

Who Sets Betting Limits? Evidence from a Survey of Massachusetts Gamblers

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Abstract

Although key stakeholders have discussed responsible gambling (RG) for more than 15 years, available RG interventions and evaluations of those interventions are limited. Among the strategies for RG are self-imposed limits on one's betting, often on monetary losses and less often, on the time spent gambling. A recent paper suggested a novel, counterintuitive RG strategy – limiting monetary winnings. Simulations have shown that, like monetary loss or time limits, win limits reduce the amount of time spent gambling and therefore also limit the average expected gambling losses. In this paper, we examine data from an Internet panel survey of past-year gamblers in Massachusetts to better understand the characteristics of those individuals who are more likely to set and adhere to loss and win limits. We observed that individuals who set loss and win limits were more involved gamblers, spending more time and playing more games than those who did not set limits, and those who adhered to those limits were less likely to use ATMs in the middle of their gambling sessions than those who did not adhere to their limits. This study adds to the literature by providing evidence related to the characteristics of self-reported betting limit setters and contributes some of the only evidence in the literature on the actual use of monetary win limits.

Keywords

Win limits, Betting limits, Loss limits, Pre-commitment, Responsible gambling, Play management

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Many observers believe that government, industry, and individuals share the responsibility for providing a “safe environment for gamblers” (Blaszczynski et al., 2011, p. 566). People with gambling-related problems are more likely to suggest that the responsibility lies more heavily with the industry (Gray, LaPlante, Abarbanel, & Bernhard, in press). This perception is important and therefore it is imperative that the industry provides adequate tools and resources to facilitate safer gambling conditions for all consumers. Many states with commercial casinos require these establishments to provide signage or brochures about responsible gambling (RG) (American Gaming Association, 2016). In addition, many casinos’ websites also provide such information.¹

One of the most commonly suggested strategies for gambling responsibly involves a pre-commitment to limiting gambling behavior (also known as play management); specifically, setting time and monetary loss limits have been emphasized. Bernhard, Lucas, Jang, and Kim (2006) found that people with gambling-related problems were more likely than others to use limiting features on gambling machines. Kim, Wohl, Stewart, Sztainert, and Gainsbury (2014) found that gamblers presented with an on screen pop-up message prompting them to set a gambling time limit at the beginning of gambling were more likely to set a time limit, and spent less time gambling than individuals who were not offered the option to set a time limit. Another study found that gamblers who do set limits are more likely to set monetary loss limits (80%) as opposed to time limits on gambling (20-30%) (Lalande & Ladouceur, 2011). However, evidence suggests that participation in voluntary limit-setting programs is still fairly low (Nelson et al., 2008). A recent report on the usage of play management tools at a newly-opened Massachusetts casino indicated that just under 10% of casino patrons used the play management tools offered (Tom, Singh, Edson, LaPlante, & Shaffer, 2017).

If pre-commitment strategies are effective, they should reduce impulsive behavior and ultimately restrict a player’s gambling to the amount of time and/or money that they can comfortably or safely afford to spend. Since people with gambling problems often experience financial difficulties, limiting the time or money spent gambling can obviously reduce the harms associated with excessive gambling.

There has been limited evidence on the efficacy of RG strategies, including self-imposed monetary loss and time limits. Nower and Blaszczynski (2010) found that non-problem gamblers were more likely to set specific money limits and adhere to those limits, compared to moderate-

¹ For example, see Caesars (<https://www.caesars.com/corporate/corporate-social-responsibility/play/responsible-gaming>), MGM (<https://www.mgmresorts.com/en/gamesense.html>), or Las Vegas Sands’ properties’ websites (e.g., <https://www.venetian.com/casino/responsible-gaming.html>).

risk or problem gamblers.² However, evidence on why and how often gamblers “bust” or gamble beyond their pre-committed limits is still scarce (Rodda, Bagot, Manning, & Lubman, 2019). Nevertheless, the available evidence suggests that limit setting may be an effective RG strategy, at least for some people (Ladouceur et al., 2017).

