal of Behavioral Addictions*.
<https://doi.org/10.1556/2006.2021.00034>
- Jones, P., Clarke-Hill, C. M., & Hillier, D. (2000). Viewpoint: Back street to side street to high street to e-street: Sporting betting on the Internet. *International Journal of Retail & Distribution Management*, 28(6), 222–227. <https://doi.org/10.1108/09590550010328391>
- Kabyl, A., Yang, M., Shah, D., & Ahmad, A. (2022). Bibliometric Analysis of Accidental Oil Spills in Ice-Infested Waters. *International Journal of Environmental Research and Public Health*, 19(22), 15190. <https://doi.org/10.3390/ijerph192215190>
- Killick, E. A., & Griffiths, M. D. (2023). Sports Betting Advertising: A Systematic Review of Content Analysis Studies. *International Journal of Mental Health and Addiction*, 21(5), 3076–3102. <https://doi.org/10.1007/s11469-022-00775-4>
- Killick, E., & Griffiths, M. D. (2021). Impact of Sports Betting Advertising on Gambling Behavior: A Systematic Review. *Addicta: The Turkish Journal on Addictions*, 8(3), 201–214.
<https://doi.org/10.5152/ADDICTA.2022.21080>
- Lamont, M., & Hing, N. (2020). Sports Betting Motivations Among Young Men: An Adaptive Theory Analysis. *Leisure Sciences*, 42(2), 185–204.
<https://doi.org/10.1080/01490400.2018.1483852>
- Lamont, M., Hing, N., & Gainsbury, S. (2011). Gambling on sport sponsorship: A conceptual framework for research and regulatory review. *Sport Management Review*, 14(3), 246–257.
<https://doi.org/10.1016/j.smr.2011.04.004>
- Lamont, M., Hing, N., & Vitartas, P. (2016). Affective response to gambling promotions during televised sport: A qualitative analysis. *Sport Management Review*, 19(3), 319–331.
<https://doi.org/10.1016/j.smr.2015.06.002>

- Lee, C.-K., Chung, N., & Bernhard, B. J. (2014). Examining the structural relationships among gambling motivation, passion, and consequences of internet sports betting. *Journal of Gambling Studies*, 30(4), 845–858. <https://doi.org/10.1007/s10899-013-9400-y>
- Lee, J. Y., & Chung, E. (2022). Mapping open science research using a keyword bibliographic coupling analysis network. *Information Research: An International Electronic Journal*, 27(4). <https://doi.org/10.47989/irpaper949>
- Liu, Z., Yin, Y., Liu, W., & Dunford, M. (2015). Visualizing the intellectual structure and evolution of innovation systems research: a bibliometric analysis. *Scientometrics*, 103(1), 135–158. <https://doi.org/10.1007/s11192-014-1517-y>
- Lopez-Gonzalez, H., Estevez, A., & Griffiths, M. D. (2017). Marketing and Advertising Online Sports Betting: A Problem Gambling Perspective. *Journal of Sport and Social Issues*, 41(3), 256–272. <https://doi.org/10.1177/0193723517705545>
- Lopez-Gonzalez, H., Estévez, A., & Griffiths, M. D. (2018). Controlling the illusion of control: a grounded theory of sports betting advertising in the UK. *International Gambling Studies*, 18(1), 39–55. <https://doi.org/10.1080/14459795.2017.1377747>
- Lopez-Gonzalez, H., Estévez, A., & Griffiths, M. D. (2019). Internet-Based Structural Characteristics of Sports Betting and Problem Gambling Severity: Is There a Relationship? *International Journal of Mental Health and Addiction*, 17(6), 1360–1373. <https://doi.org/10.1007/s11469-018-9876-x>
- Lopez-Gonzalez, H., & Griffiths, M. D. (2021). Brand Knowledge, Similarity to Story Characters and Perceived Influence of Gambling Advertising Among Spanish Sports Bettors: a Survey Study. *International Journal of Mental Health and Addiction*, 19(1), 134–142. <https://doi.org/10.1007/s11469-019-00142-w>
- Lopez-Gonzalez, H., Griffiths, M. D., & Estévez, A. (2020). In-Play Betting, Sport Broadcasts, and Gambling Severity: A Survey Study of Spanish Sports Bettors on the Risks of Betting on Sport While Watching It. *Communication and Sport*, 8(1), 50–71. <https://doi.org/10.1177/2167479518816338>
- Lotka, A. J. (1926). The frequency distribution of scientific productivity. *Journal of the Washington Academy of Sciences*, 16(12).
