# Self-Identification as a Moderator of the Relationship Between Gambling-Related Perceived Norms and Gambling Behavior

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## Abstract

This research was designed to evaluate social influences and perceived social norms on gambling behavior among undergraduate students. Furthermore, this research was designed to replicate and extend previous research demonstrating that young adults overestimate the prevalence of gambling among peers, and that the magnitude of overestimation is positively associated with own use (Larimer and Neighbors, Psychol Addict Behav 17:235–243, 2003). We expected that; (1) gambling college students would identify more strongly with other gambling students compared to other students in general; (2) identification with other gambling students would predict gambling behaviors over and above perceived prevalence of gambling; and (3) identification with other gambling students would moderate the association between perceived social norms and gambling behavior. Participants included 1,486 undergraduate students who completed measures assessing gambling quantity and frequency, gambling-related perceived descriptive norms, and identification with groups. Results revealed that perceived norms for gambling were associated with gambling and revealed that students identified more strongly with other students than either gamblers or student gamblers. However, gambling behavior was more strongly associated with identification with gambling students than students in general. There was consistent support for the perspective that social identity moderates the association between perceived norms for gambling and gambling behavior. This research builds on previous examinations of social influences related to gambling and suggests that it may be important to consider the overall prevalence of a given behavior before considering norms-based intervention approaches. Interventions utilizing social norms for gambling may be advised to consider references other than just the typical student.

### Keywords

Gambling; Misperceptions; Social norms; Social identity

## Introduction

This research evaluates social influence and perceived social norms and gambling among college students. Research suggests that perceived norms are a powerful predictor of behavior such as alcohol use, but less work has considered social influences on gambling behavior. Several questions that may have important intervention implications are considered in the present study, such as whether gambling college students identify with

other college students in general or whether they identify more strongly with other gambling students. This research additionally considers whether identification with other gambling students and/or other students in general predicts gambling behaviors beyond perceived prevalence of gambling. Further, the present research evaluates identification with other students, gamblers, and/or other gambling students as a moderator of the association between perceived social norms and gambling behavior.

## Gambling Prevalence Among College Students

Over the past several years, gambling has become a national public health issue (Korn et al. 2003) and college students have increasingly more access to gambling venues (McClellan and Winters 2006; Shaffer et al. 2003). College students rate gambling as more readily available than alcohol or marijuana and less risky than alcohol or cigarettes (Wickwire et al. 2007). In a survey of six colleges and universities, Lesieur et al. (1991) found that 85 % of students gambled, 23 % reported gambling at least once a week, and 15 % experienced at least some problems associated with gambling. Engwall et al. (2004) reported an 11 % disordered gambling rate among students in Connecticut. In Shaffer and Hall's (2001) meta-analysis of 19 college student studies, 11 % of students were classified as at-risk gamblers. Moreover, 6 % of students were classified as pathological gamblers in comparison to only 3.9 % of adolescents and 1.6 % of non-college young adults.

A more recent meta-analysis of 15 studies concluded a disordered gambling rate of 7.89 % among college students (Blinn-Pike et al. 2007). With few exceptions (e.g., LaBrie et al. 2003; Ladouceur et al. 1994; Slutske et al. 2003), most studies have found that at least 10 % of college students have exhibited gambling behavior that places them at risk for unwanted negative consequences.

Moreover, the majority of studies indicate higher prevalence rates among college students than in the general adult population. In a longitudinal study of young adults assessed over a 6 years period, Winters and colleagues (Winters et al. 2002, 2005) found 40 % of young adults experienced problems with their gambling at some point, 4 % had persistent problems, 13 % reported decreases by age 23, 3 % had fluctuating patterns, and 21 % reported new onset of gambling problems in young adulthood.

Extensive gamblers are at increased risk for problem gambling and risky health behaviors (Goudriaan et al. 2009), and those at greatest risk for problem gambling and associated consequences are young males (Barnes et al. 2010). Behavioral indicators of high-risk gambling among college students include risking more than 10 % of monthly income, gambling more than once per month, and gambling more than 2 h per month (Weinstock et al. 2008). Additionally, increasingly common health problems are associated with problem gambling, such as higher risk for several psychiatric diagnoses (Cunningham-Williams et al. 1998). The disproportionate impact of problem gambling on college students is of significance due to gambling-related problems being likely to co-occur with other problem behaviors such as drug use, alcohol use, driving under the influence, getting arrested for non-traffic offenses, binge eating, risky sexual behaviors, and low GPA (Engwall et al. 2004; LaBrie et al. 2003; Lesieur et al. 1991; Stuhldreher et al. 2007). Across multiple college campuses, between 42 and 87 % of students report having ever gambled (e.g.,

Engwall et al. 2004; LaBrie et al. 2003; Lesieur et al. 1991; Winters et al. 1998). Gambling-related problems are associated with increased risk for experiencing emotional distress, financial harm, and other health-related consequences (e.g., Stuhldreher et al. 2007; Weinstock et al. 2004; Winters et al. 1998).