Background on Win Limits

The aim of setting monetary loss and time limits on gambling is obvious; the longer-term effect of these RG strategies is to reduce a gambler’s average monetary losses. This is important because many of the harms associated with problem gambling (PG) relate to financial losses. Also, the idea of limiting a gambler’s *winnings* is counterintuitive, seemingly counterproductive. But in contrast to loss limits, which result in players leaving the casino having lost money, win limits result in players leaving the casino having won money. When considered as a component of a more comprehensive or longer-term RG strategy, putting a limit on monetary winnings has the effect of reducing average losses over time.

By “stopping while you’re ahead,” one obviously wins money from the casino, but additionally one limits time spent gambling. All betting limits – monetary loss, time, and monetary win – limit the amount of time spent gambling. Since casino games and many other forms of legal gambling are negative expected value games for the player, playing for less time results in lower average losses in the long run (Walker, Litvin, Sobel, & St-Pierre, 2015).

Although “stopping while you’re ahead” is sometimes mentioned in “how to beat the casino” books (e.g., Schneider, 2004, pp. 214-215), the idea seems to have been neglected in the literature, until recently. Walker et al. (2015) were the first to introduce the concept of win limits to the scientific gambling literature, through a gaming simulation study, and Nelson, Kleschinsky, LaPlante, Gray, and Shaffer (2013) were the first to include the concept in a survey of gamblers.³ We are unaware of any study that has examined the effectiveness of win limits as a RG tool.⁴

² Other studies that address pre-commitment and/or loss limits include Auer, Malischnig, and Griffiths (2014), Auer, Reiestad, and Griffiths (2018), Blaszczynski, Gainsbury, and Karlov (2014), Broda et al. (2008), Forsström (2017), Ginley, Whelan, Pfund, Peter, and Meyers (2017), Ladouceur, Blaszczynski, and Lalande (2012), Ladouceur, Shaffer, Blaszczynski, and Shaffer (2017), Moore, Thomas, Kyrios, and Bates (2012), and Wohl, Gainsbury, Stewart, and Sztainert (2013).

³ Other work has examined the “house money” effect. For example, behavioral economics suggests that people will bet more aggressively, or perhaps behave more carelessly, with house money (Thaler, 2015; Thaler & Johnson, 1990).

⁴ There have been analyses of EGM or online gambling monetary deposit limits, as well as EGM “bank” features with which gamblers can set-aside a part of their winnings (Blaszczynski et al., 2014; Broda et al., 2008), but these are not conceptually or effectively the same as “win limits” as discussed in this paper.

In their comparison of win limits with loss limits and time limits on gambling, Walker et al. (2015) showed that win limits could serve as a useful RG tool, as they tend to reduce players' average losses, compared to setting loss limits. We repeated this simulation as background for this study.⁵

Win Limit Simulation

The simulation utilizes a random number generator to simulate a 1-line slot machine, \$1 per play, with a payout rate of 95% (i.e., an expected value per play of $-\$0.05$). We simulated 3,600 slot machine players, each of whom can make up to 5,000 slot machine plays. Each spin is assumed to take 6 seconds, so that each player can play for up to 8.33 hours. Different limits on betting are simulated, so that the player stops either when the bet limit is reached, or they make 5,000 spins. Results are shown in Table 1.

[Table 1 here]

The results with no betting limits (i.e., simulation 1) are shown in row 1 of Table 1. In this scenario, each of the 3,600 players makes 5,000 spins/plays (simulating gambling for 8.33 hours). Column A of Table 1 shows that 658 of the 3,600 (18.3%) players would be winning after 5,000 plays. The average result is a loss of \$252 (column B), which is close to the expected value of the simulated slot machine ($5,000 \times \$1 \times -.05 = -\250). The median result of a \$256 loss is shown in column C. The worst result among simulated players is a loss of \$1,251; the best is a win of \$939 (columns D and E of Table 1). Because the first simulation has no betting limits, we can think of the results shown in Table 1, row 1, as being the average player's expected result on slot machines of this type (\$1 bet, 95% payout).⁶

Rows 2-5 of Table 1 show the results from different simulations in which all 3,600 players employed a particular betting limit. The time limit (simulation 2; row 2) and monetary loss limit (simulation 3; row 3) are meant to model commonly suggested RG tools. Simulation 2 shows the results when all players stop after 1 hour of play, or 600 spins. Note that the average loss of \$28 is less than the average loss of those with no betting limits.⁷ The minimum and

⁵ One reason for re-running the simulation here is that Walker et al. (2015) did not report the standard deviations or medians for the simulation results. These summary statistics are presented for our simulation.

