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Do Sports Bettors Remember Their Bets? The Role of Problem Gambling in Bet Recall

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Abstract: The increasing accessibility of sports gambling, facilitated by mobile applications and online platforms, has led to significant growth in participation. This rise has generated concerns about the cognitive and behavioral aspects of sports betting, particularly in relation to problem gambling. Recall accuracy is crucial because bettors' ability to remember their bets, whether wins or losses, may directly impact their future betting decisions and potential gambling-related harm. The primary objective of this research is to explore the relationship between problem gambling tendencies and sports betting engagement recall. Using a within-subject experimental design, the findings from this study suggest that individuals who scored moderate-to-high on the PGSI underestimated both the number of bets they agreed to place and the amount of money they stated they would wager. This result was a statistically significant difference than individuals who scored on the low end of the PGSI. The results provide evidence that the selective recall sports bettors display can mislead them into inaccurately recalling their engagement with sports betting.

Keywords: Sports Betting, Recall, Problem Gambling, Sports Fans, Sports Gambling, Cognitive Distortions.

Introduction

Since the overturning of the Professional and Amateur Sports Protection Act (PASPA) in 2018, sports gambling has become an integral part of the sport industry. Currently, 39 states and Washington DC have legalized sports betting in some capacity (AGA, 2025). Sports betting operators are among the most common advertisers and sponsors of professional sports and teams. Research has noted that since the legalization of sports betting, young men are one demographic who seems most susceptible to developing problem gambling behaviors (Cohen, 2025). Other research has noted that gamblers face several cognitive distortions that can influence their behavior. Some of these distortions include: the gambler's fallacy, illusion of control, hindsight bias and selective memory to name a few (Goodie & Fortune, 2013).

This last distortion is the main distortion of interest for this study – selective memory. Research has already noted that self-reported data often must be taken with a grain of salt, because participants are prone to lying or misremembering the real results of past behaviors (Chan, 2010). Wagenaar (1995) notes that gamblers are prone to the availability heuristic, big wins come to mind quickly while losses fade and don't make the same impression. Research has also found that online gambling platforms specifically operate at a much higher velocity than in person betting (Torrance et al., 2024) potentially exacerbating the issue. This can be problematic for consumers. If they are unable to accurately remember how many wagers they are engaged with placing, it is far more difficult for them to avoid developing problematic behaviors such as betting more than they can afford to lose. The purpose of this study is to investigate consumers' ability to recall the number of bets and the amount of money they would wager in hypothetical situations, based on different levels of problem gambling as measured by the Problem Gambling Severity Index (PGSI) (Ferris & Wynne, 2001), using a within-subject experimental design. Prior research notes that individuals with problem gambling behaviors are more likely to fall victim to cognitive distortions associated with betting (Michalczuk et al., 2011). As a result, it is hypothesized that individuals with the highest PGSI scores will be less accurate than other groups at recalling how many bets they state they would make and how much money they would stake.

Theoretical Background

Cognitive Distortions in Gambling

Cognitive distortions have a demonstrated effect as a risk factor with problem gambling tendencies (MacKay & Hodgins, 2016). In the context of gambling or specifically sports betting, cognitive distortions refer to systematic thinking errors and psychological assumptions that can lead to irrational or un-optimal betting behaviors. Gambling itself is a difficult enough activity to try and become profitable at, but when you factor in the multiple cognitive distortions that sports fans and bettors face, it becomes

an even more daunting task. Some frequently noted cognitive distortions that influence sports bettors are those of the illusion of control, the gambler's fallacy, hindsight bias, and selective memory – distortions that, as discussed below, share a common motivated function.

