Social Influences, Alcohol Expectancies, and Hazardous Alcohol Use Among College Athletes

Janine V. Olthuis  
Dalhousie University

Byron L. Zamboanga  
Smith College

Matthew P. Martens  
University of Missouri

Lindsay S. Ham  
University of Arkansas

Research has shown that college student-athletes are at increased risk for hazardous alcohol use. As such, this study examined social and cognitive influences on athletes’ alcohol consumption by exploring the association between injunctive norms (parental, teammate, and coach approval) and hazardous alcohol use among college athletes, and testing whether alcohol expectancy outcomes and valuations would mediate this association. College student-athletes (n = 301; mean age = 19.4, SD = 1.3) completed self-report questionnaires assessing their drinking behaviors and perceptions of alcohol use in their social environment. Structural equation modeling revealed, in all but one case, a direct association between each of the injunctive norms variables and hazardous alcohol use. In addition, negative expectancy valuations mediated the association between teammate approval and hazardous alcohol use. Injunctive norms emerged as an important factor in student-athletes’ alcohol use. Implications for alcohol intervention programming among student-athletes are discussed.

Keywords: alcohol use, college student-athletes, injunctive norms, alcohol expectancies

Janine V. Olthuis is with the Department of Psychology at Dalhousie University in Halifax, Nova Scotia, Canada. Byron Zamboanga is with the Department of Psychology at Smith College in Northampton, MA. Matthew Martens completed work for this project while in the Department of Counseling, Educational Psychology, and Research at the University of Memphis, TN. Dr. Martens is now with the Department of Educational, School, and Counseling Psychology at the University of Missouri, Columbia. Lindsay Ham is with the Department of Psychology at the University of Arkansas in Fayetteville, AR.
Heavy alcohol use among college students is an important health concern on college campuses. Research has shown that 45% of students engage in risky drinking behaviors (Substance Abuse and Mental Health Services Administration, 2006). This high prevalence is a significant concern, as alcohol use is associated with risky health behaviors and physical, psychological, social, and academic problems (Hingson, Heeren, Zakocs, Kopstein, & Wechsler, 2002). Among the college population, student-athletes are one subgroup at increased risk for hazardous alcohol use (Turrisi, Mallett, Mastroleo, & Larimer, 2006). Studies have revealed that they are more likely to engage in heavy episodic drinking and experience alcohol-related problems than their nonathlete peers (for a review, see Martens, Dams-O’Connor, & Beck, 2006a). Alcohol use among student-athletes is of particular concern given the additional health and injury risks that hazardous use may bring to those involved in physical training (e.g., reduced ability to synthesize muscle proteins; Cunningham et al., 2001).

Further research designed to understand the social and cognitive factors associated with elevated alcohol consumption in the unique environment of student-athletes is needed to inform prevention and intervention efforts. The theory of reasoned action (TRA; Ajzen & Fishbein, 1973, 1980) can be applied to further our understanding of student-athletes’ drinking behaviors. According to the TRA, behavior, including alcohol consumption, is guided cognitively by beliefs about the consequences of actions and evaluations of the desirability of these consequences, as well as socially by perceptions of the normative expectations of others (Kuther, 2002). Several studies have shown the utility of the TRA in predicting alcohol use among young people (Kuther & Higgins-D’Alessandro, 2003; Laflin, Moore-Hirsch, Weis, & Hayes, 1994; Wood, Nagoshi, & Dennis, 1992; Zamboanga, Schwartz, Ham, Hernandez Jarvis, & Olthuis, 2009).

**Social Normative Influences**

Peers are a particularly potent influence during the college years (Borsari & Carey, 2001). Previous research has indicated a relationship between peers’ attitudes and behaviors and college students’ alcohol use (Borsari & Carey, 2006). Peers can exert their influence directly, through encouragement or offers and indirectly, through descriptive (i.e., perceptions of how often and much peers drink) or injunctive (i.e., perceptions of the extent to which peers view alcohol use as acceptable) norms (Cho, 2006; Cialdini, Reno, & Kallgren, 1990). Researchers have suggested that the quality of peer relationships, determined by the extent to which one feels close to or spends time with a peer, increases peers’ influence on one’s behavior (Borsari & Carey, 2006; Reifman, Watson, & McCourt, 2006). In college athletics, strong relationships are a key to competitive success, and teammates spend considerable time together during training and social activities in a “work hard, play hard” ethic (Leichliter, Meilman, Presley, & Cashin, 1998). As such, the influence of peers may be especially relevant for athletes. Moreover, among groups such as sports teams that are often characterized by a strong group identity and close social networks, injunctive norms are very important as they represent socially approved behavior important for maintaining group identity and cohesion (Trafimow & Finlay, 1996).

