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## Injunctive Norms and Problem Gambling among College Students

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### Abstract

Two studies examined the relationships among injunctive norms and college student gambling. In study 1 we evaluated the accuracy of perceptions of other students' approval of gambling and the relationship between perceived approval and gambling behavior. In study 2 we evaluated gambling behavior as a function of perceptions of approval of other students, friends, and family. In study 1, which included 2524 college students, perceptions of other students' approval of gambling were found to be overestimated and were *negatively* associated with gambling behavior. The results of study 2, which included 565 college students, replicated the findings of study 1 and revealed *positive* associations between gambling behavior and perceived approval of friends and family. Results highlight the complexity of injunctive norms and the importance of considering the reference group (e.g., peers, friends, family members) in their evaluation. Results also encourage caution in considering the incorporation of injunctive norms in prevention and intervention approaches.

### Keywords

Social norms; Attitudes; Injunctive norms; Gambling

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Between 1975 and 1999, lifetime incidence of adult gambling increased from 65% to 86%, gambling expenditure increased from 0.3% to 0.7% of personal income, and gambling patterns among women grew to resemble those of men (Gerstein et al. 1999). In 2001,

Americans made an estimated 303 million trips to casinos, resulting in casino-based revenue of 27.2 billion dollars and contributing to gross gambling revenue of 63.3 billion (American Gaming Association 2002). While for most people gambling is simply an infrequent form of entertainment, some individuals experience negative consequences associated with this behavior ranging in severity from occasional minor problems to diagnosable gambling pathology. Thus, over the past several decades disordered gambling has become a significant public health problem in its own right (Korn and Shaffer 1999) and is associated with a host of other disorders, especially those related to alcohol and other substance use (Petry et al. 2005).

Variable prevalence rates of disordered gambling in the general US population have been reported, with the average lifetime estimates being about 1.6% and 3.9% for pathological gambling and subclinical/problem gambling (Shaffer et al. 1999). Some evidence suggests that gambling is particularly prevalent and problematic among college students (Lesieur et al. 1991; Neighbors et al. 2002a; Shaffer et al. 1999; Winters et al. 1998). Shaffer et al. (1999) reported lifetime estimates of 4.62% and 9.28% for college student lifetime pathological and subclinical/problem gambling respectively, more than double the general adult population estimates. Other evidence suggests that prevalence rates of pathological gambling among adolescents, young adults, and college students have been inflated (Derevensky et al. 2003; Labrie et al. 2003; Slutske et al. 2003). Nevertheless, it seems clear by all accounts that gambling occurs relatively frequently in this population and has undesirable consequences for a significant number of students.

Literature has shown higher gambling rates and related problems among college students are most often related to factors of demography (male) (Engwall et al. 2004; Lesieur et al. 1991; Greenberg et al. 1999; Winters et al. 1998; Lightsey and Hulsey 2002), personality (sensation-seeking or impulsivity) (Holt et al. 2003; Lightsey and Hulsey 2002), drinking history (higher alcohol consumption) (Engwall et al. 2004; Lesieur et al. 1991), and activity involvement (Greek organizations or athletics) (Cross et al. 1998; Rockey et al. 2005). Of direct relevance to the present research, recent work has begun to evaluate the importance of social influences on college student gambling. In evaluating self-reported motives for gambling, Neighbors and colleagues found that social reasons were the most frequently reported motive for gambling with the exception of winning money and enjoyment (Neighbors et al. 2002b). Moreover, social norms have been identified as strong predictors of gambling behavior and gambling related negative consequences (Larimer and Neighbors 2003; Moore and Ohtsuka 1997; Moore and Ohtsuka 1999; Takushi et al. 2004).

Social norms generally refer to implicit or explicit rules regarding appropriate behavior within a particular social context. More precisely, two types of social norms have been described, often with inconsistent terminology (Cialdini et al. 1990). Descriptive norms refer to the prevalence of a given behavior (i.e., how much or how often people in a given context engage in the behavior). Injunctive norms, the focus of the present research, relate to the degree of perceived or actual approval of a given behavior. Actual injunctive norms refer to the extent to which people in a given context approve or disapprove of, in this case, gambling. Perceived injunctive norms refer to the perceived degree of others approval or disapproval. The subjective norm (a type of perceived injunctive norm), is a component of the Theory of Reasoned Action/Planned Behavior and refers to the extent to which people perceive important others as approving or disapproving of a given behavior (Fishbein and Ajzen 1975; Ajzen 1991). It should be noted that the distinction between perceived and actual injunctive norms is often not well made.

