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Gambling Goals Predict Chasing Behavior during Slot Machine Play

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Abstract

Aims. The purpose of this study was to test the effect of gambling goals (i.e., gambling achievement-orientation) on chasing behavior (i.e., decision to chase, chasing spins) over and above known antecedents (e.g., problem gambling severity, winning money motivations, approach/avoidance motivation). *Methods.* Young adult gamblers (N = 121) were provided $20 and invited to use those funds on a slot machine situated in an immersive virtual reality casino. Unbeknownst to participants, outcomes were manipulated such that a nominal amount of money was either won or lost (depending on experimental condition) after 30 spins. Before the 31st spin, participants were asked if they wished to continue play. If they agreed, all successive spin outcomes were a loss. This permitted an assessment of what factors influence a player's: (1) decision to chase and (2) the number of chasing spins played in the face of loss. *Results.* Almost all participants (n = 95, 78.5%) screened positive for problem gambling symptoms. The majority of gamblers decided to chase (n = 67, 55.4%). In bivariate analyses, higher gambling goal and problem gambling severity scores (but not approach/avoidance nor 'loss/win' condition) were positively related to both forms of chasing. Gamblers 'motivated to win money' were more likely to decide to chase. In multivariate analyses, higher gambling goals best accounted for both forms of chasing independent of known antecedents. *Conclusions.* This study provides the first evidence that gambling goals can influence chasing. Implications for shaping responsible gambling approaches to be more consistent with motivations for play are discussed.

KEYWORDS: gambling goals; chasing; electronic gaming machines (EGMs); problem gambling; motivation; responsible gambling

1. Introduction

One distinguishing characteristic of problem gambling is the desire to continue gambling as well as wager additional money in an effort to recoup losses (American Psychiatric Association [APA], 2013; Dickerson, Hinchy, & Fabre, 1987; Lesieur, 1979; Toce-Gerstein, Gerstein, & Volberg, 2003). This behavior is typically referred to as "chasing" and is common in the ego-dystonic (compulsive) stages of problem gambling (Custer, 1984; el-Guebaly, Mudry, Zohar, Tavares, & Potenza, 2012). Remarkably, however, very little empirical attention has been paid to this component of problematic play. The existing research points to impaired control, impulsivity, alexithymia, approach motivation, and reward sensitivity as antecedents of chasing (Balodis, et al., 2012; Bibby, 2016; Breen & Zuckerman, 1999; Campbell-Meiklejohn, Woolrich, Passingham, & Rogers, 2008; Campbell-Meiklejohn et al., 2012; O'Connor & Dickerson, 2003; Parke, Harris, Parke, & Goddard, 2015). Typically, however, this research assesses chasing and its antecedents while participants engage in decision-making tasks that approximate the gambling environment (e.g., Iowa Gambling Task; Linnet, Rojskjaer, Nygaard, & Maher, 2006; Studer, Limbrick-Oldfield, & Clark, 2015; for exceptions see O'Connor & Dickerson, 2003; Young et al., 2008), thus eliminating some of the driving forces behind gambling behavior (e.g., the lights and sounds of the slot machine; Dixon et al., 2014; Parke & Griffiths, 2006).

We also contend that researchers have neglected a potentially important facet of the gambler's motivation to play that may contribute to their chasing: the influence of gambling goals (importance to which a player places on achieving in the gambling context). Research has shown that people who set higher achievement-oriented goals in adaptive domains (e.g., academics) are more likely to persist in the face of barriers than those who do not place a high emphasis on achieving such goals (Elliot, McGregor, & Gable, 1999; Heath, Larrick, & Wu,

1999; Locke & Latham, 2002). Within the context of gambling, a salient goal or motive for many gamblers is to win money (Lee, Chae, Lee, & Kim, 2007; Neighbors, Lostutter, Cronce, & Larimer, 2002). In the current research, we test the possibility that persistence during play, herein operationalized as chasing, may be a function of the importance to which a gambler places on meeting their gambling goals.

