

Social Anxiety and Pre-Party Motives Are Associated With Alcohol-Related Negative Consequences During College Students' Most Recent Pre-Party Occasion

KATHERINE WALUKEVICH-DIENST, PH.D.,^{a,*} JESSICA A. BLAYNEY, PH.D.,^a ANNE M. FAIRLIE, PH.D.,^a
ANNA E. JAFFE, PH.D.,^b & MARY E. LARIMER, PH.D.^a

^a*Department of Psychiatry and Behavioral Sciences, University of Washington, Seattle, Washington*

^b*Department of Psychology, University of Nebraska–Lincoln, Lincoln, Nebraska*

ABSTRACT. Objective: Engaging in hazardous drinking behaviors, such as playing drinking games or pre-partying, is associated with excessive drinking and negative consequences among college students. Pre-partying or playing drinking games often occurs in anticipation of or during social situations. College students with elevated social anxiety who drink to cope with social anxiety symptoms in social settings may be especially vulnerable to drinking more heavily in these contexts and, in turn, experiencing more negative consequences. However, little is known about specific psychosocial factors that may inform the decision of socially anxious individuals to engage in hazardous drinking behaviors. **Method:** The current study used cross-sectional data to test whether social anxiety symptoms and past-year pre-party motives were associated with (a) a greater likelihood of playing drinking games while

pre-partying, (b) total alcohol consumption, and (c) consequences during students' most recent drinking occasion during which they pre-partied. **Results:** Participants were 981 college students (63.5% women, 67.9% White, mean age = 20.1 years, $SD = 1.3$) who reported on their most recent pre-party drinking occasion. Greater social anxiety symptoms were related to higher past-year interpersonal enhancement and intimate pursuit motives, which in turn were associated with greater alcohol consumption and more negative consequences during the most recent pre-party event. **Conclusions:** Although preliminary, results highlight the importance of considering pre-party motives associated with social anxiety and negative drinking consequences among college students. (*J. Stud. Alcohol Drugs*, 83, 820–828, 2022)

MORE THAN HALF of college students who drink alcohol engage in hazardous drinking practices, including pre-partying (i.e., consuming alcohol before going to an intended event; Zamboanga & Olthuis, 2016) and playing drinking games (Zamboanga et al., 2014). Independently, pre-partying and playing drinking games are associated with heavier drinking and more negative drinking consequences among college students (for review, see Zamboanga & Olthuis, 2016; Zamboanga et al., 2014). Nearly half of students who pre-party report playing drinking games while doing so (approximately 45%; Pedersen & LaBrie, 2007), and students who pre-party reported playing drinking games sometimes (35%) or often (41%) while pre-partying (Read et

al., 2010). Playing drinking games and pre-partying during the same drinking occasion have been shown to be especially dangerous. College students who reported playing drinking games during their last pre-party occasion experienced significantly higher blood alcohol levels and more negative drinking consequences than those who did not (Hummer et al., 2013). Examination of psychosocial factors that increase college students' risk for participating in these activities concurrently is greatly needed.

College students endorse reasons for pre-partying or playing drinking games that are distinct from general drinking motives. For example, LaBrie and colleagues (2012) identified four unique pre-party motives—(a) barriers to consumption (“Because I am underage and cannot purchase alcohol at the destination venue”), (b) situational control (“So I don’t have to drink at the place where I am going”), (c) intimate pursuit (“To increase the likelihood of hooking up”), and (d) interpersonal enhancement (“It makes talking to new people easier”). Other reasons include boredom, drinking to fit in, and bonding with friends (e.g., DeJong et al., 2010). Pre-party (Napper et al., 2015) and drinking game motives (sexual pursuit, competition, conformity; Zamboanga et al., 2019) explain unique variance in negative drinking consequences. Although motives are one of the most proximal psychosocial factors for drinking (Cox & Klinger, 1988), few studies have tested psychosocial risk factors that may be associated with greater motives specific to hazardous drinking, such as social anxiety symptoms.

Received: November 23, 2021. Revision: April 8, 2022.

Data collection was supported by National Institute on Alcohol Abuse and Alcoholism (NIAAA) Grant R01/R37AA012547 (principal investigator: Mary E. Larimer). Manuscript preparation was supported by the following grants from the NIAAA: F32AA029589 (principal investigator: Katherine Walukevich-Dienst), K99AA028777 (principal investigator: Jessica A. Blayney), and K08AA028546 (principal investigator: Anna E. Jaffe). The NIAAA had no role in the study design, collection, analysis, or interpretation of the data; writing the manuscript; or the decision to submit the article for publication.

*Correspondence may be sent to Katherine Walukevich-Dienst at the Department of Psychiatry and Behavioral Sciences, Center for the Study of Health and Risk Behaviors, University of Washington, Box 356560, Seattle, WA, 98195, or via email at: kwd1@uw.edu.

doi:10.15288/jsad.21-00434

It is theorized that socially anxious individuals drink to manage fears of negative evaluation or to promote social facilitation in certain drinking contexts (Buckner et al., 2021), which has the potential to increase risk for negative drinking outcomes. An important conflicting finding in the social anxiety–drinking literature is that college students with elevated trait social anxiety symptoms experience more negative drinking consequences, despite evidence that social anxiety is linked to lower drinking quantity and frequency (Schry & White, 2013). To explain these inconsistencies, researchers have hypothesized that, although socially anxious individuals may drink less in general, they may drink more heavily in specific contexts, such as while pre-partying or playing drinking games (e.g., Buckner et al., 2020; Hurd et al., 2020).