Research has consistently shown an association between perceptions of descriptive norms and alcohol use among college athletes (Dams-O’Connor,
Olthuis et al., 2007; Grossbard et al., 2009; Martens et al., 2006a; Martens, Dams-O’Connor, Duffy-Paiement, & Gibson, 2006b); however, the influence of injunctive norms on athlete alcohol use is less understood. Only recently have researchers begun to examine this association among student-athletes. Turrisi and colleagues found that athletes, as compared with nonathletes, had higher perceptions of peer approval of drinking, which was in turn related to higher rates of heavy drinking (Turrisi, Mastroleo, Mallett, Larimer, & Kilmer, 2007). Results of another study revealed that both perceived injunctive and descriptive norms were significant predictors of student-athletes’ alcohol use (Hummer, LaBrie, & Lac, 2009). In addition, perceived injunctive norms emerged as the strongest predictor of student-athletes’ attitudes toward alcohol use.

Peers, however, are not the only social influence on athletes; parents and coaches may also exhibit considerable influence. Although research suggests an attenuation in parental influence during the college years (Borsari & Carey, 2001), parents’ attitudes and behaviors continue to have an influence on students’ alcohol use (Schwartz et al., 2009; Turrisi, Jaccard, Taki, Dunnam, & Grimes, 2001). For instance, Boyle and Boekeloo (2006) found that if first-year college students perceived their parents as approving of drinking, they were more likely to report experiencing negative consequences as a result of alcohol use. Coaches may also serve as an influential figure for student-athletes because of their ability to regulate athletes’ behavior by way of rules and schedules. One study showed that those athletes who drank heavily only in the off-season had the strongest perceptions of a restrictive drinking norm established by the coach (Thombs, 2000). Other research with female college athletes found that those abstaining from alcohol offered coaches’ rules about drinking as one reason for this decision (Bower & Martin, 1999; Martin, 1998).

### Alcohol Expectancies

Weighted against the social normative influence on alcohol use are cognitive influences. According to the TRA, this cognitive component involves identifying the possible consequences of a behavior, and evaluating both the desirability and likelihood of these outcomes, before acting. This is in line with expectancy theory (Jones, Corbin, & Fromme, 2001), which posits that if an individual expects that positive effects will occur as a result of alcohol use (e.g., “I would be friendly”), this may increase their consumption, while negative expectations (e.g., “I would be clumsy”) may decrease use. Longitudinal research among female college athletes showed that positive expectancies (not negative expectancies) predicted increased likelihood of hazardous alcohol use at baseline and one-year follow-up (Zamboanga, Horton, Leitkowski, & Wang, 2006).

To fully understand the role of cognitions in alcohol use, however, researchers argue that expectancy valuations, or judgments of the desirability of the expected consequences of alcohol use, must also be considered, as expectancies alone will not influence an individual’s behavior unless expectancies are desired or valued (Fromme, Stroot, & Kaplan, 1993; Ham & Hope, 2003). By considering valuations, researchers are allowing for the possibility that some researcher-labeled “negative” expectancies (i.e., risk/aggression) may in fact be considered desirable outcomes by certain individuals and, as such, may lead to increased alcohol consumption.
Research has only recently begun to examine the importance of alcohol expectancy valuations among student-athletes. One study among female student-athletes (Zamboanga, Bean, Pietras, & Pabon, 2005) showed that favorable valuations of liquid courage mediated the relationship between liquid courage expectancy outcomes and involvement in drinking games. Moreover, although expectancies of cognitive and behavioral impairment were associated negatively with participation in drinking games, favorable valuations of these expectancies were correlated with increased involvement in drinking games. In another study, female athletes’ favorable valuations of negative expectancies predicted increased frequency of heavy alcohol use (Zamboanga & Ham, 2008).

Expectancies as Mediators of Social Influences on Alcohol Use

Consistent with the tenets of social learning theory (Maisto, Carey, & Bradizza, 1999), researchers have argued that social factors may also be indirectly associated with drinking behaviors through their effects on alcohol expectancies and valuations. Kuther (2002) postulated a revised model of the TRA wherein parent and peer influences on alcohol use are mediated by alcohol expectancies. In such a model, the attitudes of parents, peers, and coaches can help shape student-athletes’ expectations about the effects of alcohol, which can in turn influence their drinking behavior. In accordance, studies have shown that the more permissive of alcohol use adolescents perceived their parents and peers to be, the more they expected positive outcomes from alcohol use (Cumsille, Sayer, & Graham, 2000; Martino, Collins, Ellickson, Schell, & McCaffrey, 2006). Furthermore, in a longitudinal study with 8th to 10th graders, Scheier and Botvin (1997) found that alcohol expectancies (social facilitation outcomes) mediated the association between peer influences (perceived norms, peer use) and alcohol use; however, these relationships have not yet been examined among college student-athletes.