### Gambling-Related Perceived Norms

Despite the fact that social reasons are among the most frequently reported reasons for gambling among undergraduate students (Neighbors et al. 2001), relatively few studies have empirically evaluated social influences on gambling behavior (e.g., Larimer and Neighbors 2003; Moore and Ohtsuka 1999; Neighbors et al. 2007; Sheeran and Orbell 1999). Social norms are presumed to represent a strong influence on human behavior (Berkowitz 1997).

The term *social norms* refers to two distinct types of social influence: descriptive norms and injunctive norms. Descriptive norms refer to the perception of what *is* (Reno et al. 1993; Deutsch and Gerard 1955) and injunctive norms (also known as subjective norms) refer to what *should be* (Ajzen 1991; Cialdini et al. 1990; Sheeran and Orbell 1999). Both types of norms are often inaccurate and can influence behavior based on false assumptions regarding others' values and/or behaviors. For example, effects can occur whereby individuals incorrectly assume that other people's attitudes or behaviors are more similar (false consensus) or dissimilar (false uniqueness or pluralistic ignorance) to their own (Marks and Miller 1987; Miller and McFarland 1991; Prentice and Miller 1993). While research has demonstrated links between perceived injunctive norms and behaviors (e.g., Berkowitz and Perkins 1986; Van Empelen et al. 2001), the present study focuses on descriptive norms, which have been shown to influence behaviors such as condom use (Buunk et al. 1998), littering (Cialdini et al. 1990), and alcohol consumption (e.g., Borsari and Carey 2003). A large body of research documenting alcohol-related social norms demonstrates that college students tend to overestimate the frequency of alcohol use (descriptive norms) of the typical college student (Borsari and Carey 2003), and normative misperceptions have been shown to be associated with personal alcohol use (e.g., Lee et al. 2010; Lewis and Neighbors 2004; Neighbors et al. 2006a, b; Perkins 2002; Reis and Riley 2000). Thus, previous research suggests that perceived descriptive norms influence many behaviors including gambling, and that these misperceptions are often inaccurate, usually in the direction of overestimating risk behaviors to be more prevalent than they are. Some research has suggested that social identity may moderate the association between perceived norms and drinking (Neighbors et al. 2010; Reed et al. 2007). This hypothesis has not been considered with respect to other risk behaviors.

Social norms play a role in influential theories of behavior and behavior change, such as social identity theory, a general theory which suggests that individuals define and evaluate themselves in light of a self-inclusive social category (e.g., Abrams and Hogg 1990). Two processes occur: self-categorization and self-enhancement. Self-categorization occurs when individuals accentuate similarities among self and in-group members and differences between the self and out-group members (Johnston and White 2003; Turner et al. 1987). Self-enhancement occurs when individuals favor the in-group over the out-group on dimensions relevant to the individual (Johnston and White 2003). It is likely that individuals

will adapt behaviors and attitudes to be congruent with those of the relevant group when there is perceived normative support for particular behaviors and attitudes (e.g., Terry and Hogg 1996). Previous research (e.g., Neighbors et al. 2010; Reed et al. 2007) has demonstrated that alcohol-related social identities moderate drinking behavior through perceived social norms, and individuals will tend to engage in behaviors if they are in accordance with the perceived norms of a group with whom the individual strongly identifies (e.g., Schofield et al. 2001). However, no one has yet examined these associations with respect to gambling behavior. Based on previous findings, it is likely that gambling-related self-identification moderates the relationship between gambling-related social norms and gambling behavior.