⁶ Some of the results, such as "Maximum \$ Result" would be different if a different payout table was adopted. For example, if 99.9% of spins resulted in a \$1 loss, but 0.1% of spins won \$949, the expected value would still be $-\$0.05$, but the maximum result could be much higher if one of the players won the \$949 payout.

⁷ The expected loss per hour on the simulated machine is $600 \times \$1 \times -0.05$, or \$30. If the time limit had instead been set at 2 hours, then the average loss would have been close to \$60.

maximum results of the time limit are also smaller than when no limits are used. Interestingly, 1,324 of the 3,600 simulated players (or 36.8%) would be winning money if they stopped gambling after 1 hour.

Simulation 3 is a monetary loss limit of \$100, so that the players stop once they have either played 5,000 spins or have reached a monetary loss of \$100. The average result in this case is a loss of \$75, the minimum is a \$100 loss (due to the betting limit), and the best result is a \$994 win. Using the loss limit, only 303 players out of the 3,600 (or 8.4%) were winning by the time they either play 5,000 spins or reach their \$100 loss limit. Ironically, this result in column A of Table 1 is the worst of *all* possible scenarios for gamblers in the simulation. For casinos, however, the result implies that the large majority of customers using a loss limit will leave the casino having lost money. Thus, it is perhaps not surprising that the casino industry supports loss limits as a RG tool.

In simulation 4 (Table 1, row 4) the players use both a \$100 loss limit and a \$100 win limit. In this case they stop once they play 5,000 spins, lose \$100, or win \$100 – whichever occurs first. The average result in this case is a loss of \$32, the minimum result is a loss of \$100, while the best result is a \$244 win.⁸ In this scenario, 1,168 out of the 3,600 players (32.4%) end up with monetary gains.

A comparison of simulations 3 and 4 reveals that the use of the win limit in addition to the loss limit reduces average losses by more than half. But it also dramatically cuts the maximum win, and cuts the average time played by over half. Also noteworthy is that the median result for simulations 3 and 4 is a loss of \$100, indicating that more than half of the simulated gamblers would stop gambling due to reaching the \$100 loss limit.

Finally, simulation 5 in Table 1 is a \$100 win limit, with no limit on losses. In this scenario the average result is a loss of \$161, the largest loss being \$1,319, and a maximum win of \$246. Interestingly, almost half of the players (1,685 out of 3,600) end up winning money. While simulation 5 produced the most winners of any simulation, it also produced the greatest single loss of any simulation.

The simulation results suggest that win limits may be a legitimate RG tool, perhaps more effective than loss limits alone. The purpose of the current study is to examine 2012 survey data from past-year gamblers in Massachusetts to better understand the characteristics of those who set and adhere to win- and loss-limits. The survey administered by Nelson et al. (2013) provides the first data on the extent to which casino gamblers set win limits on gambling.

⁸ The maximum win is \$244, even though there is a \$100 win limit. This can occur if a player wins a large jackpot that pushes their balance over \$100. They would stop once their balance goes over \$100.

Method

Participants

Nelson et al. (2013) reported on a 2012 survey of Massachusetts residents, designed to be a benchmark for studying changes in behavior, opinions, and attitudes after casinos opened in Massachusetts.⁹ The survey was completed by 511 respondents who were part of an online “Knowledge Panel.” These panels are random household samples recruited from the general population. The panel used in the current study was recruited from the general population of Massachusetts and was demographically representative of the state.¹⁰ Among these respondents, 274 had gambled within the past 12 months.

