

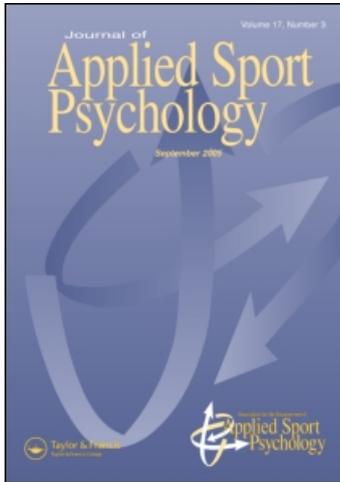
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Joel Grossbard <sup>a</sup>; Justin Hummer <sup>b</sup>; Joseph LaBrie <sup>b</sup>; Eric Pederson <sup>a</sup>; Clayton Neighbors <sup>a</sup>

<sup>a</sup> University of Washington, <sup>b</sup> Loyola Marymount University,

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## **Is Substance Use a Team Sport? Attraction to Team, Perceived Norms, and Alcohol and Marijuana Use Among Male and Female Intercollegiate Athletes**

JOEL GROSSBARD

*University of Washington*

JUSTIN HUMMER AND JOSEPH LABRIE

*Loyola Marymount University*

ERIC PEDERSON AND CLAYTON NEIGHBORS

*University of Washington*

This research examined the role of attraction to one's team in predicting alcohol and marijuana use among intercollegiate athletes. Attraction to team and alcohol-related information were collected via an online survey and marijuana use-related information was gathered in a live setting. We investigated the influence of attraction to one's team above and beyond the influence of gender and perceived norms, and attraction to team as a moderator of these relationships. Attraction to one's team accounted for significant variance in marijuana use, and alcohol-related consequences after controlling for alcohol consumption. Regression analyses revealed significant interactions between gender, attraction to team, and norms in predicting alcohol and marijuana use. Stronger attraction to one's team may increase alcohol use but decrease marijuana use among male athletes, suggesting the importance of attraction to team when developing interventions for athletes.

Heavy drinking by college students and its associated negative consequences constitute a major issue in the United States, with daunting numbers of related deaths, accidents, and injuries (Hingson, Heeren, Zakocs, Kopstein, & Wechsler, 2002; O'Malley & Johnston, 2002). Illicit drug use among students also commands research attention. Marijuana is the most commonly used illicit drug among students, with up to 30% reporting use in the past year and 16–22% reporting past month use (CORE Institute, 2001). Problematic marijuana use is also associated with psychological and physical consequences (e.g., Simons & Carey, 2006). In comparison to the general student population, college athletes are a subgroup at greater risk for heavy drinking and at comparable risk for marijuana use. Studies suggest that student

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Address correspondence to Joel Grossbard, Department of Psychiatry and Behavioral Sciences, University of Washington, 1100 NE 45th St., Suite 300, PO Box 354944, Seattle, WA 98195-1525. E-mail: joelg13@u.washington.edu

athletes consume more alcohol, engage in more frequent heavy drinking, and experience more negative alcohol-related consequences as compared with non-athletes (Leichtler, Meilman, Presley, & Cashin, 1998; Nelson & Wechsler, 2001; Wechsler, Davenport, Dowdall, Grossman, & Zanakos, 1997). Further, nearly 30% of athletes in a national study reported using marijuana in the past year despite potential consequences to athletic performance and eligibility (Green, Uryasz, Petr, & Bray, 2001). In light of alcohol and marijuana being central nervous system depressant substances, individuals engaging in alcohol and marijuana use are at risk for experiencing both physical and cognitive performance deficits. These consequences may be particularly problematic for athletes, given their physical and cognitive athletic demands. Research has indicated negative short-term outcomes resulting from marijuana use, including performance decrements on cognitive tasks requiring sustained attention and concentration (Fant, Heishman, Bunker, & Pickworth, 1997), as well as loss of coordination and poor sense of balance, decreased reaction time, and altered motivation (The Higher Education Center for Alcohol and Other Drug Abuse and Violence Prevention, 1999). Marijuana use has also been shown to be associated with poorer academic performance, and these effects may impede the ability of student athletes to maximize performance in both athletic and academic settings.

