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The Role of Positive Alcohol Expectancies in Underage Binge Drinking Among College Students

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Abstract

Objective—This study explored associations between positive alcohol expectancies, demographics, as well as academic status and binge drinking among underage college students.

Participants—A sample of 1,553 underage college students at three public universities and one college in the southeast who completed the Core Alcohol and Drug Survey in the spring 2013 semester.

Methods—A series of bivariate analyses and logistic regression models were used to examine associations between demographic and academic status variables as well as positive alcohol expectancies with self-reported binge drinking. Positive alcohol expectancies were examined in multivariable models via two factors derived from principal component analyses.

Results—Students who endorsed higher agreement of these two emergent factors (Sociability; Sexuality) were more likely to report an occurrence of binge drinking in the past two weeks.

Conclusions—Study results document associations between positive alcohol expectancies and binge drinking among underage students; implications for prevention and treatment are discussed.

Keywords

college binge drinking; Core survey; positive alcohol expectancies; underage

According to the 2011 National Survey on Drug Use and Health (NSDUH), 25.1% of underage individuals (ie, 12-20 years old) consumed alcohol within the previous thirty days and approximately 15.8% were classified as binge drinkers, defined as consuming five or more drinks on the same occasion at least one day in the past thirty days.¹ The NSDUH results also showed that 60.8% of full-time college students aged 18-22 reported current alcohol use and 39.1% were classified as binge drinkers.¹ Other studies indicate that the majority of all college drinking reported is attributed to underage students.² Furthermore, in

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comparison to their non-college peers, underage college men and women drink in heavier quantities.^{2,3}

Severe alcohol use among college populations has been shown to lead to negative consequences, such as unintentional injuries, motor vehicle crashes, sexual assault, academic failure, and an estimated 1,825 unintentional deaths a year.⁴ The National Institute on Alcohol Abuse and Alcoholism⁴ estimates that 3.3 million college students drive under the influence of alcohol annually and 25% of college students have experienced academic difficulties (eg, missing class, performing poorly on exams, falling behind) due to their drinking. Furthermore, one study found that first year and second year college undergraduates had lower academic performance when they reported higher levels of drinking.⁵

All of these consequences not only affect the individual, but also other college students, families, the college itself, and the community. These severe and prevalent negative consequences of college drinking are a public health concern. Despite awareness of these problems, heavy drinking is often an accepted behavior among college students, therefore identifying potential predictive factors for dangerous drinking is important.

Factors Associated with Binge Drinking among College Students

Demographics

Studies found that students who enter college with prior binge drinking history reduce their alcohol consumption as they mature in college without any interventions, suggesting that their patterns of high alcohol consumption will decrease over time.^{6,7} Research also suggests that males are more likely to binge drink than females.^{2,8-10} Other studies revealed that Caucasians/Whites report the highest alcohol consumption, then Hispanics, followed by African Americans/Blacks and Other.^{8,11} The residential environment of college students has been shown to be associated with differing levels of drinking, where students who live away from home and off campus report higher levels of alcohol consumption,³ including higher levels of binge drinking.^{2,8} Research also indicates a significant relationship of greater alcohol use and heavy episodic drinking among those involved socially in college Greek fraternities and sororities and those who are Greek members.^{6,8,12-14} Due to excessive alcohol consumption, negative consequences (eg, alcohol related injuries, DUI arrests, physical fights due to alcohol, sexual victimization) are more prevalent among Greek members, both male and female, than students who are non-members.^{4,9}

Academic Status

The college enrollment status (ie, full-time or part-time) of students has shown differences in drinking, where full-time students display a greater amount of drinking in terms of frequency and quantity when compared to part-time students.³ Increased alcohol use has also shown to have a negative impact on college students' academic performance (eg, missing class, performing poorly on a test).⁵ Caudill and colleagues⁶ found that students with a grade point average (GPA) of an "A" had fewer drinking occurrences, while students with a "C" or lower GPA had the most frequent occurrences.

