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Addictive Behaviors xx (2006) xxx–xxx

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## Drinking game participation among college students: Gender and ethnic implications

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### Abstract

Participation in drinking games by college students has recently sparked research attention. While previous research indicates that women play drinking games at lower frequencies than men, the current study reveals that college women may be playing games at rates similar to college men. In a sample of 105 coed college students, participants completed a 3-month Timeline Followback recording every drinking event and quantity consumed. They then were prompted to identify which drinking events involved drinking games and how much alcohol was consumed during game playing. Both men and women engaged in drinking games at similar rates and consumed more drinks on game playing days than on non-game drinking days. However, drinking game participation was related to alcohol-related consequences in women only. Further, while Caucasian participants played drinking games more often than non-Caucasian participants, an association between game participation and alcohol-related consequences emerged in non-Caucasian participants.

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*Keywords:* College students; Drinking games; Alcohol use; Women; Ethnicity

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Heavy drinking by college students increases risk for alcohol-related consequences (Wechsler & Nelson, 2001) and negatively impacts campus communities (National Institute of Alcohol Abuse and Alcoholism; NIAAA, 2002). The NIAAA calls for interventions with college students aimed at reducing heavy quantities of consumption and the negative consequences associated with drinking. Interventions with heavy drinking students may be more effective, however, if the influences (both

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social and emotional) of this drinking behavior are examined and well-understood. Social events promoting heavy drinking, such as involvement in drinking games, have recently sparked research attention.

Drinking games may facilitate heavy alcohol consumption as the goal of these games is to become or force someone else to become intoxicated, while refusal to drink is often followed by disapproval (Borsari, 2004). Players are likely to view getting drunk positively, take pride in their ability to drink large quantities, and receive approval for heavy drinking (Green & Grider, 1990; Newman, Crawford, & Nellis, 1991). Game playing is associated with a wide range of alcohol-related problems. These range from personal problems, such as missing a class or having a hangover, to legal problems, such as driving under the influence or being in trouble with authorities (Engs & Hanson, 1993; Johnson & Cropsey, 2000; Johnson, Wendel, & Hamilton, 1998). The goal of intoxicating others during games can lead to negative consequences as well, including date rape (Newman et al., 1991; Sandy, 1991). Unfortunately, some men view drinking games as a way to intoxicate women to facilitate sexual encounters (Johnson & Stahl, 2004).

Historically, undergraduate men drink at higher levels than undergraduate women (Engs & Hanson, 1985; Johnston, O'Malley, & Bachman, 2000; Rosenhow, 1998; Wechsler, Lee, Kuo, & Lee, 2000). Similarly, drinking game participation has traditionally been a male-dominated activity (Clapp, Shillington, & Segars, 2000; Engs, Diebold, & Hanson, 1996; Johnson et al., 1998) and although women may be present during drinking games, they were often bystanders (Rhoads, 1995). Recent research, however, reports that rates of binge drinking—four drinks in a row for females and five drinks in a row for males (Wechsler et al., 2002; Wechsler & Nelson, 2001)—among undergraduate women have increased and approach those of college men (O'Malley & Johnston, 2002; Wechsler et al., 2002; Young, Morales, McCabe, Boyd, & D'Arcy, 2005). Increased drinking game participation among women may be a factor in these increases. While men drink more during games than females do (Johnson & Sheets, 2004), women report drinking more during drinking games than during other drinking situations (Johnson et al., 1998).

Almost all of the previous research examining drinking games among college students relies on single-item self reports. Participants were asked whether or not they play drinking games, and then comparisons of consumption levels and experiences of alcohol-related consequences between non-game playing students and game playing students were conducted (i.e. Engs et al., 1996; Engs & Hanson, 1993; Johnson & Stahl, 2004; Johnson et al., 1998). Event-level studies which analyze specific drinking events for an individual and utilize within-subjects comparisons of consumption levels on drinking game days and on non-game drinking days would help to determine the role of game playing in number of consequences and levels of intoxication. Few studies have used this event level design (i.e. Clapp et al., 2003), and this research only involved one or two events at most.

The current study examines every drinking event (both game playing days and non-game drinking days) over a 3-month time period to gain a better understanding of college students' drinking and how it is impacted by game playing. Further, the study pays particular attention to women's involvement in drinking games. As women's drinking has increased to levels similar to men, we predict female participation in drinking games will be similar to men's. Additionally, we hypothesize that binge drinking is more likely to occur on game playing drinking days than on other drinking days. As binge drinking demonstrates a threshold for experiencing alcohol-related negative consequences (Wechsler & Nelson, 2001), binging during or after drinking games may need to become a focus of alcohol-reducing interventions with college students.