The literature on injunctive norms comes largely from three bodies of research: a sizable body of research on college student drinking (Borsari and Carey 2003; Larimer et al. 2004;

Perkins and Berkowitz 1986; Prentice and Miller 1993), research associated with the Theory of Reasoned Action (Fishbein and Ajzen 1975) and its extension, the Theory of Planned Behavior (Ajzen 1991), and finally research on social norms conducted by Cialdini and colleagues (Cialdini 2003; Cialdini et al. 1990; Kallgren et al. 2000; Reno et al. 1993). These three areas of research taken together provide an initial foundation for examining the influence of social norms on gambling in college students.

The body of research specifically examining social norms in relation to gambling behaviors among college students is considerably small (Larimer and Neighbors 2003; Moore and Ohtsuka 1997; Moore and Ohtsuka 1999; Takushi et al. 2004). The limited information on the influence of social norms on gambling behavior makes it difficult to present a conceptual frame for examining factors, which influence and contribute to students' mis/perceptions of approval of gambling among their peers. Alternatively, there is a vast body of literature that has focused on social norms approaches to understanding drinking behaviors in college samples (e.g., Borsari and Carey 2003; Larimer et al. 2004; Perkins and Berkowitz 1986; Prentice and Miller 1993). Given the strong association between gambling and drinking, it's likely that the processes operating are similar (Grant et al. 2002). Of particular interest are the influences at work in the formation and maintenance of discrepancies between perceived approval of gambling behavior and actual approval.

This phenomenon (i.e., the discrepancy between the perceived and actual approval of others) can be partially understood by existing literature. There is a sizable body of alcohol research that has investigated the complex relation between the proximity of the reference group, how one perceives the associated drinking norms, and the effects of these norms on the individuals' drinking behavior (Baer et al. 1991; Borsari and Carey 2001; Borsari and Carey 2003; Lewis and Neighbors 2004; Suls and Green 2003). More specifically, two effects have been repeatedly shown in this literature. The first of these effects has shown that perceptions of others' approval of drinking are strongly associated with college student drinking and the closer the "others" the stronger the relationship (Borsari and Carey 2003). This is supported by Social Identity Theory (Hogg et al. 2003; Tajfel and Turner 1986; Terry and Hogg 1996; Turner 1982) and Self-categorization Theory (Turner et al. 1987) which provide a comprehensive perspective for understanding this relationship in that groups with which we associate more strongly tend to have more influence over our attitudes and behavior. Proximal reference groups (generally friends and family), have a greater influence over our behavior because we care more about the opinions of those that are close to us (Terry and Hogg 1996). A second recurring effect has shown that students overestimate the degree of approval and the amount that their peers drink in comparison with personal norms, and the magnitude of this effect is largely dependent upon the proximity of the reference group (i.e., the closer the reference group, the smaller the misperceptions) (Baer et al. 1991; Lewis and Neighbors 2004). Put differently, students' perceptions are more discrepant for groups they are less familiar with and are more accurate for groups with greater familiarity.

A handful of studies to date have looked at the role of injunctive norms in gambling (Larimer and Neighbors 2003; Moore and Ohtsuka 1999). In a study performed by Moore and Ohtsuka (1999), injunctive norms were found to be associated with gambling frequency, but not intentions to gamble or gambling-related negative consequences. Similarly, Larimer and Neighbors (2003) found that students who perceive important others as approving of gambling gambled more frequently, but they also experienced more gambling-related negative consequences and expended more money on gambling than did students who did not share these perceptions. However, these studies operationalized injunctive norms as perceived approval of friends and family and did not consider perceptions of other students' approval of gambling.