- McAuliffe, W. H. B., Louderback, E. R., Edson, T. C., LaPlante, D. A., & Nelson, S. E. (2022). Using “Markers of Harm” to Track Risky Gambling in Two Cohorts of Online Sports Bettors. *Journal of Gambling Studies*, 38(4), 1337–1369. <https://doi.org/10.1007/s10899-021-10097-0>
- McGee, D. (2020). On the normalisation of online sports gambling among young adult men in the UK: a public health perspective. *Public Health*, 184, 89–94. <https://doi.org/10.1016/j.puhe.2020.04.018>
- Mestre-Bach, G., Granero, R., Mora-Maltas, B., Valenciano-Mendoza, E., Munguía, L., Potenza, M. N., Derevensky, J. L., Richard, J., Fernández-Aranda, F., Menchón, J. M., & Jiménez-Murcia, S. (2022). Sports-betting-related gambling disorder: Clinical features and correlates of cognitive behavioral therapy outcomes. *Addictive Behaviors*, 133. <https://doi.org/10.1016/j.addbeh.2022.107371>
- Milner, L., Hing, N., Vitartas, P., & Lamont, M. (2013). Embedded Gambling Promotion in Australian Football Broadcasts: An Exploratory Study. *Communication, Politics & Culture*, 46, 177–198. <https://doi.org/10.3316/IELAPA.533210922130517>
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Reprint—Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *Oxford University Press*, 89(9), 873–880. <https://doi.org/10.1093/ptj/89.9.873>

- Nabifo, S. C., Izudi, J., & Bajunirwe, F. (2021). Alcohol consumption and sports-betting among young male motorcycle taxi boda boda riders in urban southwestern Uganda. *BMC Public Health*, 21(1). <https://doi.org/10.1186/s12889-021-10406-7>
- Nelson, S. E., Edson, T. C., Grossman, A., Louderback, E. R., Gray, H. M., & LaPlante, D. A. (2022). Time Out: Prediction of Self-Exclusion From Daily Fantasy Sports. *Psychology of Addictive Behaviors*, 36(4), 318–332. <https://doi.org/10.1037/adb0000829>
- Newall, P. W. S., Cassidy, R., Walasek, L., Ludvig, E. A., & Meyer, C. (2020). Who uses custom sports betting products? *Addiction Research and Theory*, 1–7. <https://doi.org/10.1080/16066359.2020.1792887>
- Newall, P. W. S., & Cortis, D. (2021). Are sports bettors biased toward longshots, favorites, or both? A literature review. *Risks*, 9(1), 1–9. <https://doi.org/10.3390/risks9010022>
- Newall, P. W. S., Rockloff, M., Hing, N., Thorne, H., Russell, A. M. T., Browne, M., & Armstrong, T. (2023). Designing Improved Safer Gambling Messages for Race and Sports Betting: What can be Learned from Other Gambling Formats and the Broader Public Health Literature? *Journal of Gambling Studies*, 39(2), 913–928. <https://doi.org/10.1007/s10899-023-10203-4>
- Newall, P. W. S., Russell, A. M. T., & Hing, N. (2022). Structural characteristics of fixed-odds sports betting products. *Journal of Behavioral Addictions*. <https://doi.org/10.1556/2006.2021.00008>
- Newman, M. E. J. (2004). Coauthorship networks and patterns of scientific collaboration. *Proceedings of the National Academy of Sciences*, 101(suppl_1), 5200–5205. <https://doi.org/10.1073/pnas.0307545100>
- Nower, L., Caler, K. R., Pickering, D., & Blaszczynski, A. (2018). Daily fantasy sports players: Gambling, addiction, and mental health problems. *Journal of Gambling Studies*, 34(3), 727–737. <https://doi.org/10.1007/s10899-018-9744-4>
- Osareh, F., & Mostafavi, E. (2011). Lotka's Law and authorship distribution in Computer Science using Web of Science (WoS) during 1986–2009. *Collnet Journal of Scientometrics and Information Management*, 5(2), 171–183. <https://doi.org/10.1080/09737766.2011.10700911>
- Paul, R. J., & Weinbach, A. P. (2011). Investigating allegations of pointshaving in NCAA basketball using actual sportsbook betting percentages. *Journal of Infection Prevention*, 12(4), 432–447. <https://doi.org/10.1177/1527002510385904>
- Paul, R. J., & Weinbach, A. P. (2012). Sportsbook pricing and the behavioral biases of bettors in the NHL. *Journal of Economics and Finance*, 36(1), 123–135. <https://doi.org/10.1007/s12197-009-9112-4>
- Petrotta, B. A. (2023). From Prohibition to Promotion: Framing and Sourcing the Legalization of Sports Betting in the U.S. *Communication and Sport*. <https://doi.org/10.1177/21674795231193132>
- Phan Tan, L. (2022). Bibliometrics of social entrepreneurship research: Cocitation and bibliographic coupling analyses. *Cogent Business & Management*, 9(1). <https://doi.org/10.1080/23311975.2022.2124594>
- Pickering, D., Blaszczynski, A., Hartmann, M., & Keen, B. (2016). Fantasy Sports: Skill, Gambling, or Are These Irrelevant Issues? *Current Addiction Reports*, 3(3), 307–313. <https://doi.org/10.1007/s40429-016-0111-1>
- Pitt, H., Thomas, S. L., Bestman, A., Daube, M., & Derevensky, J. (2017). What do children observe and learn from televised sports betting advertisements? A qualitative study among Australian children. *Australian and New Zealand Journal of Public Health*, 41(6), 604–610. <https://doi.org/10.1111/1753-6405.12728>
- Pritchard, A. (1969). Statistical Bibliography or Bibliometrics? *Journal of Documentation*.