1.1. Problem gambling

Gambling is common throughout the United States and North America; studies estimate 80 to 95% of people gamble during their lifetimes (Kessler et al., 2008; Welte, Barnes, Wieczorek, Tidwell, & Parker, 2001) and nearly 80% report past-year gambling (Welte, Barnes, Tidwell, Hoffman, & Wieczorek, 2015). Rates of participation increased with the widespread expansion of gambling opportunities in the 1990's (Gerstein, Murphy, Toce, et al., 1999; Kallick, Suits, Dielman, & Hybels, 1976), and have remained relatively stable throughout the past decade (Welte et al., 2015).

Electronic gaming machines (EGMs) are considered among the most addictive form of gambling because of their interval ratio reinforcement schedule of conditioning, wherein players continue playing (i.e., "chasing") in the hopes of a future financial windfall (Blaszczynski, Sharpe, Walker, Shannon, & Coughlan, 2005; Dixon, Harrigan, Sandhu, Collins, & Fugelsang, 2010; Dowling, Smith, & Thomas, 2005; Gainsbury, Suhonen, & Saastamoinen, 2014; Harrigan & Dixon, 2010). Efforts to decrease the association between EGMs and chasing have largely focused on assisting the gambler to make informed choices by setting limits on play (Auer & Griffiths, 2013; Blaszczynski et al., 2011; Monaghan, Blaszczynski, & Nower, 2009; Stewart & Wohl, 2013; Wohl, Parush, Kim, & Warren, 2014). Limit-setting tools aim to reduce chasing behavior by encouraging players to limit their money and time spent on gambling – two factors

highly predictive of greater monetary losses (LaBrie et al., 2008; Weinstock, Ledgerwood, & Petry, 2007). A number of studies have reported that limit-setting tools are potentially useful for encouraging responsible play, particularly among recreational gamblers, because they offer a reminder and reality check regarding time and money spent (Auer & Griffiths, 2013; Stewart & Wohl, 2013; Wohl et al., 2008).

Despite potential efficacy, gamblers (and those with greater levels of problem gambling symptoms) are reluctant to voluntarily use limit-setting tools (Ladouceur, Blaszczynski, & Lalande, 2012; Lalande & Ladouceur, 2011; Nower & Blaszczynski, 2010). Wohl, Kim, and Sztainert (2014), for example, argued that gamblers avoid using limit-setting tools, in part, because of a lack of proper education on how games work (e.g., many slot machine gamblers overestimate their chances of winning). It is also possible that gamblers perceive limit-setting tools emphasizing risk minimization and "punishment" (Skinner, 1957), as counter to the motivations and rewarding outcomes of play typically cited by gamblers (Gainsbury et al., 2014; Lee et al., 2007; Lister, Wohl, & Davis, 2015; Stewart & Zack, 2008).

In the current research, we test the possibility that chasing is a function of the goals that gamblers set for a given gambling session. Specifically, we contend gamblers that place a greater importance on achieving winning-oriented gambling goals will be more likely to chase than gamblers who play without a strong motivation to achieve. This idea has yet to be explored in the gambling literature, though there is evidence to support the hypothesis that higher self-reported as well as experimentally-manipulated achievement goals predict persistence as a means to achieve better outcomes in adaptive domains (e.g., academic/athletic outcomes, task performance) (Elliot, 1999; Grant & Dweck, 2003; Locke & Latham, 1990, 1991, 2002; Stoeber, Uphill, & Hotham, 2009; Wolters, 2004). In addition, placing more importance on goal

achievement has been linked to increased risk-taking behavior to achieve goals (Larrick, Heath, and Wu, 2009). The influence of gambling goals in the casino environment, which carries a long-term financial disadvantage to gamblers (LaBrie et al., 2008), represents a potential dangerous environment for gamblers who place a high importance on achieving gambling goals.