Study Aims and Hypotheses

Based on Kuther’s (2002) conceptualization of the TRA, the current study investigated the association between injunctive norms (perceptions of the extent to which teammates, parents, and coaches judge alcohol use to be acceptable) and hazardous alcohol use among collegiate athletes. We studied injunctive norms because the association between this type of social norm and alcohol use is not yet well understood, and injunctive norms might be particularly relevant for student-athletes. Hazardous alcohol use was indexed by student-athletes’ binge drinking, participation in drinking games, and scores on a measure of hazardous alcohol use. Based on the TRA and prior research, we hypothesized that there would be a positive association between athletes’ perceptions of their parents’, teammates’, and coaches’ approval of alcohol use and their own hazardous alcohol use, and that expectancies and valuations would mediate this association. Understanding these relationships may inform intervention programming for student-athletes. Finally, we also tested for invariance in our analyses across sport-type (i.e., club vs. varsity sports), as the unique nature of club and varsity sport environments might
yield different relationships among teammates as well as between teammates and coaches in these settings.

Method

Participants and Procedures

Participants \((n = 301)\) were part of a larger investigation examining alcohol use among college students \((N = 1636)\). The sample was restricted to include only respondents who self-identified as college student-athletes \((81\text{ club, }206\text{ varsity, }14\text{ unidentified})\), resulting in a total of 301 participants \((208\text{ females, }87\text{ males, }6\text{ unidentified by gender; ages }18–23, M = 19.4, SD = 1.3)\). Students were recruited from eight schools across the United States: a private women’s liberal arts college \((30.9\%)\) and a private coeducational institution in the Northeast \((19.6\%)\), a large public university in the Southeast \((7.0\%)\), two small religious institutions in the Midwest \((\text{one women’s college, }12.3\%; \text{one men’s university, }11.3\%)\), a small private university in the Northwest \((8.3\%)\), a small private university in the Southwest \((5.6\%)\), and a small religious liberal arts college in the South \((5\%)\).

All participants were recruited from undergraduate psychology courses and completed a 40-min self-report questionnaire. Data were collected in two ways. In some cases, participants completed the survey in one of the investigator’s laboratories under the supervision of a trained research assistant (RA) who explained survey protocols to each participant. Alternatively, RAs visited psychology courses and distributed the questionnaire to students at the beginning of the class. They explained study protocols and asked that students return completed surveys and signed informed consent forms to the next class meeting. Surveys were identified only by participant numbers and were kept separate from informed consent forms to ensure confidentiality. As compensation, participants received course or extra credit at the discretion of the course instructor. Each participating institution’s IRB approved the study protocols.

Measures

Hazardous Alcohol Use. Hazardous alcohol use was assessed via three measures: the Alcohol Use Disorders Identification Test (AUDIT; Saunders, Aasland, Babor, De La Fuente, & Grant, 1993), self-reported drinking game participation, and self-reported heavy episodic drinking. The AUDIT is designed to assess hazardous drinking behaviors within the past year, including frequency and quantity of alcohol use, frequency of alcohol-dependent behaviors, and problems caused by alcohol use. The psychometric properties of the AUDIT have been well established for use with college-aged samples (e.g., Kokotailo et al., 2004; for review see Reinert & Allen, 2007), and in the present sample the Cronbach’s alpha coefficient was 0.83. To assess drinking game participation, participants indicated how often they played drinking games in college on an 8-point Likert scale, ranging from 1 \((I\text{ don’t play drinking games})\) to 8 \((\text{daily or nearly daily})\); this measure is similar to one used in prior research (Adams & Nagoshi, 1999). Finally, heavy episodic drinking was assessed differentially for men and women, consistent with recommendations for a gender-specific definition of binge drinking to account for differences in alcohol
metabolism (Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994). On a 5-point Likert scale, ranging from 0 (never) to 4 (daily or almost daily), women indicated how often they have four or more drinks in one occasion, while men indicated how often they have five or more drinks in one occasion. These three indices served as indicator variables for a latent hazardous alcohol use variable.

