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## The Moderating Role of Gender in the Prospective Associations Between Expectancies and Alcohol–Related Negative Consequences Among College Students

Martie P. Thompson<sup>1</sup>, Hugh Spitzer<sup>1</sup>, Thomas P. McCoy<sup>2</sup>, Laura Marra<sup>1</sup>, Erin L. Sutfin<sup>2</sup>, Scott D. Rhodes<sup>2</sup>, and Catherine Brown<sup>1</sup>

<sup>1</sup>Department of Public Health Sciences, Clemson University, Clemson, South Carolina, USA

<sup>2</sup>Wake Forest University School of Medicine, Winston-Salem, North Carolina, USA

### Abstract

This study examined if alcohol expectancies (assessed with the Comprehensive Effects of Alcohol–Brief Form) were prospectively related to negative consequences (assessed with the Rutgers Alcohol Problem Index) and if these associations varied by gender. Data were collected from 558 first-year college students at a university in the south-eastern United States as part of an intervention study conducted during their initial residence hall meetings of the fall semester of 2007. Only those students who used alcohol and completed both baseline and 3-month follow-up surveys were included in the analyses ( $n = 347$ ). Mixed-model multivariate analyses indicated that higher sexuality and tension reduction expectancies were prospectively related to more alcohol consumption–related negative consequences for males but not for females. Findings suggest that intervention efforts to prevent problem drinking would benefit from being gender-specific. The study's limitations are noted.

### Keywords

expectancies; college students; alcohol–related negative consequences; gender; problem drinking

### Introduction

Nationally representative surveys of alcohol use among U.S. college students indicate that problem drinking is highly prevalent (Wechsler et al., 2002). Heavy alcohol use among college students is associated with alcohol use disorders in later adulthood (O'Neill, Parra, and Sher, 2001), as well as an increased likelihood of alcohol–related negative consequences, such as unintentional and intentional injuries (Hingson, Heeren, Winter, and Wechsler, 2005).

Positive expectancies about the effects of alcohol have been found to be associated with subsequent drinking problems (Blume, Lostutter, Schmalin, and Marlatt, 2003; Leigh and Stacy, 2004; Park and Grant, 2005). Alcohol expectancies and internal motivation to drink among college students vary by gender, by level of “heavy drinking,” and by environmental context (Krank, Wall, Stewart, Wiers, and Goldman, 2005; Read and Curtin, 2007). Alcohol expectancies at the beginning of the freshmen year are significantly related to drinking

levels and alcohol-related problems at the end of the school year (Werner, Walker, and Greene, 1995). Alcohol expectancies are more predictive of drinking problems than are demographic variables (Baer, 2002). The fact that alcohol expectancies decrease over the 4 years of college (Sher, Wood, Wood, and Raskin, 1996) suggests that the first year of college is a pivotal time period for addressing expectancies.

Males are more likely than females to engage in problem drinking (Spear, 2002), yet data suggest that the gender gap is getting smaller (Johnston, O'Malley, and Bachman, 2002). Men also tend to evaluate alcohol-related problems less negatively than women, plan to drink more than women, and rate avoidance of negative consequences as less important to them than do women (Gaher and Simons, 2007; Patrick and Maggs, 2008). Prospective data also suggest that alcohol expectancies may be more predictive of alcohol consumption patterns among males than females (Kidorf, Sherman, Johnson, and Bigelow, 1995; Read, Wood, Lejuez, and Palfai, 2004).

The purpose of the current analysis is to explore whether expectancies are prospectively related to alcohol-related negative consequences and if these associations vary for males and females.

## Method

### Participants and Procedures

Data were collected as part of an intervention trial to decrease heavy episodic drinking and alcohol-related consequences among first-year college students. One male and one female freshman residence hall were selected as the study population because they each contained nine floors, were equal in total population, similar in demographics, located next to each other in the same area of campus, and permitted more effective control over cross-contamination between exposure conditions by gender. One of three exposure conditions was randomly assigned by floor within each residence hall to three of the nine floors. Baseline data were collected during student orientation sessions the day before classes began in the fall semester. Students were told that the university wanted to develop more effective alcohol intervention programs and that they were being asked to complete an anonymous 30-minute baseline survey, including questions about alcohol use, alcohol expectancies, and alcohol-related consequences, and then hear information presented in a 1-hour session by a team of two peer health educators.

Seven hundred eighty students from the two dormitories were eligible to participate in the study. Approximately 72% of eligible students completed baseline surveys (Time 1,  $n = 558$ ). Of these students, 75% ( $n = 416$ ) were resurveyed 3 months later (Time 2) on each residence hall floor during a residence hall meeting. We used mixed-effects logistic regression to examine differences in attrition rates by gender, race, age, Greek status, alcohol expectancy scores, and Rutgers Alcohol Problem Index (RAPI) scores. Bivariate and multivariable attrition analyses revealed no significant differences ( $p > .05$ ) on any of these variables except for gender, with females being more likely to complete the 3-month follow-up survey. Students who reported that they had never consumed alcohol were excluded from the analyses, reducing the analytic sample to 347.