This study utilizes Goal Setting Theory (Heath et al., 1999), which is guided by the principles of Prospect Theory (Kahneman & Tversky, 1979; Tversky & Kahneman, 1991), as a theoretical framework to guide our investigation of the possible influence of gambling goals to chasing behavior. Based on this framework, we devised three goal-related principles for the gambling domain: 1) when a gambler sets gambling goals all possible outcomes will be understood as wins and losses relative to those gambling goals (or *reference point*); 2) on average, gamblers will be more affected by losses than wins, resulting in a strong desire to recoup losses (*loss aversion*); and 3) as a gambler falls farther below their gambling goals, each loss will be relatively less aversive (*diminishing sensitivity*).

In light of these principles, the current study was designed to test the relationship of gambling goals to chasing while accounting for other known antecedents. Specifically, we hypothesized: 1) higher gambling goals should result in a greater likelihood of chasing and chasing for more spins; 2) deciding to chase and chasing for more spins should be predicted by known antecedents, including: greater problem gambling severity, being 'motivated to win money', differential approach/avoidance motivation variables (e.g., higher reward responsiveness), as well as experiencing nominal losses ('loss condition'); and 3) higher gambling goals should be a unique contributor to both forms of chasing in multivariate analyses.

2. Material and methods

2.1. Participants and procedure

Participants (N = 121) who reported lifetime gambling were recruited from a Canadian university using the psychology department's web-based research portal (see Appendix A for recruitment and study announcement detail). All participants signed informed consents prior to participating and were fully debriefed[1] regarding deception (i.e., programmed slot machine outcomes) at study's end. The research protocol was approved by the Carleton University Research Ethics Board.

Participants played slot machines located in an immersive virtual casino environment (see Appendix B for more detail) (Stewart & Wohl, 2013), and were told they would have $20 to gamble with and, ostensibly, five minutes to play (30 spins in actuality). Participants were told any money they won (including their $20 stake) would be theirs to keep. Prior to gambling they converted their virtual money into 80 credits. The experimenter tracked betting behavior around a partition to minimize observer effects (Bracht & Glass, 1968). The experimenter programmed the first 30 spins, with roughly half the participants experiencing nominal wins (up $3: n = 58, 47.9%) or losses (down $3: n = 63, 52.1%). Following the 30th spin, the experimenter sounded an egg timer and asked the participant whether they wished to continue gambling. All subsequent slot machine outcomes were losses (Cote et al., 2003). Participants were remunerated with $25 CDN regardless of the amount of credits they had remaining when deciding to stop.

2.2. Measures

[1]In the instance a participant indicated an urge to gamble again during debriefing, the study team had at their disposal a perseverance phenomenon script, which explained these feelings to participants. The script (Ross, Lepper, & Hubbard, 1975) involved discussion of urges to continue gambling after the gambling experiment, which Ross et al. (1975) have found to eliminate post-experimental effects. The experimenter also had referral information for treatment if a participant indicated that their gambling urges could or already had become problematic. The experimenter was instructed to walk participants to the university health services in this instance. Fortunately, this occurrence did not present for any of the participants.

2.2.1. Gambling goals, winning money motivations, problem gambling severity, and approach/avoidance motivation

Participants completed nine self-report items that assessed the importance of achieving gambling goals (gambling achievement-orientation) during play. To construct these items, we adapted the Achievement Goals Questionnaire (AGQ: Elliot & Church, 1997) for a gambling context. Preliminary analyses of the item pool (scree-plot interpretation, component loadings, variance explanation) narrowed the scale to a six-item single-factor scale with good reliability (α = .76). The final items in the scale were: "It was very important to me to win more money than other participants," "I wanted to win money in this gambling task so others could see my gambling ability," "The thought of ending the task with less money than other participants motivated me to do everything I could to win," "Once I started losing my money on the task, I tried even harder to win my money back," "As I began to lose more and more money on the task, I started to feel like giving up," and "I would have felt like playing for longer had I been experiencing more wins." These items were anchored at 1 (*strongly disagree*) and 7 (*strongly agree*). We additionally measured winning money motivations in a single-item assessment anchored at 1 (*not lose any money*), 4 (*break-even*), and 7 (*win a lot of money*), which was also dummy-coded as 'motivated to win money' (scores of 1 to 4 coded as the reference).