Materials

The Nelson et al. (2013) survey, whose data is used in this study, provided baseline data prior to the expansion of casinos in Massachusetts. The survey includes a wide variety of questions, including standard demographics such as race, sex, household income, and level of education. A series of questions addresses a person’s frequency of gambling, total losses, games played, and gambling venues visited within the last 12 months, as well as Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) gambling disorder (GD) criteria experienced during the past year. The survey also asks about perceptions of the economic impacts of gambling and casinos, the degree to which “luck” can affect gambling outcomes, as well as respondent drug and alcohol use. Most important for our study, past-year gamblers were asked a series of four questions about their use of voluntary, self-imposed betting limits (Nelson et al., 2013, questions 13-16)¹¹:

- 1) Thinking about your gambling in the past 12 months: when you gambled, did you usually set a loss limit for yourself (in other words, a limit of how much you were willing to lose during a gambling session before you would stop gambling)?*
- 2) [If Yes to (1)] In the past 12 months, how often did you continue to gamble after reaching your loss limit?*
- 3) Thinking about your gambling in the past 12 months: when you gambled, did you usually set a win limit for yourself (in other words, an amount which, after you won that much, you would stop gambling)?*

⁹ Plainridge Park, 35 miles southwest of Boston, was the first casino to open in Massachusetts, in June 2015.

¹⁰ For a discussion of the survey participants, sample characteristics, etc., see Nelson et al. (2013, p. 3).

¹¹ The entire survey can be found in the appendix to Nelson et al. (2013).

4) *[If Yes to (3)] In the past 12 months, how often have you continued to gamble after reaching your win limit?*

These questions were the focus of our analysis of how those who set betting limits differ from those who do not. One individual refused to answer questions about limit-setting, so 273 respondents answered these questions.

Procedure

Using the Nelson et al. (2013) survey data and a set of logistic regressions, we tested what aspects of gambling behavior differentiated those who set loss and win limits from others and those who adhered to those limits from those who did not.

We conducted hierarchical logistic regressions, entering potential predictors in five steps. In the first step, we entered demographic variables measuring age, gender, and household income. In the second step, we entered variables measuring comorbid mental health and substance use issues, including depression, anxiety, and hazardous drinking screens, as well as a measure of illegal drug use. In the third step, we added variables measuring the type of past year gambling in which individuals participated, including whether they engaged in any gambling other than the lottery, whether they played slot machines, and whether they gambled at the two major casinos bordering Massachusetts (i.e., at Mohegan Sun and/or Foxwoods, in Connecticut). In the fourth step, we added variables measuring the individuals' level of past year gambling involvement, including maximum amount lost on a single game type, maximum frequency of play on a single game type, maximum number of hours played in a single session, and a number of different game types played. In the fifth and last step, we entered measures of risk for problematic gambling, including age first gambled, whether the individual endorsed any criteria of gambling disorder, and whether the individual reported going to an ATM to get additional money in the middle of a gambling session.

We ran this logistic regression on four separate outcomes. First, we compared past year gamblers who set either loss or win limits to those who do not. Second, we compared past year gambling limit-setters who set win limits to those who only set loss limits. Finally, for individuals who set loss limits and for individuals who set win limits, we compared those who reported adhering to those limits to those who did not.

Results

Among the 273 past-year gamblers who responded to the survey, about 84% (n=228) reported usually setting a loss limit, although close to 20% (n=45) of those also reported not adhering to the limit at least some of the time. Only 25% (67 of 273 respondents) reported setting a win limit, and about 40% of those who set win limits (n=27) reported gambling even after their win limit was reached. Table 2 provides additional data on setting and adhering to betting limits.

[Table 2 here]

One interesting statistic not reflected in Table 2 is that 62 of the 67 respondents who set a win limit also set a loss limit. Among the 273 past-year gambler respondents, 166 usually set a loss limit but no win limit, and 40 usually set no betting limits.

In Table 3 we present summary statistics for the variables we analyzed. We divided past-year gamblers into three categories: “Did not usually set a limit” (n=40) “Usually set a loss limit but no win limit” (n=166) and “usually set a win limit” (n=67).

