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The Moderating Effect of Gender on the Relation between Expectancies and Gambling Frequency among College Students

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Abstract

Compared to college females, college males are more likely to report frequent gambling. Research on gambling outcome expectancies has shown that expectations about gambling influence gambling behavior and that endorsement of particular expectancies differs by gender. Knowledge regarding the differential predictive utility of specific gambling expectancies based on gender would help to determine how beliefs about gambling may be fundamentally different for men and women. The present study explored whether gender moderates the relation between gambling expectancy and gambling frequency in a college sample. 421 college students completed an online survey that included questions about their demographics, gambling frequency, and gambling expectancies. Hierarchical regression analyses indicated that gender moderated the relations between the expectancies of social consequences, material gain, and gambling frequency. For females, greater endorsement of social consequences predicted less frequent gambling. For both males and females, greater endorsement of material gain predicted more frequent gambling. The current findings can help inform prevention and intervention efforts by identifying gambling expectations that are differentially related to college student gambling behavior choices.

Gambling has become a popular activity among college students, with an estimated 75% of college students reporting gambling in the past year (Barnes, Welte, Hoffman, & Tidwell, 2010). Recent prevalence studies indicate that 8% of college students met diagnostic criteria for pathological gambling, and approximately 11% reported subclinical gambling-related problems (Nowak & Aloe, 2013; Shaffer & Hall, 2001; Blinn-Pike, Worthy, & Jonkman, 2007). The disparate impact of gambling problems among this cohort is noteworthy due to the academic, financial, and health consequences associated with problematic gambling (LaBrie et al., 2003; Engwall et al., 2004; Larimer & Neighbors, 2008). Among college students, men were more likely to report frequent gambling than college females (31% and 6%, respectively; Barnes et al., 2010), and disordered gambling has been traditionally higher among men although this gender gap appears to be diminishing (LaPlante et al., 2006; Welte

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et al., 2004). Consistent with expectancy theory (Bandura, 1977), outcome expectancies have been shown to influence risk-taking behaviors, including gambling (Jones, Corbin, & Fromme, 2001; Katz, Fromme, & D'Amico, 2000; Wickwire, Whelan, & Meyers, 2010). Research on gambling outcome expectancies has indicated that endorsement of particular expectancies differs by gender (Gillespie et al., 2007b). Thus, gender may moderate the relation between expectancy endorsement and gambling frequency. The objective of the current study is to explore whether gender moderates the relation between gambling outcome expectancy and gambling frequency in a college sample.

In his expectancy theory, Bandura (1977) argued that one's future behavior is influenced by his or her expectations of positive or negative outcomes of a particular behavior. Expectations of positive outcomes predict an increase in that behavior, while expectations of negative outcomes result in a decrease or avoidance of that behavior (Jones, Corbin, & Fromme, 2001). Many studies support that holding positive and negative outcome expectancies of engaging in substance use play a key role in the involvement high-risk behaviors (see Jones et al., 2001). Furthermore, expectancies appear to be malleable. Modifying one's outcome expectancies lead to reduced engagement in risky health behaviors (Botvin, Baker, Dusenbury, Tortu, & Botvin, 1990; Darkes & Goldman, 1993; Dunn, Lau, & Cruz, 2000). Therefore, identifying gambling outcome expectancies may be key in the development of successful prevention and health promotion efforts. Knowledge regarding the differential predictive utility of specific gambling expectancies based on gender would help to determine how beliefs about gambling may be fundamentally different for men and women, possibly leading to significant differences in gambling frequency. This understanding of outcome expectancy differences should help inform strategies to reduce the harm related to more frequent gambling.

Though the development of gambling problems appears to share many similar characteristics with substance dependence (Whelan, Steenbergh, & Meyers, 2007), relatively little research has assessed the role of outcome expectancies in the decision to gamble excessively. Several published studies have examined outcome expectancies held by gamblers. Gillespie and colleagues (2007a) assessed the strength of positive and negative outcome expectancies held by adolescents ages 12–18 years and found that non-gamblers, at-risk gamblers, and probable pathological gamblers have different expectations of what will occur if or when they gamble. Those who gambled most frequently were more likely than infrequent gamblers to endorse positive expectancies. Gamblers were more likely than non-gamblers to endorse the expectancy of negative emotional consequences and more likely to endorse the expectancy to lose control of their gambling, suggesting that although gamblers might be aware of their problematic preoccupation with gambling, this awareness does not lead to less frequent gambling. In their follow-up study, Gillespie and colleagues (2007b) examined gender differences in expectancy endorsement regardless of their gambling involvement and found that boys were more likely to endorse expectancies of monetary gain and enjoyment/arousal, while girls were more likely to endorse expectancies of negative emotional impact. This differential endorsement of outcome expectancies was significantly associated with gambling frequency. Greater endorsement of material gain and enjoyment/arousal among boys was associated with more frequent gambling and greater

endorsement of negative emotional impact among girls was associated with less frequent gambling.