Previous research has demonstrated that those who score higher in problem gambling measurements face stronger influence from these cognitive distortions (Michalczuk et al., 2011). The gambler's fallacy is the mistaken belief that past events influence future outcomes (i.e. this team is due for a win because they've been losing recently) (Barron & Leider, 2010). The illusion of control is that gamblers tend to overestimate their ability to influence random sports outcomes – believing that personal rituals or actions influence the game (Dixon, 2000). Hindsight bias hits bettors by influencing them after the fact, that a perceived result of a game was predictable – even if the result went counter to their bets (Hertwig et al., 2003). Lastly is the idea of selective memory. This distortion specifically notes that gamblers recall wins far more than losses, leading to an inflated sense of success (Czerny et al, 2008).

The correlation between cognitive distortions and problematic gambling behavior has been demonstrated (MacKay & Hodgins, 2016) in prior research. While research has also demonstrated that selective memory affects sports bettors. Heirene et al., (2022) reported poor recall of outcomes or even betting frequency among online sports bettors, resulting in the individual's underreporting losses. Recall accuracy is crucial because bettors' ability to remember their bets, both wins or losses, may directly impact their future betting decisions and potential gambling-related harm (Newall et al., 2020). The current study plans to combine these two findings – that cognitive distortions influence those with higher levels of problem gambling and that sports bettors display selective memory regarding their betting behavior.

While these distortions are frequently studied on their own, they're better understood as different versions of the same underlying process rather than as unrelated errors. Motivated reasoning ties them together: people tend to process information in a way that supports what they want to believe rather than what is accurate (Kunda, 1990). This produces a self-serving bias, where good outcomes get chalked up to one's own skill while bad outcomes get explained away or blamed on outside factors (Miller & Ross, 1975). When viewed through this lens, the illusion of control, the gambler's fallacy, hindsight bias, and selective memory aren't four separate distortions but four routes to the same place: protecting the bettor's belief in their own ability and their expectation of winning. Selective memory is the most direct of these, and the one this study focuses on. Memory gets shaped by motivation, so wins are easier to recall than losses. The poor recall found among online sports bettors (Heirene et al., 2022) is exactly the mechanism this study examines.

Problem Gambling

According to prior research, problem gambling has been used to describe behaviors that have harmful consequences to those doing the gambling – whether it be mental, legal, financial, social, or employment-related (Ferris & Wynne, 2001). Similarly to other addictions, problem gambling also has a demonstrated negative effect on not only the individual partaking, but also their spouses, children and family members (Darbyshire et al., 2001; Grant et al., 2010). According to the National Council on Problem Gambling (NCPG), it is estimated that anywhere between 5-10 million Americans have either mild, moderate or severe gambling problems (NCPG, 2023). As legalization continues to spread across the country, the concern over consumers developing these behaviors increases.

One popularized method of determining problem gambling behaviors has been the Canadian Problem Gambling Severity Index (PGSI). The PGSI has been used in different gambling research contexts including internet gambling, race betting, and electronic gaming machines, and has been used to assess diverse populations across different countries and cultural contexts including international students, female gamblers, and university students (Corney & Davis, 2010; Hing et al., 2017; Mond et al., 2019; Moore et al., 2013). The PGSI has also been adapted and validated for sports betting by Shaygan et al., (2024), highlighting the need to study this context in depth.

Not only is problem gambling an issue, but other research has found that problem gambling tendencies are far more prevalent online than in person (Azmier, 2000; Hammer, 2001). One direct comparison between internet gamblers and non-internet gamblers found that the internet gamblers scored significantly higher on a problem gambling screener compared to the non-internet gamblers (Ladd & Petry, 2002). More recently, research has found that males who spend more time online are more likely to exhibit problem gambling behaviors (Lombardi et al., 2024). To take this a step further, not only is gambling online an addictive activity, but the method in which many individuals are engaging with it – on their cell phones – is also an addictive element (Kowalski, 2014). One research study found that smartphone dependence had a significant effect on impulsive choice control when participants were given choice tasks (Robayo-Pinzon et al., 2021). The confluence of addiction from gambling, the internet, and smart phones places sports bettors in a potentially dangerous position.