The Problem Gambling Severity Index [PGSI] [non-problem (PGSI = 0), low-risk (PGSI = 1 – 2), moderate-risk (PGSI = 3 – 7), and problem (PGSI = 8 – 27] was used to assess the degree and level of problem gambling severity (Canadian Problem Gambling Index: Ferris & Wynne, 2001). In addition, approach/avoidance motivation was measured using the Behavioral Inhibition (BIS) and Behavioral Activation (BAS) Scales (Carver & White, 1994). The BIS measured motivation to avoid unpleasant feelings/experiences, and the BAS measured

motivation to move towards desirable feelings/experiences in three subscales: reward responsiveness (sensitivity to pleasant experiences), drive (persistence to achieve desired outcomes), and fun-seeking (motivated by excitement). The PGSI and BIS/BAS scales have both demonstrated reliable psychometric properties in prior research (Jorm et al., 1998; Orford, Wardle, Griffiths, Sproston, & Erens, 2010).

2.2.2. Chasing

To measure chasing, participants were asked whether they wished to continue play (yes/no) following the first 30 spins ('decision to chase') and their subsequent number of plays following that decision were tallied ('chasing spins'). Participants who decided not to chase were coded as playing for '0' chasing spins. All spins played after participants made their chasing decision were programed as losses.

2.3. Data analysis

Chi-square analyses and t-tests were conducted to examine bivariate differences for categorical and continuous variables. Three variables (problem gambling severity, chasing spins, reward responsiveness) were transformed due to non-normal distribution for bivariate analyses. All predictors were examined in their raw versions for multivariate analyses to aid results interpretation (multivariate analyses were able to handle non-normal predictors). We conducted one univariate test which examined the interaction of winning money motivations (dummy-coded) and the 'loss/win' condition to predict chasing behavior.

Multivariate analyses consisted of two-block logistic and linear regression analyses to examine the unique contribution of predictor variables to chasing decision and chasing spins. Block 1 predictors included known antecedents (problem gambling severity, winning money

motivations, approach/avoidance motivation variables, and 'loss/win' condition) to control for individual and experimental condition differences; Block 2 included gambling goals.

3. Results

3.1. Sample demographics

The sample ranged in age from 18 to 40 (M = 19.8, SD = 2.8). Slightly more males (n = 67, 55.4%) participated, and a majority of participants identified as Caucasian (n = 68, 56.2%). Gambling severity (PGSI: M = 2.5, SD = 2.5) groups were as follows: non-problem (n = 26, 21.5%), low-risk (n = 52, 43.0%), and moderate/problem risk (n = 43, 35.6%). Most participants reported being 'motivated to win money' (n = 86, 72.9%); relatively fewer reported motivations to 'break-even' or 'not to lose money' (n = 32, 27.1%). The majority of participants (n = 67, 55.4%) decided to chase, and chased for approximately 10 spins (M = 9.3, SD = 13.6).

3.2. Bivariate analyses

Table 1 presents bivariate analyses by chasing decision for gambling goals, winning money motivations, problem gambling severity, approach/avoidance motivation, and 'loss/win' condition. Higher scores for gambling goals and problem gambling severity, and being 'motivated to win money' were observed among the 'chasing' group. We did not find differences for chasing decision by approach/avoidance motivation variables or 'loss/win' condition. Bivariate analyses predicting chasing spins indicated a similar pattern (e.g., higher gambling goals (r = .28, p = .002) and greater problem gambling severity (r = .25, p = .007) both predicted relatively more chasing spins, and again, we did not find differences by approach/avoidance variables or 'loss/win' condition. Contrary to analyses explaining chasing decision, being 'motivated to win money' did not predict chasing spins. The interaction of being 'motivated to win money' and 'loss/win' condition did not predict either form of chasing. Of note, participants

with higher gambling goals also demonstrated relatively higher problem gambling severity scores (r = .36, p = < .001).