Buckner et al. (2020) found that students with higher trait social anxiety symptoms reported higher anticipatory anxiety and, in turn, more pre-partying, which was associated with heavier drinking before and during a social event. Interpersonal enhancement and intimate pursuit pre-party motives may be of particular relevance to college students with elevated social anxiety, as socially anxious individuals tend to drink more heavily to prepare for a social event (Buckner et al., 2020) and when in personal or intimate settings (e.g., with a close friend, on a date; Terlecki & Buckner, 2015). Yet, to our knowledge, no study has specifically tested the role of pre-party motives as a mechanism of the social anxiety–drinking consequences.

In addition, it may be that college students with elevated social anxiety experience more negative drinking consequences because they are more likely to engage in hazardous drinking behaviors concurrently, such as a playing drinking games and pre-partying during the same drinking occasion. Individuals with higher levels of social anxiety symptoms may find drinking games especially appealing, as drinking games tend to promote social connection while taking the focus off unstructured individual conversations at the beginning of a social event (e.g., Mulligan et al., 2016). Indeed, higher trait social anxiety symptoms have been shown to be associated with more frequent drinking game participation among college students with higher general drinking-to-cope motives (Mulligan et al., 2016). Social anxiety is also associated with more negative drinking consequences as a result of playing drinking games (Kenney et al., 2014), which may be due in part to greater drinking game conformity motives (George et al., 2019). These findings highlight the importance of considering both context and motivation to better understand drinking outcomes among socially anxious undergraduates. However, it is unclear whether social anxiety symptoms and pre-party–specific motives are associated with a greater likelihood of pre-partying and playing drinking games during the same drinking event.

Given that playing drinking games and pre-partying during the same drinking occasion have been shown to be

associated with heavier drinking and consequences among college students generally (Hummer et al., 2013), understanding whether social anxiety is associated with a greater likelihood of engaging in concurrent hazardous drinking practices is an important area to investigate. Further, identifying associations between trait social anxiety and general pre-party motives could help disentangle mixed associations between social anxiety and drinking outcomes. Information of this kind could help inform personalized intervention efforts to reduce alcohol use among this vulnerable group.

Present study

The current study expands on prior work (e.g., Hummer et al., 2013; Kenney et al., 2014; LaBrie et al., 2012) by exploring the roles of social anxiety (measured as a trait variable) and pre-party motives (measured in the past year) in the context of college students' most recent pre-partying occasion in the past month (hereafter referred to as "most recent pre-party occasion"). We chose to examine level of social anxiety symptoms rather than restricting our sample to individuals with and without clinically elevated social anxiety symptoms, as even subclinical social anxiety symptoms are associated with negative drinking consequences among college students (e.g., Villarosa-Hurlocker et al., 2018a). In fact, some college students with subclinical social anxiety symptoms display riskier drinking profiles than students with clinically elevated social anxiety symptoms (Villarosa-Hurlocker & Madson, 2020), emphasizing the importance of including individuals with a range of social anxiety symptoms in our analyses.

We hypothesized (H1) that social anxiety would be positively correlated with past-year pre-party motives (interpersonal enhancement, intimate pursuit), as well as drinking game participation, alcohol consumption, and alcohol-related negative consequences during the most recent pre-party occasion. We also hypothesized (H2) that greater social anxiety would be indirectly related to more negative drinking consequences during the most recent pre-party occasion, such that greater social anxiety would be associated with higher past-year pre-party motives, which in turn would be related to a greater likelihood of drinking game participation and greater total alcohol consumption during the most recent pre-party occasion.

Method

Participants and procedures

Data were from the baseline assessment of a parent intervention study (Larimer et al., 2021) involving undergraduates from two West-coast universities. A randomly selected sample of 5,998 students (approximately half per university) was invited via mail and email to participate in an interven-

tion study on alcohol use in college students. Invitations included a link to a screening survey and a unique identification number for each participant to access the survey. Of those invited, 2,767 (46.1%) participants provided consent and completed screening. The 1,494 (54%) participants eligible for the larger study (i.e., endorsed at least one past-month heavy episodic drinking episode of 4+/5+ drinks on a single occasion for women/men) were immediately directed to the baseline survey. Of those eligible, 1,367 (91.5%) completed baseline. Surveys took approximately 1 hour. Participants were compensated \$30. Only baseline data were used in the present analyses, which was completed before the alcohol intervention. All procedures were approved at both universities' Institutional Review Boards.

Given our interest in pre-partying, analyses focused on a subsample of 981 participants who reported pre-partying at least once in the past month and consuming at least one drink during their most recent pre-party occasion. Regarding gender identity, the majority (63.6%) identified as a woman, and the remainder identified as a man. No participants in the subsample identified as transgender. On average, participants were 20.1 years old ($SD = 1.3$). The racial composition of the analytic sample was 67.5% White, 12.6% Asian, 11.9% multiracial, 2.5% Black, 1.9% Native Hawaiian/Pacific Islander, 0.3% Native American/Alaskan Native, and 3.3% did not specify. Approximately 13.4% of the sample identified as Hispanic/Latinx.

Measures

Global experiences

(A) *SOCIAL ANXIETY*: The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) is a 20-item measure that asks participants to rate how characteristic it is for them to experience anxiety related to different social situations on a 0 (*never*) to 4 (*extremely*) scale. Example items include, "When mixing socially, I am uncomfortable" and "I find myself worrying that I won't know what to say in social situations." Total scores range from 0 to 80. A score of 34 or higher represents clinically elevated social anxiety symptoms (Brown et al., 1997). Reliability was acceptable in the current sample ($\alpha = .87$).