Greater understanding of cognitive, motivational, and social factors is necessary to inform the development of prevention and intervention efforts targeted at student athletes. Typically, both student athlete and non-athlete males consume more alcohol than females, particularly in relation to binge drinking rates and typical drinks consumed per week (see review by Martens, Dams-O'Connor, & Beck, 2006). Additionally, higher marijuana use prevalence has been found among National Collegiate Athletic Association (NCAA) male than female athletes (NCAA, 2001). Therefore, gender is a factor worthy of consideration in all substance use research with collegiate athletes. An additional factor that shows continued prognostic value in the context of college student drinking is perceived social norms (see Berkowitz, 2004; Perkins, 2003). Perceived descriptive social norms refer to the beliefs one has regarding the prevalence of behavior in a population, usually one's peers. Social norms perspectives assert that indirect peer influence, in the form of perceptions, acts on an individual's own behavior regardless of the accuracy of the perceived norm. Students' overestimations of perceived substance use have been found to be among the best predictors of alcohol use (Neighbors, Lee, Lewis, Fossos, & Larimer, 2007) and marijuana use (Kilmer, Walker, Lee, Palmer, Mallett, Fabiano, & Larimer, 2006; Neighbors, Geisner, & Lee, 2008).

Athlete-specific normative misperceptions predicting alcohol and marijuana use have also been identified. Athletes tend to hold misperceptions of typical use by fellow athletes at their school (Perkins & Craig, 2006) and perceived drinking among athlete friends may associate with personal alcohol consumption among male and female athletes (Martens, Dams-O'Connor, Duffy-Paiement, & Gibson, 2006). Moreover, Hummer, LaBrie, and Lac (2008) demonstrated that perception of normative drinking behavior was the best predictor of actual consumption after controlling for other previously established predictors of alcohol use among athletes. Finally, perceptions of athletes' marijuana use norms have also been shown to predict individuals' own use among male athletes (LaBrie, Grossbard, & Hummer, 2009), while opposite sex marijuana use norms may affect female athletes' decisions to use marijuana (Page & Roland, 2004).

Recent research highlights the importance of examining group and gender-specific influences among closely connected at-risk groups, because misperceptions of proximal reference groups are more likely to influence drinking behavior than misperceptions of distal reference groups (Borsari & Carey, 2003; Korcuska & Thombs, 2003; Lewis & Neighbors, 2006). Collegiate athletes are a specific group of students known to exist in a somewhat isolated environment that is often heavily reliant on the inter-athletic community for both social

support and social activity (Damms & Murray, 1996; Harvey, 1999; Martens, Dams-O'Conner, & Beck, 2006). Thus, athletes may be strongly influenced by teammates and other athletes both during competition and in everyday activities. If athletes are highly connected to their teams (or to the athletic community as a whole), it is likely that misperceptions of other school-specific athletes may influence individual behavior. According to Latane (1981), how important the group is to oneself (connectedness/attraction to one's group) influences individual behavior and attitudes. If an individual athlete does not feel a sense of connectedness with one's team, the salience of the norm may diminish. Conversely, if there is a high degree of connectedness with one's team, the individual may be heavily influenced by his/her perceptions of normative group behavior. This concept has been shown to be a discriminating factor in the relationship between perceived norms and behavioral intentions (Ajzen, 1985; Fishbein & Ajzen, 1975).

There is a limited amount of research examining the conceptually similar effect of group identity on perceived norms and alcohol use. Rimal and Real (2005) found an interaction between identification with other university peers and perceptions of descriptive drinking norms. Further, Reed, Lange, Ketchie, and Clapp, (2007) examined the moderating influence of identification with one's group on the relationship between perceived injunctive drinking norms (i.e., attitudes about drinking) and drinking behavior among three reference groups of friends, peers, and fraternity/sorority members and found the relationship between perceived injunctive norms and drinking increased as the level of group identification became stronger. Despite these findings, there are no studies to date that have looked specifically at at-risk student athletes and peer influence, regarding attraction to one's team, perceived norms, and substance use.