Positive Alcohol Expectancies

Binge drinking among college students may be explained and predicted by their engagement in positive alcohol expectancies (PAEs).¹⁵⁻¹⁹ The construct of PAEs is derived from expectancy outcome theory, a cognitive learning theory in which individuals have learned an association between performing a certain behavior and receiving a positive outcome. The association is then stored in one's memory and positive expectations are formed about the behavior.^{16,18} Naturally, these behaviors are more likely to be repeated due to these positive expectancies.¹⁸ Positive alcohol expectancies and expectancy outcome theory provide a well-structured and articulated framework for research into both student drinking and abstention behavior.^{15,16} Research has shown that there is a significant association between PAEs and how much and often individuals consume alcohol, especially among college-aged populations.^{8,15-17,20-22}

Current Study

Understanding the strength of the association between PAEs and alcohol use is important when discussing implications for both prevention and intervention efforts for college populations.^{19,22} The purpose of this study was to examine factors associated with underage binge drinking among college students with a particular focus on PAEs. Two hypotheses were tested in this study: (1) underage college students with higher PAEs would be more likely to experience binge drinking episodes in the previous two weeks and (2) factors previously discussed that have been demonstrated by literature will be associated with underage binge drinking. This study adds to a limited body of literature exploring associations between PAEs and college student drinking, particularly among underage students. Focusing exclusively on the PAEs of underage students will yield important insight to their illegal drinking behavior.

Methods

Study Design

This study consisted of secondary analyses of data collected using the Core Alcohol and Drug Survey, also known as the Core survey, conducted during the 2013 spring semester. The Core Survey Long Form was administered to students attending four publicly funded institutions in Florida: three state universities and one state college as part of the Florida Collegiate Success Initiative (CSI), a state initiative funded by a U.S. Department of Education (DOE) "Sober Truth On Preventing Underage Drinking" (STOP) grant.

Florida CSI involved a partnership between a coordinating center (the authors' location), and collaboratives consisting of academic institutions and county-level substance abuse prevention coalitions in four counties, with the aim of developing campus strategies for prevention. Collaborative members included each university's health and wellness promotion administrator and members of their local county's substance abuse prevention coalitions.

The Core survey, a requirement of the DOE grant, is a 39 question instrument used throughout the U.S. to assess alcohol and drug use among college students as well as

perceptions of campus policies.²³ The Core Institute under contract with the coordinating center provided the online survey platform and data collection process before transferring the data to the coordinating center.

After each academic institution received exempt status approval from their respective Institutional Review Board, emailed invitations from the health and wellness coordinator were sent to their respective undergraduates. Respondents accessed the survey's website link, read the study description, and provided consent. With the exception of one university, all institutions were sent up to four reminder emails requesting student participation. The remaining university only sent one invitation to participate. Students aged 18-20 years old were used for this study's selection criteria. This study was approved by the University of South Florida's Institutional Review Board.

Dependent Variable

Binge Drinking—The focus of this study analyzed the occurrence of one or more self-reported binge drinking episodes in the last two weeks. The survey question used to assess this was: “*Think back over the last two weeks. How many times have you had five or more drinks at a sitting?*,” where a drink was defined as a bottle of beer, a glass of wine, a wine cooler, a shot glass of liquor, or a mixed drink. Participants chose among categorical responses ranging from “*none*,” “*once*,” “*twice*,” “*3 to 5 times*,” “*6 to 9 times*,” and “*10 or more times*.” These response items were later re-coded to a dichotomized variable (ie, no binge drinking episode and one or more episodes).

Independent Variables

Demographics—Variables assessed were year in college (ie, freshman, sophomore, junior, senior), ethnicity, sex, current residence (ie, on-campus or off-campus), employment status, and Greek membership.

Greek affiliation was assessed through the question stem: “*Within the last year to what extent have you participated in any of the following activities?*”, where the activity analyzed was social sororities or fraternities. The response format was categorized as involved, attended, active involvement (non-leader), and leadership position. Based off this, Greek status was then re-coded to a trichotomous variable: non-member, attended, and member. This coding revision was based upon existing literature which suggests that attending Greek events, even as a non-member, is associated with an increased use of alcohol than those who do not attend.^{13,14}

Academic Status—Variables included in the present analyses were students' cumulative GPA and student enrollment status within the university. GPA was assessed by asking students to estimate their cumulative GPA with the following letter grades: A+, A, A-, B+, B, B-, C+, C, C-, D+, D, D-, F. These values were re-coded as A, B, C, and D/F, which were used in all analyses. Enrollment status was measured as either full-time (12+ credits) or part-time (1-11 credits) enrollment.