More recently, Wickwire, Whelan, and Meyers (2010) developed the Adolescent Gambling Expectancies Survey (AGES) in order to measure the gambling outcome expectancies of high school students. After eliciting expectancies from high school students, exploratory and factor analyses were used to parse out overarching categories of gambling expectancies. Five categories of expectancies emerged: material gain, self-evaluation, negative affect, social consequences, and parental disapproval. These five categories were subsequently used to predict both gambling frequency and problems in a large urban sample of high school students. Results indicated that all five of these expectancy domains accounted for significant variance in gambling frequency, with greater endorsement of expectancies of material gain, negative affect, and self-evaluation associated with more frequent gambling and greater endorsement of social consequences and parental disapproval associated with less frequent gambling.

In order to evaluate if the AGES would replicate in a college student sample, Ginley and colleagues (2013) collected data from a sample of 421 college students and found that the factor structure for gambling outcome expectancies among adolescents was very similar for college students. These findings suggested that gambling expectancies endorsed by adolescents remain relevant for college students. In both the high school and college sample, expectations related to material gain and self-evaluation predicted more frequent gambling, while expectations of social consequences and parental disapproval predicted less frequent gambling. Although these results provide validation for the dimensions of the AGES and support its predictive value among college students, only the main effect of specific expectancies on gambling frequency and pathology was examined.

In the present study, the Ginley et al. (2013) dataset was used to examine gender as a moderator of the relation between outcome expectancies and gambling frequency. Based upon previous research, it is hypothesized that males will be more likely to endorse expectancies of material gain and positive self-evaluation and that greater endorsement of these expectancies will be associated with more frequent gambling. In contrast, it is hypothesized that females will be more likely to endorse expectancies of social consequences, negative affect, and parental disapproval and that greater endorsement of these expectancies will be associated with less frequent gambling. This will be the first study to examine whether gender moderates the relation between outcome expectancies and gambling frequency in a college sample.

Methods

Participants

Recruitment was completed at two public universities and one private college ($n = 421$). To be included in the study, participants needed to be between 18 and 25 years of age ($M_{\text{age}} = 19.4$, $SD = 1.68$). Participants needed to complete all study measures and they were included even if they had not gambled in the past year. Participants were 55.2% female ($n = 227$), and they placed themselves in the following ethnic and racial categories: 57.7% Caucasian,

30.4% African American, 3.4% Hispanic, 2.7% Asian, 0.5% American Indian, 0.2% Native Hawaiian or Pacific Islander, and 5.1% Other.

Measures

Demographic Questionnaire—Participants completed a demographics questionnaire with queries on age, gender, race, and ethnicity.

Gambling Frequency Measure—The South Oaks Gambling Screen (SOGS; Lesieur & Blume, 1987) included a table to assess gambling frequency for nine types of gambling activity. For this study the original frequency table was expanded to request that for each gambling activity participants indicate whether they gambled: not at all, a few times a year, about once a month, about once a week, a few times per week, or almost daily. Gambling frequencies for each gambling activity and total gambling frequency scores were calculated. Participants not responding to any gambling frequency item were scored a “Not at all” for that item.

Adolescent Gambling Expectancy Survey (AGES)—The AGES (Wickwire et al., 2010) was developed to assess adolescents’ expectancies for gambling outcomes. Item responses are in a bipolar format with two negative response options, a neutral response option, and two positive response options. The gambling outcome expectancies have been factor analyzed in an adolescent sample and have been shown to fall into five measureable domains: 1) Material gain, 2) Self-evaluation, 3) Affect, 4) Social consequences, and 5) Parental disapproval. In a sample of adolescents, the AGES factors have been shown to have an internal consistency from .70 to .80 with two-week test-retest reliability from .54 to .76. In a recent validation study, the five AGES factors were replicated in a college student sample (Ginley et al., 2013).

Procedure

Prior to the start of data collection, the Institutional Review Boards of each participating university reviewed and approved the protocol. All participants were provided with informed consent materials that highlighted confidentiality of responses, a participant’s right to quit at any time without penalty, and the voluntary nature of participation. Those who provided consent were then given the assessments.

The collection of data varied slightly by site. At one university, participants were recruited from the undergraduate subject pool. They completed the survey questionnaires in an online format for course credit. At the other two institutions, participants completed the measures as part of general data collection for a large study looking at biomarkers of substance use in a college sample (BARCS: RO1 AA016599 and RC1 AA019036 to Dr. Godfrey Pearlson; for complete description see Dager et al., 2012). Participants in this larger study completed the gambling assessment measures and the outcome expectancy questionnaire in paper and pencil form during the larger study assessment. Participants were paid \$20 per hour for the session.