## 1. Method

### 1.1. Participants

One-hundred and thirty participants recruited from the University psychology subject pool agreed to and signed local IRB-approved consent forms to participate in an assessment of alcohol use. Twenty-three participants who did not drink in the past 3 months and two participants over the age of 30 were excluded from analyses, yielding a homogenous sample of college-aged student drinkers between the ages of 18 and 22. These 105 participants averaged 18.84 (S.D.=0.88) years of age and consisted of 35 males (33%) and 70 females (67%). The sample was 59% Caucasian, 15% Asian or Pacific Islander, 15% Hispanic, 2% African American, and 9% classified as “mixed ethnicity” or “other.” All participants received class credit for participation, regardless of drinking behavior or age.

### 1.2. Design and procedure

Participants came to a scheduled one-on-one interview, consented to participate, and completed a brief questionnaire assessing demographic variables (i.e. age, ethnicity, GPA) and drinking variables (days per week and days per month drank in the past month, average drinks per occasion, and maximum drinks consumed at one time in the past month). The questionnaire also included two measures of alcohol-related problems in the past month. The eight-item revised College Alcohol Problem Scale (CAPS-r, Maddock, LaForge, Rossi, & O’Hare, 2001) assessed alcohol problems in the past month that relate to college students and the 23-item Rutgers Alcohol Problem Index (RAPI, White & Labouvie, 1989) assessed problems encountered during the past month either during or due to drinking. The CAPS-r has two four-item subscales, CAPS-Personal Problems and CAPS-Social Problems. Items on the CAPS-Personal Problems include “Feeling sad, blue, or depressed,” “Nervous, irritability,” “Caused you to feel bad about yourself,” and “Problems with appetite or sleeping;” while items on the CAPS-Social Problems include “Engaged in unplanned sexual activity,” “Drove under the influence,” “Did not use protection when engaging in sex,” and “Illegal activities associated with drug use.”

After the questionnaire, participants performed a 3-month Timeline Followback for alcohol use (TLFB, Sobell & Sobell, 1992) led by one of three research assistants (2 males, 1 female) trained in TLFB administration. Participants were randomly assigned to interviewer regardless of gender. Interviewers strictly adhered to the guidelines of the one-on-one TLFB (Sobell & Sobell, 2003). The TLFB uses a calendar visual aide to assist participants in recall of retrospective drinking behavior of standard drinks (defined as a drink containing one-half ounce of ethyl alcohol—one 12 oz. beer, one 4 oz. glass of wine, or one 1.25 oz. shot). For each drinking day, participants indicated how many standard drinks they consumed.

After the scripted TLFB assessment of drinking behavior, the interviewer asked participants to recall those drinking occasions in the past 3 months where a drinking game was played. Drinking games were defined for participants as:

A game where drinking is part of the known rules, the object of the game is either to avoid drinking a lot or to show that you can drink a lot; the object is to get others to drink a lot, or where chugging is involved. This would not include, for example, having a few beers while playing a game of

poker, unless the rules of the game called for drinking during certain hands or during certain circumstances.

All participants were familiar with drinking game terminology and described the game(s) they played (i.e. *Kings*, *Beer Pong*, *Quarters*) for each day they played a game to ensure that the game met the definition. If questionable games arose, interviewers consulted a review article by Borsari (2004) for clarification of drinking games. The interviewer noted on the 3-month TLFB each day a drinking game was played and how many standard drinks were consumed during that game.

## 2. Results

### 2.1. Drinking behavior

The male and female participants averaged similar numbers of total drinks consumed in the 3 months assessed (86.89 (S.D.=88.53) vs. 64.89 (S.D.=62.00),  $p=.142$ , respectively). Further both men and women were similar on the percentage of drinking days that involved binge drinking (59.33% (S.D.=33.51) vs. 53.88% (S.D.=30.90),  $p=.411$ ). Men, however, drank significantly more average drinks per occasion (5.66 (S.D.=3.07) vs. 4.27 (S.D.=1.97),  $t(103)=2.25$ ,  $p<.05$ ) and more drinks per binge drinking occasion (7.63 (S.D.=2.40) vs. 5.81 (S.D.=2.25),  $t(91)=3.62$ ,  $p<.001$ ) than women.