Positive Alcohol Expectancies—Positive alcohol expectancies were assessed through fourteen dichotomous items beginning with the question stem: “*Do you believe that alcohol has the following effects?*,” Students responded “yes” or “no” to each statement given; the item text for each specific statement has been presented elsewhere,¹⁵ and is discussed later throughout this paper.

In order to examine associations between PAEs and the self-reported binge drinking in the past two weeks using the most parsimonious method, a series of principal components analyses were conducted. Principal components analysis (PCA) was selected as the method of factor extraction to derive the linear composites that best summarized the variability of student PAEs. All PCAs were conducted in SPSS version 21 statistical program²⁴ using the Pearson correlation matrix. However, given the binary nature of the data, PCAs using a tetrachoric correlation matrix were also conducted using SAS version 9.3. While similar results were obtained from PCAs based upon the tetrachoric matrix, the SAS program used did not produce factor scores necessary for utilization in logistic regression models. Thus, results from analyses based upon the Pearson correlation matrix are presented.

Several criteria were utilized to determine the number of factors to be retained. Visual inspection of the scree plot produced and application of the Kaiser-Guttman rule²⁵ (which retains all factors with eigenvalues greater than 1) suggested the extraction of a two-factor solution. In regards to item retention criteria, items that loaded at .32 or higher into both of the two factors were excluded due to crossloadings²⁶ and each individual item had to have a minimum loading of .4 into a factor.²⁷ Each factor had to have a minimum of three items to contribute.²⁶ In addition, each alcohol expectancy item had to contribute theoretical meaningfulness to each factor. Orthogonal (varimax) rotation was used to produce factors that were uncorrelated.

The first PCA conducted contained all fourteen PAE items and two factors emerged. Inspection of the items contained within each factor suggested that the first and second factor corresponded to sociability and sexuality, respectively. However, the item “*Makes food taste better*”, which significantly loaded on the second factor, was removed due to a lack of theoretical consistency with the other items which significantly loaded into that factor (ie, “*Makes women sexier, makes men sexier, makes me sexier, facilitates sexual opportunities*”). A second PCA was then conducted excluding that item. Results from this PCA indicated that the item “*Facilitates sexual opportunities*,” be removed due to the presence of significant crossloadings (.466 for factor 1, .439 for factor 2). Following the removal of that item, a third PCA was conducted. Results from this PCA indicated that the item “*Easy to deal with stress*” be removed due to poor factor loadings with the first extracted factor (.474), sub-threshold crossloadings with the second factor (.282), as well as a lack of theoretical consistency with all other items which significantly loaded into factor 2.

The final PCA conducted contained eleven items with two emergent factors (see Table 1), together explain 64.16% of the variance among PAE items. The theoretical components of each resulting factor led to the name of Sociability for factor 1 and Sexuality for factor 2. Internal consistency reliability analyses were conducted on each factor, indicating the factors produced scores with good to high levels of reliability (Sociability $\alpha = .90$, Sexuality

$\alpha = .84$). The emergent factors, as well as their naming, correspond to similarities in varying subscales of empirical alcohol expectancy measures in the literature.²⁸⁻³¹

Analyses

Bivariate statistics were used to examine demographics, academic status, and alcohol expectancy items with self-reported binge drinking. Chi square tests and an independent *t*-test were used as appropriate. Violations of chi square assumptions in bivariate analyses (ie, adequate cell sizes) led ethnicity to be re-coded into two classifications, White (non-Hispanic) and Other to ensure a parsimonious variable in further analyses. A block multivariable logistic regression model was used to examine certain characteristics (ie, demographics, academic status, PAE factors) associated with the occurrence of binge drinking. All demographic and academic status variables were included in the multivariable analysis to control for any potential demographic or academic differences. The two factors (ie, Sociability and Sexuality) derived from the PCA (previously discussed) were used in the multivariable model to assess PAEs; internal consistency of these factors were examined via Cronbach's alpha. All analyses were performed using SPSS version 21 statistical program.²⁴ Bivariate associations between demographics, academic status, and alcohol expectancy items were evaluated using Bonferroni family-wise error corrections at $p < .05$ (eg, six variables for demographic: corrected $p = .05/6 = .008$, see Table 2); all other multivariable analyses were evaluated at $p < .05$.