It is common for personalized feedback in college student alcohol interventions to provide descriptive norms regarding other students' typical behaviors (Lange et al. 2002; Larimer and Cronce 2002). This type of intervention (involving personalized feedback) has been adapted to address college student gambling (Takushi et al. 2004). However, little is known about the appropriateness of incorporating perceived and actual injunctive norms in these interventions. As such, the purpose of the present research was to evaluate the accuracy of perceived injunctive gambling norms regarding other students' approval of gambling and to examine their relationship with gambling behavior among college students. We also aimed to examine the differences in the relationships between perceived injunctive norms and gambling as a function of the reference group. Specifically, we were interested in examining gambling behavior as a function of perceived injunctive norms with varying reference groups (i.e., perceptions of other students', friends', family's approval of gambling).

## Study 1

The purpose of study 1 was to investigate the accuracy of perceptions of gambling attitudes among college students. Specifically, this study sought to examine the relationship between student's personal approval or disapproval of gambling behaviors and their perceptions of other college student's attitudes about gambling. We expected that those students who had more favorable attitudes and who perceived other students as approving of gambling would gamble more frequently than students who disapproved of gambling and who thought other college students disapprove of gambling.

## Method

**Participants**—Participants included 2,524 (41.5% male and 58.5% female) university students at a large West-coast university. The average age of participants was 20.23 years ( $SD = 1.56$ ). Ethnicity was 65.5% Caucasian, 22.5% Asian/Asian American, 6.7% multi-racial, and 5.3% other. The majority of participants were (37.9%) sophomores and (51.8%), juniors, while the remaining 10.3% were seniors at the time of survey completion. This sample was demographically similar to the university's undergraduate population. The mean age of first bet was 11.12 years old ( $SD = 7.67$ ).

**Procedure**—A random sample of college sophomores and juniors were provided by the university registrar's office. The sample of students was sent a brief, confidential, optical scan survey with a request to complete the survey regardless of the participant's gambling behavior. The questionnaire packet also contained a cover letter, consent forms, and instructions for how to decline participation. All procedures were reviewed and approved by the University's human subjects review committee. Each participant received \$10 for sending in a completed survey. Surveys were scanned in to an ASCII-text file and then uploaded into SPSS 11.0 for data analyses.

## Measures

**Gambling Attitudes (Gambling Attitude and Injunctive Norms Scale, GAINS):** The GAINS is a 32-item scale developed for this study. The scale consists of sixteen attitudinal items, asking participants about their approval or disapproval of students engaging in different gambling behaviors. Mean score for the sample on these items served as the actual injunctive norms comparison. The remaining 16 perceived injunctive norms items ask "How do you think most college students feel about other students' gambling behavior?" The response items consisted of a 5-point Likert scale ranging from "Strongly Disapprove" to "Strongly Approve." An example item asks "How do you think other college students feel about other students when they spend \$100 or more/week on gambling?" Coefficient alpha for gambling attitudes and perceived injunctive norms were .91 and .91, respectively.

*Gambling Frequency* was assessed using a single item from The Gambling Quantity and Perceived Norms Scale (Neighbors et al. 2002a), which asked, “Approximately how often do you gamble?” The response items consisted of a 10-point Likert scale ranging from “Never” to “Every day.”

**Gambling Expenditure:** The expenditure scale (Neighbors et al. 2002a) includes six items assessing gambling wins and losses over differing periods of time. Response options for each item are presented on 10 point Likert-scales ranging from “less than \$25” to “more than \$2,000.” Coefficient alpha for these six items was .92. In addition, this scale includes one item assessing the participant’s monthly disposable income on an 11-point Likert-scale ranging from “less than \$50” to “more than \$500.” The gambling expenditure score was calculated as the mean of the six expenditure items residualized on disposable income, thus the scores reflect gambling expenditure controlling for disposable income differences between participants. Disposable income was included in the development of this scale (described in more detail in Neighbors et al. 2002a) in response to limitations of previous measures of gambling expenditure, which did not account for income differences. Moreover, the specific dollar amount of money spent on gambling is likely to represent a functionally different meaning depending on how much money one has available to begin with.

**South Oaks Gambling Screen-Lifetime (SOGS; Lesieur and Blume 1987):** The SOGS lifetime scale contains 20 scored items, which highly correlate with DSM-III-R and DSM-IV diagnoses of pathological gambling. Sample SOGS items include “Did you gamble more than you intended to?” and “When you gamble, how often do you go back another day to win back money you lost?” Possible raw scores range from 0 to 20. Shaffer et al. (1999) have proposed using cutoff points as possible indicators of gambling severity. A score of 5 or greater is a “probable pathological gambler” or level 3 gambler. A score of 3–4 is categorized as a “problem gambler” or level 2. A score of 2 or less is categorized as a “non-problem gambler” or a level 1. Coefficient alpha in this sample was .75.