[Table 3 here]

From Table 3, we note that the majority of past year gamblers from the survey reported their greatest past-year loss on any particular game at “\$100 or less.” In addition, most of the respondents reported the past-year maximum time spent on one game type at two hours or less. Almost half (45%) of those who usually did not set a betting limit played lottery games exclusively. Almost half of the respondents who set a loss or win limit played slot machines during the past year. Among the respondents who were past-year gamblers, only 13.1% (36 of 273) endorsed at least one DSM-IV GD criterion.

Table 4 reports the results for all the variables included in the final step of each hierarchical logistic regression. Column A of Table 4 predicts who is likely to set either a win or loss limit. Among past year gamblers, a positive screen for depression and not using drugs in the past year were predictive of setting win or loss limits ($p < .05$). In examining the steps of the regression, only the addition of variables measuring type of play (i.e., Step 3: engaged in any gambling other than the lottery, playing slot machines, and gambling at the two major casinos bordering Massachusetts) significantly improved the model [Step $\chi^2(3) = 39.8, p < .001$].

[Table 4 here]

As column B of Table 4 shows, among past year gamblers who set a win or loss limit, only gambling at resort casinos neighboring Massachusetts predicted setting a win limit, specifically. In examining the steps of the regression, both the addition of variables measuring type of play (i.e., Step 3) and the addition of variables measuring risk for problematic gambling (i.e., Step 5: age first gambled, endorsing any criteria of gambling disorder, and going to an ATM to get extra money in the middle of a gambling session) significantly improved the model [Step $\chi^2(3) = 13.9, p < .01$ and Step $\chi^2(3) = 11.1, p < .05$, respectively].

Column C of Table 4 shows that, among past year gamblers who set a loss limit, only *not* needing to get more money in the middle of a gambling session predicted always adhering to a loss limit. In examining the steps of the regression, both the addition of variables measuring type of play (i.e., Step 3) and the addition of variables measuring risk for problematic gambling (i.e.,

Step 5) significantly improved the model [Step $\chi^2(3) = 22.2$, $p < .001$ and Step $\chi^2(3) = 15.8$, $p < .01$, respectively].

Finally, as column D of Table 4 shows, among past year gamblers who set a win limit, only *not* drinking at hazardous levels predicted always adhering to their win limit. In examining the steps of the regression, only the addition of variables measuring mental health and substance use (i.e., Step 2: depression, hazardous drinking, and illegal drug use) significantly improved the model [Step $\chi^2(3) = 10.0$, $p < .05$].

Discussion

In the Nelson et al. (2013) survey of 511 representative Massachusetts residents, 273 indicated that they had gambled in the past 12 months. Our analysis focuses on explaining what characteristics help to predict whether these past year gamblers utilize (and adhere to) loss limits and win limits. As noted in Table 2, about 84% of the survey respondents, or 228 people, indicated that they usually set loss limits. Roughly 25% of respondents indicated they usually set win limits. Loss limits have received a fair amount of attention in the literature. Given win limits are also somewhat commonly used by gamblers, it is surprising they have received almost no attention from researchers.

Even when past-year gamblers set loss or win limits for themselves, they do not always adhere to them. According to the data from Table 2, almost 20% of past-year gamblers who set loss limits continued gambling after the limit had been reached, at least “some of the time.” Among those who indicated that they set win limits, almost 40% continued gambling after their limit had been reached. What factors help predict who will set limits and adhere to them?

Our regression results in Table 4 begin to paint a picture of the characteristics which make it more likely a gambler will set and adhere to betting limits. The model explaining setting a win or loss limit (column A of Table 4) indicates that individuals who do not engage in recreational drug use are more likely than others to set win or loss limits. In addition, those who had a positive screen for depression in the past year were also more likely than others to set a loss or win limit on gambling.

Those respondents who indicated they gambled outside of Massachusetts, such as in Connecticut, are among the most involved gamblers. These individuals are more likely than others to set win limits on their gambling (Table 4, column B). As more involved gamblers, they may be more likely to have considered different strategies for minimizing gambling losses. We found a similar result for more involved gamblers, particularly slot players, who appear to be more likely to set limits. However, this result was not statistically significant at traditional levels.