Results

Sample Description

A total of 2,358 (30% males, 70% females) responded to the Core survey administered in the spring 2013 semester across the four institutions. After restricting the analyses to underage students (ie, 18-20 years old) the final sample size was 1,553 (66% of total) with a mean age of 19.12 ($SD = 0.77$), most of whom (73%) were females. The sample was racially and ethnically diverse (69.9% White non-Hispanic, 15.6% Hispanic, 6.4% Black non-Hispanic, 4.3% Asian or Pacific Islander, 0.5% American Indian or Alaskan Native, 3.4% other) and relatively evenly distributed between freshmen (35.6%), sophomores (32.5%) and juniors (25.6%). The majority of students were enrolled full-time (98.5%), unemployed (65.3%), and living on campus (50.5%). Students' self-reported cumulative grade point average was high (A, 45.7%; B, 44.6%; C, 8.9%; D or F, 0.8%). Most respondents reported that they were not members of Greek organizations (80.8% non-member, 7.1% attended Greek events, 12% Greek members).

Prevalence of Binge Drinking

Overall, 36.3% of the sample reported one or more binge drinking episodes in the past two weeks at the time of survey completion. Across those who reported any binge drinking episode in the past two weeks ($n = 562$), 40% reported one episode (14.4% of entire sample); 27% reported two episodes (10% of entire sample); 25% reported 3-5 episodes (9.2% across entire sample); 6% reported 6-9 episodes (2% of entire sample); 2% reported 10 or more episodes (0.7% of entire sample).

Bivariate Analyses

Table 2 depicts the bivariate associations between each independent variable and self-reported past two week binge drinking. There were no significant differences in rates of self-reported past two week binge drinking by year in college. Males (43.7%) were more likely to self-report binge drinking than females (33.6%). There was significant variability in rates of binge drinking across racial/ethnic categories, with those who were Hispanic (39.3%), White (non-Hispanic) (38.6%), and Other (33.3%) reporting the highest rates of binge drinking. There was no difference in self-reported binge drinking by residence or employment status. Those who reported a binge drinking occurrence and were Greek members (64.8%), as well as non-members who attended Greek events (49.1%), had significantly higher rates of self-reported binge drinking than non-members who did not attend events.

There was significant variability in rates of binge drinking across GPA, with those who self-reported a C (40.6%), B (40.1%), and D/F (33.3%) reporting the highest rates of binge drinking. There was no significant difference by enrollment status.

There was significant variability of rates of self-reported binge drinking by each of the original fourteen PAE items, with seven items associated with higher rates of binge drinking and seven items associated lower rates of binge drinking. However, an independent *t*-test conducted with the Sociability and Sexuality factors displayed that higher factor scores were associated with higher rates of self-reported binge drinking. For Sociability, those who reported yes to one or more episodes of binge drinking had a mean of 0.49 (*SD* = 0.68), as compared to those who did not (*M* = -0.28; *SD* = 1.05), *t* (1426.17) = -16.85, *p* <.001. For Sexuality, those who reported yes to one or more episodes of binge drinking had a mean of 0.26 (*SD* = 1.17), as compared to those who did not (*M* = -0.15; *SD* = 0.85), *t* (845.08) = -7.19, *p* <.001.

Multivariable Analyses

Results of the block logistic regression method are presented in Table 3. In Model 1, results indicate that the following were significantly more likely (*p* < .05) to have a binge drinking occurrence: males (*OR* = 1.61), Whites (non-Hispanic) (*OR* = 1.29), students living off campus (*OR* = 1.34), those who attended Greek events (*OR* = 2.41), and those who were members of Greek organizations (*OR* = 4.16). The results of Model 1 indicate a significant step and model chi square test ($X^2(10) = 106.29$, *p* < .001). The linear combination of predictors in Model 1 accounted for roughly 10% of the variance in the self-reported occurrence of past-two week binge drinking (Nagelkerke's $R^2 = .098$).

In Model 2, Whites (non-Hispanic), males, those who attended Greek events, and those who were Greek members remained significantly more likely to have a binge drinking occurrence as in Model 1. Students living off campus became insignificant in Model 2. With the addition of academic status in Model 2, those who self-reported a cumulative GPA of a B were significantly more likely to have a binge drinking occurrence (*OR* = 1.38). The step chi square test of Model 2 was significant ($X^2(4) = 7.46$, *p* = .114), as well as the model chi

square test ($X^2(14) = 113.74$). The variance explained in Model 2 slightly increased from Model 1 (Nagelkerke's $R^2 = .105$).