**DSM-IV pathological gambling (National Opinion Research Center DSM Screen for Gambling Problems, NODS; Gerstein et al. 1999):** The NODS was developed as a telephone screening tool to identify problem gamblers. The current study used a paper-pencil version of NODS that is comprised of 16-items that can be answered in a yes/no format. Items parallel DSM-IV criteria for pathological gambling and assessed lifetime gambling consequences. The NODS was originally normed on 40 outpatient gamblers and had strong construct validity and test-retest reliability (Gerstein et al. 1999). A recent study (Hodgins 2004) also reported fair to good internal reliability for using the NODS as a measure of outcome in a brief gambling treatment study. A sample item includes, “Have you ever gambled as a way to escape from personal problems?” Raw scores range from 0 to 10. A cutoff of 5 or greater would meet diagnosis of pathological gambler. In order to use the NODS along a continuum of problem gambling comparable to the Schaffer et al suggestion for the SOGS, the following criteria provide a rough approximation: a raw score of 1 or 2 would be an “at-risk” gambler, a score of 3–4 a “problem gambler,” and 5 or greater was considered a “pathological gambler.” Coefficient alpha for the NODS for the current study was .77.

## Results

**Accuracy of Perceived Injunctive Norms—**The first aim was to evaluate whether students overestimate the extent to which other students approve of gambling. A paired sample *t*-test revealed that average actual approval of gambling by students,  $M = 2.14$ ,  $SD = .51$ , was lower than the average perceived approval of gambling by students,  $M = 2.48$ ,  $SD = .50$ ,  $t(2513) = -26.61$ ,  $P < .001$ ,  $d = -.53$  (see Table 1). The magnitude of overestimation

is represented by a medium effect size where  $d$  was calculated as the mean difference divided by the standard deviation of the difference (Cohen 1988).

**Attitudes, Perceived Injunctive Norms, and Gambling Behavior**—Next we were interested in evaluating the relationships between attitudes, perceived injunctive norms, and gambling behavior. Attitudes and perceived injunctive norms were positively but modestly correlated,  $r = .23$ . A series of multiple regression analyses were performed separately examining gambling frequency, expenditure, DSM criteria, and SOGS scores as a function of actual approval and perceived approval of gambling by other students. Regression results are presented in Table 2. As expected, an individual's positive attitudes toward gambling were strongly and consistently associated with more problematic gambling. Perceived approval of gambling by other students was strongly and consistently associated with less problematic gambling. The negative relationship between perceived approval of gambling by other students and gambling behavior was unexpected and was the opposite of what was hypothesized.

## Discussion

Results from study one were consistent with expectations regarding the discrepancy between perceived and actual injunctive norms. Students inaccurately overestimated the extent to which their peers approved of gambling. Not surprisingly, students' personal attitudes regarding gambling were strongly associated with their gambling behaviors. In contrast, the negative relationship between perceived approval of gambling by other students and gambling behavior was unexpected and seemingly inconsistent with previous literature showing positive associations between injunctive norms (operationalized as perceived approval by friends and family). After deeming type I error fairly unlikely given the large sample and effect sizes, we reasoned that the specificity and familiarity of the reference group might be responsible for the unexpected direction of association.

## Study 2

Study 2 was designed to extend study 1 by resolving the inconsistency between previous literature and the results of study 1. We sought to replicate the results of previous research finding injunctive norms, with close others as the reference group, to be positively associated with gambling behavior. We further expected to replicate the results of study 1 suggesting that injunctive norms, with distal others (i.e., other students) as the reference group, would be negatively associated with gambling behavior.

## Method

**Participants**—Participants included 565 (41.3% male and 58.7% female) undergraduate psychology students at a large West-coast university. The average age of participants was 18.85 years ( $SD = 2.14$ ). Ethnicity was 54.8% Caucasian, 31.7% Asian/Asian American, 7% multi-racial, and 6.5% other. Participants were (68.4%) freshman, (19.2%) sophomores, (8.7%) juniors, and (3.7%) seniors. This sample was demographically similar to the population enrolled in undergraduate psychology courses at the university. The mean age of first bet was 15.44 years-old ( $SD = 3.78$ ).