**Alcohol Expectancies.** Respondents completed the Comprehensive Effects of Alcohol scale (CEOA; Fromme et al., 1993). The CEOA measures respondents’ expectations of the effects of alcohol and evaluations of these effects. Participants indicated how much they agreed or disagreed with each statement, thus indicating their perception of the likelihood of each effect happening to them from 1 (disagree) to 4 (agree). Participants also evaluated the desirability of each outcome from 1 (bad) to 5 (good). The items of the CEOA measure both negative (e.g., “I would neglect my obligations”) and positive (e.g., “I would be friendly”) expectancy outcomes and thus can be split into respective subscales. These subscales can be further subdivided into distinct categories. Within the positive expectancies are sociability, enhanced sexuality, liquid courage, and tension reduction outcomes; negative expectancies encompass cognitive and behavioral impairment, risk and aggression, and negative self-perception outcomes. In the current study, these subscales were used as indicator variables for latent expectancy and valuation variables (described below). The CEOA has adequate internal consistency, test-retest reliability, and criterion validity (Fromme et al., 1993; Ham, Stewart, Norton, & Hope, 2005). The Cronbach’s alpha coefficients for the CEOA subscales in the study sample were 0.81 for positive expectancy outcomes, 0.76 for negative expectancy outcomes, 0.87 for positive expectancy valuations, and 0.83 for negative expectancy valuations.

**Injunctive Norms.** Respondents indicated how much those around them approved of alcohol use. Participants were asked, “How do most of your teammates feel about athletes your age drinking alcohol?” and “How does your coach feel about athletes your age drinking alcohol?” Responses were indicated using a 5-point scale, ranging from 0 (very much against it) to 4 (very much for it). Participants also listed who the two most significant parents/parent-figures (e.g., parent, grandparent, aunt/uncle) are in their lives and then responded to the question, “How do your parents/parent-figures that you noted above feel about students your age drinking alcohol?” using the same scale as above. Because of the variety of parents/parent-figures indicated by respondents and given the aims of this study, we focused on familial relations, thus omitting the responses of other “parent-figures” (e.g., high school teacher, social worker). Each injunctive norm scale was modeled as a uniquely measured variable in our analyses.

**Data Analytic Plan**

To examine our hypothesized direct and mediated relationships, we used structural equation modeling (SEM) via the AMOS program with both observed and latent variables. Our conceptual model is presented in Figure 1. Two separate models were examined, as we were interested in examining positive expectancies/valuations and negative expectancies/valuations separately. In both models, the three injunctive norms variables served as measured exogenous variables; expectancies
and valuations were latent mediator variables, and hazardous alcohol use was a latent outcome variable. For identification purposes, a path from each latent variable to one indicator variable was constrained to one, as were the paths from the error terms to their corresponding variables. The three injunctive norms variables were allowed to covary as were the error terms for the expectancy and valence values for the same construct (e.g., tension reduction expectancies and tension reduction valence). Maximum likelihood estimation procedures were used to estimate the models and fit was assessed via the chi-square statistic, Comparative Fit Index (CFI; Bentler, 1990); Tucker-Lewis Index (TLI; Tucker & Lewis, 1973) and Root Mean Square Error of Approximation (RMSEA; Steiger & Lind, 1980). A nonsignificant chi-square, higher CFI and TLI values (e.g., ≥ 0.95), and lower RMSEA values (e.g., ≤ .08) are indicative of good model fit (Hu & Bentler, 1999; Martens, 2005). Full information maximum likelihood estimation procedures were used to account for missing data (Allison, 2001), and the Sobel test (Goodman, 1960) was used to test for the presence of mediated effects. We also conducted invariance tests to compare the fit of the models between varsity and club sport athletes.

Results

Preliminary Analyses

Descriptive statistics and bivariate correlations for the study variables are shown in Tables 1 and 2, respectively. One-way ANOVAs were conducted to test for gender differences among the study variables. Results revealed that males reported higher
levels of hazardous alcohol use on the AUDIT, $F(1, 294) = 19.56, p < .001, \eta^2 = 0.06$; more frequent participation in drinking games, $F(1, 294) = 8.21, p < .01, \eta^2 = 0.03$; and more frequent heavy episodic drinking, $F(1, 294) = 13.75, p < .001, \eta^2 = 0.05$ than did females. Males also reported higher perceptions of teammates’ approval of alcohol use, $F(1, 256) = 8.41, p < .01, \eta^2 = 0.03$; coach’s approval of alcohol use, $F(1, 255) = 11.63, p = .001, \eta^2 = 0.04$; as well as higher favorable evaluations of negative alcohol expectancy outcomes, $F(1, 295) = 13.27, p < .001, \eta^2 = 0.04$. We also calculated mean differences between those with complete questionnaires and those with missing cases and found no significant differences between these groups on study variables.