The strong result that individuals are less likely to adhere to loss limits if they reported needing to get more money during a gambling session is consistent with intuition. If a gambler does not adhere to their limit, they may be more likely to use an ATM to get additional funds during a gambling session. Alternatively, ease of access to additional money may make it more difficult for some gamblers to adhere to a loss limit. It may follow that leaving the ATM card at

home, or removing ATMs from casino floors, may be helpful with respect to RG (Hing, Sproston, Tran, & Russell, 2017; Thomas, Pfeifer, Moore, Meyer, & Yap, 2013).

Lastly, the statistically significant finding that hazardous drinking is associated with failing to adhere to win limits might be an indication of impaired decision making, or simply lower inhibitions, associated with alcohol use. Gamblers may be satisfied when winning, but drinking may lead them to make riskier decisions, including ignoring betting limits they had set. We note that this result is consistent with the idea that it may be to the casinos' benefit to provide free alcohol to patrons who are gambling, particularly if it leads to customers playing longer, which tends to result in greater losses – or lower winnings (Walker et al., 2015).

Limitations

As explained above, the analysis in this paper relies upon the survey data collected by Nelson et al. (2013), who note some of the limitations of the data. First, the survey data were self-reported in an online survey, and such data have well known issues. The data were collected in 2012-13, prior to the opening of casinos in Massachusetts, making the age of the data a potential issue. Also, Nelson et al. (2013) note that the recruitment rate for their sample was 16.3%, which is somewhat low, although common among household surveys.

Conclusion & Future Directions

We provide new evidence on what characteristics increase the likelihood that a gambler will set and adhere to self-set monetary loss and win limits on gambling. While many of the variables in our model were not predictive of either setting or adhering to betting limits, there were several interesting findings. Based on our results, it appears that more involved gamblers (i.e., those who were willing to travel to out-of-state casinos) are more likely than others to set win limits. Individuals who indicate hazardous drinking in the past year were less likely than others to adhere to the win limits they set.

Loss limits, which are more commonly set, tend to be more common among individuals who have not engaged in recreational drug use. Unsurprisingly, people who have not needed to get more money during a gambling session were also more likely to adhere to loss limits.

Although our survey analysis has not provided a complete picture of factors affecting the decisions to set and adhere to betting limits, our analysis does provide a useful information for future analysis and possibly experimental research on setting and adhering to monetary loss and win limits.

Future research in this area should seek to utilize actual gambling records in addition to self-reported data. Randomized controlled trials that assign gamblers to win limits, loss limits, time limits, or a combination of them, could provide valuable additional evidence on characteristics that predict setting and adhering to betting limits. Such evidence will be valuable in better understanding the efficacy of betting limits as RG tools.

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Table 1

Results from simulated slot machine with player-set betting limits, 3,600 players

	A	B	C	D	E	F
Simulation	# Winners (% Chance of Winning)	Mean \$ Result ^b (SD)	Median \$ Result	Minimum \$ Result	Maximum \$ Result	Average Time Played (# Plays ^a)
1 No win or loss limits (5,000 spins; 8.33 hrs. of play ^a)	658 (18.3%)	- \$ 252 (279.0)	- \$ 256	- \$1,251	\$ 939	8.33 hrs. (5,000)
2 Time limit of 1 hr. ^a	1,324 (36.8%)	- \$ 28 (94.1)	- \$ 35	- \$ 314	\$ 232	1.0 hr. (600)
3 \$100 loss limit	303 (8.4%)	- \$ 75 (93.6)	- \$ 100	- \$ 100	\$ 994	2.52 hrs. (1,512)
4 \$100 loss limit; \$100 win limit	1,168 (32.4%)	- \$ 32 (99.0)	- \$ 100	- \$ 100	\$ 244	1.11 hrs. (665)
5 \$100 win limit	1,685 (46.8%)	- \$ 161 (296.3)	- \$ 91	- \$1,319	\$ 246	5.37 hrs. (3,224)

Notes: ^a This assumes each spin/play takes 6 seconds. ^b Results are rounded to the nearest dollar.

Source: The results are from re-running the simulation by Walker et al. (2015, Table 3).