### Measures

**Alcohol-Related Negative Consequences (Dependent Variable)**—The Rutgers Alcohol Problem Index (RAPI) was used to assess alcohol-related negative consequences. The 23 items were answered on a 5-point Likert scale (0–4), and responses were summed

across items. The RAPI has demonstrated good convergent and discriminant validity, as well as reliability (White and Labouvie, 1989;  $\alpha = .89$  in current sample).

**Alcohol Expectancies (Predictor)**—The 15-item Comprehensive Effects of Alcohol–Brief Form (B-CEOA; Ham, Stewart, Norton, and Hope, 2005) was used to measure the perception that a particular effect would occur from drinking. Items were answered on a 4-point Likert scale. The B-CEOA has four subscales: sociability and risk, cognitive and behavioral impairment, sexuality, and tension reduction. The scale has good psychometric properties (Ham et al., 2005), and the subscales were internally consistent in our sample: sociability and risk = .80, cognitive and behavioral impairment = .73, sexuality = .70, and tension reduction = .70.

**Gender (Hypothesized Moderator)**—Males were assigned a score of 0 and females were assigned a score of 1.

**Covariates**—We controlled for race (white = 0, other = 1), age (coded continuously), if the respondent was in a Greek organization (0 = no, 1 = yes), and RAPI scores at Time 1.

**Interaction Terms**—We computed four interaction terms to represent the cross products of gender and each expectancy subscale. The components of the interaction terms were centered before computing the cross-products in order to reduce multicollinearity (Aiken and West, 1991).

## Results

### Sample Descriptives

Descriptive information on the study variables for males and females are shown in Table 1. The table also depicts gender differences on each variable using simple linear regression with adjustments for dorm floor clustering. Males were more likely than females to have higher levels of tension reduction expectancies, and females were more likely than males to be a member in a Greek organization. We performed an outlier analysis by assessing for Normality and by examining graphs using boxplots and histograms. We also performed an analysis of residuals for the regression modeling and examined influence statistics.

### Bivariate Correlations Between Main Study Variables

Table 2 presents the correlation matrix between the primary study variables. Most of the expectancy subscales were correlated significantly with each other, such that positive expectancies in one domain were associated with positive expectancies in other domains. Of particular note, sociability and risk, sexuality, and tension reduction expectancies were related to higher scores on the RAPI at Time 2.

### Multivariate Regression Analyses

Linear mixed-model regression analyses were conducted to examine prospective associations between expectancies at Time 1 and alcohol–related consequences at Time 2, adjusting for dorm floor (random effect) and controlling for age, Greek membership, race, and Time 1 RAPI scores (fixed effects). As shown in Table 2, there were significant main effects for sexual and tension reduction expectancies, with higher expectancies being associated with higher RAPI scores 3 months later. There was also a significant main effect for RAPI at Time 1. Two of the four interaction terms (Gender  $\times$  Sexual Expectancies, Gender  $\times$  Tension Reduction Expectancies) were significantly related to RAPI scores at Time 2.

To interpret the nature of the interaction terms, we conducted post hoc probing of significant moderation effects (see Holmbeck, 2002). Results indicated that sexuality ( $z = 2.86, p < .01$ ) and tension-reduction expectancies ( $z = 2.24, p < .05$ ) were significantly related to higher levels on Time 2 RAPI for males but not for females.

## Discussion

Findings indicated that higher levels of sexuality and tension reduction expectancies were predictive of more alcohol-related negative consequences for males but were unrelated to females' alcohol-related consequences. Although this study was strengthened by a prospective design, psychometrically sound measures, and multivariate statistical techniques that controlled for many potential confounding variables, several limitations should be noted. First, we do not know how those who completed follow-up surveys may have differed from participants who did not complete surveys at the follow-up period. There were no significant differences on demographics or key study variables at baseline between those who completed the 3-month follow-up and those who did not except for gender. Second, although the assignment of students to residence hall by the university's housing department was random, the extent of the findings' generalizability to students in other residence halls is not certain. Third, we did not control for other variables that may influence alcohol-related negative consequences, such as personality and social functioning measures.

Limited research has examined if alcohol expectancies operate similarly for males and females in predicting drinking outcomes. Our results are consistent with two prior studies that suggest that expectancies are more predictive of alcohol consumption patterns among males than females (Kidorf et al., 1995; Read et al., 2004). Thus, this study adds to the small body of literature showing that expectancies may be significantly associated with problem drinking for males but not for females.