Bivariate analyses among all study variables (see Table 2) showed that hazardous alcohol use was positively associated with all study variables except for negative expectancy outcomes. Significant correlations also emerged among the three variables indexing perceived injunctive norms (mean $r’s = 0.24$). Moreover, parent, teammate, and coach approval were positively correlated with positive expectancy valuations and negatively correlated with negative expectancy outcomes; however, only teammate approval was significantly related to negative expectancy valuations, and neither parent, teammate, nor coach approval was associated with positive expectancy outcomes. Within the CEOA subscales, positive expectancy outcomes were positively correlated with both negative expectancy outcomes and positive expectancy valuations. There was a positive correlation between positive and negative expectancy valuations. Finally, all measures of alcohol use (AUDIT, drinking games participation, heavy episodic drinking) were highly correlated (mean $r’s = 0.71$).

| Table 1 | Descriptive Statistics of Alcohol Use, Perceived Norms, and Alcohol Expectancies |
|---------|---------------------------------|-----------------|-----------------|-----------|
| Variable | $M$    | $SD$  | Range          | $\alpha$  |
| Alcohol Use |        |       |                |           |
| AUDIT Scores | 7.79  | 6.54  | 0.0–31.0       | 0.83      |
| Drinking Games Participation | 1.91  | 1.68  | 0.0–5.0        | —         |
| Heavy Episodic Drinking | 1.64  | 1.14  | 0.0–4.0        | —         |
| Perceived Norms |        |       |                |           |
| Parent Approval | 1.52  | 1.01  | 0.0–4.0        | —         |
| Teammate Approval | 2.69  | 0.97  | 0.0–4.0        | —         |
| Coach Approval | 1.58  | 1.27  | 0.0–4.0        | —         |
| Alcohol Expectancies |        |       |                |           |
| Positive Expectancy Outcomes | 2.74  | 0.59  | 0.0–4.0        | 0.81      |
| Negative Expectancy Outcomes | 2.39  | 0.58  | 0.0–4.0        | 0.76      |
| Positive Expectancy Valuations | 3.27  | 0.81  | 0.0–5.0        | 0.87      |
| Negative Expectancy Valuations | 2.06  | 0.68  | 0.0–5.0        | 0.83      |

Note. AUDIT = Alcohol Use Disorders Identification Test.
<table>
<thead>
<tr>
<th>Hazardous Alcohol Use</th>
<th>1</th>
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<th>3</th>
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<th>7</th>
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<th>10</th>
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<tr>
<td>AUDIT Scores</td>
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<td>0.80***</td>
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<td>0.30***</td>
<td>0.27***</td>
<td>0.27***</td>
<td>—.01</td>
<td>0.24***</td>
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<td>Drinking Games</td>
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<td>0.35***</td>
<td>0.25***</td>
<td>0.26***</td>
<td>—.16**</td>
<td>0.28***</td>
<td>0.31***</td>
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<td>Positive Expectancy</td>
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<td>0.54***</td>
<td>0.33***</td>
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*Note.* N’s range from 261 to 301 due to missing cases. *p < .05, **p < .01, ***p < .001. AUDIT = Alcohol Use Disorders Identification Test.
Structural Equation Modeling Analyses

*Positive Expectancies/Valuations Model.* Parameter estimates for the model examining positive expectancies/valence as mediator variables are presented in Figure 2 (for brevity and interpretive purposes, error terms and indicator variables were omitted as were nonsignificant parameters). Although the chi-square test was statistically significant, the rest of the fit indices indicated a good model fit: $\chi^2(62, N = 301) = 84.84, p = 0.03$, CFI = 0.99, TLI = 0.98, RMSEA = 0.04; and standardized parameter estimates from each latent variable to its indicator variables were strong:

![Diagram](image)

**Figure 2** — Model testing positive expectances and positive valuations as mediators of the relationship between injunctive norms and hazardous alcohol use. *Note.* *p* < .05.
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β = 0.59–0.93, p < .01. Parental and teammate norms had a significant relationship with hazardous alcohol use: β = 0.35 and 0.24, respectively, p < .01 while coach norms did not: β = 0.09, p = 0.15. Positive expectancies and valuations were also associated with hazardous alcohol use: β = 0.20 and 0.12, respectively, p < .05. No injunctive norm variable was associated with positive expectancies, while teammate and coach norms were associated with positive expectancy valuations: β = 0.21 and 0.14, respectively, p < .05. However, the Sobel test indicated no indirect effect on hazardous alcohol use through positive valence for either teammate norms: z = 1.70, p = 0.09, or coach norms, z = 1.41, p = 0.16. Thus, neither positive expectancies nor positive expectancy valuations mediated the relationships between the injunctive norms and hazardous alcohol use.