The current study sought to expand research on intercollegiate athlete substance abuse prevention by examining the role that attraction to team has on one's use of alcohol and marijuana. The level of attraction to one's team was examined as a contributing factor in the relationship between perceived substance use norms and actual behavior. The term "attraction to team" is used throughout this study instead of the more general term of "team identity." Team identity refers to shared characteristics or cognitive qualities of similarity in relation to a person's association to a particular group of people (team), whereas the concept of group attraction purportedly refers to feelings of connectedness or how emotionally drawn one is to the group. Because the majority of team sports consist of single-sex members, a description of the gender differences in alcohol and marijuana consumption, as well as the influence gender may play in the relationship between attraction to one's team and perceived norms, is included. We anticipated that athletes with higher levels of attraction to their teams would report higher levels of alcohol and marijuana use, particularly among those with higher perceived norms for such use among athletes. Greater understanding of the factors influencing athletes' substance use behaviors can assist in attempts to promote healthy behaviors and peak performance while minimizing negative consequences.

## METHOD

### Participants

A total of 656 athletes from two NCAA Division I universities in the United States were recruited to participate in a larger social norms study designed to reduce alcohol consumption (LaBrie, Hummer, Huchting, & Neighbors, 2009). This intervention study included an online baseline survey, a group interactive session, and 1-month and 2-month follow-up online surveys. Data collection for this study was completed before administration of the intervention and came from both the baseline survey and the group session. Every athlete from all 14

school-sponsored athletic teams at each site was invited to participate in the local Internal Review Board-approved study. Out of the 656 athletes who were recruited, 610 athletes completed the study (93% recruitment rate). Incomplete survey data provided by 16 participants resulted in a sample of 594 students from the two mid-size universities in the southwest ( $n = 286$ ) and northeast ( $n = 308$ ).

The mean age of the sample was 19.61 years ( $SD = 1.35$ ) and 61.8% were currently involved in intercollegiate matches or games at the time of the survey. The majority of the participants were female (56.4%) and Caucasian (78.0%). Other ethnic representations were as follows: 6.6% Hispanic/Latino, 5.4% African American, 3.3% "more than one race," 2.6% "other," 1.6% Asian, 1.3% Pacific Islander, and 1.2% "declined to state." Class status was 36% freshmen, 23% sophomores, 24% juniors, 15% seniors, and 2% "other." Finally, the majority of the sample (82.5%) reported drinking on at least one occasion in the past month.

## Design and Procedure

At the beginning of the spring 2007 semester, coaches from all athletic teams were contacted and invited to participate in a study about alcohol and marijuana use, and that it could fulfill programming requirements from the Athletic Departments. The PI explained that each member of each team would receive a link to an online survey via email and that survey responses were confidential. Every participant and team was assigned a random sequence number and assured that nothing about individual or specific team responses would be communicated to University personnel, athletic directors, or coaches. Each student athlete received a link to the online survey via email and was prompted to electronically consent to the study before being directed to the survey itself. The survey began with an assessment of demographic variables including age, sex, class year, team, and ethnicity. Students also reported on their own drinking behavior in the past 30 days responding to typical drinks per occasion (i.e., average drinks), number of drinking days, and number of drinks consumed on the peak occasion. This assessment method has been used in previous studies as a measure of alcohol use (e.g., LaBrie, Hummer, & Neighbors, 2008; LaBrie, Hummer, Huchting, & Neighbors, 2009). A "drinks per month" variable was computed by multiplying average drinks by drinking days. Standard drinks were defined for students as a drink containing one-half ounce of ethyl alcohol.

## Perceived and Actual Substance Use

Perceived descriptive drinking norms and participant drinking behavior were assessed in parallel with five items assessing: (1) frequency of drinking behavior, (2) average quantity consumed during a typical drinking occasion, (3) quantity of drinks consumed per week, (4) quantity of drinks consumed during the peak drinking occasion in the past 30 days, and (5) frequency of heavy episodic drinking. For example, male athletes were asked, "How often does a typical 'X' University male athlete consume alcohol?" (perceived norm). This question was then repeated to assess individual behavior: (e.g. "How often do *you* consume alcohol?"). The Appendix contains a list of questions and response options. Previous work using these items modified for fraternity and sorority students suggests that this five-item measure is reliable and valid as an indicator of perceived and actual alcohol use (LaBrie, Hummer, Neighbors, & Pedersen, 2008). In the current sample, these five questions revealed adequate reliability for the perceived norm ( $\alpha = .85$ ) and actual drinking behavior ( $\alpha = .92$ ). Scores were calculated as the mean of the five items for each variable. Marijuana use was assessed during four group meetings at each site, all occurring within 2 weeks of each other. The groups were gender- and team-specific (four meetings total per gender group) and were comprised of 50–80 student