3.3. Multivariate analyses of chasing decision and chasing spins

Results of the two-block logistic regression explaining the decision to chase (see Table 2) indicated in Block 1 that for every point of increase in problem gambling severity, participants were 28% more likely to decide to chase (p < .01). Gamblers who reported being 'motivated to win money' were 2.47 times (p < .05) as likely to decide to chase. Following inclusion of gambling goals in Block 2, every point of increase in gambling goal scores (p < .01) increased the likelihood of deciding to chase by 11%. Problem gambling severity and being 'motivated to win money' were no longer significant predictors of chasing decision after including gambling goals in Block 2. The 'loss/win' condition and approach/avoidance motivation variables were non-significant predictors of chasing decision in both blocks. Model effects were improved after including gambling goals (in Block 2). The second block of the model correctly classified 76.3% of cases and explained 28.6% of variation in data (Nagelkerke R^2), versus 69.3% of cases and 19.3% of variance explained in Block 1. Both blocks demonstrated an adequate chi-square goodness-of-fit (Hosmer-Lemeshow test).

Results of the two-block linear regression predicting chasing spins (see Table 3) indicated in Block 1 that higher problem gambling severity scores predicted relatively more chasing spins (p < .01). Following inclusion of gambling goals in Block 2, higher gambling goal and problem gambling severity scores predicted relatively more chasing spins (p < .05). The 'loss/win' condition, approach/avoidance motivation variables, and being 'motivated to win money' were all non-significant predictors of chasing spins in both blocks. Block 1 demonstrated trend significance for model fit, $F(7, 106) = 2.06$, p = .054, and explained 12.0% of variation in data.

After including gambling goals in Block 2, the model fit became significant, $F(8,105) = 2.57$, $p = .013$, and explained 16.4% of variation in data. In addition, the degree of change was significant after including gambling goals in the second block, $F(1, 105) = 5.52$, $p = .021$.

4. Discussion

To date, only a few studies have examined psychological antecedents of chasing behavior and there is no clear published research on the relationship of gambling goals to chasing. To address this gap, we examined the relationship of gambling goals to chasing behavior during slot machine play while accounting for other known antecedents (gambling and psychological factors). Specifically, we hypothesized that the more importance gamblers placed on achieving in gambling (higher gambling goals), the more chasing behavior would be observed. In line with this hypothesis, gamblers with higher gambling goals were more likely to chase and chase for more spins in the face of loss (independent of known antecedents). Our findings also suggest that higher gambling goals are predictive of chasing in response to either losses or wins, even when gamblers have met winning money motivations.

The generalizability of these findings is substantiated by our use of slot machines in an immersive virtual reality casino environment (strengthening ecological validity). The reliability of our findings on the influence of gambling goals to chasing is reinforced by our accountancy of established antecedents of chasing. Not surprisingly, we found that gamblers who reported more problem gambling symptoms demonstrated increased vulnerability to both forms of chasing in bivariate analyses, though problem gambling severity demonstrated a relatively weaker relationship to chasing when including gambling goals in multivariate analyses. Of note, this is the first study to identify a positive relationship for winning money motivations to chasing behavior during slot machine play, replicating an effect identified among Internet casino

gamblers (Gainsbury et al., 2014). Contrary to predictions, all approach/avoidance motivation variables were not associated with chasing.

Gambling goals are a key yet unexplored antecedent of chasing behavior, which implicate promising avenues for responsible gambling research. Taken together, our findings highlight that the typical young adult gambler is motivated to win money during slot machine play, and gamblers who place a greater importance on achieving (higher gambling goals) will typically chase more often and continue to chase for more spins in the face of loss. These factors may offer some rationale for why gamblers (in particular, those with greater problem gambling severity) generally refrain from using limit-setting tools. Our findings suggest that gamblers with higher levels of problem gambling severity may be more invested in achieving higher gambling goals. As a result, these gamblers may be resistant to placing limits on their time and money since doing so will almost invariably reduce their chances to achieve.