**Negative Expectancies/Valuations Model.** Parameter estimates for the model examining negative expectancies/valuations as mediator variables are presented in Figure 3 (for brevity and interpretive purposes, error terms and indicator variables were omitted as were nonsignificant parameters). The overall fit for the model was good, although not as strong as the positive expectancies/valence model: χ²(39, N = 301) = 113.73, p < .01, CFI = 0.95, TLI = 0.89, RMSEA = 0.08. Standardized parameter estimates from each latent variable to its indicator variables were again strong: β = 0.63–0.94, p < .01. In this model, parental, teammate, and coach norms all had a significant relationship with hazardous alcohol use: β = 0.36, 0.20, and 0.12, respectively, p < .05. These values differ slightly from the other model because these are direct semipartial relationships and thus in part are dependent upon the other variables in the model. Negative expectancy valuations were associated with hazardous alcohol use, β = 0.26, p < .01, but negative expectancies were not, β = 0.01, p = 0.88. Parent and teammate norms were associated with negative expectancies, β = –.17 and –.24, respectively, p < .01, but the almost zero relationship between expectancies and hazardous alcohol use made mediation effects impossible. Teammate norms were also significantly related to negative expectancy valuations, β = .31, p < .01, and the Sobel test indicated that the indirect relationship between teammate norms and hazardous alcohol use via negative expectancy valuations was statistically significant, z = 3.21, p < .01. Thus, we concluded that negative expectancy valuations partially mediated the relationships between teammate injunctive norms and hazardous alcohol use.

**Invariance Tests.** Invariance testing was used to compare the fits of both models between varsity and club sport athletes. Invariance testing involves comparing a model where all paths are freely estimated between the two groups and one where the paths are constrained to be equivalent. In effect, these analyses determine whether the parameters in the model are similar for both groups. If the model is invariant between groups, then the difference in fit between the two models will not be statistically significant. For the current study, we constrained to be equivalent all covariance estimates, all paths in the structural model, and all paths between the latent variables and their indicator variables.

Results from both the positive expectancy/valuation model and the negative expectancy/valuation model indicated that the models were not invariant between the two groups: positive model, χ²_{diff}(26) = 55.01, p = 0.001; negative model, χ²_{diff}(24) = 38.13, p = 0.03. To determine the sources of noninvariance, we freed up the equality constraint on the parameter that demonstrated the strongest difference in value between the two groups and proceeded to rerun the analyses. In many
instances, freeing up a single parameter or two will result in the two models not differing from each other, in which case one concludes that it was the parameter(s) in question that resulted in the noninvariance. In the current study, though, freeing up the 10 parameters with the largest discrepancy between the two groups did not yield invariant models in either instance. Thus, we conclude that the relationships within the model differ considerably for club versus varsity sport athletes. Separate structural model parameter estimates for varsity versus club sport athletes (with loadings allowed to vary between the two groups) are presented in Table 3.

**Figure 3** — Model testing negative expectances and negative valuations as mediators of the relationship between injunctive norms and hazardous alcohol use. *Note.* *p* < .05.
### Table 3  Parameter Estimates for the Structural Models by Competitive Level

<table>
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<th>Parameter</th>
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<th>Negative Expectancies Model</th>
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<td>Club Athletes</td>
<td>Varsity Athletes</td>
<td>Club Athletes</td>
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<tr>
<td>Parent Approval $\rightarrow$ P/N Expectancies</td>
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<td>$p$</td>
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<td>Teammate Approval $\rightarrow$ P/N Expectancies</td>
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<tr>
<td>Coach Approval $\rightarrow$ P/N Expectancies</td>
<td>0.13</td>
<td>0.10</td>
<td>-.23</td>
<td>0.20</td>
</tr>
<tr>
<td>Parent Approval $\rightarrow$ P/N Valence</td>
<td>0.14</td>
<td>0.04</td>
<td>0.01</td>
<td>0.97</td>
</tr>
<tr>
<td>Teammate Approval $\rightarrow$ P/N Valence</td>
<td>0.25</td>
<td>0.00</td>
<td>0.08</td>
<td>0.64</td>
</tr>
<tr>
<td>Coach Approval $\rightarrow$ P/N Valence</td>
<td>0.18</td>
<td>0.02</td>
<td>0.03</td>
<td>0.88</td>
</tr>
<tr>
<td>Parent Approval $\rightarrow$ High Risk Drinking</td>
<td>0.38</td>
<td>0.00</td>
<td>0.24</td>
<td>0.03</td>
</tr>
<tr>
<td>Teammate Approval $\rightarrow$ High Risk Drinking</td>
<td>0.22</td>
<td>0.00</td>
<td>0.15</td>
<td>0.30</td>
</tr>
<tr>
<td>Coach Approval $\rightarrow$ High Risk Drinking</td>
<td>0.09</td>
<td>0.20</td>
<td>0.30</td>
<td>0.05</td>
</tr>
<tr>
<td>Positive Expectancies $\rightarrow$ High Risk Drinking</td>
<td>0.17</td>
<td>0.01</td>
<td>0.28</td>
<td>0.02</td>
</tr>
<tr>
<td>Positive Valence $\rightarrow$ High Risk Drinking</td>
<td>0.08</td>
<td>0.28</td>
<td>0.27</td>
<td>0.01</td>
</tr>
</tbody>
</table>