(B) *PRE-PARTY MOTIVES*: Pre-partying was defined for participants as "drinking alcohol prior to attending an event or activity [for example a party, bar, or concert] at which more alcohol may or may not be consumed." Motivations for pre-partying were measured using the 16-item Pre-partying Motivations Inventory (PMI; LaBrie et al., 2012). Participants were asked to rate how often in the past year they pre-partied for each reason from 1 (*almost never/never*) to 6 (*almost always/always*). Items represented four subscales: (a) interpersonal enhancement, (b) intimate pursuit, (c) barriers to consumption, and (d) situational control. For the current study, we focused on interpersonal enhancement

($\alpha = .88$; e.g., "It helps me feel more relaxed when meeting new people once I go out") and intimate pursuit ($\alpha = .82$; e.g., "To increase the likelihood of hooking up") subscales and report subscale means. Reliability was also acceptable for the full PMI ($\alpha = .92$).

Most recent pre-party occasion in the past month

(A) *NUMBER OF DRINKS ACROSS ENTIRE DRINKING OCCASION*: Participants were asked to think about the last drinking occasion on which they pre-partied in the past month. After being shown the definition of a standard drink, participants were asked to indicate how many drinks (0–25 drinks) they consumed across the entirety of their most recent pre-party occasion.

(B) *DRINKING GAMES WHILE PRE-PARTYING*: Participants were asked whether they played drinking games during their most recent pre-party occasion (0 = *no*, 1 = *yes*).

(C) *NEGATIVE PRE-PARTY DRINKING CONSEQUENCES*: Alcohol consequences were assessed using a modified 17-item version of the Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ; Kahler et al., 2005). This measure was modified by dropping seven items deemed inappropriate for occasion-level assessment (e.g., "I have been overweight because of drinking"). Participants indicated which drinking consequences occurred on the last drinking occasion on which they pre-partied and on the last drinking occasion on which they did not pre-party: 1 = *did not happen either time (when I drank or when I pre-partied)*, 2 = *happened both times (when I pre-partied and when I did not pre-party)*, 3 = *happened the last time I pre-partied*, and 4 = *happened the last time I drank but did not pre-party*. Responses of "2" and "3" were recoded as 1 = *yes*, and "1" and "4" were recoded as 0 = *no* and summed for a count score of consequences to refer to consequences for the most recent pre-party occasion.

Data analytic strategy

We first calculated descriptive statistics for all study variables. To test our first hypothesis, we calculated bivariate correlations with Bonferroni correction for multiple comparisons to test associations among social anxiety, motives, drinking game participation, and drinking outcomes, independent of other variables (15 comparisons, corrected $p < .003$). To test our second hypothesis, path analysis was conducted in MPlus Version 8 (Muthén & Muthén, 1998–2017) with Monte Carlo integration. A negative binomial (NB) model was estimated, as the primary outcome was a count variable (i.e., number of negative consequences). The dispersion parameter was significant, $B = 0.49$, $SE = 0.04$, $p < .001$, suggesting that the dispersion parameter afforded by the negative model is a better fit to the data than a more restrictive Poisson model. Fit indices for the NB model were lower than those for the Poisson model (NB: Akaike information criterion [AIC] = 18,013.74, Bayesian

TABLE 1. Bivariate correlations among study variables

Variable	1.	2.	3.	4.	5.	6.
1. Social anxiety	–	–	–	–	–	–
2. Interpersonal enhancement motives	.27*	–	–	–	–	–
3. Intimate pursuit motives	.11*	.49*	–	–	–	–
4. Drinking game participation ^a	.00	.11*	.16*	–	–	–
5. Number of drinks consumed ^a	-.06	.17*	.26*	.14*	–	–
6. Number of negative consequences ^a	.10*	.30*	.35*	.12*	.30*	–
<i>M</i>	27.4	3.0	1.7	0.3	7.4	4.3
<i>SD</i>	14.8	1.0	0.9	0.5	3.5	3.9
Range	0–73	1–5	1–5	0–1	1–25	0–17

^aDuring most recent pre-party occasion.

* $p < .003$, the Bonferroni-corrected p value.

information criterion [BIC] = 18,204.35; Poisson: AIC = 18,404.74, BIC = 18,595.35), also indicating that the NB model is a better fit for the data.

As prior work found gender and age differences in hazardous drinking behaviors among college students (Pedersen & LaBrie, 2006; Pedersen et al., 2009) and gender (but not age) differences for pre-party motives (Napper et al., 2015), gender identity (0 = *man*, 1 = *woman*) was included as a covariate in the model for all variables; age was included as a covariate for only drinking game participation, alcohol consumption, and consequences. Campus was included as a covariate for interpersonal enhancement and intimate pursuit motives, as one-way analyses of variance (ANOVAs) revealed significant differences in these variables by campus.¹

Compared to a model with gender, age, and campus as covariates for all model variables (AIC = 18,019.86, BIC = 18,239.80), our model with empirically informed covariates evinced lower AIC = 18,013.74 and BIC = 18,204.35, supporting use of our model to test our hypotheses. The SIAS total score variable was rescaled so that total scores ranged from 0 to 4. Indirect effects were examined using maximum likelihood and 5,000 bootstrapped resamples to derive 95% bias-corrected bootstrap confidence intervals (CIs). Incidence rate ratios (IRRs; the exponentiated unstandardized regression coefficient) and their 95% CIs are presented for direct effects with NB outcomes.