Sports Bettors

Prior research has demonstrated that problem gambling behaviors can appear for any bettor – whether they be betting on sports or playing more traditional table games, lotteries, or scratch off tickets. A previous study found that in general, people who gamble on sports reported increased frequency in gambling, higher rates of problem gambling, and a wider variety of gambling behaviors compared to individuals who bet in other

contexts (Grubbs & Kraus, 2023). This study found that there was nothing inherent in sports betting that influenced problem behaviors, but rather, due to the increased overall engagement with the activity, these individuals were more susceptible to developing problem tendencies.

In addition, sports betting is also an activity that can begin at a young age compared to other betting activities. According to the 2025 NCAA “Trends in NCAA Student-Athlete Gambling and Sports Betting Behaviors”, 77% of male athletes report the first time they gambled for money was either in high school or before high school, while 64% of women reported the same. Often in the United States, March Madness pools are some of the first times individuals are exposed to sports betting and have been noted as potentially putting individuals on the path towards problem behaviors (Cohen, 2025).

Not only are sports bettors prone to the cognitive distortions associated with gambling, but they are also susceptible to the cognitive distortions associated with being a sports fan. One study found that sports fans who bet on their favorite team are also more likely to overestimate their favorite team’s chances of actually winning a bet (Na et al., 2019). Others have shown that sports bettors often mistakenly feel that their level of knowledge about the sports they consume will give them an edge when betting (Andersson et al., 2009) – despite the fact that all publicly available information is included when betting lines are set (Malkiel, 1989).

Some of the other key factors of sports bettors that correlate with problem gambling tendencies are being young and male (Hing et al., 2016), being single (Gordon et al., 2015), if your social circle also participates in gambling (Gordon et al., 2015), and lastly they believe their perceptions of skill and knowledge in the domain give them an advantage (Auer & Griffiths, 2017). Based upon these findings, it is clear to see why the young male demographic is particularly vulnerable.

In addition to their own personal behaviors, sports betting has become far more advanced in how it can reach consumers. Sports betting companies are among the largest advertisers during sporting events (Harris et al., 2024). Even further, while PASPA was overturned in 2018 allowing states to decide for themselves if they wanted to legalize or not, prediction markets have managed to sidestep the legal hurdles associated with sports betting and now allow the sale of prediction contracts to anyone over the age of 18 in all 50 states and Washington DC. As such, betting consumers have more options and ability to place wagers than ever before. As such, it is imperative to gain a greater understanding of how cognitive distortions can negatively influence sports betting customers.

This study aims to examine consumers’ ability to recall the number of bets placed in a hypothetical situation, as well as the amount of money they would wager depending on levels of problem gambling, utilizing a within-subject experimental design. The following research question is presented:

Research Question: How do individuals with problematic gambling tendencies exhibit distorted or biased recall regarding the amount bet and the number of bets placed?

Method

Participants

Participants were recruited through Prolific and compensated \$1.00 for completing a survey that required approximately 6 minutes. This compensation rate corresponds to approximately \$10 per hour, exceeding Prolific's recommended minimum compensation guideline of \$8.00 per hour (Prolific, 2025). Using Prolific's prescreening criteria, participation was restricted to individuals aged 21 years or older who resided in U.S. states where sports gambling had been legalized. In addition, to ensure participants have experience engaging in sports betting, respondents were asked "Have you placed a bet on a sporting event(s) in the past 12 months?" with the options of Yes or No. Only participants who placed a bet on sporting events in the past 12 months were included in the study. A total of 350 participants attempted to complete the survey. After removing 10 respondents who failed the attention check (e.g., "Please select strongly disagree in this question."), 340 participants remained in the final sample. The final sample consisted of 55% male and 44% female. A total of 68% reported an annual income of more than \$50,000, and 67% held a two-year college degree or higher. The mean age of respondents was 37.48 years ($SD = 10.25$). Participants' demographic information is summarized in Table 1.