### Current Study

The current study was designed to replicate and extend previous research evaluating social influences on gambling behavior in the college population (Larimer and Neighbors 2003). The present research considers gambling-related normative misperceptions, the impact of descriptive norms, and perceived identification with gamblers. We expected to replicate previous research demonstrating that college students overestimate the prevalence of gambling among their peers and that the magnitude of overestimation is positively associated with own gambling. With respect to identification we had three specific hypotheses. Our first hypothesis is that gambling college students will feel a stronger sense of identification with other gambling students compared to other students in general. Our second hypothesis is that identification with other gambling students will predict gambling behaviors over and above perceived prevalence of gambling. Our third hypothesis is that identification with other gambling students will moderate the association between perceived social norms and gambling behavior.

## Method

### Participants

Participants included 1,486 college students (*M* age = 22.58 years; *SD* = 6.01 years) from a large southwestern university and were part of a larger longitudinal intervention for gambling among college students (62.2 % female). Participants were 41.1 % Caucasian, 31.0 % Asian, 12.9 % African American, 5.4 % Multi-Ethnic, 1.2 % Native American, 0.7 % Native Hawaiian/Pacific Islander, and 7.7 % Other. In terms of ethnicity, 26.2 % were Hispanic.

### Procedure

A random sample of 15,000 undergraduate students identified through the registrar's list were invited via email and flyers which were placed in the campus newspaper and asked students to participate in a study of college student gambling behaviors. Demographics of the recruited sample were similar to the demographics of the larger invited sample: 49.7 % female, 31.4 % Caucasian, 20.9 % Asian, 12.9 % African American, 26.9 % Hispanic, 2.3 % Multiracial, 0.3 % Native American, 0.3 % Native Hawaiian/Pacific Islander, 4.4 % International, and 0.7 % Unknown. Respondents in our sample were more likely to be Caucasian, Asian, Hawaiian and Multi-racial (all *p*s < .001). In addition, recruited

participants were significantly younger (slightly less than 1 year) than the invited population, *p* < .001. Eligible participants completed an online screening assessment and provided information related to gambling behavior, gambling-related negative consequences, perceived descriptive norms related to gambling, and personality characteristics. Those meeting eligibility criteria for the longitudinal trial (e.g., reporting a score of three or more on the South Oaks Gambling Screen; SOGS) are invited to the larger study to complete a computer-based baseline/intervention survey, and three and 6 months follow-up assessments.

### Measures

**Gambling Quantity and Frequency—**Gambling quantity was measured with the Gambling Quantity and Perceived Norms Scale (GQPN; Neighbors et al. 2002), which includes four items assessing monthly and yearly wins and losses. One item asks participants to report disposable income. A summary score for expenditure was calculated by taking the mean of the expenditure items and residualizing it on disposable income. Thus, the variance in gambling expenditure related to differences in disposable income was statistically removed. This measure addresses criticisms of other gambling quantity measures (e.g., Blaszczynski et al. 1997) by unambiguously defining quantity in terms of wins and losses during specified time periods and allowing for statistical control of relevant income differences. One item assessed gambling frequency with response options ranging from 0 (*never*) to 9 (*every day*).

**Gambling-Related Perceived Descriptive Norms—**Descriptive gambling norms were assessed using the GQPN (Larimer and Neighbors 2003; Neighbors et al. 2002). This scale includes five items that ask respondents how much they think other students of their same sex gamble. One of these items assesses frequency, while four items assess expenditure (monthly and yearly wins and losses; Cronbach's α = .87). Recent research (Larimer and Neighbors 2003) indicates the scale can be effectively used to evaluate misperceptions of gambling norms. These biases are related to increased gambling and mediate the efficacy of in-person personalized normative feedback intervention (Larimer et al. in press).

**Identification with Groups—**Identification with groups was assessed using three items that ask students to review a diagram depicting seven sets of overlapping circles varying in degree of overlap, with one circle symbolizing the student and the other circle symbolizing a representative member of a group (either a college student, a person who gambles, or a college student who gambles). Participants select the set of circles they most strongly identify with.

## Results

### Descriptives

Descriptive statistics are provided in Table 1. Both perceived norms variables (i.e., gambling frequency and quantity) were positively associated with reported gambling frequency and reported gambling quantity. Identification with other students, with other gamblers, and with

other student gamblers were all positively correlated with reported gambling frequency and quantity.