Results

Descriptive statistics

Means and correlations are in Table 1. Of the analytic sample of 981 participants, 33.4% ($n = 324$) endorsed playing drinking games during their most recent pre-party occasion. On average, participants reported consuming 7.4 drinks ($SD = 3.5$) and experiencing 4.3 consequences ($SD = 3.9$) during their most recent pre-party occasion. Approximately 32.3% ($n = 317$) of the sample fell above the cut-score for clinically elevated social anxiety. Social anxiety was signifi-

cantly, positively correlated with interpersonal enhancement and intimate pursuit pre-party drinking motives, and with consequences experienced on the most recent pre-party occasion (all r s .10–.27; p s were all below the Bonferroni-corrected p value of .003). Social anxiety was not correlated with playing drinking games or alcohol consumption.

Path analysis

Figure 1 presents a diagram of the path model with unstandardized path coefficients, and Table 2 presents direct and indirect effects. Direct effects were consistent with bivariate correlation results, with one exception: in the path model, there was a significant, negative association between social anxiety and alcohol consumption after controlling for gender, age, campus, pre-party motives, and drinking game participation when pre-partying. Inconsistent with hypotheses, controlling for gender, campus, and age, greater social anxiety was not indirectly related to more negative consequences via the sequential effect of higher pre-party motives, greater likelihood of drinking game participation, and greater alcohol consumption during the most recent pre-party occasion (Table 2). We also explored all other possible indirect paths in the model. Social anxiety was indirectly associated with more negative consequences during the pre-party occasion through greater interpersonal enhancement and intimate pursuit pre-party motives, and through greater motives and more alcohol consumption. Social anxiety was associated with fewer negative consequences indirectly through alcohol consumption during the pre-party occasion. There were no significant indirect paths through drinking game participation.

Discussion

The current study is the first of which we are aware to evaluate associations between social anxiety symptoms and pre-party-specific drinking motives. Findings from the current study provide preliminary evidence for two different processes linking social anxiety to negative drinking consequences during pre-party drinking occasions among college

¹Results available from first author on request.

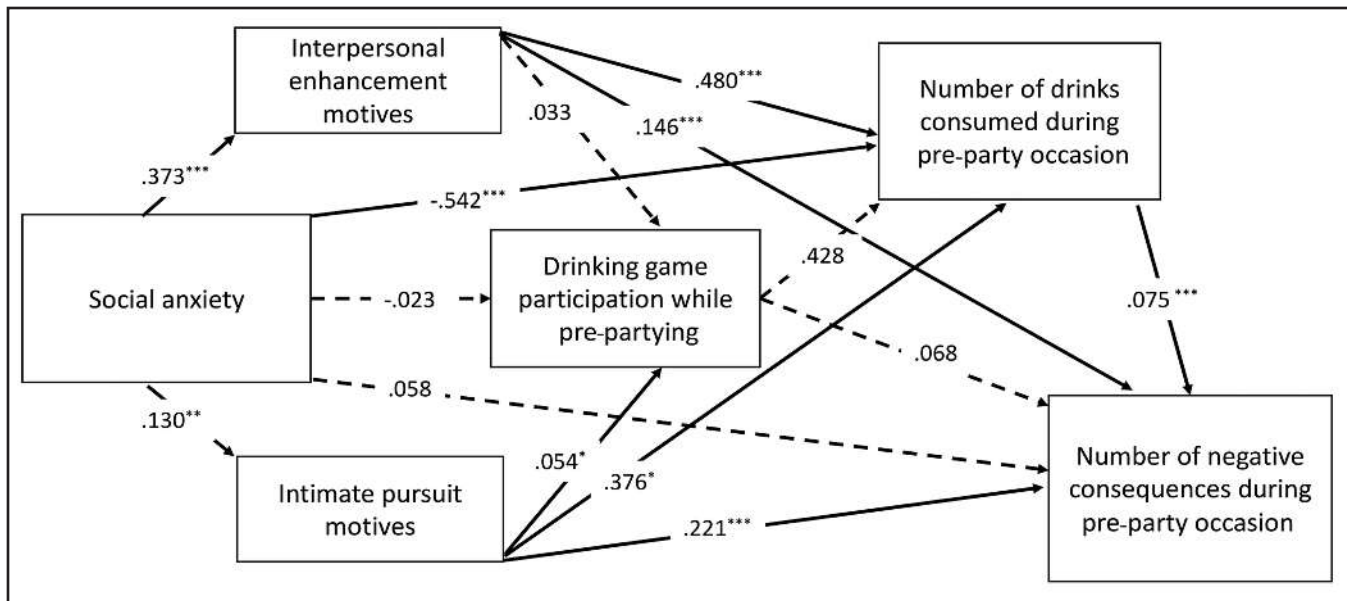


FIGURE 1. Unstandardized estimates from path model predicting number of negative consequences experienced during the most recent pre-party occasion. *Notes:* Paths shown as dotted lines were nonsignificant. Gender was included as a covariate in the model for all variables; age was included as a covariate for drinking game participation, total alcohol consumption, and consequences; and campus was included as a covariate for intimate pursuit and interpersonal enhancement motives. Significant paths for these covariates are not pictured here. The correlation between the residuals for interpersonal enhancement and intimate pursuit motives is also not pictured here. Incidence rate ratios for paths with count outcomes can be found in Table 2. * $p < .05$; ** $p < .01$; *** $p < .0001$.

students who reported past-month heavy episodic drinking and pre-partying. Social anxiety was associated with less alcohol consumption and, in turn, fewer consequences. However, college students with elevated social anxiety who pre-partied to make it easier to socialize or “hook up” consumed more alcohol and experienced more negative consequences as a result of pre-partying.

