Incorporating Social Anxiety Into a Model of College Problem Drinking: Replication and Extension

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Abstract

Although research has found an association between social anxiety and alcohol use in noncollege samples, results have been mixed for college samples. College students face many novel social situations in which they may drink to reduce social anxiety. In the current study, the authors tested a model of college problem drinking, incorporating social anxiety and related psychosocial variables among 228 undergraduate volunteers. According to structural equation modeling (SEM) results, social anxiety was unrelated to alcohol use and was negatively related to drinking consequences. Perceived drinking norms mediated the social anxiety–alcohol use relation and was the variable most strongly associated with problem drinking. College students appear to be unique with respect to drinking and social anxiety. Although the notion of social anxiety alone as a risk factor for problem drinking was unsupported, additional research is necessary to determine whether there is a subset of socially anxious students who have high drinking norms and are in need of intervention.

Keywords

college students; problem drinking; drinking norms; social anxiety; expectancies

Recently, college student problem drinking has received attention as an important public health concern (Wechsler, Lee, Kuo, & Lee, 2000). Not only is problem drinking highly prevalent among college students (e.g., O'Malley & Johnston, 2002; Wechsler et al., 2000), but it also negatively impacts non-problem-drinking college students (e.g., Hingston, Heeren, Zakocs, Kopstein, & Wechsler, 2002) and the community in general (e.g., Hingston et al., 2002). Social anxiety, a common psychiatric disorder (e.g., Kessler et al., 1994) that often co-occurs with alcohol problems (e.g., Kushner, Abrams, & Borchardt, 2000), has been proposed as a factor that motivates college students to drink (e.g., Burke & Stephens, 1999). This belief seems particularly relevant to college students who face a variety of novel social situations and settings that encourage alcohol consumption.

Psychosocial factors have received considerable attention as important predictors of behavior; however, researchers have noted the absence of these factors in models of college student drinking (Burke & Stephens, 1999; Martin & Hoffman, 1993). A more comprehensive model of college student drinking may include factors such as social anxiety, alcohol expectancies, valuations (i.e., the desirability of the expected alcohol effects), perceived drinking norms of peers, and religious involvement (Forthun, Bell, Peek, & Sun, 1999; Fromme, Stroot, &

Kaplan, 1993; Ham & Hope, 2003; O'Hare, 1990; Reis & Riley, 2000). Ham and Hope (2005) tested a model that included these variables in a sample of students who were referred to the Alcohol Skills Training Program (ASTP; Fromme, Marlatt, Baer, & Kivlahan, 1994) because they violated the campus alcohol policy. Unexpectedly, social anxiety was unrelated or inversely related to the drinking variables (i.e., as assessed by typical weekly drinking and alcohol-related problems), and alcohol expectancies generally were unrelated to drinking variables. Perceived drinking norms had the most consistent positive association with alcohol variables and served as a mediator for social anxiety on drinking variables. Valuations had positive relations with drinking variables, whereas religious involvement had inverse relations with both alcohol variables. This study contradicts a number of previous studies that have indicated a positive relation among social anxiety, alcohol expectancies, and drinking (e.g., Burke & Stephens, 1999; Lewis & O'Neill, 2000).

It is unclear whether the unexpected findings were related to the unique characteristics of the samples selected or to measurement problems or whether they reflect true relations among the model variables for college students. In the current study, we aimed to improve our understanding of the relations among social anxiety, perceived drinking norms, alcohol expectancies, valuations, and religious involvement with college drinking by assessing non-treatment-seeking college students using comprehensive measures and a strong data analytic strategy. For example, the full scale of the Comprehensive Effects of Alcohol (CEOA; Fromme et al., 1993) rather than the brief version (B-CEOA; Addictive Behaviors Research Center, 1997) administered in Ham and Hope's (2005) study provided the opportunity to test positive alcohol expectancies (e.g., "I would feel calm") and negative alcohol expectancies (e.g., "I would be clumsy") separately. Holding negative beliefs about the outcomes of drinking theoretically would provide motivation for students to refrain from drinking (e.g., Fromme et al., 1993). We also used two well-established measures of social anxiety (i.e., the Interaction Anxiousness Scale [Leary, 1983] and the Social Phobia Anxiety Inventory [Turner, Beidel, Dancu, & Stanley, 1989]). Furthermore, we strengthened the data analytic approach by using structural equation modeling (SEM) techniques rather than multiple regression. The use of sound measures, a more generalizable sample, and SEM techniques provided information regarding the need for investment of additional time and resources in a longitudinal study.