**Procedures**—An anonymous survey assessing gambling attitudes, injunctive norms, and behavior was administered to college students enrolled in a psychology undergraduate course in a mass testing session. All measures and procedures were reviewed and approved by the university's human subjects review board.

## Measures

**Gambling Attitudes (GAINS):** The GAINS assessed gambling attitudes and injunctive norms with other students as the reference group. Coefficient alpha for gambling attitudes and injunctive norms with other students as the reference group were .91 and .92 in this sample, respectively.

*Injunctive Norms with Friends and Family* were assessed with the Gambling Injunctive Norms Scale (Moore and Ohtsuka 1999). The scale consists of 12 items, which examine perceived approval or disapproval of gambling using the reference groups of family or friends. Participants were asked to respond to questions using a 5-point Likert scale to how much they: Strongly Disagree, Disagree, Neither Agree or Disagree, Agree, or Strongly Agree with each statement. Sample items include: “Most of my friends approve of gambling” and “My family would disapprove of me playing poker machines” (reverse scored). Coefficient alpha for the study was .82.

**Gambling Frequency and Gambling Expenditure:** The measures of gambling frequency and gambling expenditure were identical to the measures described in Study 1. Coefficient alpha for expenditure in this study was .92.

## Results

**Students own approval of gambling and perceptions of approval of friends, family, and other students—**Our first aim in study 2 was to replicate the finding from study 1 indicating that perceptions of approval of gambling by typical students were overestimated. A paired samples t-test again revealed that average actual approval of gambling by students,  $M = 2.08$ ,  $SD = .51$ , was lower than the average perceived approval of gambling by students,  $M = 2.49$ ,  $SD = .56$   $t(547) = -16.32$ ,  $P < .001$ ,  $d = -.70$ .

In addition, we evaluated mean differences among students' own approval of gambling and perceived injunctive norms with other students, friends, and family as the reference group using repeated measures ANOVA. Results indicated large differences among students own approval and their perceptions of others approval across three different reference groups,  $F(3, 544) = 644.19$ ,  $P < .001$ . Figure 1 presents means and 95% confidence intervals. Follow-up paired t-tests indicated that all paired comparisons among the four means were significantly different with the exception of perceptions of other students' approval of gambling and perceptions of family's approval. Students own approval ratings were lower than their perceptions of friends', family's, and other students' approval. Perceptions of friends' approval was higher than perceptions of family's and other students' approval.

**Gambling behavior as a function of students' own approval of gambling and perceptions of approval of friends, family, and other students—**Next we examined the relationships among gambling behavior, own approval and perceived injunctive norms for gambling. Table 3 presents zero order correlations among own approval of gambling, perceived approval of gambling by other students, friends, and family, gambling frequency, and gambling expenditure. Correlations were positive and medium sized ( $r$ 's = .35–.37) between own approval and perceptions of approval by others, regardless of the reference group. Perceived approval by friends and family were positively correlated, and neither was strongly associated with perceived approval by other students. Own approval, perceived approval by friends, and perceived approval by family were all significantly and positively associated with gambling frequency and gambling expenditure. Consistent with study 1, perceptions of other students' approval of gambling were negatively associated with gambling behavior, although these correlations were relatively weak.

We used multiple regression analysis to evaluate unique associations between approval, perceived approval by others, and gambling behavior. Multiple regressions were performed separately for gambling frequency and gambling expenditure. Table 4 presents regression results. Results indicate that own approval and perceptions of friends' approval of gambling are strongly, positively, and uniquely associated with gambling frequency and gambling expenditure. In contrast, and consistent with the results of study 1, perceptions of other students' approval of gambling were negatively and uniquely associated with gambling frequency and gambling expenditure. Perception of family's approval of gambling was not uniquely associated with gambling frequency or expenditure.

## Discussion

The results of study two replicated the results of study 1 and provide clarification regarding the apparent discrepancy between previous findings and the negative association between perceived injunctive norms (with other students as the reference group) and gambling reported in study 1. These data suggest that students think other students, friends, and family approve of gambling more than students themselves do, especially friends. Own approval and perceived friends' approval are most strongly associated with gambling behavior. Also of direct interest, perceived other students' approval, although positively correlated with perceived friends' and families' approval, appears to have a different relationship with behavior.