Table1. Descriptive Statistics

	Category	Participants (n= 340)
Gender	Male	55 %
	Female	44.1%
	Other	0.3 %
	Prefer not to answer	0.6 %
Income (annual)	Less than \$25,000	8.5%
	\$25,000-\$50,000	21.5%
	\$50,001-\$75,000	22.9%
	\$75,001-\$100,000	16.8%
	\$100,001-\$125,000	12.1%
	\$125,001-\$150,000	6.8%
	More than \$150,000	9.1%
	Prefer not to answer	2.4%
Education	Less than High School	0.3%
	High School/GED	14.1%
	Some College	18.5%
	2-year college degree	15.3%
	4-year college degree	37.1%
	Master's degree	12.4%
	Doctoral degree	0.3%
	Professional degree	1.8%
Age	Mean	37.48
	Standard Deviation	10.25

Measures

Betting Intentions. Betting intentions were assessed with two measures: likelihood of betting and magnitude of the bet (or wager). For the likelihood of betting, participants were asked to “Please rate the likelihood of betting on this game” using a 100-point sliding semantic differential scale (*0 – not likely at all* to *100 – extremely likely to bet*). To measure the magnitude of the bet, participants responded to the question, “If you had a budget of \$200

to bet on this specific matchup, how much would you bet on it?” (entering a dollar value between 0 and 200).

Bet Recall. Bet recall was measured by asking participants, “How many bets did you indicate you were likely (> 50%) to place the bet?” “What was the total amount you indicated you would wager on those bets?”

Problem Gambling. Problem gambling was measured using Canadian Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001) to assess varying levels of individuals’ gambling severity. The PGSI, developed by Ferris & Wynne (2001), is a nine-item measure that asks questions that begin with, “In the past 12 months, how often...” and includes questions such as “have you bet more than you could really afford to lose?” and “have you felt that you might have a problem gambling”. These responses are scored on a 0-3 scale, where 0 indicates never, 1 indicates sometimes, 2 indicates most of the time, and 3 indicates almost always. From this, multiple ranges are established. 0 points indicates a non-problem gambler, 1-2 indicates a low-risk gambler, 3-7 a moderate-risk gambler, and 8+ a problem gambler.

Control Variables. Previous studies have found that age, gender, education and income affected consumers’ gambling intentions and expenditure (Castrén et al., 2018; Moore & Ohtsuka, 1997). Thus, age, gender, education, and income were collected as control variables.

Procedure

To answer the proposed research question, a within-subject experimental design was employed. To mimic a sport betting context, participants were presented with 12 potential NBA games accompanied by betting information (i.e., point spreads) and were asked to report their likelihood of betting and the magnitude of a hypothetical wager for each game. Figure 1 contains a sample mock betting option.

Figure 1: Sample mock betting option

7:30 PM ET	Fiserv Forum Milwaukee, WI
12. BROOKLYN NETS(14-31) 4. MILWAUKEE BUCKS (24-17)	POINT SPREAD : BUCKS -10
*YOU HAVE ACCESS TO WATCH TV BROADCAST	

First, participants were presented with team standings and each team's record to reflect their relative positions. Subsequently, they were presented with 12 mock betting options, where each option included team information with their current records and a betting spread (e.g., -10, even). For 12 separate mock betting options, participants rated likelihood of betting and provided total wagering amount for each option. After completing all betting decisions, participants were asked to recall how many bets they are likely to place a bet (i.e., 51% or more) and total amount of money wagered.

Finally, they were asked to complete the Problem Gambling Severity Index (PGSI) to assess problem gambling severity, followed by demographic questions. Based on PGSI evaluations, total sample ($N = 340$) was initially categorized into four groups: non-problem gamblers ($n = 117$), low-risk gamblers ($n = 99$), moderate-risk gamblers ($n = 79$), and problem gamblers ($n = 45$). Based on this classification, non-problem and low-risk gamblers who typically experience few or no negative consequences were combined into a Low Problem Gambling Risk Group, whereas moderate-risk and problem gamblers who experience some-to-significant negative consequences were combined into a Moderate-to-High Problem Gambling Risk Group. Thus, the total sample ($N = 340$) was divided into 2 groups: Low Problem Gambling Risk Group ($n = 216$) vs Moderate-to-High Problem Gambling Risk Group ($n = 124$).