The current study investigated whether social anxiety has non-significant or negative relations with the drinking variables and whether drinking norms, expectancies, and valuations serve as mediators between social anxiety and drinking in this college sample (see Figure 1). We hypothesized that positive expectancies would be positively related to drinking whereas negative expectancies would be negatively related to drinking. Furthermore, we expected that perceived drinking norms would have the strongest positive association with college student drinking and that religious involvement would be negatively associated with drinking variables.

Method

Participants

Two hundred and forty-nine student volunteers from the undergraduate psychology subject pool who had never attended the campus alcohol intervention program (ASTP) volunteered to participate in the study. We oversampled men to match the gender ratio in the ASTP intervention (38% women, 62% men). Of the original 249 students, 21 were omitted from analyses as they were univariate statistical outliers (Hoaglin, Mosteller, & Tukey, 1983).[1] See Table 1 for summary demographic data. The final sample of 228 students was 39.5% women with a mean age of 19.40 (*SD* = 1.56) and 60.5% men with a mean age of 19.88 (*SD* = 1.60). The sample consisted primarily of students who were Caucasian (90.8%) and who had never married (99.6%).

Measures

Social anxiety—We used the Interaction Anxiousness Scale (IAS; Leary, 1983) and the Social Phobia Anxiety Inventory (SPAI; Turner et al., 1989) to assess social anxiety. The IAS is a 15-item commonly used self-report measure that has strong evidence of sound psychometric attributes (Leary, 1983; Leary & Kowalski, 1993). The SPAI is a 45-item measure that includes 32 items assessing social anxiety and 13 items assessing agoraphobia. The SPAI has excellent internal consistency ($\alpha = .96$), test–retest reliability ($r =.85–.86$), and discriminant validity (Turner et al., 1989). This study used the Social Phobia scale, corrected for agoraphobia, as recommended by the scale developers (Turner et al., 1989). The IAS and SPAI were highly correlated, $r(228) =.80$, $p < .001$, and therefore, the scores were aggregated by adding the standardized z scores to provide a social anxiety index.

Alcohol-related problems—The Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989) is a 23-item questionnaire designed to assess the frequency of problems related to an individual's alcohol use in the past 6 months (rated on a 0–4 scale; $0 = never$, $4 = more$ *than 10 times*). The RAPI has high internal consistency, $\alpha =.92$, and convergent validity (White & Labouvie, 1989).

Alcohol use and peer influence—The Alcohol Use Questionnaire (AUQ; Addictive Behaviors Research Center, 1997) is a self-report measure that assesses current alcohol use and perceived drinking norms. Individuals consider a typical week during the past month and estimate the following factors: the typical number of drinks they consume each day, the typical number of drinks that a same-sex fellow college student consumes each day, and the typical number of drinks that best friends consume each day. Because a universally agreed upon measure for perceived drinking norms does not exist, we constructed a perceived-norms composite score including two face-valid items that address gender and peer group influences on drinking behavior. The composite score was the average number of drinks consumed by the typical same-sex student and his or her best friends. We combined both variables to capture a larger sphere of normative peer influence.

Alcohol expectancies and valuations—The CEOA (Fromme et al., 1993) includes 38 items that assess expectancies (rated on a 1–4 scale) and the same 38 items that assess valuations (rated on a 1–5 scale). The CEOA includes four positive expectancies (sociability, tension reduction, enhanced sexuality, and liquid courage) and three negative expectancies (cognitive and behavioral impairment, risk and aggression, and negative self-perception), also allowing respondents to indicate valuations of each of these expected effects. The CEOA has adequate internal consistency ($\alpha = .66–.86$), test–retest reliability ($r =.66–.81$ for CEOA expectancy scales, $r =.52–.78$ for CEOA valuation scales), criterion validity, and factorial validity (Fromme et al., 1993; Ham, Stewart, Norton, & Hope, 2005).