### 2.2. Drinking game behavior

#### 2.2.1. Event-level

Male participants had 469 drinking events in the past 3 months with 84 events (18%) involving drinking games; while the female students engaged in 915 drinking events with 187 (20%) involving drinking games. For men, across all drinking events, 7.95 (S.D.=4.48) drinks were consumed during the games, while 6.11 (S.D.=4.21) drinks were consumed during non-game drinking events ( $F(1, 467)=12.83$ ,  $p<.001$ ). In the men's drinking events, binging occurred 94% of the time on drinking game occasions versus only 61% during non-game drinking occasions ( $X^2(1, N=469)=33.95$ ,  $p<.001$ ). For women, across all drinking events, 6.29 (S.D.=3.00) drinks were consumed during drinking games, compared to 4.48 (S.D.=2.55) drinks consumed during non-game drinking events ( $F(1, 913)=69.53$ ,  $p<.001$ ). In women's drinking game events, binging occurred 87% of the time and only 59% of the time during non-game drinking events ( $X^2(1, N=915)=51.08$ ,  $p<.001$ ).

#### 2.2.2. Within-participant comparisons

Table 1 contains means and standard deviations for those participants who participated in drinking games on drinking variables. Women and men both participated in drinking games at similar rates both in the past 3 months and in the past month with 64% of women ( $n=45$ ) and 57% of men ( $n=20$ ) playing at least one game in the past 3 months ( $X^2(1, 105)=.505$ ,  $p=.308$ ). Among game-playing participants, the women averaged game playing 27.7% (S.D.=17.41) of the time they drank and binge drinking 85.4% (S.D.=23.19) of the time drinking games were played. Men averaged game playing 24.7% (S.D.=17.81) of the time they drank and binge drinking 82.5% (S.D.=33.54) of the time drinking games were played.

Table 1  
Means and standard deviations for total drinks and drinking game variables for drinking game participants

	All game participants (N=65)	Men (n=20)	Women (n=45)
	M (S.D.)	M (S.D.)	M (S.D.)
<i>Three months behavior</i>			
Total drinks	94.81 (73.12)	111.70 (87.70)	87.31 (65.33)
Game playing days	4.21 (4.00)	4.35 (5.59)	4.16 (3.79)
Percentage of drinking days a game was played	26.75 (17.46)	24.65 (17.81)	27.69 (17.41)
Average consumed during games	3.95 (1.66)	4.56 (1.98)	3.67 (1.44)
Average consumed on game days	6.56 (3.47) <sup>3</sup>	7.77 (4.43)	6.02 (2.84) <sup>2</sup>
Average consumed on non-game days	4.88 (2.46) <sup>3</sup>	6.25 (3.26)	4.27 (1.71) <sup>2,*</sup>
Percentage of game days binged	84.47 (26.56) <sup>3</sup>	82.50 (33.54) <sup>1</sup>	85.35 (23.19) <sup>3</sup>
Percentage of non-game days binged	58.32 (32.65) <sup>3</sup>	62.57 (34.38) <sup>1</sup>	56.43 (32.07) <sup>3</sup>
<i>One month behavior</i>			
Total drinks	33.43 (27.84)	36.80 (27.47)	31.93 (28.18)
Game playing days	1.63 (1.46)	1.50 (1.88)	1.69 (1.26)
Percentage of drinking days a game was played	30.24 (24.25)	25.63 (17.93)	32.19 (26.41)
Average consumed during games	3.97 (1.95)	5.24 (2.14)	3.44 (1.61)*
Average consumed on game days	6.49 (3.02) <sup>3</sup>	8.70 (4.06) <sup>1</sup>	5.73 (2.16) <sup>2,*</sup>
Average consumed on non-game days	4.76 (2.66) <sup>3</sup>	5.72 (3.74) <sup>1</sup>	4.33 (1.90) <sup>2</sup>
Percentage of game days binged	86.93 (27.95) <sup>2</sup>	93.33 (25.82)	84.26 (21.71) <sup>1</sup>
Percentage of non-game days binged	68.37 (32.32) <sup>2</sup>	65.32 (37.64)	69.63 (30.26) <sup>1</sup>

\* Indicates a significant difference between men and women at  $p < .05$ .

<sup>1,2,3</sup> Indicate a significant difference between variable on a game day and variable on a non-game day ( $p < .05$ ,  $p < .01$ ,  $p < .001$ , respectively).