## Misperceptions

To our knowledge, only one paper (Larimer and Neighbors 2003) has previously identified misperceptions in gambling frequency. One objective of the current study was to replicate this finding. Differences between raw scores of perceived norms and actual reported gambling behavior were evaluated using a paired samples *t* test. Effect size for the mean differences (Cohen's *d)* were also calculated as the mean difference divided by the standard deviation of the difference (Cohen 1988). Confidence intervals (CIs) using means and standard errors are presented for gambling quantity and frequency in Figs. 1, 2, 3.

Our results were consistent with expectations. We identified significant differences between perceived norms for gambling frequency and actual gambling frequency and between perceived norms for gambling quantity and actual gambling quantity for all individual items. These differences occurred in the direction that participants overperceived the frequency and quantity with which other students gamble. Specifically, we found significant differences between perceived gambling frequency for the average college student ($M = 3.53$; $SD = 1.76$) and actual gambling frequency as reported by the participants ($M = 1.42$; $SD = 1.74$), $t(1450) = 39.05$, $p < .001$, $d = 1.03$. We found significant differences between the perceived amount the average college student spends per year gambling ($M = 4.27$; $SD = 2.34$) and the actual amount participants reported spending per year gambling ($M = 1.89$; $SD = 1.79$), $t(1369) = 33.05$, $p < .001$, $d = 0.89$. We found significant differences between the perceived amount the average student spends per month gambling ($M = 4.22$; $SD = 2.29$) and the actual amount participants reported spending per month gambling ($M = 1.46$; $SD = 1.24$), $t(1355) = 41.34$, $p < .001$, $d = 1.12$. We found significant differences between the perceived amount the average college student wins gambling per year ($M = 3.66$; $SD = 2.11$) and the amount the participants reported winning per year ($M = 1.94$; $SD = 1.91$), $t(1350) = 24.49$, $p < .001$, $d = 0.67$. Finally, we found significant differences between the perceived amount the average college student wins per month ($M = 3.74$; $SD = 2.25$) and the amount the participants reported winning per month ($M = 1.59$; $SD = 1.46$), $t(1346) = 32.41$, $p < .001$, $d = 0.88$.

## Self-Identification as a Moderator

More specifically, beyond replicating the findings from Larimer and Neighbors (2003), another objective of the current research was to examine identification with others (i.e., identification with other students, with other gamblers, and with other student gamblers) as a moderator of the association between perceived norms in gambling frequency/quantity and gambling behavior. Hierarchical regression analyses were conducted to evaluate the role of perceived norms and identification with others in predicting gambling behavior. As reflected in the tables, all main effects were entered at Step 1, with the two-way interaction added at Step 2. Cohen's *d* was included as a measure of effect size using the formula $d = 2t / \sqrt{df}$ (Rosnow and Rosenthal 1991). Effect sizes of .2, .5, and .8 are typically considered small, medium, and large, respectively (Cohen 1992). Results from all analyses are represented in Tables 2, 3, 4.

### Identification with Other Students (Table 2)

**Frequency—**Perceived norms for gambling frequency were positively associated with actual gambling frequency. Identification with other students was also positively associated with gambling frequency. The interaction between perceived frequency norms and identification with other students predicting gambling frequency was not statistically significant.

**Quantity—**Perceived norms for gambling quantity were positively associated with actual gambling quantity. Identification with other students was also positively associated with gambling quantity. The interaction between perceived quantity norms and identification with other students was significant and in the expected direction, such that perceiving other students spend more on gambling was associated with increased reported gambling expenditures, particularly with stronger perceived identification with other students. Tests of simple slopes were conducted evaluating the association of perceived norms and gambling expenditure at low ($-1$ $SD$) and high values ($+1$ $SD$) of identification with other students (Cohen, Cohen, West, and Aiken, 2003). Results revealed that the association between perceived quantity norms and gambling quantity was significant at low levels of identification with other students, $\beta = .16$, $p < .001$, but significantly stronger at high levels of identification with other students, $\beta = .28$, $p < .001$.

### Identification with Other Gamblers (Table 3)

**Frequency—**Perceived norms for gambling frequency were positively associated with actual gambling frequency. Identification with other gamblers was also positively associated with gambling frequency. The interaction between perceived frequency norms and identification with other gamblers was statistically significant and in the expected direction, such that perceiving other students gamble more often was associated with increased time spent gambling, particularly with stronger perceived identification with other gamblers. Tests of simple slopes indicted that the association between perceived frequency norms and gambling frequency was significant at low levels of identification with other gamblers, $\beta = .18$, $p < .001$, but significantly stronger at high levels of identification with other gamblers, $\beta = .39$, $p < .001$.