Consistent with hypotheses, social anxiety was positively correlated with interpersonal enhancement and intimate pursuit pre-party motives. Much of the research on drinking motives and social anxiety has focused more broadly on general coping motives (e.g., Ham et al., 2009; Lewis et al., 2008). Our findings extend this work by identifying two pre-party-specific motives associated with social anxiety and negative pre-party consequences. In line with theory and prior research (Buckner et al., 2020, 2021), results indicate that heavy drinking college students with elevated social anxiety report pre-partying to promote social facilitation by making it easier to socialize or increase their chances of hooking up. As pre-party motives demonstrate greater utility in predicting pre-party behaviors and consequences than general drinking motives (LaBrie et al., 2012; Napper et al., 2015), continuing to examine pre-party motives will be important for informing our understanding of this hazardous drinking pattern among those with elevated social anxiety symptoms.

Unexpectedly, social anxiety was not associated with playing drinking games while pre-partying during the most

recent pre-party occasion. Other work has found no direct association between social anxiety and the frequency or likelihood of drinking game participation more generally (e.g., Ham et al., 2010; Mulligan et al., 2016), whereas social anxiety was not associated with the likelihood of playing drinking games while pre-partying on a specific occasion in the present study. The opportunity to play drinking games may depend on use context. It could be that other people at the event did not initiate drinking games; in those situations, it might have been difficult for socially anxious individuals to initiate drinking games themselves. Alternatively, as social anxiety symptoms are associated with more frequent solitary pre-partying (Keough et al., 2016), people with elevated social anxiety may be unlikely to play drinking games because they are more likely to pre-party alone.

Future work could benefit from assessing both the pre-party context and whether drinking games were occurring to more accurately determine whether social anxiety is associated with the likelihood of engaging in drinking games while pre-partying. No paths including drinking game participation were significant, either independently or sequentially through pre-party motives and alcohol consumption. Given the strong association between drinking motives (e.g., coping, enhancement) and negative drinking consequences (Bresin & Mekawi, 2021), it is possible that the link between social anxiety and negative consequences is less about the hazardous drinking behaviors engaged in and more about the reasons for doing so.

TABLE 2. Path model results

Path	Unstandardized estimate	SE	IRR	[95% CI]
Total effect				
SocAnx → Cons	0.117	0.041	1.124	[1.040, 1.219]
Direct effects				
SocAnx → IntEnh	0.373	0.042	–	[0.293, 0.456]
SocAnx → IntPur	0.130	0.040	–	[0.053, 0.214]
SocAnx → Games	-0.023	0.021	–	[-0.063, 0.019]
SocAnx → Drinks	-0.542	0.151	0.582	[0.433, 0.783]
SocAnx → Cons	0.058	0.039	1.060	[0.979, 1.143]
IntEnh → Games	0.033	0.018	–	[-0.004, 0.700]
IntEnh → Drinks	0.48	0.123	1.616	[1.278, 2.077]
IntEnh → Cons	0.146	0.034	1.157	[1.083, 1.236]
IntPur → Games	0.054	0.022	–	[0.013, 0.098]
IntPur → Drinks	0.376	0.170	1.456	[1.048, 2.034]
IntPur → Cons	0.221	0.035	1.247	[1.163, 1.335]
Games → Drinks	0.428	0.220	1.534	[1.003, 2.382]
Games → Cons	0.068	0.058	1.070	[0.956, 1.203]
Drinks → Cons	0.075	0.010	1.078	[1.058, 1.099]
Indirect effects				
SocAnx → IntEnh → Cons	0.054	0.015	1.055	[1.029, 1.091]
SocAnx → IntPur → Cons	0.029	0.010	1.029	[1.013, 1.052]
SocAnx → Games → Cons	-0.002	0.002	0.998	[0.991, 1.001]
SocAnx → Drinks → Cons	-0.041	0.012	0.960	[0.935, 0.982]
SocAnx → Games → Drinks → Cons	-0.001	0.001	0.999	[0.997, 1.000]
SocAnx → IntEnh → Games → Cons	0.001	0.001	1.001	[1.000, 1.004]
SocAnx → IntPur → Games → Cons	0.000	0.001	1.000	[1.000, 1.002]
SocAnx → IntEnh → Drinks → Cons	0.013	0.004	1.013	[1.007, 1.023]
SocAnx → IntPur → Drinks → Cons	0.004	0.002	1.004	[1.001, 1.009]
SocAnx → IntEnh → Games → Drinks → Cons ^{H2}	0.000	0.000	1.000	[1.000, 1.001]
SocAnx → IntPur → Games → Drinks → Cons ^{H2}	0.000	0.000	1.000	[1.000, 1.001]

Notes: Significant paths are **bolded**. Gender was included as a covariate in the model for all variables; age was included as a covariate for drinking game participation, total alcohol consumption, and consequences; and campus was included as a covariate for intimate pursuit and interpersonal enhancement motives. Significant paths for these covariates are not pictured here. CI = confidence interval; IRR = incidence rate ratio; SocAnx = social anxiety; IntEnh = interpersonal enhancement motives; IntPur = intimate pursuit motives; games = drinking game participation during most recent pre-party occasion; drinks = number of drinks consumed over the course of the most recent pre-party occasion; cons = number of negative drinking consequences experienced during the most recent pre-party occasion. ^{H2}Hypothesized pathway.