Paired samples  $t$ -tests analyzed differences in drinking means between days when drinking games were played versus non-game drinking days. Both men and women consumed more drinks per occasion on days when they participated in a drinking game. In the past 3 months, men averaged 7.77 (S.D.=4.43) drinks on game days and 6.25 (S.D.=3.26) drinks on non-game days, however, this difference only trended towards significant ( $p = .079$ ). In the past month, men averaged 8.70 (S.D.=4.06) drinks per occasion on game days and 5.72 (S.D.=3.74) drinks on non-game days ( $t(12) = 2.57$ ,  $p < .05$ ). Women consumed significantly more drinks per occasion on game days than on non-game days (6.02 (S.D.=2.84) vs. 4.27 (S.D.=1.71),  $t(44) = 3.69$ ,  $p < .01$  for 3 months and 5.73 (S.D.=2.16) vs. 4.33 (S.D.=1.90),  $t(37) = 3.46$ ,  $p < .01$  in the past month) (see Table 1).

Binge drinking on drinking game days was significantly greater for women than on non-game drinking days in the past 3 months (85.4% (S.D.=23.19) vs. 56.4% (S.D.=32.07),  $t(44) = 5.51$ ,  $p < .001$ ) as well as in the past month (84.3% (S.D.=21.71) vs. 69.6% (S.D.=30.26),  $t(33) = 2.65$ ,  $p < .05$ ). For men, binge drinking on game days was significantly greater than on non-game days in the past 3 months (82.5% (S.D.=33.54) vs. 62.6% (S.D.=34.38),  $p < .05$ ) and trended towards significant in the past month (93.3% (S.D.=25.82) vs. 65.3% (S.D.=37.64),  $p = .071$ ).

### 2.2.3. Drinking related consequences

Men and women did not differ on alcohol-related consequences in the past month on either the RAPI (composite score of 5.17 (S.D.=4.96) for men; composite score of 5.57 (S.D.=5.73) for women,

$p=.736$ ) and the CAPS-r (composite score of 12.56 (S.D.=5.00) for men; composite score of 12.40 (S.D.=3.97) for women,  $p=.859$ ). Independent  $t$ -tests with game players vs. non-game players (based on whether or not at least one game was played in the past 3 months) revealed that men who played games had significantly higher composite RAPI scores (6.74 (S.D.=5.79)) than men who did not play drinking games (3.20 (S.D.=2.70),  $t(32)=2.18$ ,  $p<.05$ ). Women who played drinking games also had significantly higher RAPI scores (6.59 (S.D.=5.95)) than women who did not play drinking games (3.61 (S.D.=4.83),  $t(65)=2.52$ ,  $p<.05$ ), as well as higher composite scores on the CAPS-Social Problems subscale (6.39 (S.D.=2.52) vs. 4.88 (S.D.=1.39),  $t(67)=2.76$ ,  $p<.01$ ). Additionally, drinking game participation for women significantly correlated with RAPI composite scores and CAPS-Social Problems, while men's game participation did not significantly correlate with any measure of alcohol-related problems (see Table 2).

Using hierarchical linear regression, gender moderated the relationship between alcohol-related problems and game participation in the past month. Using composite RAPI scores as the dependant variable, participant gender and number of games played in the past month were entered into Step 1, and an interaction variable of gender  $\times$  number of games played in the past month entered into Step 2. Analyses revealed a stronger relationship between female game participation and RAPI scores ( $t(101)=2.60$ ,  $p<.01$ ,  $\beta=.36$ ); which accounted for 12% of the variance found. Using the CAPS-Social Problems subscale as the dependant variable, analyses revealed a stronger relationship between female game participation and Social Problems ( $t(101)=2.85$ ,  $p<.01$ ,  $\beta=.39$ ); which accounted of 15% of the variance found. Gender was not found to moderate the relationship between CAPS-Personal Problems and game participation ( $t=1.08$ , *NS*). Fig. 1 represents predicted means derived from the regression equation. Low and high drinking game participation were defined as one standard deviation above and below the mean (Aiken & West, 1991).