*Note. P = positive; N = negative. Full parameter estimates available from first author on request.*
Discussion

Among the college population, student-athletes are one subgroup at increased risk for hazardous alcohol use (Turrisi et al., 2006); thus, studies aimed at uncovering the cognitive and social factors associated with alcohol use among this population are necessary. As such, the purpose of this investigation was to examine whether athletes’ perceptions of the extent to which their teammates, parents, and coaches approve of the use of alcohol by students their age are related to their own drinking habits and to see whether this association was mediated by alcohol expectancy outcomes and valuations. Overall, results show that athletes’ perceptions of teammates’, parents’, and coaches’ (only when negative expectancies and valuations were included in the model) approvals of alcohol use were independently associated with hazardous alcohol use. Furthermore, the association between teammate approval and hazardous use was partially mediated by negative expectancy valuations. It should be noted, however, that the relationships between the variables and the overall model fit differed quite a bit between club and varsity athletes, warranting further research attention.

The association between perceived teammate approval of alcohol use and athletes’ own hazardous consumption is consistent with past research (Hummer et al., 2009; Turrisi et al., 2007). The importance of injunctive norms among student-athletes, as highlighted in our results, parallels research emphasizing the relevance of injunctive norms among fraternity and sorority members, another setting in which group cohesion is emphasized and valued (Larimer, Turner, Mallett, & Geisner, 2004). The positive association between parental approval and hazardous alcohol use in our findings is noteworthy given prior assertions that parental influence declines during the college years (Borsari & Carey, 2001). These findings are supported by research showing a direct association between perceived parental attitudes and values (e.g., permissiveness of alcohol use) and alcohol use and related problems among late adolescents (Wood, Read, Mitchell, & Brand, 2004). Finally, while the association between perceived coach approval and hazardous alcohol use was only significant when negative alcohol expectancies and valuations were included in the model, it does suggest that coaches’ influence on athletes’ behavior may have ramifications beyond training and competition and into their lifestyle choices. In other words, coaches’ attitudes might be an important consideration of student-athletes in their daily decision making, even outside of the sporting context. While the National Collegiate Athletic Association and collegiate athletic departments have policies regarding alcohol use, it is unknown exactly how often the use of alcohol is discussed among individual sports teams. Given the important role of coaches in influencing student-athletes’ alcohol use in the present findings, it is evident that further research is needed to determine the extent to which coaches are discussing, discouraging, and/or endorsing alcohol use among their athletes. By examining the normative influence of coaches, this study has extended research on social norms into an area that has thus far lacked in-depth investigation. Future research should investigate what messages coaches are sending their athletes about alcohol use and how student-athletes’ perceptions of their coaches’ approval or disapproval of alcohol use may develop (i.e., through explicit communication, through departmental policies, or through observation or conjecture regarding the coach’s own alcohol-related behavior) and be related to drinking behaviors.
In accordance with Kuther’s (2002) revised conceptualization of the TRA, the association between teammate approval and hazardous alcohol use was mediated by negative expectancy valuations. Findings from past studies have also supported Kuther’s postulation that *valuations* of the desirability of alcohol’s effects are necessary considerations in explaining alcohol use (e.g., Valdivia & Stewart, 2005; Zamboanga, 2006; Zamboanga & Ham, 2008). This mediation effect may have emerged only for perceived teammate approval because athletes consume alcohol with this group during college and thus alcohol use, its expected consequences, and judgments as to its favorable effects are often discussed with them. In addition, this mediation effect may have emerged only for negative as opposed to positive valuations due to the relevance of certain negative valuations for athletes, including cognitive and behavioral impairment (e.g., “My senses would be dulled”) and risk and aggression (e.g., “I would act tough”) outcomes. Athletes may be particularly concerned with the cognitive and behavioral consequences of alcohol use given its possible detrimental effects on athletic performance and on an athlete’s ability to continue participation in collegiate athletics. Furthermore, as risk and aggression are aspects of sport, some athletes may possibly endorse such outcomes of alcohol use more positively than nonathletes. This finding exemplifies the manner in which the culture and environment of college athletics might have a unique influence on athletes.