Of note, intimate pursuit motives were significantly associated with the likelihood of playing drinking games. This is consistent with prior work finding that sexual pursuit-related motives are associated more broadly with frequency of drinking game participation (George et al., 2019) and extends this work by identifying that higher intimate pursuit pre-party motives are also related to a greater likelihood of playing drinking games specifically in pre-party settings. As drinking game participation is associated with both sexual assault perpetration and victimization (Johnson & Stahl, 2004), future work may want to examine pre-partying and related drinking game participation as contextual risk factors for individuals with higher intimate pursuit motives.

Our hypothesis that greater social anxiety would be indirectly related to more negative consequences through the sequential effect of higher pre-party motives, greater likelihood of drinking game participation, and greater alcohol consumption was not supported. Although the total effect was small, social anxiety was associated with significantly more consequences during the most recent pre-party occasion (i.e., considering all variables and the direct effect

in aggregate). This overall effect was explained in part by social-related pre-party motives, such that social anxiety was related to more negative consequences indirectly through interpersonal enhancement and intimate pursuit motives and indirectly through motives and greater alcohol consumption.

Inconsistent with the total effect, social anxiety was associated with fewer consequences through less alcohol consumption, suggesting that the association between social anxiety and more drinking consequences would have been even stronger if social anxiety did not also lead to lower levels of consumption. These results indicate two opposing processes at work in the present model: Although social anxiety may increase risk for negative consequences by way of social-related pre-party motives, this effect is also lessened by way of less drinking.

Socially anxious students who fear negative evaluation may evaluate certain drinking consequences more negatively than their peers (e.g., “I said or did embarrassing things”) and make an effort to moderate their alcohol intake to avoid consequences during pre-party situations. In partial support of this notion, negative appraisals of drinking consequences

are important predictors of drinking behaviors among college students more broadly (Barnett et al., 2015; Fairlie et al., 2016), and socially anxious students with greater fear of negative evaluation take steps to reduce harms from drinking (Villarosa-Hurlocker et al., 2018b). Understanding whether appraisal of negative consequences affects associations between social anxiety and pre-party drinking behaviors will be an important next step. In contrast, elevated social anxiety symptoms were associated with more negative pre-party consequences by way of elevated pre-party motives and more drinking, and through elevated pre-party motives only.

It may be that these motives are associated with riskier patterns of drinking and quantity of alcohol consumed, putting socially anxious individuals who pre-party for social reasons at risk for negative consequences. For example, they may consume alcohol more rapidly while pre-partying to reduce social awkwardness and, as a result, reach a higher blood alcohol level despite not drinking more overall in some instances. Thus, both context and context-specific motives are important to understanding why socially anxious students may drink more heavily in pre-party settings. Continuing to assess proximal cognitive, contextual, and behavioral factors will provide greater insight into the mixed findings between social anxiety and alcohol consumption.

Findings from the current study have important clinical implications. To identify college students most at risk for negative drinking consequences, clinicians or campus officials working with college students may want to assess drinking motives specific to hazardous drinking practices—such as pre-partying—in addition to general drinking motives. In addition, anxious students who use protective behavioral strategies more frequently drink less in pre-party settings (Hummer et al., 2021). Thus, intervention efforts may want to focus on providing psychoeducation around hazardous drinking practices and personalized, pre-party-related protective behavioral strategies intervention content to reduce negative drinking consequences among socially anxious students.

Results from the current study should be interpreted in light of limitations. First, the majority of our sample was comprised of non-Hispanic/Latinx White college-age women who endorsed pre-partying and heavy episodic drinking in the past month. Given the heavy drinking nature of the current sample, results may not generalize more broadly to college student samples. In addition, as several studies have found demographic differences in college students' pre-partying or drinking game participation (Paves et al., 2012; Zamboanga et al., 2015), future work would benefit from using a more diverse sample to assess whether findings differ across demographic groups.

Second, the current study was cross-sectional, which permits an important first step in testing the putative relationships among study variables but does not allow for temporal or causal conclusions to be drawn. Prospective and/or

experimental work will be an important next step in testing these associations.

Third, the study assessed past-month pre-party behaviors, which may introduce recall bias regarding the pre-party event. Using ecological momentary assessment methodologies could help disentangle whether state social anxiety and situationally specific pre-party motives affect pre-partying drinking outcomes and reduce potential recall bias by assessing pre-party behaviors in real time.

Fourth, effects were relatively small, which may be due to using a sample not selected for clinically elevated social anxiety symptoms. Although nearly a third of the sample fell above the clinical cut-score for social anxiety disorder, future work may want to test whether these results differ between clinical and nonclinical samples.

Fifth, the current study only assessed pre-party-specific motives and did not control for other motives in our path model. Testing the extent to which pre-party motives are uniquely associated with social anxiety and pre-party outcomes by covarying for general and drinking game motives will be important.

Conclusions

Despite limitations, the current study is the first of which we are aware to evaluate pre-party motives and concurrent hazardous drinking practices in the context of social anxiety and drinking outcomes during the most recent pre-partying occasion. Results suggest that socially anxious individuals may be vulnerable to experiencing more negative consequences when pre-partying as a result of the reasons they are pre-partying. Assessing drinking motives for specific hazardous drinking practices could help identify college students most at risk for experiencing social anxiety and negative drinking consequences.