#### 2.2.4. Ethnic group comparisons

Due to the ethnically diverse sample, we examined the drinking game behavior among different ethnic groups. Caucasian participants were more likely to play at least one drinking game in the past 3 months than Hispanic participants (74% of Caucasian students vs. 31% of Hispanic participants), and Asian participants (33% of Asian participants;  $X^2(2, N=92)=14.75$ ,  $p<.01$ ). Caucasian participants played a mean of 3.47 (4.77) games in the past 3 months, while non-Caucasian participants (Hispanic, Asian, African American, "mixed," and "other" participants combined) played a mean of 1.38 (2.14) games

Table 2

Pearson's  $r$  correlations among men and women for drinking game variables and alcohol-related problems

Variable	CAPS personal problems		CAPS social problems		RAPI	
	Men	Women	Men	Women	Men	Women
<i>Three months</i>						
Total games	-.058	.153	-.015	.326***	.022	.404***
Average consumed during games	-.045	.116	.071	.232	-.067	.326*
<i>One month</i>						
Total games	-.087	.133	-.098	.445***	.018	.445***
Average consumed during games	-.273	-.102	.169	-.029	-.330	.132

\* $p<.05$ , \*\*\* $p<.001$ .

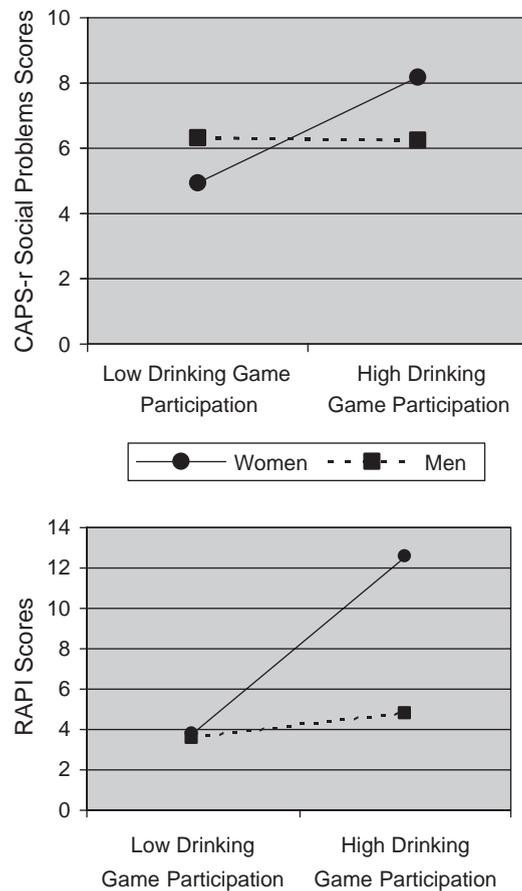


Fig. 1. Alcohol-related consequences as a function of drinking game participation and gender.

( $t(101)=2.66$ ,  $p<.01$ ). During drinking games, Caucasians consumed significantly more drinks than non-Caucasians (8.85 (S.D.=8.89) vs. 5.50 (S.D.=2.77),  $t(59)=2.27$ ,  $p<.05$ ).

Correlations determined relationships between problems and game participation among Caucasians and non-Caucasians. Game playing among non-Caucasians significantly correlated with composite RAPI at  $r=.576$  ( $p<.001$ ) for total games played in 3 months. This relationship was not significant for Caucasian participants ( $r=.223$ ,  $p=.087$ ). Fisher's R to Z transformations revealed a significant difference between Caucasians and Non-Caucasians on correlations for total games in 3 months and composite RAPI scores ( $z=2.06$ ,  $p<.05$ ).

### 3. Discussion

The current study looked at frequency of drinking game playing among college students by analyzing every drinking event participants had over a 3-month period. The findings demonstrate that both male and female college students participate in drinking games regularly and that participation in drinking games associated with heavy consumption levels. Drinking game participants were nearly one and a half

times more likely to binge drink on drinking game days than on non-game drinking days. However, it appears that drinking games may be particularly risky for women and non-Caucasian students, as their participation rates associated with alcohol-related negative consequences.

Contrary to previous research (Clapp et al., 2000; Engs et al., 1996; Johnson et al., 1998), women participated in drinking games at equivalent rates to men. Further, women's drinking consumption levels paralleled that of men, confirming recent published reports (O'Malley & Johnston, 2002; Wechsler et al., 2002; Young et al., 2005). Consistent with the work of Johnson and colleagues (1998), women clearly drank significantly more drinks on drinking game days than on non-game drinking days. Women drank 41% more drinks on game playing days and were 50% more likely to binge drink when playing drinking games than on non-game drinking days. The increased drinking game participation for women compared to previous research findings and the fact that women drink more when playing drinking games may be a partial explanation for the recently found similar drinking levels/patterns between genders.