**Invariance Testing: Varsity vs. Club Sports Involvement**

Present results indicate that the relationships within the model differ considerably for club as compared with varsity sport athletes. This may be due to differences in the characteristics of the club and varsity environments, which might contribute to unique normative influences. For instance, there might be differences in the level of competition and dedication to success, in the amount of time the team spends together in practices and/or in social activities, in the relationship between the coach and the student-athletes, in the continuity of membership of the teams, in the importance team members attribute to athletics, etc. Future research should look more closely at the unique normative influences of varsity and club sports.

**Implications for Intervention, Limitations, and Future Research Directions**

Taken together, the present findings suggest that a social normative approach addressing the injunctive norms perceived by collegiate athletes could be an appropriate method of addressing hazardous drinking. While this study did not examine the extent to which perceived injunctive norms were accurate, past research has indicated that injunctive norms tend to be misperceived by young people, including student-athletes (Hummer et al., 2009; Perkins & Craig, 2006; Thombs, 2000), and that *perceptions* of these norms are more salient predictors of students’ alcohol use than are peers’ *actual* reported consumption and attitudes (Baer, Stacy, & Larimer, 1991; Perkins, 2007). While researchers have examined social norms interventions targeted at descriptive norms, the importance of injunctive norms as highlighted by the present findings indicates that further research into interventions targeting these norms is warranted. Given the strong group cohesion and identity
among student-athletes, making these norms more salient could potentially impact student-athlete drinking. Future studies will help researchers understand which social norms messages can be the most effective and influential. Furthermore, the importance of negative expectancy valuations as a mediator in the present model suggests that valuations might also be a crucial focus in interventions designed for student-athletes. It is possible that athletes view some researcher-labeled negative outcomes of alcohol use (e.g., increased risk and aggression) positively. Interventions designed to address athletes’ beliefs about the desirability of certain outcomes may help curb hazardous use in this population. Current interventions tend to involve large-scale education regarding the consequences of alcohol use and tend to operate under the assumption that student-athletes will perceive these consequences as undesirable. It may be that, given the unique values of the sporting environment, student-athletes need further education about why some of the consequences of alcohol use might be undesired. For instance, student-athletes may require athlete-specific interventions aimed at discussing the detrimental effects of alcohol use on athletic performance.

Although this investigation provides support for the importance of injunctive norms on student-athletes’ drinking, the results should be considered in light of several limitations. First, the data are cross-sectional, and thus no inferences about causality or the temporal order of the relationships between our study variables can be made. Second, the data were collected through self-report questionnaires, and thus participants may have under- or over-reported behaviors. Third, we did not measure descriptive norms in this study and as such were unable to isolate the relative and independent contributions of descriptive and injunctive norms to hazardous alcohol use. Furthermore, the injunctive norms construct “approval of alcohol use” was slightly ambiguous. Future research should further examine exactly what amount/frequency of alcohol use coaches, teammates, and parents are endorsing to better understand the relationship between perceived approval and hazardous use. Fourth, as data were collected at different times during the semester, participants’ responses may have been influenced by how recent their exposure to parents (e.g., after a holiday break) or to coaches (e.g., in-season vs. off-season) was. Finally, the focus of this investigation was on alcohol expectancies and valuations as a whole (due to limited power), and thus the different dimensions of expectancies and valuations (e.g., risk and aggression, enhanced sexuality) were not individually examined. In the future, researchers should examine the role of specific dimensions of alcohol expectancies as they pertain to the relationship between social influences and alcohol use (e.g., teammates may have an association with enhanced sociability expectancies, while coaches’ influence may be associated with cognitive and behavioral impairment expectancies).

Conclusion

This study contributes to the empirical literature on normative perceptions as they relate to student-athlete drinking patterns by further investigating the unique contribution of injunctive norms. The present findings reveal that perceptions of teammate, coach, and parent approval each influence hazardous alcohol use among collegiate athletes and that the relationship between teammate approval and alcohol use is mediated by athletes’ negative valuations of alcohol expectancies. Results
encourage research into injunctive norm-based alcohol interventions, which may be particularly effective for college student-athletes, a high-risk population.

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References