Anxiety-related constructs—Social anxiety is positively correlated with global anxiety and negative affect (e.g., Brown, Chorpita, & Barlow, 1998). We included measures of anxiety-related constructs to provide a method to statistically control for global anxiety and negative affect. The Positive and Negative Affect Scales (PANAS; Watson, Clark, & Tellegen, 1988) is a 20-item self-report measure designed to assess positive and negative affect. The PANAS has evidence of acceptable internal consistency ($\alpha = .84–.87$), test–retest reliability ($r =.71$),

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[1]The standard outlier analysis procedure identifies outliers by computing quartiles for each variable, then computing the interquartile spread (difference between 25th and 75th percentiles), and then defining outliers as any score that is more than 1.5 fourth spreads beyond the lower or upper bound fourth value. Outlier analyses were conducted after transformations were applied as necessary for distribution normality. We identified 3 outliers for weekly drinking, 3 outliers for perceived drinking norms composite, 16 outliers for the Rutgers Alcohol Problem Index (RAPI), 2 outliers for negative expectancies, 6 outliers for positive expectancies, and 10 outliers for valuations. Some cases were statistical outliers on multiple variables.

and concurrent validity (Watson et al., 1988). The Beck Depression Inventory–II (BDI-II; Beck, Steer, Ball, & Ranieri, 1996) is a 21-item commonly used self-report measure that was designed to assess depression and that has demonstrated excellent psychometric properties (Dozois, Dobson, & Ahnberg, 1998). The Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988) is a 21-item self-report measure designed to assess the severity of anxiety symptoms and has strong evidence of internal consistency ($\alpha = .92$), test–retest reliability ($r = .75$), convergent validity, and discriminant validity (Beck et al., 1988; Creamer, Foran, & Bell, 1995). The Anxiety Sensitivity Index (ASI; Peterson & Reiss, 1993) is a 16-item self-report measure designed to assess the extent to which a person finds anxiety-related sensations to be fearful or catastrophic in outcome; the ASI has demonstrated excellent psychometric properties in clinical and nonclinical samples (Peterson & Reiss, 1993).

Demographic information—The demographic sheet included items regarding gender, participation in religion (1 = *not at all*; 5 = *very often*), and importance of religion (1 = *not at all*; 5 = *very*). We created a religion scale by computing the mean of the two questions assessing religion, $\alpha = .83$–.84, as was done in the previous studies (Ham & Hope, 2005; Oetting & Beauvais, 1987).

Procedures

All participants gave informed consent prior to completing a questionnaire battery administered by the research investigator or assistant. The methods of data collection in this study were consistent with Sobell and Sobell's (1990) recommendations for reliable and accurate self-report information regarding alcohol. Participants received research credit for participating in the study.

Results

Preliminary Analyses

Distribution normality—As the skew for weekly alcohol consumption and the RAPI exceeded the skew tolerances (a priori as skew > ±0.7), transformations adjusting for values less than 1 were applied to these variables until a tolerable skew was reached. We applied a square-root transformation to weekly consumption and a logarithmic transformation to the RAPI for the remaining analyses (Meadows & Stradling, 1996; Osborne, 2002).

Correlations and gender t tests—Correlations among the variables in the hypothesized path model were generally as expected (see Table 2). Social anxiety had a negative correlation with weekly alcohol use and did not have a significant correlation with alcohol-related problems. Additionally, negative expectancies were not correlated with the alcohol variables.

Planned independent sample *t* tests revealed that men ($M = 12.17$, $SD = 11.83$) reported more alcohol use than did women ($M = 8.58$, $SD = 9.29$), $t(226) = 2.10$, $p = .04$, whereas men ($M = 8.69$, $SD = 8.98$) and women ($M = 8.29$, $SD = 10.30$) did not differ in levels of alcohol-related problems, $t(226) = .87$, $p = ns$. Thus, gender was included in the model.