**Quantity—**Perceived norms for gambling quantity were positively associated with actual gambling quantity. Identification with other gamblers was also positively associated with gambling quantity. The interaction between perceived quantity norms and identification with other gamblers was significant and in the expected direction, such that perceiving other students spend more on gambling was associated with increased reported gambling expenditures, particularly with stronger perceived identification with other gamblers. Tests of simple slopes again revealed that the association between perceived frequency quantity and gambling quantity was significant at low levels of identification with other gamblers, $\beta = .07$, $p < .05$, although the association was not strong. The association was significantly stronger at high levels of identification with other gamblers, $\beta = .32$, $p < .001$.

### Identification with Other Gambling Students (Table 4)

**Frequency**—Perceived norms for gambling frequency were positively associated with actual gambling frequency. Identification with other students who gamble was also positively associated with gambling frequency. The interaction between perceived frequency norms and identification with other gambling students was significant and in the expected direction, such that perceiving other students gamble more often was associated with increased time spent gambling, particularly with stronger perceived identification with other student gamblers. Examination of simple slopes once again showed that the association between perceived frequency norms and gambling frequency was significant at low levels of identification with other students gamblers, $\beta = .18$, $p < .001$, but significantly stronger at high levels of identification with other student gamblers, $\beta = .39$, $p < .001$.

**Quantity**—Perceived norms for gambling quantity were positively associated with actual gambling quantity. Identification with other student gamblers was also significantly positively associated with gambling quantity. The interaction between perceived quantity norms and identification with other student gamblers was significant and in the expected direction, such that perceiving other students spend more on gambling was associated with increased reported gambling expenditures, particularly with stronger perceived identification with other gambling students. Evaluation of simple slopes in this case revealed that the association between perceived quantity norms and gambling quantity was not significant at low levels of identification with other students gamblers, $\beta = .03$, $p = .43$, but was significant at high levels of identification with other student gamblers, $\beta = .40$, $p < .001$. A graph of this interaction is presented in Fig. 4.

## Discussion

The present research builds on previous examinations of social influences related to gambling. Consistent with previous research we found that perceived norms for gambling were significantly associated with gambling behavior. That is, participants who estimated other students to gamble more frequently and spend more money gambling, themselves reported gambling more frequently and spending more money gambling. Also, consistent with previous research, in the present study, large effects were found for the discrepancy between perceived norms and actual norms, indicating that participants overestimate the frequency and expenditure of other students.

Unique to the present study was the consideration of how social identity relates to perceived norms and gambling. We expected that gambling college students would identify more strongly with other gambling students than other students in general, or than other gamblers in general. Overall, students identified more strongly with other students than either gamblers or student gamblers but, as expected, gambling behavior was more strongly associated with identification with gambling students than students in general. Relatively little difference was observed between identification with other gamblers versus student gamblers. This overall pattern was reiterated in examining the primary hypothesis, that identification would moderate the association between perceived norms and gambling.

Overall, we found consistent support for the notion that social identity moderates the association between perceived norms for gambling and gambling behavior. In examining three levels of reference (other students; other gamblers; other gambling students) and two outcomes (frequency and expenditure) the interaction between social identity and perceived norms was significant in five of the six models. Perceived identification with other gamblers moderated the relationship between perceived norms variables (i.e., perceiving other students spend more on gambling or gamble more often) and reported behavior (i.e., reported gambling expenditure, time spent gambling). As such, perceived norms variables were positively associated with reported gambling behavior, particularly with stronger perceived identification with other gamblers. The only case in which the interaction was not significant was for typical students and gambling frequency. Moreover, a review of the effect sizes suggests that the impact of social identity on the association between perceived norms and gambling is more evident in considering other gambling students or other gamblers than typical students.

The pattern of results is consistent with previous research suggesting that perceptions of the typical student may not have high relevance for students who gamble frequently (Neighbors et al. 2007). It is interesting to note that results were stronger for other gamblers than for other students but there was relatively little difference between other gamblers and other gambling students. This may suggest that gambling students think of themselves more strongly as gamblers than as students. In comparison to heavy drinking, frequent gambling is less common among college students. Thus, identification with the typical student may be more relevant for behaviors that are more common and less relevant for behaviors that are less common including gambling, smoking, or using substances other than alcohol. In terms of social identity, membership in a relatively rare category or group (e.g., frequent gambler) may be more self-defining than membership in a relatively common category (e.g., college gambler). In addition to theoretical implications, these results suggest that it may be important to consider the overall prevalence of a given behavior before considering norms-based intervention approaches. As typically implemented we might expect normative approaches to be most effective in common behaviors where misperceptions are identified (e.g., alcohol) relative to less common behaviors (e.g., methamphetamine use).