A more promising inroad to reduce problematic gambling outcomes (chasing, losing money) may be to shape messaging around the gambler's achievement, but in doing so, to emphasize more responsible goal setting for gambling achievements. Future research should compare 'responsible goal-setting tools' against existing 'limit-setting tools'. These investigations should evaluate: 1) engagement rates (frequency of use among gamblers for each tool when allowed to decline), 2) if engagement rates for responsible goal-setting vs. limit-setting tools differ by problem gambling severity, and 3) whether mandated responsible goal-setting tools are as (or more) efficacious (see Walker, Litvin, Sobel, & St. Pierre, 2015) at reducing problem gambling behavior (e.g., time and money spent gambling) compared to mandated limit-setting tools.

Although not assessed in this study, it is possible that some problem gamblers who are in treatment may have developed problematic patterns of play as a result of high gambling goals. Future research should assess this possibility. If our contention is valid, it may benefit clinicians to be mindful of the role that gambling achievement had for their client(s) and collaboratively outline other achievement domains to focus future goals.

A few limitations of the current study should be noted. First, the participants were a convenience sample of university-recruited young adult gamblers. However, there is no reason to suspect the predictive relationship of gambling goals to chasing should vary by age. Second, the questions regarding gambling goals were developed for this study, though we used the well-established Achievement Goals Questionnaire (Elliot & Church, 1997) as a guide. Future research should further evaluate the scale with a larger participant sample (Comfrey & Lee, 1992) to better develop the measure. Third, this was the first time our 'loss/win' manipulation was used. It is possible the nominal amounts were not substantial enough to influence chasing, though the non-significant interaction of 'loss/win' condition and being 'motivated to win money' suggests chasing might be influenced more by intrinsic (i.e., gambling-achievement motivation) compared to extrinsic factors (i.e., losses).

In conclusion, this study examined the relationship of gambling goals to chasing behavior while accounting for other relevant gambling and psychological factors. Our findings highlight an important and novel factor, gambling goals, that to date had been unexplored in gambling research. Policy makers and responsible gambling councils are recommended to take our findings under consideration as they continue to develop and test responsible gambling messaging and tools.

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Table 1
Bivariate differences for gambling goals, winning money motivations, problem gambling severity, and approach/avoidance motivation by chasing decision.

Variable	'No' to chasing (n = 54)	'Yes' to chasing (n = 67)	Test Statistic	p
Gambling goals	21.0 (8.4)	26.5 (7.9)	t = 3.62	<.001
'Loss/win' condition, %(n)			x^2 = 0.01	.966
'Loss'	44.8 (28)	55.6 (35)		
'Win'	44.8 (26)	55.2 (32)		
Winning money motivations, %(n)			x^2 = 4.17	.041
'Motivated to win money'	63.5 (33)	80.3 (53)		
'Not motivated to win money'	36.5 (19)	19.7 (13)		
Problem gambling severity (PGSI)	1.8 (2.4)	3.0 (2.5)	t = 3.44	.001
Behavioral inhibition (BIS)	21.0 (3.7)	19.8 (3.5)	t = 1.75	.082
Drive (BAS)	11.3 (1.9)	10.7 (2.2)	t = 1.43	.156
Fun-seeking (BAS)	12.8 (2.2)	12.3 (2.2)	t = 1.21	.230
Reward responsiveness (BAS)	17.7 (1.8)	17.3 (2.2)	t = 1.07	.286

Note. Gambling goals score range = 6 to 48. The 'loss' condition was coded as the reference. Winning money motivations = participants who reported motivations 'not to lose' or 'break-even' were coded as the reference. PGSI = Problem Gambling Severity Index; BIS/BAS = Behavioral Inhibition and Activation Scales.

Note. Values reported are means and standard deviations unless otherwise noted. %(n) = percent (number). Problem gambling severity (PGSI) and reward responsiveness (BAS) were transformed for bivariate analyses due to non-normal distribution.