## General Discussion

The present research was designed to evaluate the relationship between injunctive norms and gambling behavior. In other work examining descriptive norms and gambling, students have been shown to overestimate the prevalence of gambling among their peers. In addition, higher estimations of peer gambling have been associated with higher gambling frequency, greater expenditure, and more gambling related problems (Larimer and Neighbors 2003). In this research we were interested in determining whether similar relationships hold with respect to injunctive gambling norms. More specifically, we wished to evaluate whether students overestimate other's approval of gambling and whether estimations of approval were positively associated with gambling behavior. In study 1, consistent with expectations, we found that students overestimated the extent to which other students approve of gambling. However, in contrast to previous research finding perceived injunctive norms to be positively associated with gambling behavior (Larimer and Neighbors 2003; Moore and Ohtsuka 1999), estimations of other students' approval were negatively associated with gambling frequency and gambling expenditure. The primary difference in this study and previous studies was that perceived approval was estimated for other students, whereas in previous work perceptions of approval were estimated for friends and family. Thus, in study 2 we examined perceived approval of other students and perceptions of approval of friends and family. The results of this study replicated both previous findings indicating (1) positive relationships between gambling behavior and perceived approval of friends and family and (2) negative relationships between gambling and perceived approval of other students.

These results highlight the importance of the reference group in considering the relationship between perceptions of others' approval and behavior. These results also suggest that injunctive norms have a more complex relationship with gambling behavior than descriptive norms. While this work represents an important contribution in our understanding of social influence on college student gambling, it also presents additional questions that need to be answered before injunctive norms can be considered for inclusion in prevention and brief intervention programs for problem gambling. An obvious question relates to why perceptions of other students' approval are negatively associated with gambling, whereas perceptions of friends' and family's approval are positively associated with gambling. One



speculation relates to students' direct knowledge of friends' and family's attitudes about gambling. Students probably know (or think they know) how their friends and family feel about gambling and evaluating the accuracy of estimations of approval among these reference groups is an important next step in this line of research. Still, friends and family are typically important and proximal reference groups with which students share similar values. Thus, it is not surprising that perceptions of approval from these reference groups are positively associated with gambling. This association is consistent with previous findings and with theoretical explanations regarding normative influences (e.g., Terry and Hogg 1996). Alternatively, asking students to estimate the approval of other students, a rather generic reference group, whom they do not know is more tenuous. Students may feel as if they are simply guessing about other students' level of approval and their biased overestimation may represent a self-serving process akin to the false uniqueness effect (Suls et al. 1988), where students who do not gamble or gamble infrequently see themselves as unique in having somewhat unfavorable attitudes about gambling. Another possibility is that students who gamble frequently and/or problematically are sensitive to others' disapproval of this behavior and this sensitivity is reflected in their lower estimations of other students' approval.

The present findings raise caution about attempting to incorporate injunctive norms in prevention and intervention approaches for gambling and more generally. Brief motivational enhancement interventions utilizing personalized feedback, and based on Motivational Interviewing (MI; Miller and Rollnick 2002), have been empirically supported in addressing heavy drinking among college students (for reviews see Larimer and Cronce 2002; Walters and Neighbors 2005). Similar interventions have begun to be implemented for problem gambling college students (e.g., Takushi et al. 2004). These interventions typically include a descriptive norm component, which has been documented as efficacious in isolation for drinking prevention (Lewis & Neighbors, 2007; Neighbors, Larimer, & Lewis, 2004; Neighbors, Lewis, Bergstrom, & Larimer, 2006). Motivational enhancement interventions utilizing personalized feedback do not typically include injunctive norms. Motivational enhancement interventions encourage autonomy support, empathy, and collaboration with clients. Authoritative and directive prescriptions regarding what the client should or should not do are inconsistent with the spirit of MI. In contrast to descriptive norms, which can be easily presented as non-evaluative base-rate information, injunctive norms detail what others believe constitutes good or bad behavior and might increase resistance and defensiveness. In sum, short of recommending the exclusion of injunctive norms in brief interventions, we encourage additional work examining when and how they might be effectively incorporated. For example, work demonstrating that students overestimate friends' approval of gambling in combination with the positive association between these perceptions and gambling behavior would provide a foundation for incorporating injunctive norms related to friends.