Following this segmentation, data will be analyzed using IBM SPSS Statistics Version 30. Problem gambling risk group will serve as the independent variable, while recall accuracy measures (i.e., recall accuracy for the number of bets and total wagered amount) will serve as the dependent variables. Age, gender, income, and education will be included as covariates to control for potential demographic influences. Analyses of covariance (ANCOVA) will be employed to investigate the differences regarding bet recall accuracy for number of bets and total wagering amount between Low Problem Gambling Risk Group and Moderate-to-High Problem Gambling Risk Group.

Results

Data Analysis

To examine bet recall accuracy for number of bets, each participant's responses across the 12 mock betting options were first aggregated. Bets were counted when participants indicated a likelihood of betting score of 51 or higher. Bet recall accuracy was then calculated by subtracting the aggregated number of bets from the participant's recalled number of bets. To assess recall accuracy for total wagered amount, each participant's reported wager amounts across the 12 mock betting options were summed. Wager recall accuracy was calculated by subtracting the summed wager amount from the participant's recalled total wagering amount.

After this process, ANCOVA was employed to investigate the differences regarding bet recall accuracy for number of bets and total wagering amount between Low Problem Gambling Risk Group and Moderate-to-High Problem Gambling Risk Group. We find statistically significant differences between Low Problem Gambling Risk Group and Moderate-to-High Problem Gambling Risk Group on both dependent variables after controlling for age, gender, income, and education; $F(2, 333) = 3.65, p = .02$; Wilk's $\Lambda = .97, \eta^2 = .02$).

Pairwise comparisons revealed that there was a statistically significant difference on recall accuracy for number of bets between Low Problem Gambling Risk Group ($M = 0.23, SE = .23$) and Moderate-to-High Problem Gambling Risk Group ($M = -0.55, SE = .31$; mean difference = $0.78, p = .04$). As for recall accuracy for total wagering amount, pairwise comparisons also revealed that there was a statistically significant difference between Low Problem Gambling Risk Group ($M = -217.15, SE = 24.46$) and Moderate-to-High Problem Gambling Risk Group ($M = -304.51, SE = 32.55$; mean difference = $87.36, p = .03$). Refer to Table 2 for the ANCOVA results.

Table 2. ANCOVA Results

Dependent Variables	Means		<i>p</i> -value	Partial η^2
	Low PG	PG		
Bet Recall: number of bets*	0.23	-0.55	0.04	0.01
Bet Recall: total wagering amount*	-217.15	-304.51	0.03	0.01

$$F(2, 333) = 3.65, p = .02; \text{Wilk's } \Lambda = .97, \eta^2 = .02$$

Notes. Bet Recall: number of bets = Recalled Number of Bets – Aggregated Number of Bets (Likelihood ≥ 51), Bet Recall: total wagering amount = Recalled Total Wagered Amount – Aggregated Hypothetical Wagers, positive values indicate overestimation, whereas negative values indicate underestimation. * $p < .05$

Discussion

Cognitive Distortions in Gambling

The results of this study provide insight into how cognitive distortions influence sports bettor behavioral intentions. Prior research noted that individuals who score higher on problem gambling scales are more influenced by cognitive distortions (Michalczuk et al., 2011). The finding was confirmed through this study, as individuals who scored moderate-to-high on the PGSI underestimated the number of bets they agreed to place, as well as underreported the amount of money they stated they would wager. Both of these were statistically significantly different from individuals who scored on the low end of the PGSI. This finding also supports the work of Heirene et al., (2022) who noted poor recall of betting

frequency among online sports bettors. While previous research has already demonstrated these cognitive effects, it is important to note that sports bettors also face another array of cognitive distortions associated with their fandom. When combined with the other gambling related cognitive distortions, it is difficult for sports bettors to place wagers without some unconscious distortions clouding their view.