It is also interesting to note that in the present data related to expenditure, perceived norms for wins was lower than perceived norms for losses but self-reported behavior suggested they were about the same. If in reality losses were to exceed wins, as is definitely true for some forms of gambling (e.g., casino games), this would represent a reporting bias, such that individuals may underreport their losses. The presence of a potential reporting bias in underreporting losses would not account for the discrepancy between perceived norms and gambling which is consistent across gambling outcomes (frequency, wins, and losses). It is also probable that the ratio of actual wins and losses depends on the specific gambling activity. When estimating others' gambling, participants might have thought of gambling activities with lower win/loss ratios relative to the activities they themselves most typically engage in. Future research considering gambling activity as a potential moderator may help illuminate these issues.

Overall, findings tended to be stronger for expenditure relative to frequency. This is consistent with research examining associations between social norms and other behaviors. For example, Neighbors et al. (2006a) found the same pattern in examining cross-sectional and longitudinal associations between perceived norms and drinking. This may be because frequency, as assessed here, is relatively less variable than expenditure. It may also be that frequency of gambling is relatively less diagnostic. An individual could buy a lottery ticket daily without considering him/herself to be a gambler. In contrast, spending large amounts of money on gambling activities on a weekly basis might be strongly associated with identification.

### Limitations and Future Directions

The present research is limited by the cross-sectional design, which precludes causal inferences. In addition the large sample size resulted in statistical signicance for even small associations (e.g., $r = .07$), which may have limited practical meaning. Previous research suggests that there are reciprocal causal pathways between perceived norms and behavior (Neighbors et al. 2006a). It is likely that identification with other gamblers or other gambling students goes hand in hand with behavior. One would not expect identification with other gamblers to arise without a history of gambling behavior. Additional research using longitudinal data may help elucidate relative contribution and temporal precedence in causal models. The research is also limited by self-report data and the data suggest that there may be some underreporting of losses. Moreover, self-report bias could provide an alternative explanation for the discrepancy between perceived norms and reported behavior if individuals correctly perceived others gambling but underreported their own. This would not, however, account for the positive association between perceived norms and behavior or its moderation by social identification. Future efforts incorporating objective assessments (e.g., in situ designs; financial records) might help us better determine whether and to what extent reporting biases may be operating in this context. Finally, response options for frequency and quantity of perceived norms and behavior included relatively few categories and are limited relative to more continuous measures.

## Conclusion

In conclusion, the present research extends previous research suggesting that social norms are strongly associated with gambling among college students. Social identity moderates the association between perceived norms and gambling, particularly for references to other gambling students and other gamblers. Interventions utilizing social norms for gambling may be advised to consider references other than just the typical student.