Path Model

The hypothesized path model was tested through use of the computer program LISREL 8.54 (Jöreskog & Sörbom, 2003). The SEM approach using LISREL is noted to be superior to multiple regression approaches in the testing of path models, both theoretically and statistically (e.g., Kline & Klammer, 2001).[2] Model fit was examined using absolute indices (chi-square goodness-of-fit test and goodness-of-fit index [GFI]) and incremental fit indices (root-mean-square error of approximation [RMSEA], nonnormed fit index [NNFI], and comparative fit index [CFI]). Good model fit is indicated by a nonsignificant chi-square value, RMSEA <.06,

$CFI \geq .95$, $GFI \geq .90$, and $NNFI \geq .90$ (see Hu & Bentler, 1995, 1999). Reduced models were developed through removal of the nonsignificant paths (e.g., Klem, 1995). In all analyses, we controlled for anxiety-related constructs (i.e., negative affect, depression, general anxiety, and anxiety sensitivity) by using residualized scores for each variable in the path model.

Hypothesized full path model—Most fit indices indicated that the model fit the data well, with the RMSEA indicating only a fair fit, $\chi^2(2, N = 228) = 4.57$, $p = .10$, RMSEA $= .08$, CFI $= .96$, GFI $= 1.00$, NNFI $= .91$. As shown in Figure 2, perceived drinking norms, positive expectancies, and valuations had positive relations with weekly alcohol consumption and alcohol-related problems. Social anxiety was negatively related to alcohol-related problems but was unrelated to alcohol use. Religious involvement had a significant negative relation with weekly alcohol use and approached significance for a negative association with alcohol-related problems. Social anxiety had a significant negative relation with perceived drinking norms and a marginally significant association with positive expectancies. Contrary to hypotheses, social anxiety was not associated with negative expectancies or valuations. Gender and negative expectancies were unrelated to the drinking variables.

We tested the role of perceived drinking norms as a mediator of social anxiety and alcohol consumption (Baron & Kenny, 1986). The partial correlation (controlling for anxiety-related constructs) between social anxiety and weekly alcohol consumption was significant, $r(226) = -.18$. When controlling for paths from social anxiety to perceived drinking norms and perceived drinking norms to weekly alcohol consumption, we found that the social anxiety–alcohol consumption path coefficient was not significant. Paths to and from perceived drinking norms were significant. Thus, our results fully support the mediator hypothesis for perceived drinking norms. Our results did not support other hypothesized mediations.

Reduced path model—In the reduced path model, we removed paths originating from social anxiety to valuations, negative expectancies, and weekly alcohol consumption and paths originating from negative expectancies and gender to both drinking variables. The reduced model fit the data well, $\chi^2(9, N = 228) = 8.57$, $p = .50$, RMSEA $< .001$, CFI $= 1.00$, GFI $= .99$, NNFI $= 1.01$. A comparison of chi-square values indicated that the fit of the reduced model did not differ significantly from that of the full model, $\Delta\chi^2(7, N = 228) = 4.00$, $p < .05$, $\chi^2_{\text{critical}} = 14.07$. As shown in Figure 3, social anxiety had negative associations with perceived drinking norms, positive expectancies, and alcohol-related problems. As expected, perceived drinking norms, positive expectancies, and valuations had positive relations with both drinking variables. Similar to the full model, religious involvement was inversely related to weekly alcohol consumption and had a negative relation that approached significance with alcohol-related problems.

Discussion

College problem drinking is an important public health concern with numerous negative consequences. College students face many novel social situations that offer access to alcohol in which students may drink to reduce social anxiety. In the present study, we aimed to improve the understanding of relations among social anxiety, college drinking, and related psychosocial variables in a broad sample of non-treatment-seeking college students by using comprehensive measures and a strong data analytic strategy. Understanding the relations among model variables and drinking will provide a foundation for future prevention and intervention efforts.

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[2]SEM, in contrast to multiple regression, is a more powerful way for researchers to take into account the modeling of direct and indirect effects, correlated independent variables, and measurement error, and it allows for testing of the proposed model as a unit rather than as individual path coefficients.