Problem Gambling

Additionally, the results of this study also support the findings of prior research regarding problem gambling. For example, prior research has noted that problem gambling tendencies can be more prevalent online than in person (Amier, 2000; Hammer, 2001). This makes sense, especially in a sport betting context. When placing bets in person, the individual is given a bet slip – a physical piece of paper that notes the bet they placed, how much money, the time it was placed, and the potential payout. The participants in our study were not given the physical bet slip, just like online betting platforms. As such, it was unsurprising that our participants – even those with low levels of problem gambling – underestimated the amount of money they said they would wager.

Once again, not only do sports bettors face this issue, but they also face the issue of cognitive distortions related to being a sports fan. While Na et al. (2019) were able to demonstrate that sport fans overestimate their favorite team's chances of winning. In conjunction with this finding that problem gamblers display poor recall, it is likely that sport fans betting on their own favorite team may remember the wins with far more clarity than the losses placed on the same team. The findings from this research provide important implications for responsible gambling interventions and consumer protection. To help mitigate problem gambling risks, online sport betting platforms should be required to provide clear and accessible information regarding the number of bets placed and total amounts wagered at regular time intervals. Providing this information would minimize sports bettors' reliance on biased recall and promote more informed betting decisions.

Sports Bettors

This study also provides support and insight regarding the topic of specific sports bettors. Prior research noted that individuals who gamble on sports may face higher rates of problem gambling and higher frequency of gambling (Grubbs & Krause, 2023). Prior research also noted that sports betting is a betting activity that often begins at a younger age when compared to alternative betting games (NCAA, 2025; Cohen, 2025). The sample for this study had an average age of 37, while 24% of participants were under the age of 30. When looking at the problem gambling groups, we saw that the low-level group had an average age of nearly 39, while the moderate-to-high-group had an average age of 35. Additionally, nearly 44% of the sample reported an annual income between \$25,000 and \$75,000.

According to Experian (2024), the average American 35-year-old has a median savings amount of \$5,400. Based on this fact, this demographic is not one who can overcome the financial burden associated with problem gambling.

Moreover, this is a group who is being advertised to heavily, and with a permanent companion by their side in their cell phone, it is increasingly difficult for those sport fans already at risk of developing problematic tendencies to detach from the sports betting ecosphere. It has permeated televised sporting events, sports talk shows, radio shows, podcasts, and social media platforms themselves. With the introduction of prediction markets – offering users the ability to select whether a team will win or lose – but treated as a financial contract – this issue is likely to get exacerbated. Prediction markets are legal in all 50 states and only require users to be 18 – while sports books face legislative hurdles to begin operation and must also restrict users to being 21 years old. As such, sports bettors may face a greater overall risk for problem tendencies.

Practical and Theoretical Implications

The implications of this study provide insight for researchers as well as to regulators and sports book operators. Theoretically, this study helps provide evidence of a mechanism-level account for why sports betting is associated with both elevated problem-gambling levels as well as poor recall. Existing explanations attribute the difference of online-offline sports betting to features that differ between them: accessibility, convenience, and speed of play (Torrance et al., 2024). This study offers a more specific account based on the absence of the physical bet slip. In retail settings, the slip provides a consumer with physical evidence of the wager made, the amount wagered, the potential payout, and when the bet was placed. These all serve as memory aids that can help a consumer's memory of his or her activity. Online platforms remove this element and, in conjunction with the ability to place bets at a much higher velocity, presents a combination ripe for increasing difficulty with accurate recall. When viewed through this lens, the lack of physical evidence of the bet is potentially a causal contributor to the recall failures observed in this study.