These findings add further support for interventions to prevent problem drinking to be gender-specific. For example, males with positive sexuality and tension-reduction expectancies may need to be cautioned that these perceptions can result in an increased likelihood of experiencing alcohol-related negative consequences. As strategies are developed to address problem drinking among college students, consideration of contextual factors must be a priority. It is well documented that health promotion and disease prevention efforts must be tailored for the population, community, or individuals targeted. Similarly, programs to reduce problem drinking among college students must incorporate strategies that acknowledge how males and females approach alcohol differently in order to increase their effectiveness.

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## Biographies



**Martie P. Thompson**, PhD, is a Research Professor in the Department of Public Health Sciences and the Director of the Center for Research and Collaborative Activities at Clemson University. Her research focuses on risk factors and consequences of victimization and suicidal behavior, as well as high-risk behaviors among first-year college students.

**Hugh D. Spitler**, Ph.D., is an Associate Professor in the Department of Public Health Sciences. His research focuses on reducing the incidence of heavy, high-risk drinking among college students, and controlling the risks and consequences resulting from “heavy drinking” through the development of more effective intervention programs among first-year college students.

**Thomas P. McCoy**, M.S., is a Biostatistician in the Department of Biostatistical Sciences at Wake Forest University School of Medicine. His research focuses on design and analysis of early phase cancer trials and also intervention studies for high-risk drinking and alcohol consumption–related consequences among college students.



**Laura Marra** graduated from Clemson University with a B.S. in Psychology, and worked as a Research Assistant for the Department of Public Health Sciences. Her research focuses on high-risk drinking, body image, and disordered eating among young adults.

**Erin L. Sutfin**, Ph.D., is a Research Assistant Professor in the Department of Social Sciences and Health Policy within the Division of Public Health Sciences at Wake Forest University School of Medicine. Her research focuses on health risk behaviors among young adults, with an emphasis on tobacco and alcohol use among college students.



**Scott D. Rhodes**, Ph.D., MPH, is an Associate Professor in the Departments of Social Sciences and Health Policy and Internal Medicine at Wake Forest University School of Medicine. His research focuses on the development, implementation, and evaluation of interventions designed to improve the health and well-being of vulnerable communities.



**Catherine A. Brown**, B.S., is a graduate of Clemson University's Public Health Science department with a concentration in Health Education and Promotion. She is currently involved in research at the Medical University of South Carolina's Psychiatry and Behavioral Sciences department, where her research focuses on pharmaceuticals and weight management.

**Table 1**  
**Selected descriptive statistics for males and females on study variables**

Study variable	Male ( <i>n</i> = 114)	Female ( <i>n</i> = 233)	<i>t</i> -value
Age			-1.40
<i>M</i>	17.99	17.92	
SD	0.41	0.44	
Greek status (yes)	11%	52%	5.42***
RAPI Time 1			-0.91
<i>M</i>	4.61	4.01	
SD	6.25	5.51	
RAPI Time 2			-0.32
<i>M</i>	4.27	4.06	
SD	6.16	4.90	
Sociability expectancies			-1.73
<i>M</i>	16.82	16.14	
SD	3.14	3.53	
Cognitive expectancies			0.19
<i>M</i>	10.16	10.20	
SD	1.73	2.20	
Sexual expectancies			-0.46
<i>M</i>	3.95	3.84	
SD	1.31	1.45	
Tension reduction expectancies			-3.38**
<i>M</i>	5.14	4.53	
SD	1.19	1.28	

\*\*  
 $p < .01$ ;

\*\*\*  
 $p < .001$ .



Table 2

## Bivariate correlations between primary study variables

	1	2	3	4	5	6
1. Time 1 RAPI	1.00					
2. Time 2 RAPI	.49***	1.00				
3. Sociability expectancies	.36***	.30***	1.00			
4. Cognitive expectancies	.02	.04	.39***	1.00		
5. Sexuality expectancies	.27***	.27***	.42***	.06	1.00	
6. Tension expectancies	.10	.14**	.2***	.09	.19***	1.00

\*  $p < .05$ ;\*\*  $p < .01$ ;\*\*\*  $p < .001$ .

**Table 3**  
**Mixed-model linear regression analyses predicting RAPI Time 2 scores**

	Estimate <sup>I</sup>	Standard error	t-value
Gender	0.32	0.60	0.53
Age	0.12	0.59	0.20
Race	0.13	0.95	0.14
Greek	0.69	0.58	1.19
Time 1 RAPI	0.37	0.05	7.78***
Expectancies			
Sociability and risk	0.18	0.09	1.92
Cognitive/behavioral	0.24	0.27	0.90
Sexuality	1.05	0.35	3.02**
Tension reduction	0.92	0.38	2.41**
Interaction terms			
Gender × Sociability	0.18	0.19	0.92
Gender × Cognitive	-0.37	0.31	-1.19
Gender × Sexuality	-0.98	0.42	-2.32*
Gender × Tension	-0.90	0.45	-1.99*

<sup>I</sup>Estimates are unstandardized regression coefficients.

\*  $p < .05$ ;

\*\*  $p < .01$ ;

\*\*\*  $p < .001$ .