Social anxiety had an inverse relation with alcohol-related problems, consistent with recent studies investigating social anxiety and drinking in college students (Eggleston, Woolaway-Bickel, & Schmidt, 2004; Ham & Hope, 2005). However, this finding is counterintuitive upon consideration of the evidence supporting a positive relation between social anxiety and drinking in community samples (e.g., Kushner, Abrams, & Borchardt, 2000). One explanation is that social anxiety serves as a significant risk factor for problem drinking only when the social anxiety is causing severe impairment in functioning. Severe social anxiety is unlikely among a sample of individuals who are enrolled in a university setting, attending classes, and participating in research. College-age individuals who have comorbid social anxiety and alcohol use disorders may not attend college or may not remain in college because of greater impairment. A recent national study provides some support for this assertion, as college students ages 18–29 with alcohol dependence had a significantly lower risk of comorbid social anxiety disorder than did noncollege students ages 18–29 with alcohol dependence (Dawson, Grant, Stinson, & Chou, 2005).

Perceived drinking norms mediated the relation between social anxiety and weekly alcohol consumption. Many socially anxious college students have less exposure to social contexts and social networks because of avoidance of feared situations. Further, many college students are under the legal drinking age and therefore may not easily obtain alcohol outside of social situations such as parties. Social anxiety could serve as a protective factor because of the avoidance of college drinking–related environmental influences. Students with greater levels of social anxiety and perceived drinking norms would theoretically be at a greater risk for problem drinking.

The current study allowed for the differentiation of positive and negative alcohol expectancies in the model. Consistent with the hypotheses, positive expectancies and valuations of expectancies were related to greater drinking. Alternatively, negative expectancies were unrelated to the drinking variables. This finding may explain some of the inconsistencies regarding expectancies in Ham and Hope's (2005) study. When combining positive and negative expectancies, it is possible to miss significant relations. Because in the current study we used a more comprehensive measure of expectancies, we can assume greater confidence in the results. Although it seems that assessment of negative expectancies has merit, actual assessment of "negative expectancies" has been problematic across studies (see Adams & McNeil, 1991; Leigh, 1989). In particular, the assessment of negative expectancies related to more severe *distal* outcomes (e.g., having a hangover, becoming addicted) may be a stronger predictor of drinking behavior than the assessment of negative expectancies related to more *proximal* effects (i.e., the effects that occur on the 'same day' as drinking; e.g., Jones & McMahon, 1994; Noar, LaForge, Maddock, & Wood, 2003). Noar and colleagues (2003) noted that the CEOA items used in the current study examine the mild proximal effects of drinking.

Overall, the results provide further evidence indicating that the perception of drinking norms in the prediction of college student problem drinking is important. As proposed in Ham and Hope (2005), the influence of peers and social networks during college may exert a greater influence than do expectancies regarding alcohol and valuations of expected effects in college drinking behavior. This theory is consistent with the concept of *developmentally limited alcoholism* (i.e., a period of heavy drinking that one eventually matures out of in adulthood) that is often seen in college students (Zucker, 1987). Religious involvement had weak negative relations with drinking variables. The religious social environment could counteract the effects of the peer influences for college students. (Note that the current study examined perceptions of others' drinking rather than others' actual drinking or perceptions of the acceptability of drinking in the college setting.)

Although the current study has the strengths of comprehensive measures, control for anxiety-related constructs, an adequate sample size for provision of sufficient power (e.g., Bentler & Chou, 1987), and the use of the SEM approach, certain limitations must be noted. Causal interpretability of the results is limited because of the use of self-report and a cross-sectional design. The current study design was useful in demonstrating the reliability of findings to inform studies with improved methodology. We recommend that in future studies, researchers consider the use of distal negative expectancies assessment, structured diagnostic interviews, and varying measures of peer influence (e.g., actual drinking of peers or perception of drinking acceptability) with a longitudinal design. This study has limited generalizability to ethnically and culturally diverse populations, as the sample was primarily Caucasian. Half the participants were 1st-year students, thus limiting the generalizability to students in the latter years of college. It is possible that peer influence is more powerful while the student is initially adjusting to college life. Another concern is the large number of deleted outliers. However, follow-up SEM analyses, including those of the 21 deleted outliers, yielded results that were similar to those of the models with the outliers deleted,[3] thus providing evidence of representative results.