In Model 3, males ($OR = 1.49$), those who attended Greek events ($OR = 1.67$), those who were Greek members ($OR = 3.15$), and those with a B GPA ($OR = 1.39$) remained significant. Students living off campus reappeared as significant ($OR = 1.36$). With the addition of alcohol expectancies, both Sociability ($OR = 2.60$) and Sexuality ($OR = 1.48$) proved to be significant, demonstrating that those who had higher factor scores, which indicates a greater endorsement of PAE items, were more likely to have a binge drinking occurrence. The step chi square test of Model 3 was significant ($X^2(2) = 227.90, p < .001$), as well as the Model 3 chi square test ($X^2(16) = 341.65, p < .001$). The addition of PAEs in the overall study model resulted in a significant increase in the variance explained (Nagelkerke's $R^2 = .292$).

Hosmer and Lemeshow's goodness of fit test indicate well-fitting models for all models (Model 1: $X^2(8) = 10.99, p = .202$; Model 2: $X^2(8) = 10.06, p = .261$; Model 3: $X^2(8) = 4.82, p = .777$).

Comment

This primary focus of this study was to examine the association between PAEs and binge drinking, while controlling for certain demographic factors and academic status, among underage college students. From the Core Alcohol and Drug survey, self-reported demographic and academic factors identified by literature were used in bivariate analyses and logistic regression models. Positive alcohol expectancies were analyzed by each question stem using bivariate analyses, and factor analyzed to ensure the most parsimony in multivariable analyses. Principal component analyses were used to derive the two factors (ie, Sociability and Sexuality) used for inclusion in the logistic regression models. To support this study's assessment of using factor analysis to examine PAEs' association with binge drinking, the two factors emergent are theoretically consistent with subscales in alcohol expectancy assessment tools.²⁸⁻³¹ The empirically validated adolescent Alcohol Expectancy Questionnaire (AEQ), which is designed for individuals with minimal exposure to and experience with alcohol,²⁹ has subscales titled "Changes in Social Behavior" and "Sexual Enhancement". These subscales are theoretically consistent with the factors in this study. In addition, the adult AEQ has similar subscales (ie, "Increased Social Assertiveness" and "Sexual Enhancement").²⁹ When others tried to create a new alcohol expectancy tool, the same two subscales were found.³⁰ Similar to this study's approach to derive factors, all previous methods to develop these alcohol expectancy psychometric tools used factor analysis. Although the Core survey alcohol expectancy items were not part of a psychometrically validated questionnaire, we tried to create one using PCA and it demonstrates high internal reliability and theoretical consistency. The extraction of a two-factor solution found in the current study from the Core survey PAE items is consistent with other findings in the literature.¹⁵

Additionally, results of this study further support other findings in the literature, demonstrating that college students drink with the positive expectation that it will facilitate

their social engagement and bonding or enhance sexual appearance.^{15-17, 20-21} A previous study has shown that these same two expectations are evident in particular environments where heavy drinking is associated, such as nightclubs or bars.³² These are key aspects for prevention coalitions and college administrators to consider when developing strategies for prevention of underage college student drinking and prevention of binge drinking among those of legal age.

Other Factors Associated with Underage College Student Binge Drinking

Consistent with previous research on binge drinking among college students, the results from this study demonstrated that binge drinking was more frequent among Whites, males, those living off campus, and among those who attended Greek events, or who were Greek members. Contrary to other research findings, this study did not find an association with binge drinking and increased year in college. This may be due to the study's restricted focus on the underage population, which is mainly freshmen or sophomores. As consistent in another study, the employment status of underage college students was also not associated with binge drinking.⁸ While the literature has been inconsistent regarding the association between student enrollment status (ie, full-time or part-time) and students' drinking behavior,³ this study failed to find any significant differences, as consistent with results obtained by Capece and Lanza-Kaduce.⁸ As almost all (98%) students of this study were enrolled full-time, future studies might compare similar sized samples of part-time and full-time enrolled students to examine any associations with binge drinking.