athletes each. Questions and response options were projected onto a screen and participants endorsed their preferred response through the use of a wireless handheld device. This method of in vivo computerized data collection has been shown to be comparable to traditional paper and pencil questionnaires (LaBrie, Earleywine, Lamb, & Shelesky, 2006). Participants were asked one question regarding the perceived marijuana use of their fellow gender-specific athletes at their institution. Participants were then asked about their own marijuana use. For both questions, response options ranged from “1—never” to “9—everyday.”

### *Alcohol-Related Negative Consequences*

Participants completed the Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ; Kahler, Strong, & Read, 2005). The BYAACQ is a 24-item, self-report measure that individuals respond “yes” or “no” to questions assessing consequences experienced in the past month (e.g., “I have woken up in an unexpected place after heavy drinking”). Reliability was adequate ( $\alpha = .92$ ).

### *Attraction to Team*

Participants completed the 20-item Group Attitude Scale (Evans & Jarvis, 1986), a measure of attraction to one’s salient group. The definition of attraction to group offered by Evans and Jarvis (1980), an individual’s desire to identify with and be an accepted member of the group, was selected as a basis for the Group Attitudes Scale. The scale was adapted to reflect attraction to one’s specific athletic team; changing the term “group” to “team.” Thus, we refer to the measure as “Attraction to Team.” Example items include, “It makes a difference to me how this team turns out” and “I want to remain a member of this team.” A nine-point Likert scale ranging from “1—Strongly disagree” to “9—Strongly agree” was used ( $\alpha = .92$ ).

## RESULTS

### **Preliminary Analyses**

Throughout the analyses, minor discrepancies in degrees of freedom are due to missing values. Effect sizes ( $d$ ) for all analyses were calculated as  $d = 2t/\sqrt{df}$  (Rosenthal & Rosnow, 1991). Descriptive analyses of drinking behavior revealed similar findings as previous research that male athletes drink and use marijuana more frequently and in higher quantities than female athletes. Male athletes drank 5.64 ( $SD = 4.56$ ) times per month and female athletes drank 4.51 ( $SD = 3.59$ ) times. In terms of the average quantity of alcohol use, males indicated drinking 6.06 ( $SD = 4.14$ ) drinks per typical drinking occasion and females drank 4.16 ( $SD = 3.57$ ) per occasion. Further, males reported drinking 10.50 ( $SD = 7.25$ ) drinks during their peak drinking occasion in the past 30 days and females reported 6.65 ( $SD = 4.23$ ) drinks. Lastly, total drinks in the last month for males was 46.11 ( $SD = 48.52$ ) and for females, 24.30 ( $SD = 28.88$ ).

With regard to marijuana use, 330 participants (63.2%) reported never using, 23.8% used one to six times per year, 3.6% used once a month, 4.4% used two to three times a month, 3.2% used between one to six times a week, and 2.9% reported daily marijuana use. Of the 104 male and 88 female athletes reporting any marijuana use; 49% of men and 77.3% of women used marijuana one to six times per year, 6.7% of men and 13.6% of women used once a month, 17.3% of men and 5.7% of women used two to three times a month, 12.5% of men and 3.4% of women used between one to six times a week, and 14.4% of men and 0% of women reported daily marijuana use.