Table 2

Massachusetts survey results, past-year gamblers' RG strategies

Survey Responses	% of Respondents (N=273)
% usually setting a loss limit	83.5%
Frequency of continued gambling after reaching loss limit (among those setting a loss limit)	
All of the time	2.2%
Most of the time	2.6%
Some of the time	14.9%
Never	66.7%
Never reached limit	13.6%
 % usually setting a win limit	 24.5%
Frequency of continued gambling after reaching win limit (among those setting a win limit)	
All of the time	1.5%
Most of the time	3.0%
Some of the time	35.8%
Never	40.3%
Never reached limit	17.9%

Source: Nelson et al. (2013), p. 19, Table 3

Table 3

Past-year gambler characteristics for those who do and do not set limits on their gambling
(N=273)

	PY Gambler: Did Not Usually Set a Limit (n=40)	PY Gambler: Usually Set a Loss Limit But No Win Limit (n=166)	PY Gambler: Usually Set a Win Limit (n=67)
	Mean (SD) or %		
% Female	50.0%	44.0%	31.3%
Age	47.9 (16.5)	51.1 (16.7)	50.6 (16.7)
Household Income, before taxes			
Less than \$20,000	7.5%	9.6%	7.5%
Between \$20,000 and \$50,000	30.0%	23.5%	32.8%
Between \$50,000 and \$100,000	32.5%	39.8%	32.8%
More than \$100,000	30.0%	27.1%	26.9%
PY Greatest Loss Amount on One Game Type			
Broke Even or Won	23.1%	12.3%	7.5%
\$100 or Less	53.8%	63.2%	59.7%
Between \$100 and \$1,000	15.4%	21.5%	22.6%
More than \$1,000	7.7%	3.1%	9.7%
PY Max. Time Spent on One Game Type*			
Up to 2 hours	92.1%	69.0%	65.6%
Between 2 and 7 hours	7.9%	27.8%	27.9%
More than 7 hours	0.0%	3.2%	6.6%
PY Max. Play Frequency on One Game Type			
Less Than Once a Month	45.0%	47.6%	34.8%
Between Once a Month and Weekly	42.5%	44.6%	48.5%
More than Once a Week	12.5%	13.9%	16.7%
PY % Engaged Only in Lottery Play**	45.0%	19.9%	16.4%
PY % Played Slot Machines***	7.5%	50.0%	41.8%
PY % Gambled at Neighboring Casino***	5%	38.0%	62.7%
PY # of Game Types Played**	2.2 (2.1)	3.6 (2.7)	3.6 (2.7)
Age First Gambled**	20.1 (9.9)	19.9 (7.0)	23.6 (11.1)

PY % Needed to Get More \$ During Gambling	5.0%	6.0%	11.9%
PY # of DSM-IV GD Criteria Endorsed	0.25 (0.63)	0.17 (0.74)	0.42 (1.02)
PY % Endorsing Any DSM-IV GD Criteria	17.5%	9.6%	19.4%
PY Recreational Drug Use	22.5%	9.7%	14.9%
PY Hazardous Drinking	42.5%	42.2%	34.3%
PY Anxiety Problems	5.0%	3.0%	7.5%
PY Depression	2.5%	9.0%	9.0%

Notes: ***p<.001; **p<.01; *p<.05.