## Acknowledgments

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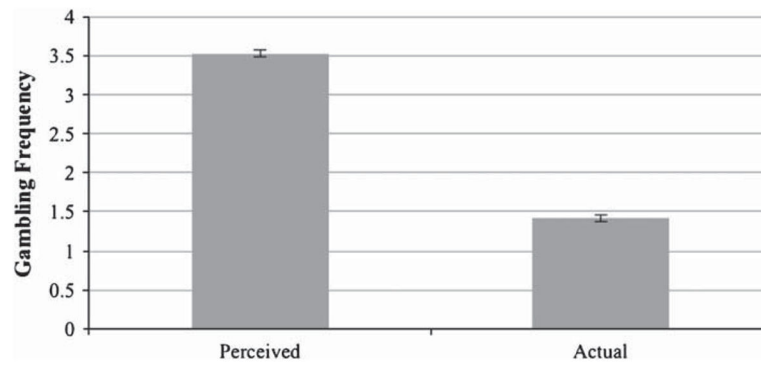
**Fig. 1.**
Confidence intervals (CIs) for means and standard errors for perceived and actual gambling frequency. *Note* For the y-axis, *0* = Never, *1* = Once a year, *2* = 2–3 times per year, *3* = Every other month, *4* = Once per month, *5* = 2–3 times per month, *6* = Weekly, *7* = More than once per week, *8* = Every other day, *9* = Every day
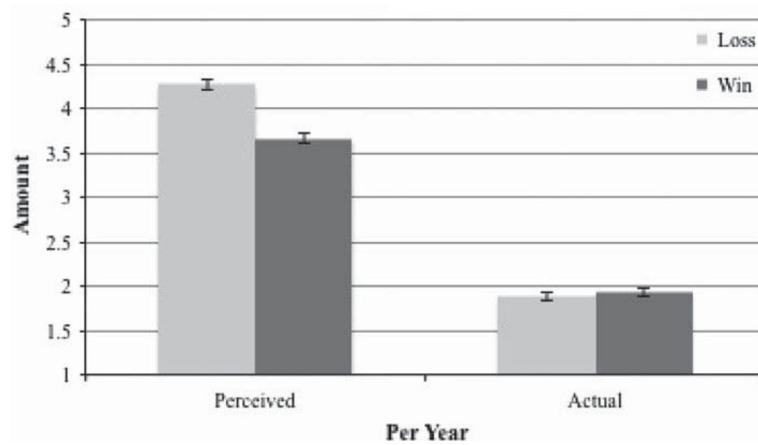
**Fig. 2.**
Confidence intervals (CIs) for means and standard errors for perceived and actual wins and losses per year. *Note.* For the y-axis, *1* = Less than $25, *2* = $25–$50, *3* = $50–$100, *4* = $100–$200, *5* = $200–$300, *6* = $300–$500, *7* = $500–$700, *8* = $700–$1,000, *9* = $1,000–$2,000, *10* = More than $2,000
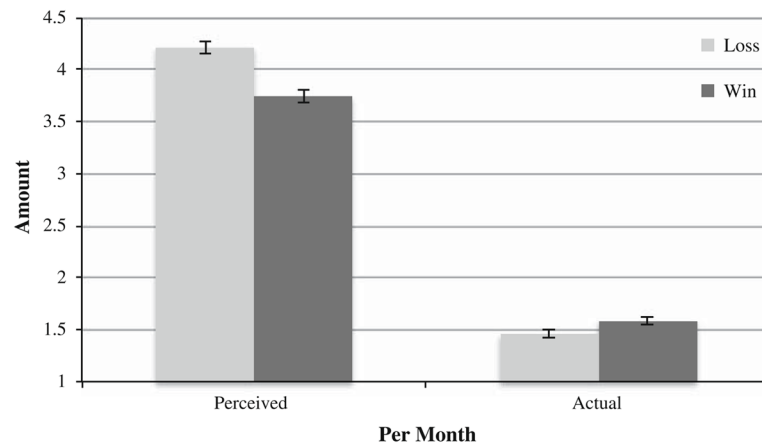
**Fig. 3.**
Confidence intervals (CIs) for means and standard errors for perceived and actual wins and losses per month. *Note* For the y-axis, *1* = Less than $5, *2* = $5–$10, *3* = $10–$20, *4* = $20–$40, *5* = $40–$60, *6* = $60–$100, *7* = $100–$200, *8* = $200–$500, *9* = $500–$1,000, *10* = More
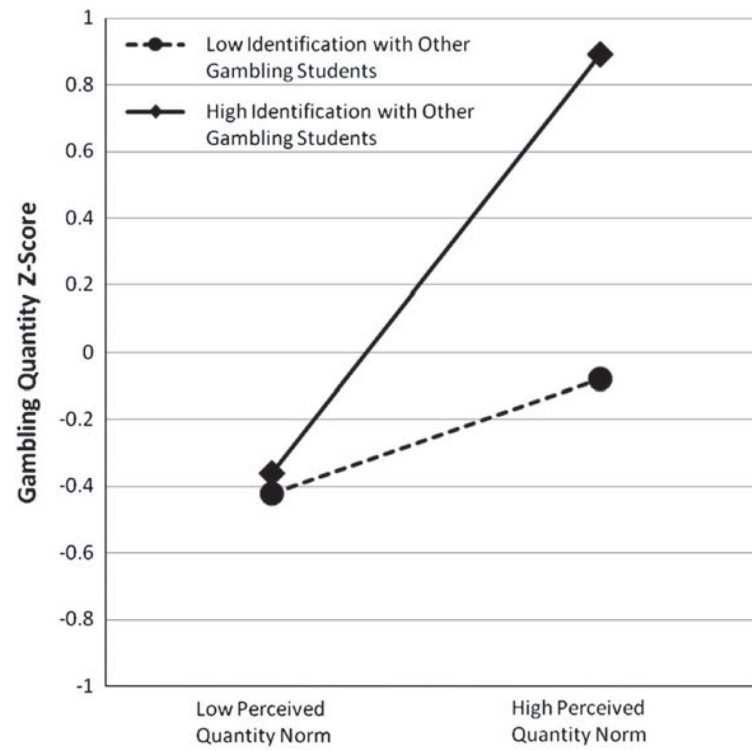
**Fig. 4.**
Interaction of perceived quantity norms and identification with other gambling students in predicting gambling quantity