**Table 1**  
**Means and Standard Deviations among Male and Female Athletes for Alcohol Use, Perceived Alcohol Use, Marijuana Use, Perceived Marijuana Use, Attraction to Team, and Alcohol-Related Consequences**

Variable	Male Athletes			Female Athletes			<i>t</i>
	Mean	SD	N	Mean	SD	N	
Alcohol Use	3.93	1.86	262	3.15	1.31	342	-6.02***
Perceived Alcohol Use	4.85	1.34	260	4.15	1.05	342	-7.27***
Marijuana Use	2.46	2.37	194	1.39	0.74	282	-7.07***
Perceived Marijuana Use	3.62	2.22	197	2.39	1.04	279	-8.15***
Attraction to Team	6.92	1.48	240	7.21	1.33	319	2.42*
Alcohol-Related Consequences	6.02	6.12	263	4.28	4.74	340	-3.93***

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

We conducted a series of *t*-tests to examine whether male and female athletes differed on the key outcome variables including alcohol use, perceptions of alcohol use, alcohol-related consequences, marijuana use, perceptions of marijuana use, and attraction to team. Results of the *t*-tests are presented in Table 1, indicating significantly greater alcohol use, normative perceptions of drinking, alcohol-related consequences, marijuana use, and perceptions of marijuana use among male athletes. Relative to males, females reported significantly stronger attraction to team. As seen in Table 1, perceived norms were greater than actual alcohol and marijuana use for both male and females. Further examination of these findings is included in LaBrie, Hummer, Huchting, & Neighbors (2009) and Hummer et al. (2008). Correlations among gender, attraction to team, perceived and actual substance use, and alcohol-related consequences are presented in Table 2.

### Attraction to Team, Perceived Norms, and Alcohol Use

To examine the association between the level of attraction to one's team and alcohol use controlling for gender and perceived drinking norms, we conducted hierarchical multiple regression with the alcohol consumption composite score as the outcome variable (Cohen, Cohen, West, & Aiken, 2003). Gender was dummy coded (women = 0, men = 1), and all other predictors were mean centered to facilitate interpretation of parameter estimates (Jaccard & Turrisi, 2003). Based on previously reported gender differences in alcohol consumption,

**Table 2**  
**Zero-Order Correlations among Gender, Alcohol Use, Perceived Alcohol Use, Marijuana Use, Perceived Marijuana Use, Attraction to Team, and Alcohol-Related Consequences**

	Alc. Use	Perc. Alc. Use	Marij. Use	Perc. Marij. Use	Attract. to Team	Consequences
Gender	0.24***	0.28***	0.31***	0.35***	-0.10*	0.16***
Alc. Use	—	0.56***	0.35***	0.17***	-0.01	0.55***
Perc. Alc. Use	—	—	0.18***	0.24***	0.01	0.27**
Marij. Use	—	—	—	0.40***	-0.13**	0.29***
Perc. Marij. Use	—	—	—	—	-0.12*	0.14**
Attrac. To Team	—	—	—	—	—	-0.16***

Note. Gender was dummy coded (Men = 1, Women = 0). \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Table 3**  
**Regression Results Evaluating Alcohol Use as a Function of Gender, Perceived Drinking Norms, and Attraction to Team**

Predictor	<i>B</i>	<i>B SE</i>	$\beta$	<i>t</i>	<i>d</i>
Step 1: $R^2 \Delta = .059\ddagger$					
Gender	0.79	0.134	0.24	5.91 $\ddagger$	0.50
Step 2: $R^2 \Delta = .263\ddagger$					
Perceived Drinking Norms	0.70	0.047	0.54	14.65 $\ddagger$	1.24
Step 3: $R^2 \Delta = .000$					
Attraction to Team	0.01	0.041	0.01	0.32	0.03
Step 4: $R^2 \Delta = .028\ddagger$					
Gender $\times$ Perceived Norms	0.40	0.095	0.15	4.26 $\ddagger$	0.36
Gender $\times$ Attraction to Team	-0.14	0.084	-0.06	-1.66	-0.14
Perceived Norms $\times$ Attraction to Team	0.09	0.032	0.10	2.73*	0.23
Step 5: $R^2 \Delta = .001$					
Gender $\times$ Norms $\times$ Attraction to Team	0.05	0.065	0.03	0.75	0.06

Note. \*  $p < .05$ .  $\ddagger p < .001$ .

and the influence of perceived norms on individual alcohol consumption, gender was entered in step 1, followed by perceived drinking norms at step 2. We were interested in examining the relationship between attraction to team and alcohol use, above and beyond variance accounted for by gender and perceived norms. Thus, the attraction to team total score was entered at step 3, and the two-way product terms for gender, attraction to team, and perceived norms were entered at step 4. The three-way product term for gender, perceived drinking norms, and attraction to team was entered at step 5.