Overall, the results of the current study replicated the findings of Ham and Hope (2005). The current sample drank significantly less in a typical week, $M = 15.83$, $SD = 11.99$, $F(1, 542) = 25.43$, $p < .001$; were more socially anxious, IAS = 37.08, $SD = 10.97$, $F(1, 541) = 33.60$, $p < .001$; and showed a trend for fewer alcohol-related problems, RAPI = 10.11, $SD = 10.31$, $F(1, 541) = 3.29$, $p = .07$, than did those in the referred student sample of the previous study. Given that the same findings were achieved despite core differences in the two samples, the current models appear to represent a wide range of college students. An avenue for future research is the investigation of students with clinical levels of social anxiety. Although many socially anxious students engage in less drinking, there may be a subset of socially anxious individuals with larger social networks who could be at risk for problem drinking.

Given the results regarding perceived drinking norms, it seems that employing and examining programs that target inaccurate perceived drinking norms (e.g., ASTP, Fromme et al., 1994; Environmental Management, Gebhardt, Kaphingst, & DeJong, 2000) would be fruitful for the majority of the college population. Socially anxious students with high perceived drinking norms may need intervention as well. Interventions focusing on the challenge of positive alcohol expectancies (e.g., Darkes & Goldman, 1993) and valuations would be another potential direction or an addition to drinking-norms interventions.

In conclusion, results from the study support recent work examining social anxiety in college students (Eggleston et al., 2004; Ham & Hope, 2005). Contrary to research supporting the notion that social anxiety is a risk factor for problem drinking (see Carrigan & Randall, 2003), social anxiety actually could be a slight protective factor against problem drinking for college students. Perceived drinking norms emerged as the most prominent variable in the relation between perceived drinking norms and drinking- and alcohol-related problems as well as in the ability of perceived drinking norms to mediate the relation between social anxiety and drinking. Positive expectancies appeared to play a role in problem drinking; however, perceived drinking norms were more strongly associated with college problem drinking. College students appear to be a unique population in terms of drinking and social anxiety; therefore, it is important that researchers use caution in generalizing findings across populations. The findings have implications for the development of prevention and intervention programs for college student problem drinking, particularly by the targeting of social influences related to drinking and attention to socially anxious students with high perceived drinking

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[3]The model, including outliers, fit the data well, $\chi^2(2, N = 249) = 1.43$, $p = .49$, RMSEA < .001, CFI = 1.00, GFI = 1.00, NNFI = 1.02. Path coefficients from social anxiety to weekly alcohol consumption (−.08) and from social anxiety to positive expectancies (−.03) were nonsignificant in this model, in contrast with marginally significant path coefficients in the model excluding outliers.

norms. Further research, including optimal measures, diverse samples, and longitudinal methodology, is necessary to explicate these relations.