- Russell, A. M. T., Hing, N., & Browne, M. (2019). Risk Factors for Gambling Problems Specifically Associated with Sports Betting. *Journal of Gambling Studies*, 35(4), 1211–1228. <https://doi.org/10.1007/s10899-019-09848-x>
- Russell, A. M. T., Hing, N., Li, E., & Vitartas, P. (2019). Gambling risk groups are not all the same: Risk factors amongst sports bettors. *Journal of Gambling Studies*, 35(1), 225–246. <https://doi.org/10.1007/s10899-018-9765-z>
- Shen, Y. (2023). Determinants of problem sports betting among college students: moderating roles of betting frequency and impulsive betting tendency. *BMC Psychology*, 11(1). <https://doi.org/10.1186/s40359-023-01387-w>
- Snaychuk, L. A., Ashley, A. M., McGrath, D. S., Hodgins, D. C., Williams, R. J., & Kim, H. S. (2023). Demographic, Gambling, and Psychological Characteristics of Sports Bettors in a Stratified Sample of Adults Who Gamble Regularly. *Psychology of Addictive Behaviors*, 37(8), 1089–1100. <https://doi.org/10.1037/adb0000971>
- Snopek, P., & Bejtkovský, J. (2023). Sport, Sports Betting, and Gambling from the Perspective of University Students: Case of the Czech Republic. *Adiktologie*, 23(4), 275–284. <https://doi.org/10.35198/01-2023-004-0003>
- Thomas, S., Lewis, S., Duong, J., & Mcleod, C. (2012). Sports betting marketing during sporting events: A stadium and broadcast census of Australian Football League matches. *Australian and New Zealand Journal of Public Health*, 36(2), 145–152. <https://doi.org/10.1111/j.1753-6405.2012.00856.x>
- Trang, P. N. T., Hanh Le, A. N., Tan, L. P., & Sung Cheng, J. M. (2023). Sustainable Marketing Management: Using Bibliographic Coupling to Review the State-Of-The-Art and Identify Future Research Prospects. *Journal of Business-to-Business Marketing*, 30(1), 63–85. <https://doi.org/10.1080/1051712X.2023.2188134>
- Upham, S. P., & Small, H. (2010). Emerging research fronts in science and technology: patterns of new knowledge development. *Scientometrics*, 83(1), 15–38. <https://doi.org/10.1007/s11192-009-0051-9>
- Uzobo, E., Scent, G. A. T., Moroyei, B. O., & Owutuamor, E. F. (2023). Sports Betting and Depression among Youths in the South-South Region of Nigeria. *Adiktologie*, 23(2), 145–157. <https://doi.org/10.35198/01-2023-001-0001>
- Valenciano-Mendoza, E., Mora-Maltas, B., Mestre-Bach, G., Munguía, L., Richard, J., Derevensky, J. L., Potenza, M. N., & Jiménez-Murcia, S. (2023). Clinical Correlates of Sports Betting: A Systematic Review. *Journal of Gambling Studies*, 39(2), 579–624. <https://doi.org/10.1007/s10899-023-10196-0>
- van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523–538. <https://doi.org/10.1007/s11192-009-0146-3>
- van Eck, N. J., & Waltman, L. (2014). Visualizing Bibliometric Networks. In *Measuring Scholarly Impact* (pp. 285–320). Springer International Publishing. https://doi.org/10.1007/978-3-319-10377-8_13
- van Eck, N. J., & Waltman, L. (2017). Citation-based clustering of publications using CitNetExplorer and VOSviewer. *Scientometrics*, 111(2), 1053–1070. <https://doi.org/10.1007/s11192-017-2300-7>
- Vieira, J. L., Coelho, S. G., Snaychuk, L. A., Parmar, P. K., Keough, M. T., & Kim, H. S. (2023). Who makes in-play bets? Investigating the demographics, psychological characteristics, and gambling-related harms of in-play sports bettors. *Journal of Behavioral Addictions*, 12(2), 547–556. <https://doi.org/10.1556/2006.2023.00030>

- Balhara, Y. P. S., & Singh, S. (2023). Fantasy sports as gaming or gambling? Perception, attitudes, and engagement behavior of college students. *Indian Journal of Psychological Medicine*.
<https://doi.org/10.1177/02537176231207994>
- Stateline. (2024, December 5). Growth of sports betting may be linked to financial woes, new studies find. <https://stateline.org/2024/12/05/growth-of-sports-betting-may-be-linked-to-financial-woes-new-studies-find/>
- The Guardian. (2025, January 31). How the quick high of 'fast-food gambling' ensnared young men. <https://www.theguardian.com/sport/2025/jan/31/how-the-quick-high-of-fast-food-gambling-ensnared-young-men>