Table 2
Multivariate logistic regression with and without gambling goals to explain chasing decision.

Predictor Variable	Beta	SE	Wald x^2	*p*	ORs	95% CIs
Without gambling goals						
'Loss/win' condition	-0.03	0.42	0.01	.952	1.03	0.45-2.32
Winning money motivations	0.95	0.48	3.94	.047	2.57	1.01-6.54
Problem gambling severity (PGSI)	0.25	0.10	6.65	.010	1.28	1.06-1.55
Behavioral inhibition (BIS)	-0.44	0.44	1.02	.312	1.55	0.66-3.65
Drive (BAS)	-0.47	0.49	0.93	.336	1.59	0.62-4.13
Fun-seeking (BAS)	-0.57	0.48	1.41	.235	1.77	0.69-4.54
Reward responsiveness (BAS)	-0.26	0.67	0.15	.702	1.29	0.35-4.76
With gambling goals						
Gambling goals	0.10	0.04	8.12	.004	1.11	1.03-1.18
'Loss/win' condition	0.23	0.44	0.27	.601	1.26	0.53-3.00
Winning money motivations	0.44	0.51	0.76	.384	1.55	0.58-4.20
Problem gambling severity (PGSI)	0.18	0.10	3.38	.066	1.20	0.99-1.46
Behavioral inhibition (BIS)	-0.50	0.46	1.19	.276	1.65	0.67-4.03
Drive (BAS)	-0.58	0.52	1.23	.267	1.78	0.64-4.90
Fun-seeking (BAS)	-0.61	0.52	1.37	.242	1.85	0.66-5.15
Reward responsiveness (BAS)	-0.74	0.73	1.03	.311	2.09	0.50-8.70

Note. Chasing decision = 'No' coded as the reference. All predictors examined in their raw form. SE = standard error, ORs = odds ratios, and CIs = confidence intervals.

Note. PGSI = Problem Gambling Severity Index; BIS/BAS = Behavioral Inhibition and Activation Scales; 'loss' condition was coded as the reference. Winning money motivations = participants who reported motivations 'not to lose' or 'break-even' were coded as the reference.

Table 3
Multivariate linear regression with and without gambling goals to predict chasing spins.

Predictor Variable	Beta	SE	*t*	*p*
Without gambling goals				
'Loss/win' condition	-0.11	0.26	0.42	.676
Winning money motivations	0.32	0.30	1.05	.294
Problem gambling severity (PGSI)	0.15	0.05	2.84	.005
Behavioral inhibition (BIS)	-0.28	0.27	1.03	.304
Drive (BAS)	-0.52	0.30	1.73	.087
Fun-seeking (BAS)	-0.04	0.29	0.14	.892
Reward responsiveness (BAS)	-0.07	0.39	0.17	.866
With gambling goals				
Gambling goals	0.04	0.02	2.35	.021
'Loss/win' condition	0.01	0.26	0.03	.976
Winning money motivations	0.05	0.32	0.17	.868
Problem gambling severity (PGSI)	0.11	0.05	2.11	.037
Behavioral inhibition (BIS)	-0.26	0.26	1.00	.318
Drive (BAS)	-0.57	0.29	1.95	.053
Fun-seeking (BAS)	0.02	0.28	0.07	.942
Reward responsiveness (BAS)	-0.23	0.39	0.61	.546

Note. Chasing spins was transformed (Ln) due to non-normal distribution. Unstandardized betas and standard errors (SE) are reported. All predictors examined in their raw form.

Note. PGSI = Problem Gambling Severity Index; BIS/BAS = Behavioral Inhibition and Activation Scales; 'loss' condition was coded as the reference. Winning money motivations = participants who reported motivations 'not to lose' or 'break-even' were coded as the reference.

Highlights

- Tested effect of gambling goals to chasing behavior during slot machine play
- Higher gambling goals best accounted for increased chasing behavior
- Higher gambling severity and winning money motivations predicted chasing
- Future research should test efficacy of ‘responsible goal-setting tools’