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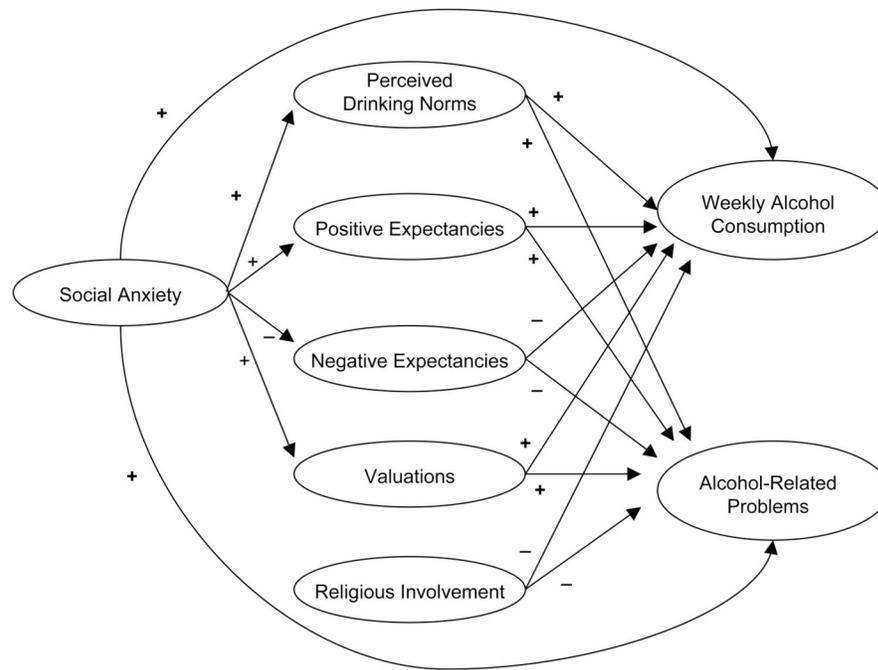
Figure 1.
Hypothesized path model, including social anxiety, perceived drinking norms, positive expectancies, negative expectancies, valuations, weekly alcohol consumption, and alcohol-related problems.
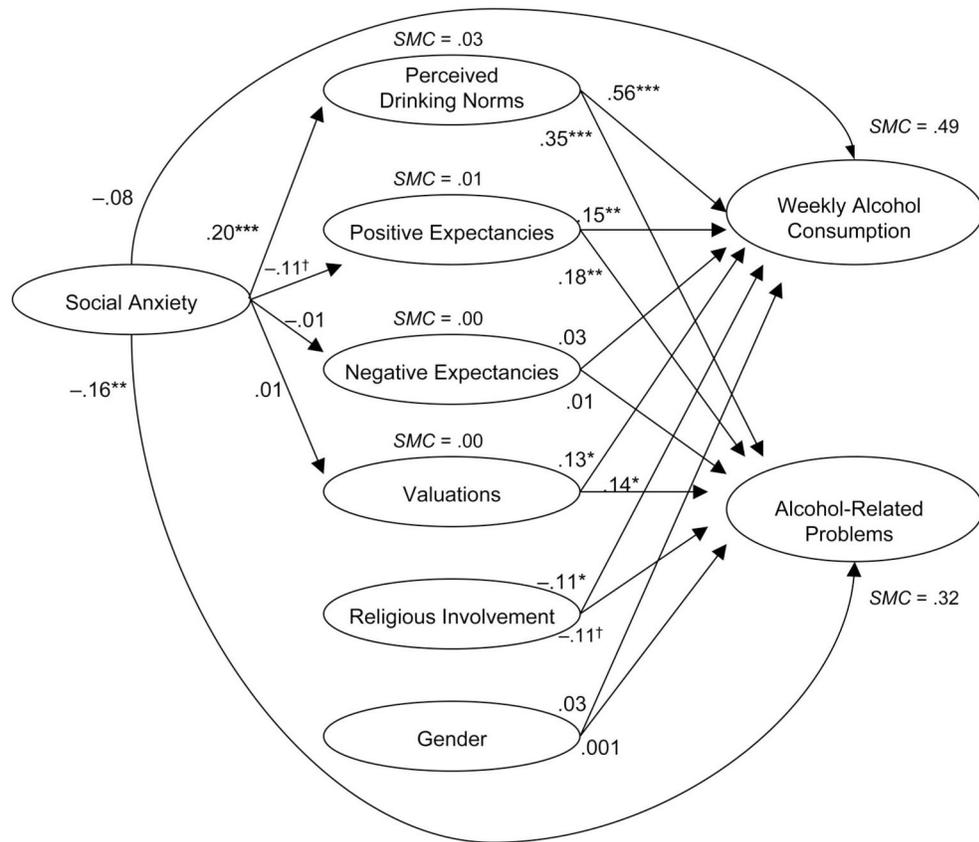
Figure 2.
Full hypothesized path model, controlling for anxiety-related constructs. † *p* < .10. * *p* < .05.
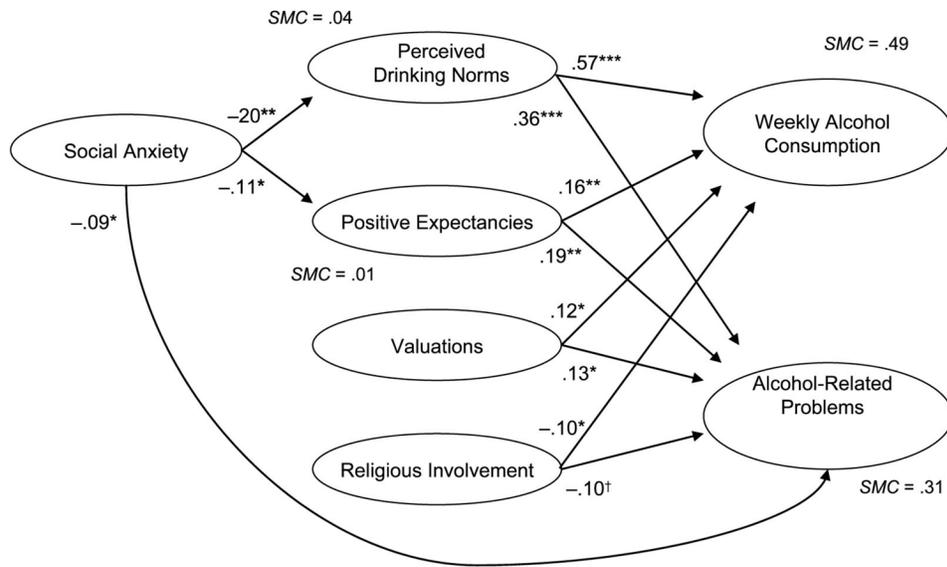** *p* < .01. *** *p* < .0001. SMC = squared multiple correlation.