Addressing Limitations in Previous Literature

Results from the current study support and expand upon findings from previous research examining the role of PAEs¹⁵ - or the concept of rewards under the social learning theory⁸ - to predict college student binge drinking using data from the Core survey. Results of PCAs of the current study support the unpublished two-factor solution of Core survey PAE items discussed in the study by Derby.¹⁵ Further, while Derby¹⁵ examined the role of each PAE item individually in his logistic regression models, items pertaining to both the Sociability and Sexuality factors extracted in the current study emerged as significant in his study, supporting the validity of the current study findings.

Capece and Lanza-Kaduce⁸ operationalized the fourteen positive alcohol expectancy items of the Core survey as a unidimensional factor corresponding to the concepts of rewards under the social learning theory (and Aker's larger social structure-social learning theory). Similar to the results of the current study, Capece and Lanza-Kaduce⁸ found that increases in the endorsement of the PAE items were associated with increases in the self-reported binge drinking among college students. However, Capece and Lanza-Kaduce⁸ analyzed student self-reported binge drinking using the original ordinal response format from the Core survey via linear regression modeling. Thus, parameter estimates obtained from Capece and Lanza-Kaduce⁸ are likely biased. In the current study, the same variable from the Core survey, self-reported binge drinking, was dichotomized and analyzed via logistic regression modeling techniques to prevent such biased parameter estimates. In addition, a dichotomous indicator of any self-reported binge drinking was chosen due to the public

health intervention and treatment significance of identifying the role of PAEs and group characteristics (eg, Greek membership) associated with *any* level of dangerous drinking.

Limitations

Possible limitations to the external validity of the study include self-selection (ie, the representativeness of students who chose to respond to the Core survey and the reliance on self-report of alcohol consumption). Reports of one's drinking behavior may be a sensitive topic, possibly leading to the issue of social desirability bias, with students underreporting their frequency of binge drinking. However, research supports the validity of self-reported alcohol consumption.³³ Lastly, the lack of an empirically validated alcohol expectancy tool embedded within the Core survey, such as the AEQ is another limitation that affects the generalizability of the results. We relied on specific Core survey items to create an expectancy measure through factor analytic methods. This limited the measurement of alcohol expectancies to far fewer items than the standard AEQ. .

Conclusions

The results of this study support PAEs and their significant association with alcohol use, specifically among underage college students. Most factors associated with binge drinking among college students were associated among the vulnerable subgroup of underage college students. Results suggest that future intervention and prevention efforts should be targeted at populations most vulnerable to binge drinking: males, those who attend Greek events, and Greek members.

Research has shown that alcohol expectancy challenges (ECs) can serve to reduce drinking through educational approaches that diminish positive expectancies from alcohol while enhancing negative expectancies.^{34,35} For example, an approach could be greater education emphasis about college students' unplanned and unwanted sexual encounters resulting from alcohol consumption. Results from the present study further support these type of approaches. In addition, EC research has stated that the effects of the intervention are relatively short and the greatest reduction in drinking can be seen immediately after the intervention.^{34,35} Given findings from this study, it may be of benefit to offer ECs through dissemination of education materials or through social media before students participate in scheduled Greek-life or other events where excessive drinking is highly probable to prevent underage drinking or alcohol consumption at dangerous levels. Such strategies are important public health approaches that would require collaborative efforts with campus and local community coalitions.

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Table 1
Results of final principal components analysis factor solution

	Factor 1 ^a Sociability $\alpha = .90$	Factor 2 ^b Sexuality $\alpha = .84$	
	Pattern loading	Pattern loading	Communality
Item Response			
Breaks the ice	.791	.099	.636
Enhances social activity	.791	.130	.643
Facilitates a connection with peers	.770	.198	.632
Gives people something to talk about	.737	.146	.564
Facilitates male bonding	.765	.239	.642
Facilitates female bonding	.771	.243	.654
Allows people to have more fun	.733	.228	.589
Gives people something to do	.650	.144	.443
Makes women sexier	.225	.859	.789
Makes men sexier	.159	.861	.766
Makes me sexier	.195	.813	.699

Note. Orthogonal (varimax) rotation was used.