Regression results are presented in Table 3. Results at step 1 revealed a significant main effect for gender, with male athletes reporting greater alcohol use than female athletes. At step 2, perceived drinking norms were positively associated with alcohol use, although attraction to team was not uniquely associated with alcohol use at step 3. Results at step 4 indicated that the two-way interaction between gender and perceived norms was significant as was the interaction between perceived norms and attraction to team. The interaction between gender and attraction to team, as well the three-way interaction at step 5 was non-significant. The significant two-way interactions and tests of simple slopes were graphed and interpreted using procedures described in detail by Aiken and West (1991). Figure 1 presents the interaction between attraction to team and perceived norms where high and low values of both variables were specified as one standard deviation above and below their means respectively. Tests of simple slopes for this interaction revealed that the relationship between perceived norms and drinking was significant for athletes with weak attraction to team ( $\beta = .55, p < .001$ ) and strong attraction to team ( $\beta = .79, p < .001$ ) but was stronger among those with higher levels of attraction to team.

### Attraction to Team, Perceived Norms, and Marijuana Use

We repeated the same regression analysis as detailed above for alcohol use, this time examining marijuana use as a function of gender, perceived norms for marijuana use, and attraction to team. Regression results for marijuana use are presented in Table 4. At step 1, results indicated a significant main effect for gender, with male athletes reporting greater marijuana use than female athletes, and at step 2, perceived marijuana use norms were significantly associated with individual marijuana use. At step 3, attraction to team was not uniquely associated with

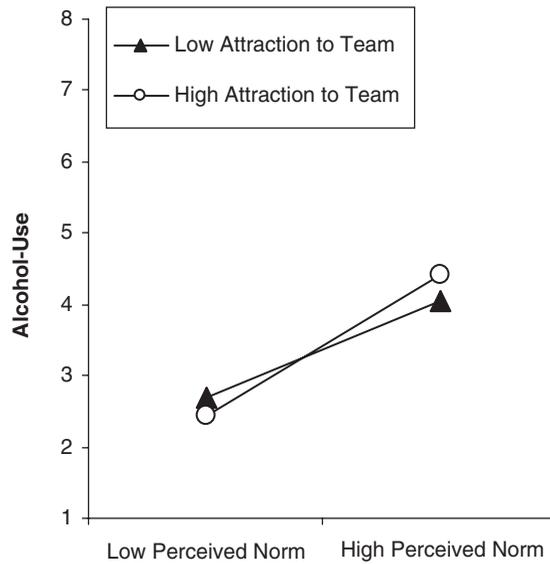


Figure 1. Two-way interaction involving attraction to team and perceived drinking norms.

marijuana use. At step 4, results indicated that all three two-way interactions were significant, although at step 5 the three-way interaction among gender, perceived marijuana use norms, and attraction to team was not significant.

The significant two-way interactions and tests of simple slopes were graphed and interpreted as described above. Tests of simple slopes revealed that the relationship between perceived marijuana norms was significantly and positively associated with marijuana use for men ( $\beta = .40, p < .001$ ) but not for women ( $\beta = .02, p = ns$ ). This result regarding the gender X perceived norms interaction, although not the main focus of this paper, was interesting and reported on

**Table 4**  
**Regression Results Evaluating Marijuana Use as a Function of Gender, Perceived Marijuana Use Norms, and Attraction to Team**