Figure 3.
Reduced path model, including social anxiety, perceived drinking norms, positive expectancies, valuations, weekly alcohol consumption, and alcohol-related variables, controlling for anxiety-related constructs. † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$. SMC = squared multiple correlation.

Table 1

Univariate Summaries (Without Transformations) N = 228

Variable	M	SD	n	%
Age (years)	19.69	1.60		
Gender				
Men			138	60.5
Women			90	39.5
Marital status				
Single			227	99.6
Married			1	0.4
Divorced			0	0.0
Ethnicity				
Caucasian			207	90.8
African American			2	0.9
Hispanic			5	2.2
Asian American			7	3.1
Middle Eastern			0	0.0
Pacific Islander			1	0.4
Other			5	2.2
Not reported			1	0.4
Year in college				
1st			115	50.4
2nd			51	22.4
3rd			37	16.2
4th or higher			25	11.0
Living environment				
On-campus residence hall			125	54.8
On-campus fraternity/sorority			23	10.1
Off-campus apartment/house rental			58	25.4
Lives in own house			4	1.8
Lives with parents			18	7.9
Weekly alcohol consumption[a]	10.75	11.02		
Rutgers Alcohol Problem Index score	8.53	9.50		
Weekly drinking by typical student[a]	17.89	8.67		
Weekly drinking by best friends[a]	15.24	12.38		
Religious participation scale score	2.91	1.30		
Religious importance scale score	3.58	1.32		
CEOA positive expectancies score	2.74	0.47		
CEOA negative expectancies score	2.47	0.47		
CEOA valuations total score	2.77	0.46		
Interaction Anxiousness Scale score	42.98	12.68		
Social Phobia Anxiety Inventory score	48.32	27.27		
PANAS: Negative Affect score	19.37	5.87		

Variable	M	SD	n	%
Beck Depression Inventory-II score	9.64	7.44		
Beck Anxiety Inventory score	7.93	6.75		
Anxiety Sensitivity Index score	16.59	8.27		

Note. CEOA = Comprehensive Effects of Alcohol questionnaire; PANAS = Positive and Negative Affectivity Scales.

[a] Number of standard drinks per week.

Table 2

Correlations Among Path Model Variables (N = 228)

Variable	1	2	3	4	5	6	7	8
1. Drinks/week[a]	—							
2. RAPI[b]	.75***	—						
3. Drinking norms	.65***	.44***	—					
4. Religion scale	-.18**	-.17*	-.11	—				
5. Social anxiety[c]	-.17*	-.09	-.14*	-.09	—			
6. CEOA positive exp.	.40***	.37***	.31***	.31***	-.06	—		
7. CEOA negative exp.	.07	.10	.15*	.15*	.09	.23***	—	
8. CEOA valuations	.28***	.27***	.15*	.15*	.03	.38***	-.31***	—

[a] Weekly consumption underwent a square root transformation prior to conducting correlation analyses.

[b] The Rutgers Alcohol Problem Index (RAPI) variable underwent a logarithmic transformation prior to conducting correlation analyses.

[c] Social anxiety is the aggregate of z scores from the Interaction Anxiousness Scale and the Social Phobia Anxiety Inventory. CEOA = Comprehensive Effects of Alcohol questionnaire; exp. = expectancies.

*
$p < .05$.

**
$p < .01$.

***
$p < .001$.