^aEigenvalue = 5.445, 49.50% variance, 49.50% cumulative variance

^bEigenvalue = 1.613, 14.67% variance, 64.16% cumulative variance

Table 2
Bivariate associations between demographics, academic status and alcohol expectancies and self-reported binge drinking episode(s)

Domain	Variable	None (n = 985)		One or more (n = 562)		Significance
		n	%	n	%	
Demographics ^d						
	Year in College					NS
	Freshman	358	64.9%	194	35.1%	
	Sophomore	304	60.7%	197	39.3%	
	Junior	261	65.7%	136	34.3%	
	Senior	59	62.8%	35	37.2%	
	Sex					$\chi^2(1) = 13.23, p < .001$
	Male	232	56.3%	180	43.7%	
	Female	752	66.4%	381	33.6%	
	Ethnicity					$\chi^2(5) = 26.73, p < .001$
	White (non-Hispanic)	662	61.4%	416	38.6%	
	Hispanic	147	60.7%	95	39.3%	
	Black (non-Hispanic)	81	81.8%	18	18.2%	
	Asian/Pacific Islander	53	81.5%	12	18.5%	
	Other	34	66.7%	17	33.3%	
	American Indian/Alaskan Native	5	71.4%	2	28.6%	
	Residence					NS
	On-campus	511	65.3%	272	34.7%	
	Off-campus	473	62.2%	288	37.8%	
	Employment					NS
	Yes, full-time	23	69.7%	10	30.3%	
	Yes, part-time	324	64.2%	181	35.8%	
	No	636	63.2%	371	36.8%	
	Greek Affiliation					$\chi^2(2) = 87.28, p < .001$
	Non-member	844	69.1%	377	30.9%	
	Attended	55	50.9%	53	49.1%	
	Member	64	35.2%	118	64.8%	

Domain	Variable	None (n = 985)		One or more (n = 562)		Significance
		n	%	n	%	
Academic status ^b						
GPA						$\chi^2(3) = 10.56, p = .014$
A		447	67.9%	226	32.1%	
B		413	59.9%	276	40.1%	
C		82	59.4%	56	40.6%	
D/F		8	66.7%	4	33.3%	
Enrollment status						
Full-time		968	63.6%	553	36.4%	
Part-time		14	60.9%	9	39.1%	
Alcohol expectancies ^c						
Do you believe alcohol has the following effects?						
Breaks the ice		589	53.9%	504	46.1%	$\chi^2(1) = 176.44, p < .001$
Enhances social activity		607	54.6%	504	45.4%	$\chi^2(1) = 160.05, p < .001$
Makes it easier to deal with stress		298	48.6%	315	51.4%	$\chi^2(1) = 104.01, p < .001$
Facilitates a connection with peers		461	50.3%	455	49.7%	$\chi^2(1) = 184.27, p < .001$
Gives people something to talk about		564	55.8%	446	44.2%	$\chi^2(1) = 86.09, p < .001$
Facilitates male bonding		452	51.6%	424	48.4%	$\chi^2(1) = 140.19, p < .001$
Facilitates female bonding		370	47.9%	403	52.1%	$\chi^2(1) = 176.28, p < .001$
Allows people to have more fun		455	49.8%	459	50.2%	$\chi^2(1) = 197.38, p < .001$
Gives people something to do		618	57.3%	461	42.7%	$\chi^2(1) = 70.68, p < .001$
Makes food taste better		102	35.8%	183	64.2%	$\chi^2(1) = 119.75, p < .001$
Makes women sexier		155	42.7%	208	57.3%	$\chi^2(1) = 93.43, p < .001$
Makes men sexier		137	45.8%	162	54.2%	$\chi^2(1) = 53.40, p < .001$
Makes me sexier		98	34.3%	188	65.7%	$\chi^2(1) = 132.99, p < .001$
Facilitates sexual opportunities		395	53.2%	347	46.8%	$\chi^2(1) = 72.35, p < .001$

Note. NS = not significant. There is some variation in n across variables due to missing data; valid percentages displayed. Only statistically significant findings in each domain at the Bonferroni family wise adjusted *p* value are displayed; Bonferroni *p* values are shown below.