PY = past year; Max. = Maximum; \$ = money; GD = gambling disorder

Table 4

Logistic regressions predicting limit setting and adherence

	Outcome															
	A				B				C				D			
	Set a Win or Loss Limit (among PY gamblers, n = 269)				Set a Win Limit (among PY gamblers who set a win or loss limit, n = 229)				Always Adhered to Loss Limit (among PY gamblers who set a loss limit, n = 224)				Always Adhered to Win Limit (among PY gamblers who set a win limit, n = 64)			
	B	SE	Wald	Odds Ratio	B	SE	Wald	Odds Ratio	B	SE	Wald	Odds Ratio	B	SE	Wald	Odds Ratio
Gender ^a	-0.20	0.44	0.20	0.82	-0.40	0.36	1.22	0.67	0.07	0.44	0.03	1.07	1.02	0.81	1.57	2.77
Age	0.01	0.01	0.77	1.01	-0.02	0.01	1.41	0.99	0.01	0.02	0.23	1.01	-0.03	0.03	0.92	0.97
Household Income ^b	-0.03	0.05	0.43	0.97	0.02	0.04	0.22	1.02	0.04	0.05	0.60	1.04	-0.13	0.13	0.97	0.88
PY Recreational Drug Use ^c	-1.26	0.58	4.68*	0.28	0.68	0.52	1.72	1.97	0.35	0.68	0.26	1.41	1.14	0.97	1.39	3.14
PY Hazardous Drinking ^c	-0.20	0.44	0.21	0.82	-0.29	0.38	0.57	0.75	-0.07	0.45	0.03	0.93	-1.94	0.97	4.05*	0.14
PY Anxiety Problems ^{c, g}	-0.30	1.13	0.07	0.74	1.94	1.26	2.38	6.98	0.03	1.58	0.00	1.03	--	--	--	--
PY Depression ^c	2.33	1.18	3.89*	10.29	-1.44	1.16	1.56	0.24	0.59	1.15	0.26	1.78	-1.65	1.67	0.98	0.19
PY Gambled on Games Other than Lottery ^c	0.17	0.49	0.12	1.19	-0.00	0.54	0.00	1.00	-0.33	0.89	0.14	0.72	0.37	1.42	0.07	1.44
PY Played Slot Machines ^c	1.65	0.94	3.08~	5.20	-0.91	0.59	2.42	0.40	0.26	0.62	0.17	1.29	-2.94	1.58	3.44~	0.05
PY Gambled at Neighboring Casino ^c	1.87	1.02	3.40~	6.51	1.92	0.61	9.89**	6.81	-1.01	0.58	3.03~	0.37	2.35	1.79	1.72	10.44
PY Greatest Loss Amount on One Game Type ^d	0.00	0.16	0.00	1.00	0.15	0.12	1.56	1.16	-0.12	0.14	0.70	0.89	-0.09	0.24	0.15	0.91
PY Max. Time Spent on One Game Type ^e	0.57	0.32	3.12~	1.76	-0.18	0.19	0.92	0.84	-0.20	0.21	0.88	0.82	0.04	0.36	0.02	1.05

PY Max. Play Frequency on One Game Type ^f	0.07	0.13	0.30	1.07	0.02	0.10	0.05	1.02	0.04	0.12	0.11	1.04	-0.22	0.21	1.04	0.81
PY # of Game Types Played	-0.01	0.16	0.00	0.99	-0.11	0.09	1.50	0.90	-0.12	0.09	1.81	0.89	-0.37	0.28	1.68	0.69
Age First Gambled	-0.01	0.03	0.21	0.99	0.05	0.02	6.46	1.06	0.00	0.03	0.01	1.00	0.07	0.04	2.54	1.07
PY Needed to Get More \$ During Gambling Sess. ^c	-1.89	1.27	2.19	0.15	0.23	0.65	0.13	1.26	-2.81	0.82	11.88**	0.06	0.10	1.07	0.01	1.11
PY 1+ DSM-IV GD Criteria Endorsed ^e	-1.41	0.73	3.73 [~]	0.25	1.05	0.54	3.80 [~]	2.86	0.37	0.66	0.32	1.45	0.97	1.19	0.67	2.64

Notes: ~p<.10; *p < .05; **p < .01; ***p < .001

Max = maximum. \$ = money. Sess = session. GD = gambling disorder.

^a 0 = female; 1 = male.

^b integer range 1-19: 1 = <\$5K; 10 = \$35K-\$39,999; 19 = \$175K.

^c dichotomous = 0=no; 1=yes.

^d integer range 1-10: 1 = won \$1+; 2 = broke even; 3 = lost \$1-\$50; 5 = lost \$101-\$500; 10 = lost \$20,001+.

^e integer range 1-6: 1 = none; 3 = 1-2 hours; 6 = 7+ hours.

^f integer range 1-8: 1 = not at all; 3 = < once a month; 6 = weekly; 8 = daily+.

^g Anxiety removed from the win limit adherence model due to reduced degrees of freedom.