Results

Analytic Plan

All participants regardless of past year gambling involvement were included in these analyses. A series of analysis of variance (ANOVAs) or Chi Square tests were conducted to assess for gender differences on demographic characteristics and the independent variables of interest. No significant differences between males and females were found on ethnicity and age.

After reporting the gambling behavior of this sample, a series of hierarchical linear regressions were conducted to examine the effects of a) expectancy endorsement, b) gender, and c) the expectancy $\times$ gender interaction on gambling frequency. To eliminate nonessential multicollinearity, each expectancy score was standardized when interaction terms were computed (Aiken & West, 1991). Because the gambling frequency measure had a skewed frequency distribution, Blom's (1958) transformation was applied to the continuous dependent variable (SOGS total score). The Blom transformation results in z scores and has been used in several alcohol use studies (Carlson, Johnson, & Jacobs, 2010; Carlson & Johnson, 2012; Sher, Wood, Wood, & Raskin, 1996). This transformation minimizes the misleading impact of extreme cases. The transformed variables resulting from the Blom transformation were reasonably normally distributed.

Each regression equation had 3 steps. On the first step, one of the five outcome expectancies was entered as well as the participant's age and ethnicity (e.g., white vs. non-white). If the demographics were significant, they were retained. If they were not significant, they were removed from the equation. On the second step, gender was entered in order to assess the partial relationship between gender and gambling frequency. In the third and final step, the product of gender and expectancy was entered in order to evaluate moderation. Entering the interaction term on the third step allowed for the measurement of the unique predictive relationship of the interaction term.

Gambling Behavior

Past year gambling involvement was reported by 60% of the sample ($n = 246$). Four participants indicated almost daily gambling participation. Participants engaged in a variety of gambling activities with lottery or scratch ticket purchases being the most commonly endorsed activity (42.1 %, $n = 173$). Participants also endorsed gambling in a variety of other ways (see Table 1). Men were more likely than women to have placed a bet in the past year ($\chi^2(1, n = 411) = 6.37, p < .05$). Males also reported gambling at a significantly higher frequency than females, $t(402) = 4.18, p < .05$.

Gender as Moderator

Moderated hierarchical multiple regression analyses were used to test whether gender moderated the relationship between specific expectancies and gambling frequency. Tables 2 and 3 provide the results of the hierarchical multiple regression analysis to predict gambling frequency. The demographic variables of age and ethnicity were not related to the outcome expectancy domain and therefore were removed from the equations. The regressions showed

that gender did moderate the relations between the expectancies of social consequences ($\beta = 1.88, p < .05$) and material gain ($\beta = -1.27, p < .01$) and gambling frequency. No significant gender by expectancy interaction was shown for the affect, self-evaluation, or parental disapproval expectancies. Post-hoc probing of significant moderation effects (see Holmbeck, 2002) was conducted in order to decode the nature of the interaction terms. For gambling frequency post-hoc probes of the significant interaction for social consequences, a significant negative association was shown between gender and social consequences for women ($\beta = -1.66, p < .01$) but a non-significant association was shown for men, indicating that stronger endorsement of social consequences was predictive of less frequent gambling for females but was not significantly related to gambling frequency for males. Probes of the significant interaction for material gain showed a significant positive association between gender and material gain for both women ($\beta = .25, p < .05$) and men ($\beta = .22, p < .05$) indicating that a stronger endorsement of material gain was predictive of more frequent gambling for both genders.

Discussion

The present study sought to determine whether gender moderates the relation between outcome expectancies and gambling frequency among a college student sample. The results indicated that gender did moderate the relation between gambling frequency and the expectancies of material gain and social consequences. Specifically, stronger endorsement of social consequences was predictive of less frequent gambling for females but was not significantly related to gambling frequency for males. Although females with higher endorsement of the expectancy reported higher gambling frequencies than those women with lower expectancy endorsement, their frequency values were significantly lower than those of males. This result is consistent with previous findings suggesting that females are more perceptive of social and emotional expectancies than males (Gillespie et al., 2007b). This finding may be related to perceptions of social norms around gambling, which have been found to influence subsequent gambling behavior (Neighbors et al., 2007). Previous research indicates that gambling may be more socially acceptable for males than females (Gupta & Derevensky, 1997). Therefore, when males gamble, they may not experience the negative social consequences experienced by females.

In addition, the results of the current study suggest that stronger endorsement of the material gain expectancy is predictive of increased gambling frequency for both males and females. This finding contrasts with findings identified in the expectancy literature where males are significantly more likely than females to endorse expectancies of material gain (Gillespie et al., 2007b). The current findings suggest that the anticipation of material gain is an important predictive factor of gambling frequency for *both* males and females in a college sample.