References

- Barnett, N. P., Merrill, J. E., Kahler, C. W., & Colby, S. M. (2015). Negative evaluations of negative alcohol consequences lead to subsequent reductions in alcohol use. *Psychology of Addictive Behaviors, 29*, 992–1002. doi:10.1037/adb0000095
- Bresin, K., & Mekawi, Y. (2021). The “why” of drinking matters: A meta-analysis of the association between drinking motives and drinking outcomes. *Alcoholism: Clinical and Experimental Research, 45*, 38–50. doi:10.1111/acer.14518
- Brown, E. J., Turovsky, J., Heimberg, R. G., Juster, H. R., Brown, T. A., & Barlow, D. H. (1997). Validation of the Social Interaction Anxiety Scale and the Social Phobia Scale across the anxiety disorders. *Psychological Assessment, 9*, 21–27. doi:10.1037/1040-3590.9.1.21
- Buckner, J. D., Lewis, E. M., Terlecki, M. A., Albery, I. P., & Moss, A. C. (2020). Context-specific drinking and social anxiety: The roles of anticipatory anxiety and post-event processing. *Addictive Behaviors, 102*, 106184. doi:10.1016/j.addbeh.2019.106184
- Buckner, J. D., Morris, P. E., Abarino, C. N., Glover, N. I., & Lewis, E. M. (2021). Biopsychosocial model social anxiety and substance use revised. *Current Psychiatry Reports, 23*, 35. doi:10.1007/s11920-021-01249-5