The contribution of the present research must be considered in light of a number of limitations. This research included two relatively large studies with strong and consistent results. However, both of these studies were cross-sectional and longitudinal research is needed to help clarify the causal direction between perceptions of others' approval and gambling behavior. This study also did not assess the actual approval of gambling behaviors of friends and family. In addition, both of these studies were conducted on the same campus and studies on other campuses where gambling is more or less prevalent would be valuable. Although an extensive literature supports the reliability and validity of self-reported assessments for alcohol and other substance use (Johnston and O'Malley 1985; Laforge et al. 2005), the validity of self-reported gambling has been less well documented (Hodgins and Makarchuk 2003).

In conclusion, this research represents an important contribution to the literature on social influences on gambling and the literature on injunctive norms more broadly. To our knowledge, this is the first research to evaluate the role of the reference group in the relationship between injunctive norms and gambling or any other addictive behavior. Given the widespread dissemination of social norms based interventions for alcohol and other addictive behaviors (Lewis and Neighbors 2006; Perkins 2002; Perkins et al. 2005; Wechsler et al. 2004) and the emphasis on the importance of injunctive norms in theoretical (Kallgren et al. 2000) and etiological studies (Borsari and Carey 2003), this work comes at an opportune time in providing an empirical basis for urging caution in the utilization of injunctive norms in prevention and intervention strategies.

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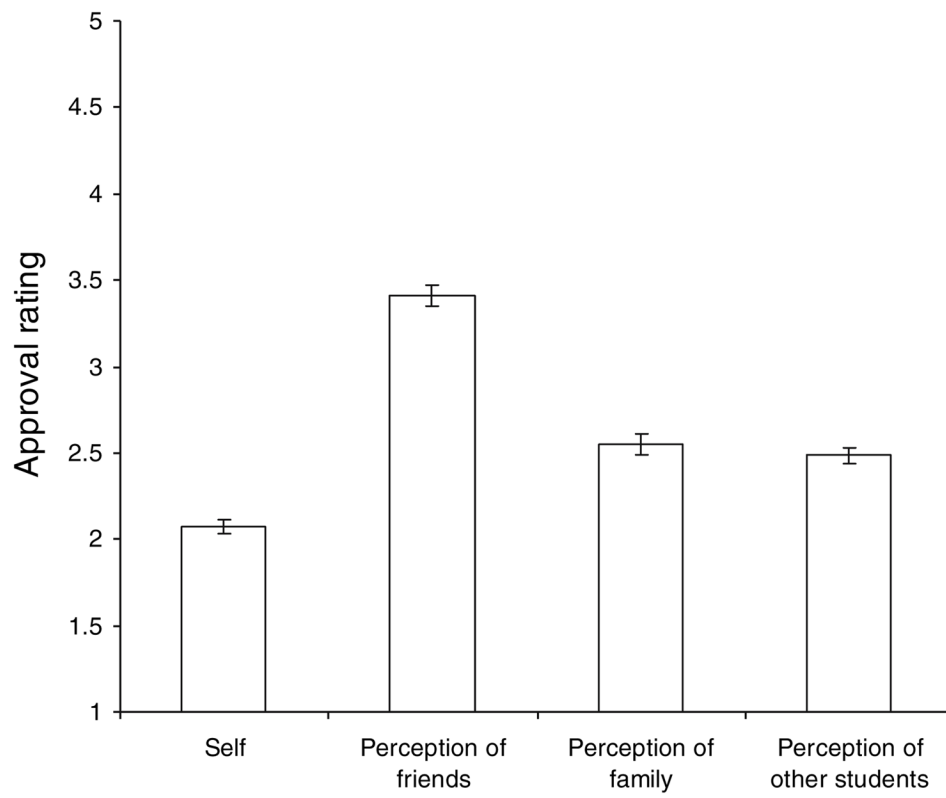
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**Fig. 1.** Approval and perceived approval of gambling as a function of reference group

Table 1

Study 1 Actual versus perceived injunctive gambling norms where the reference group is “other students”