^aDemographics: (.05/6) = .0083

^b Academic status: (.05/2) = .025

^c Alcohol expectancies: (.05/14) = .00357

Table 3
Results of block logistic regression models examining the associations between demographics, academic status and alcohol expectancies and self-reported binge drinking episode(s)

Domain	Variable	Model 1 ^a					Model 2 ^b					Model 3 ^c				
		B	OR	95% CI	p		B	OR	95% CI	p		B	OR	95% CI	p	
Demographics																
Year in College																
	Freshman (reference)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	Sophomore	0.01	1.01	[0.76, 1.35]	NS	0.01	1.01	[0.75, 1.35]	NS	-0.16	0.85	[0.62, 1.17]	NS			
	Junior	-0.19	0.83	[0.60, 1.15]	NS	-0.17	0.85	[0.61, 1.18]	NS	-0.34	0.71	[0.50, 1.02]	NS			
	Senior	0.05	1.05	[0.63, 1.74]	NS	0.09	1.10	[0.66, 1.82]	NS	0.00	1.00	[0.57, 1.76]	NS			
Sex																
	Female (reference)	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Male	0.47	1.61	[1.25, 2.06]	<.001	0.46	1.58	[1.23, 2.03]	<.001	0.40	1.49	[1.13, 1.97]	.005			
Ethnicity																
	Other (reference)	-	-	-	-	-	-	-	-	-	-	-	-	-		
	White	0.25	1.29	[1.00, 1.66]	NS	0.27	1.31	[1.02, 1.69]	.039	0.14	1.15	[0.87, 1.52]	NS			
Residence																
	On campus (reference)	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Off campus	0.29	1.34	[1.03, 1.73]	.029	0.25	1.28	[0.98, 1.67]	NS	0.31	1.36	[1.02, 1.82]	.037			
Employment																
	No (reference)	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Yes, full-time	-0.31	0.73	[0.34, 1.61]	NS	-0.35	0.70	[0.32, 1.54]	NS	-0.46	0.63	[0.28, 1.45]	NS			
	Yes, part-time	-0.07	0.93	[0.72, 1.20]	NS	-0.09	0.92	[0.71, 1.18]	NS	-0.09	0.91	[0.70, 1.20]	NS			
Greek Affiliation																
	Non-member (reference)	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Attended	0.89	2.41	[1.59, 3.65]	<.001	0.86	2.37	[1.56, 3.60]	<.001	0.52	1.67	[1.07, 2.63]	.025			
	Member	1.43	4.16	[2.96, 5.86]	<.001	1.42	4.14	[2.94, 5.84]	<.001	1.15	3.15	[2.16, 4.58]	<.001			
Academic status																
	GPA															
	A (reference)	-	-	-	-	-	-	-	-	-	-	-	-	-		

Domain	Variable	Model 1 ^a				Model 2 ^b				Model 3 ^c			
		B	OR	95% CI	p	B	OR	95% CI	p	B	OR	95% CI	p
B		0.32	1.38	[1.08, 1.75]	.009	0.33	1.39	[1.07, 1.80]	.013				
	C	0.25	1.29	[0.85, 1.95]	NS	0.23	1.26	[0.80, 1.98]	NS				
	D/F	-0.07	0.93	[0.26, 3.34]	NS	-0.55	0.58	[0.15, 2.16]	NS				
Enrollment status													
	Full-time (reference)	-	-	-	-	-	-	-	-	-	-	-	-
	Part-time	0.25	1.28	[0.52, 3.18]	NS	0.35	1.41	[0.49, 4.06]	NS				
Alcohol expectancies													
	Sociability					0.96	2.60	[2.23, 3.04]	<.001				
	Sexuality					0.39	1.48	[1.32, 1.66]	<.001				

Note. OR = odds ratio; CI = confidence interval; Sig = significance; NS = not significant.

^a Step 1: $\chi^2(10) = 106.29, p < .001$; Model: $\chi^2(10) = 106.29, p < .001$; Nagelkerke R square = .098; Hosmer and Lemeshow Test: $\chi^2(8) = 10.99, p = .202$.

^b Step 2: $\chi^2(4) = 7.46, p = .114$; Model: $\chi^2(14) = 113.74, p < .001$; Nagelkerke R square = .105; Hosmer and Lemeshow Test: $\chi^2(8) = 10.06, p = .261$.

^c Step 3: $\chi^2(2) = 227.90, p < .001$; Model: $\chi^2(16) = 341.65, p < .001$; Nagelkerke R square = .292; Hosmer and Lemeshow Test: $\chi^2(8) = 4.82, p = .777$.