Practically, the results of this study could be used to help develop stronger problem gambling assistance programs for implementation by sports book operators or for regulators to enact. As prior research as well as this study found, recall for online betting is more difficult for consumers than betting in person. As such, there is an opportunity for sports books and regulators to do more to address this issue. Currently, consumers can view their total gambling amounts by looking at sportsbooks' apps and websites over various periods of time. However, this information generally must be sought out by consumers. By removing some of the friction and providing consumers with default emails along with real-time push notifications, notifying consumers of how many bets have been placed in a given time

period (daily, weekly, and monthly) could help consumers gain a more accurate understanding of their betting engagement.

This study found that higher levels on the PGSI correlated with more inaccurate recall regarding the number of bets the participant intended to place. Many other studies have found the PGSI correlating strongly with a variety of other problem gambling behaviors. As such, operators could utilize this scale and ask consumers who may be displaying problem gambling tendencies to complete the survey and potentially inform them that they may no longer be gambling as a leisure activity, but rather as a problematic habit.

Limitations and Future Research

As with all research, the current study is not without limitations. First, it utilized only one professional league and its teams to design the experimental betting scenario and recruited participants exclusively from the United States. To enhance generalizability, future research should consider a variety of sports and leagues when creating mock betting scenarios, as well as expanding samples by recruiting participants from countries where sport gambling is legalized or has a different history of legalization. This broader approach can uncover a more comprehensive understating of how individuals with problematic gambling tendencies exhibit distorted or biased recall regarding the amount bet and the number of bets placed.

Second, the current study used hypothetical mock betting options, asking participants to recall the number of bets they placed and the amount of money they would hypothetically wager. While this design offers valuable insights in a controlled setting, it may not fully capture sports bettors' recall bias and decision making in the real world. This matters for external validity, because recall and the distortions that shape it may work differently when real money is on the line. The sting of a real loss, the fact that an individual's own money is actually being spent, and the emotional investment in the outcome could all change how accurately bettors remember the number and size of their bets. Real stakes might sharpen recall, since losses that actually cost something are harder to forget. But they could just as easily worsen it, if motivated forgetting and loss-related distortion grow stronger. Because our design can't tell these two possibilities apart, the underestimation we found should be read as evidence of recall bias under hypothetical conditions and applying it to real-money betting should be done with caution. Future research should therefore examine these behaviors in actual sports gambling settings, where participants wager their own money, to strengthen the external validity of the findings and better understand how real financial risk affects recall accuracy and betting behavior.

Lastly, the current study classified participants based on PGSI into two groups: Low Problem Gambling Risk Group ($n = 216$) and a Moderate-to-High Problem Gambling Risk Group ($n = 124$). This classification

resulted in imbalanced group sizes that may impact both interpretation and generalizability. Unequal group sizes can bias parameter estimates and reduce statistical power. Thus, readers should take into consideration the differing group sizes when interpreting these comparisons, and future research should replicate these results with larger, more balanced samples.

Conclusion

The purpose of this study was to examine how individuals with problematic gambling tendencies exhibit distorted or biased recall regarding the amount bet and the number of bets placed. Using a within-subject experimental design, the findings from this study suggest that individuals who scored moderate-to-high on the PGSI underestimated both the number of bets they agreed to place and the amount of money they stated they would wager. Overall, these findings provide meaningful insights into the behaviors of sports bettors and problem gamblers, as well as the cognitive distortions associated with gambling-related decision making. In addition, the findings provide important implications for responsible gambling interventions and consumer protection.

STATEMENT OF COMPETING INTERESTS

None.

ETHICS APPROVAL

This study was approved by the Institutional Review Board at the University of Northern Colorado (protocol number: 2404059108, 5/15/2024). All participants provided written informed consent prior to participation.

RELATIVE CONTRIBUTIONS

All authors contributed equally to this work and approved the final version of the manuscript for submission.

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None.

RESEARCH PROMOTION

This paper examines the effect of problem gambling severity on consumers' recall of betting activity. The results suggest that policymakers should consider implementing responsible gaming awareness tools to combat the problems associated with bet recall.

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