Gender serves as a moderator of the relationship between drinking game participation and the experience of alcohol-related consequences. While drinking game participation and overall drinking levels appears similar between genders, women who play drinking games may be more likely to experience negative consequences from participation. These consequences include missing classes, increased tolerance, noticing changes in their own personalities, not using protection during sexual activities, driving under the influence, as well as heightened sexual risk. Women experience differential effects from alcohol than men, metabolizing alcohol at slower rates than men (see NIAAA, 1999). Thus, the heavy drinking behavior associated with game playing may increase intoxication levels for women to levels they might not reach on typical non-game drinking days. Further, as the result of the rules of the drinking games, women may drink at quicker rates than they are normally accustomed. In the current sample, both sexual behavior items from the CAPS-Social Problems subscale "Did not use protection when engaging in sex" and "Engaged in unplanned sexual activity" significantly correlated with total games played in 1 month ( $r = .432, p < .01$  and  $r = .295, p < .05$  respectively). Previous research found that increased intoxication during drinking games can lead to unwanted sexual intercourse and date/acquaintance rape (Johnson & Stahl, 2004; Newman et al., 1991; Sandy, 1991). This could explain the differential association between game participation and alcohol-related consequences in men and women.

In men, while not significant, there was a trend toward a negative association between game playing and consequences. Men may play drinking games for a variety of social reasons including competitiveness, to intoxicate oneself or others, or to bond with other male players (see review by Borsari, 2004). Mood affected alcohol consequences for men may actually decrease due to participation, as participation may promote social-based self-esteem. Young and colleagues (2005) suggest that women may be copying the heavy drinking behavior of males to gain the esteem of male peers. However, as noted previously, women may drink at levels beyond which they normally drink thereby increasing the likelihood of experiencing negative consequences. A similar effect appears to emerge as well in non-Caucasian students.

Non-Caucasian students were less likely to participate in drinking games and played fewer games than Caucasian students. However, those non-Caucasian participants who played drinking games experienced a greater relationship between participation and consequences than Caucasian participants who played drinking games. Perhaps non-Caucasian students, as well as female students, are less experienced with drinking games than Caucasian men and, therefore, experience more problems resulting from game playing.

The study is limited by its relatively small sample size. It is not clear if the sample is representative of college students in general. Nonetheless, the study uses a rich data set, examining every drinking event over a 3-month period for all participants. Replications of the current study are warranted to determine the generalizability of these findings. Additionally, the effect of game participation on women and non-Caucasians also necessitates further examination. While the sample was ethnically diverse, there were not enough participants in each ethnic group to determine which non-Caucasian groups experienced the highest drinking game participation and consequences associations. Further studies examining drinking game behavior beyond Caucasian and non-Caucasian categories that include adequate numbers of Hispanics, Asian-Americans, and African-Americans for meaningful comparisons appear warranted.

The study is further limited by its reliance on self-reported data. Although self-report data appear valid and reliable in studies with college students (O'Hare, 1991) and the TLFB assesses alcohol use in this population with high reliability and validity (Sobell & Sobell, 1992; Sobell, Sobell, Klajner, Pavan, & Basian, 1986), it would have been helpful if blood alcohol concentrations were determined to compare between drinking days and non-drinking days. The data suggest that women may be drinking more alcohol at quicker rates than normal while playing drinking games, leading to higher levels of intoxication. Future studies which collect information on time spent playing games and the number of drinks consumed would be helpful to determine if higher intoxication rates are achieved on game-playing days in women.

Despite the limitations in this research, the current study suggests that drinking game participation may be an important factor in risky drinking among college students. Drinking game participation increases the likelihood of heavy episodic drinking. College health education and student affairs personnel may improve interventions by addressing the role of drinking games in risky drinking. Further, college women may now participate in drinking games at rates equivalent to their male peers. This is the first known study to address a potential increase in undergraduate women's drinking game participation. Thus, the underlying reasons and driving factors behind women's drinking game involvement need to be examined closer. Finally, this study expands upon previous research by refining the relationship between game participation and alcohol consequences. Through within-persons and hierarchical regression analyses incorporating the examination of every drinking event over a 3-month period, the results herein suggest that women and non-Caucasian students may experience the most alcohol-related consequences from game playing. If drinking games are a factor in reported increases in women's consumption levels and increase negative consequences in women and non-Caucasians, interventions addressing drinking game participation targeted towards these groups may be necessary.

## Acknowledgements

This research was funded by Grant U18 AA015451-01 from the National Institute of Alcohol Abuse and Alcoholism (NIAAA).

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