- Cox, W. M., & Klinger, E. (1988). A motivational model of alcohol use. *Journal of Abnormal Psychology, 97*, 168–180. doi:10.1037//0021-843x.97.2.168
- DeJong, W., DeRicco, B., & Schneider, S. K. (2010). Pregaming: An exploratory study of strategic drinking by college students in Pennsylvania. *Journal of American College Health, 58*, 307–316. doi:10.1080/07448480903380300
- Fairlie, A. M., Ramirez, J. J., Patrick, M. E., & Lee, C. M. (2016). When do college students have less favorable views of drinking? Evaluations of alcohol experiences and positive and negative consequences. *Psychology of Addictive Behaviors, 30*, 555–565. doi:10.1037/adb0000190
- George, A. M., Zamboanga, B. L., Millington, E., & Ham, L. S. (2019). Social anxiety and drinking game behaviors among Australian university students. *Addictive Behaviors, 88*, 43–47. doi:10.1016/j.addbeh.2018.08.007
- Ham, L. S., Zamboanga, B. L., Bacon, A. K., & Garcia, T. A. (2009). Drinking motives as mediators of social anxiety and hazardous drinking among college students. *Cognitive Behaviour Therapy, 38*, 133–145. doi:10.1080/16506070802610889
- Ham, L. S., Zamboanga, B. L., Olthuis, J. V., Casner, H. G., & Bui, N. (2010). No fear, just relax and play: Social anxiety, alcohol expectancies, and drinking games among college students. *Journal of American College Health, 58*, 473–479. doi:10.1080/07448480903540531
- Hummer, J. F., Davis, J. P., Christie, N., & Pedersen, E. R. (2021). Protective behavioral strategies and alcohol use while pregameing: The moderating role of depression and anxiety symptoms. *Substance Use & Misuse, 56*, 1677–1686. doi:10.1080/10826084.2021.1949610
- Hummer, J. F., Napper, L. E., Ehret, P. E., & LaBrie, J. W. (2013). Event-specific risk and ecological factors associated with prepartying among heavier drinking college students. *Addictive Behaviors, 38*, 1620–1628. doi:10.1016/j.addbeh.2012.09.014
- Hurd, L. E., Ham, L. S., Melkonian, A. J., Zamboanga, B. L., & Jackson, K. K. (2020). Context matters for the socially anxious: Moderating role of drinking context on alcohol outcome expectancies. *Substance Use & Misuse, 55*, 1257–1268. doi:10.1080/10826084.2020.1735435
- Johnson, T. J., & Stahl, C. (2004). Sexual experiences associated with participation in drinking games. *Journal of General Psychology, 131*, 304–320.
- Kahler, C. W., Strong, D. R., & Read, J. P. (2005). Toward efficient and comprehensive measurement of the alcohol problems continuum in college students: The Brief Young Adult Alcohol Consequences Questionnaire. *Alcoholism: Clinical and Experimental Research, 29*, 1180–1189. doi:10.1097/01.ALC.0000171940.95813.A5
- Kenney, S. R., Napper, L. E., & LaBrie, J. W. (2014). Social anxiety and drinking refusal self-efficacy moderate the relationship between drinking game participation and alcohol-related consequences. *American Journal of Drug and Alcohol Abuse, 40*, 388–394. doi:10.3109/00952990.2014.920849
- Keough, M. T., Battista, S. R., O'Connor, R. M., Sherry, S. B., & Stewart, S. H. (2016). Getting the party started—Alone: Solitary predrinking mediates the effect of social anxiety on alcohol-related problems. *Addictive Behaviors, 55*, 19–24. doi:10.1016/j.addbeh.2015.12.013
- LaBrie, J. W., Hummer, J. F., Pedersen, E. R., Lac, A., & Chithambo, T. (2012). Measuring college students' motives behind prepartying drinking: Development and validation of the prepartying motivations inventory. *Addictive Behaviors, 37*, 962–969. doi:10.1016/j.addbeh.2012.04.003
- Larimer, M. E., Graupensperger, S., Lewis, M. A., Crouce, J. M., Kilmer, J. R., Atkins, D. C., . . . LaBrie, J. W. (2021). *Injunctive and descriptive norms feedback for college drinking prevention: Is the whole greater than the sum of its parts?* Manuscript submitted for publication.
- Lewis, M. A., Hove, M. C., Whiteside, U., Lee, C. M., Kirkeby, B. S., Oster-Aaland, L., . . . Larimer, M. E. (2008). Fitting in and feeling fine: Conformity and coping motives as mediators of the relationship between social anxiety and problematic drinking. *Psychology of Addictive Behaviors, 22*, 58–67. doi:10.1037/0893-164X.22.1.58
- Mattick, R. P., & Clarke, J. C. (1998). Development and validation of measures of social phobia scrutiny fear and social interaction anxiety. *Behaviour Research and Therapy, 36*, 455–470. doi:10.1016/S0005-7967(97)10031-6
- Mulligan, E. J., George, A. M., & Brown, P. M. (2016). Social anxiety and drinking game participation among university students: The moderating role of drinking to cope. *American Journal of Drug and Alcohol Abuse, 42*, 726–734. doi:10.1080/00952990.2016.1188934
- Muthén, L. K., & Muthén, B. O. (1998–2017). *Mplus user's guide (8th ed.)*. Los Angeles, CA: Authors.
- Napper, L. E., Kenney, S. R., Montes, K. S., Lewis, L. J., & LaBrie, J. W. (2015). Gender as a moderator of the relationship between preparty motives and event-level consequences. *Addictive Behaviors, 45*, 263–268. doi:10.1016/j.addbeh.2015.02.010
- Paves, A. P., Pedersen, E. R., Hummer, J. F., & LaBrie, J. W. (2012). Prevalence, social contexts, and risks for prepartying among ethnically diverse college students. *Addictive Behaviors, 37*, 803–810. doi:10.1016/j.addbeh.2012.03.003
- Pedersen, E. R., & LaBrie, J. (2006). Drinking game participation among college students: Gender and ethnic implications. *Addictive Behaviors, 31*, 2105–2115. doi:10.1016/j.addbeh.2006.02.003
- Pedersen, E. R., & LaBrie, J. (2007). Partying before the party: Examining prepartying behavior among college students. *Journal of American College Health, 56*, 237–245. doi:10.3200/JACH.56.3.237-246
- Pedersen, E. R., LaBrie, J. W., & Kilmer, J. R. (2009). Before you slip into the night, you'll want something to drink: Exploring the reasons for prepartying behavior among college student drinkers. *Issues in Mental Health Nursing, 30*, 354–363. doi:10.1080/01612840802422623
- Read, J. P., Merrill, J. E., & Bytschkow, K. (2010). Before the party starts: Risk factors and reasons for “pregaming” in college students. *Journal of American College Health, 58*, 461–472. doi:10.1080/07448480903540523
- Schry, A. R., & White, S. W. (2013). Understanding the relationship between social anxiety and alcohol use in college students: A meta-analysis. *Addictive Behaviors, 38*, 2690–2706. doi:10.1016/j.addbeh.2013.06.014
- Terlecki, M. A., & Buckner, J. D. (2015). Social anxiety and heavy situational drinking: Coping and conformity motives as multiple mediators. *Addictive Behaviors, 40*, 77–83. doi:10.1016/j.addbeh.2014.09.008
- Villarosa-Hurlocker, M. C., & Madson, M. B. (2020). A latent profile analysis of social anxiety and alcohol use among college students. *Addictive Behaviors, 104*, 106284. doi:10.1016/j.addbeh.2019.106284
- Villarosa-Hurlocker, M. C., Madson, M. B., Mohn, R. S., Zeigler-Hill, V., & Nicholson, B. C. (2018a). Social anxiety and alcohol-related outcomes: The mediating role of drinking context and protective strategies. *Addiction Research and Theory, 26*, 396–404. doi:10.1080/16066359.2018.1424834
- Villarosa-Hurlocker, M. C., Whitley, R. B., Capron, D. W., & Madson, M. B. (2018b). Thinking while drinking: Fear of negative evaluation predicts drinking behaviors of students with social anxiety. *Addictive Behaviors, 78*, 160–165. doi:10.1016/j.addbeh.2017.10.021
- Zamboanga, B. L., Audley, S., Olthuis, J. V., Blumenthal, H., Tomaso, C. C., Bui, N., & Borsari, B. (2019). Validation of a seven-factor structure for the motives for playing drinking games measure. *Assessment, 26*, 582–603. doi:10.1177/1073191117701191
- Zamboanga, B. L., & Olthuis, J. V. (2016). What is pregameing and how prevalent is it among U.S. college students? An introduction to the special issue on pregameing. *Substance Use & Misuse, 51*, 953–960. doi:10.1080/10826084.2016.1187524
- Zamboanga, B. L., Olthuis, J. V., Kenney, S. R., Correia, C. J., Van Tyne,

- K., Ham, L. S., & Borsari, B. (2014). Not just fun and games: A review of college drinking games research from 2004 to 2013. *Psychology of Addictive Behaviors, 28*, 682–695. doi:10.1037/a0036639
- Zamboanga, B. L., Pesigan, I. J. A., Tomaso, C. C., Schwartz, S. J., Ham, L. S., Bersamin, M., . . . Hurley, E. A. (2015). Frequency of drinking games participation and alcohol-related problems in a multiethnic sample of college students: Do gender and ethnicity matter? *Addictive Behaviors, 41*, 112–116. doi:10.1016/j.addbeh.2014.10.002
- Zamboanga, B. L., Zhang, M., Olthuis, J. V., & Kim, S. Y. (2018). Understanding drinking game behaviors: A consideration of alcohol expectancies and motives to play and drink. *Cognitive Therapy and Research, 42*, 302–314. doi:10.1007/s10608-017-9886-1