Several limitations should be considered when interpreting the findings of this study. First, the study is correlational thus limiting the ability to determine if past experience with gambling influenced present gambling expectancies. Longitudinal research would be needed to determine how expectancies change as a function of time and experience. In addition, all data collected was based on self-report questionnaires. Though research has suggested that

self-report among gamblers is valid in comparison to collateral reports (Hodgins & Makarchuk, 2003), objective research methods should be used in future studies. Additionally, expectancies derived from a high school student sample were presented to college students without revision. It is possible that different expectancies may have been identified if college student responses had been used in development of the measure. Finally, limited demographic data was secured from the participants. Therefore, we were not able to control for other potential confounding variables. Further research is needed to better understand the interaction between gender, outcome expectancies, and gambling frequency among college students.

As with other risk-taking behaviors, college students are faced with more gambling opportunities during college. In addition, college students typically have increased free time and resources, leaving them particularly susceptible to gambling consequences (Nowak & Aloe, 2013). Though most students will be able to gamble in a responsible manner, some will find it challenging to exhibit control over their gambling possibly leading to gambling-related consequences. Prevention and intervention efforts are needed to encourage students to become more aware of their gambling behavior, alert to the potential for damage due to gambling, and to promote abstinence or gambling within affordable limits. The current findings can help inform these efforts by identifying gambling expectations that differentially inform college student behavior choices.

This study highlights the moderating role of gender on the relation between gambling expectancies and gambling frequency among a large, diverse college student sample. Knowledge regarding the differential predictive utility of specific gambling expectancies based on gender helps to determine how beliefs about gambling may be fundamentally different for men and women. Targeting gender specific gambling expectancies may be a worthwhile objective for brief interventions that attempt to reduce harm related to more frequent gambling. Brief interventions for gambling problems have received favorable results in the literature (e.g., Petry, Weinstock, Morasco, & Legerwood, 2009; Larimer et al., 2012). Perhaps interventions that provide additional information about potential social consequences associated with gambling may reduce harm for female college students but have little effect on male college students. However, a discussion of the risks that go along with potential monetary gains may be beneficial for both male and female college students. Additionally, understanding gender differences in gambling expectations may help to inform prevention efforts and to identify college gamblers most in need of intervention services.

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Table 1

Frequency of Past Year Gambling Involvement (n =411)

Activity	Not at all		A few times a year		About once a month		About once a week		A few times per week		Almost daily	
	n	%	n	%	n	%	n	%	n	%	n	%
Cards	306	75.0	91	22.3	10	2.5	1	0.2	0	0	0	0
Animals	383	93.2	19	4.6	7	1.7	2	0.5	0	0	0	0
Sports	309	75.2	76	18.5	16	3.9	7	1.7	2	0.5	1	0.2
Dice	371	90.3	27	6.6	8	1.9	2	0.5	2	0.5	1	0.2
Lottery	238	57.9	122	29.7	28	6.8	18	4.4	4	1.0	1	0.5
Bingo	389	94.6	15	3.6	3	0.7	3	0.7	1	0.2	0	0
Stock Market	379	92.2	22	5.4	3	0.7	4	1.0	1	0.2	0	0
Slots	354	86.1	44	10.7	5	1.2	6	1.5	1	0.2	0	0
Games of Skill	304	74.0	76	18.5	18	4.4	5	1.2	6	1.5	1	0.2

Note. Participants who failed to indicate the frequency of which they gambled for an activity were excluded from the frequency count by item.

Summary of Hierarchical Regression Analysis for Gender Moderation of Social Consequences and Gambling Frequency

Table 2

Variable	Model 1			Model 2			Model 3		
	B	SE	B	SE	B	SE	B	SE	B
Social Consequences	-.002	.032							
Social Consequences			< .001	.032					
Gender			.009	.009					
Social Consequences							-.158	.067	-3.17*
Gender							-.259	.100	-2.601*
Gender × Social Consequences							.204	.075	1.875**
R ²			<.001			.004			.033
R ²			.04			.04			.21

*
p < .05.
**
p < .01

Table 3
Summary of Hierarchical Regression Analysis for Gender Moderation of Material Gain and Gambling Frequency

Variable	Model 1			Model 2			Model 3		
	B	SE	β	B	SE	β	B	SE	β
Material Gain	.078	.016	.294						
Material Gain				.078	.016	.292**			
Gender				.007	.009	.049			
Material Gain							.202	.041	.759**
Gender							-.164	.053	-3.081**
Gender $\times$ Material Gain							-.308	.095	-3.258**
R^2			.087			.089			.127
R^2			.083			.082			.12

* $p < .05$.
** $p < .01$