	Actual Injunctive Norm How do you feel about other students when they...		Perceived Injunctive Norm How do you think most UW students feel about other students when they...		<i>t</i>
	Mean	SD	Mean	SD	
Gamble sometimes.	3.45	0.81	3.51	0.68	-3.75***
Gamble often.	2.53	0.88	2.81	0.78	-14.59***
Go to places where gambling occurs.	3.35	0.79	3.43	0.73	-4.85***
Spend \$20 or more/week on gambling.	2.59	0.90	2.91	0.79	-15.33***
Spend \$100 or more/week on gambling.	1.79	0.83	2.17	0.81	-19.63***
Play poker machines.	2.97	0.86	3.28	0.74	-17.15***
Buy lottery tickets.	3.31	0.88	3.50	0.78	-10.23***
Gamble instead of doing homework.	1.80	0.76	2.23	0.76	-22.45***
Charge gambling debt to credit cards.	1.51	0.72	1.99	0.76	-27.96***
Borrow money to gamble with.	1.44	0.68	1.93	0.76	-28.30***
Return another day to win back money lost gambling.	1.91	0.85	1.93	0.76	-1.12
Gamble with more money than intended.	1.99	0.77	2.32	0.79	-17.12***
Miss school because of gambling.	1.52	0.70	1.95	0.78	-23.76***
Miss work because of gambling.	1.42	0.63	1.79	0.71	-22.95***
Neglect responsibilities in order to gamble.	1.41	0.62	1.78	0.69	-23.51***
Use money needed for other things (e.g., rent or tuition) to gamble.	1.34	0.61	1.66	0.70	-21.25***

Note. N's ranged from 2472 to 2509 depending on missing data.

\*\*\*  
P < .001

**Table 2**  
Study 1 Gambling behavior as a function of attitudes and perceived approval of gambling by other students

Outcome	Predictor	B	SE	$\beta$	t
Gambling frequency	Perceived approval	-4.91	.37	-.25	-13.13***
	Attitude	7.69	.31	.39	20.75***
Gambling expenditure	Perceived approval	-3.47	.31	-.22	-11.28***
	Attitude	5.60	.31	.35	18.37***
SOGS Score	Perceived approval	-.40	.06	-.14	-6.90***
	Attitude	.56	.06	.20	9.76***
DSM criteria	Perceived approval	-.28	.05	-.12	-6.02***
	Attitude	.59	.05	.25	12.49***

Note.  $R^2 = .17$  for frequency,  $R^2 = .21$  for expenditure,  $R^2 = .25$  for DSM criteria,  $R^2 = .21$  for SOGS scores.

N's ranged from 2505 to 2513 depending on missing data.

\*\*\*  
 $P < .001$

**Table 3**  
 Study 2 Correlations among own approval of gambling, perceived approval of gambling by others, and gambling behavior

	Own approval	Perceived approval by friends	Perceived approval by family	Perceived approval by other students	Gambling frequency	Gambling expenditure
Own approval	—	.35***	.37***	.37***	.27***	.27***
Perceived approval friends	.35***	—	.44***	.06	.43***	.33***
Perceived approval family	.37***	.44***	—	.10*	.18***	.15***
Perceived approval other students	.37***	.06	.10*	—	-.14**	-.13**
Gambling frequency	.27***	.43***	.18***	-.14**	—	.69***
Gambling expenditure	.26***	.33***	.15***	-.13**	.69***	—

Note. N's ranged from 535 to 560 depending on missing data.

\*  $P < .05$ .

\*\*  $P < .01$ .

\*\*\*  $P < .001$



**Table 4**  
 Study 2 Gambling behavior as a function of own approval of gambling and perceived approval of gambling by others

Outcome	Predictor	B	SE	$\beta$	t
Gambling frequency	Own approval	5.11	.86	.26	5.95***
	Perceived approval friends	4.87	.57	.37	8.59***
	Perceived approval family	-.60	.57	-.04	-1.03
	Perceived approval other students	-4.60	.58	-.26	-6.38***
Gambling expenditure	Own approval	4.16	.71	.27	5.87***
	Perceived approval friends	2.82	.47	.27	6.03***
	Perceived approval family	-.21	.48	-.01	-.44
	Perceived approval other students	-3.52	.59	-.25	-5.93***

Note.  $R^2 = .26$  for frequency.

$R^2 = .20$  for expenditure.

N's were 534 for frequency and 534 for expenditure.

\*\*\*  
 $P < .001$