**Table 1**

Means, standard deviations, and correlations among measures

| Variable | 1. | 2. | 3. | 4. | 5. | 6. | 7. |
|---|---|---|---|---|---|---|---|
| Perceived norms: Frequency | – | | | | | | |
| Perceived norms: Quantity | .45 *** | – | | | | | |
| Identification with other UH students | –.04 | –.06 * | – | | | | |
| Identification with other gamblers | .07 ** | .03 | .13 *** | – | | | |
| Identification with other student gamblers | .08 ** | –.02 | .26 *** | .60 *** | – | | |
| Gambling frequency | .31 *** | .10 *** | .07 * | .39 *** | .37 *** | – | |
| Gambling quantity | .21 *** | .21 *** | .08 ** | .35 *** | .32 *** | .68 *** | – |
| Mean | 3.53 | 3.97 | 3.22 | 1.72 | 1.87 | 1.41 | 0 |
| Standard deviation | 1.76 | 1.99 | 1.52 | 1.25 | 1.25 | 1.74 | 1.22 |

N = 1,485,

*
$p < .05$,

**
$p < .01$,

***
$p < .001$

**Table 2**

Regression results for perceived norms for gambling frequency and quantity and identification with other students predicting gambling frequency and quantity

| Outcome | Predictor | B | β | t | p | d |
|---|---|---|---|---|---|---|
| Gambling Frequency | Perceived frequency | .309 | .314 | 12.53 | < .001 | .662 |
| | Identification with other students | .087 | .076 | 3.05 | .002 | .161 |
| | Perceived frequency × identification with other students | .026 | .120 | 1.66 | .098 | .088 |
| Gambling Quantity | Perceived quantity | .135 | .219 | 8.31 | < .001 | .449 |
| | Identification with other students | .068 | .085 | 3.25 | .001 | .176 |
| | Perceived quantity × identification with other students | .023 | .172 | 2.36 | .019 | .128 |

**Table 3**

Regression results for perceived norms for gambling frequency and quantity and identification with other gamblers predicting gambling frequency and quantity

| Outcome | Predictor | B | β | t | p | d |
|---|---|---|---|---|---|---|
| Gambling Frequency | Perceived frequency | .281 | .285 | 12.24 | <.001 | .647 |
| | Identification with other gamblers | .508 | .365 | 15.71 | <.001 | .830 |
| | Perceived frequency × identification with other gamblers | .082 | .295 | 4.86 | <.001 | .257 |
| Gambling Quantity | Perceived quantity | .124 | .201 | 8.16 | <.001 | .441 |
| | Identification with other gamblers | .337 | .348 | 14.08 | <.001 | .761 |
| | Perceived quantity × identification with other gamblers | .060 | .341 | 5.55 | <.001 | .300 |

**Table 4**

Regression results for perceived norms for gambling frequency and quantity and identification with other student gamblers predicting gambling frequency and quantity

| Outcome | Predictor | B | β | t | p | d |
|---------|-----------|---|---|---|---|---|
| Gambling Frequency | Perceived frequency | .283 | .287 | 12.19 | <.001 | .645 |
| | Identification with other student gamblers | .482 | .344 | 14.64 | <.001 | .775 |
| | Perceived frequency × identification with other student gamblers | .078 | .287 | 4.72 | <.001 | .250 |
| Gambling Quantity | Perceived quantity | .135 | .220 | 8.82 | <.001 | .477 |
| | Identification with other student gamblers | .317 | .326 | 13.09 | <.001 | .708 |
| | Perceived quantity × identification with other student gamblers | .091 | .508 | 8.48 | <.001 | .459 |