Predictor	<i>B</i>	<i>B SE</i>	$\beta$	<i>t</i>	<i>d</i>
Step 1: $R^2 \Delta = .091\ddagger$					
Gender	1.03	0.16	0.30	6.61 $\ddagger$	0.63
Step 2: $R^2 \Delta = .101\ddagger$					
Perceived Marijuana Use Norms	0.33	0.05	0.34	7.38 $\ddagger$	0.71
Step 3: $R^2 \Delta = .006$					
Attraction to Team	-0.10	0.05	-0.08	-1.85	-0.18
Step 4: $R^2 \Delta = .056\ddagger$					
Gender $\times$ Perceived Norms	0.39	0.10	0.21	3.89 $\ddagger$	0.37
Gender $\times$ Attraction to Team	-0.23	0.12	-0.09	-2.01*	-0.19
Perceived Norms $\times$ Attraction to Team	-0.07	0.03	-0.10	-2.24*	-0.22
Step 5: $R^2 \Delta = .003$					
Gender $\times$ Norms $\times$ Attraction to Team	-0.09	0.07	-0.08	-1.29	-0.12

Note. \*  $p < .05$ .  $\ddagger p < .001$ .

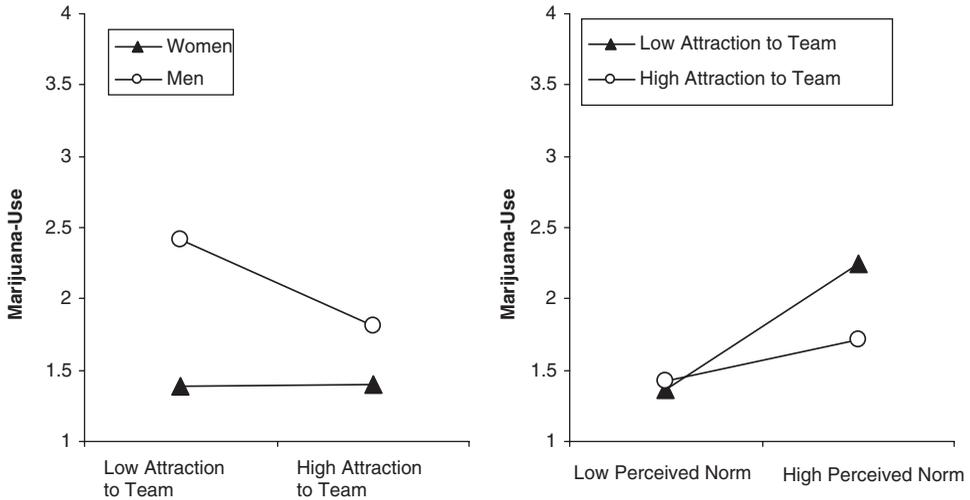


Figure 2. Two-way interactions involving gender and attraction to team (Left), and attraction to team and perceived marijuana use norms (Right).

in further detail by LaBrie, Grossbard, & Hummer (2009). The interaction between gender and attraction to team (Figure 2 left) similarly revealed no association between attraction to team and marijuana use for women ( $\beta = .00, p = ns$ ). In contrast, men with stronger attraction to their team reported significantly less marijuana use than those with weaker attraction ( $\beta = -.23, p < .01$ ). Finally, tests of simple slopes for the interaction between perceived norms and attraction to team (Figure 2 right) revealed positive associations between perceived marijuana norms and marijuana use for those with weak ( $\beta = .49, p < .001$ ) and strong ( $\beta = .32, p < .001$ ) attraction to team although the relationship was weaker among those with higher levels of attraction to their team.

### Attraction to Team, Perceived Norms, Alcohol Use, and Consequences

We also conducted a hierarchical multiple regression with drinking-related consequences as the outcome variable, while controlling for alcohol consumption. Regression results for drinking-related consequences are presented in Table 5. Gender and alcohol consumption were entered in step 1. Perceived drinking norms were entered in the model at step 2, and attraction to one's team was entered at step 3. The two-way product terms for gender, perceived drinking norms, and attraction to team were entered in step 4, followed by the three-way product term for gender, perceived norms, and attraction to team at step 5. Results at step 1 indicated that not surprisingly, greater alcohol consumption was significantly associated with greater alcohol-related consequences, although gender was not uniquely associated with drinking-related consequences. Perceived drinking norms were not significantly associated with consequences at step 2, although results revealed a significant main effect for attraction to team on alcohol-related consequences at step 3, such that greater attraction to team predicted fewer drinking-related consequences. At steps 4 and 5, none of the two- or three-way interactions were significant.

**Table 5**  
**Regression Results Evaluating Alcohol-Related Consequences as a Function of Gender, Alcohol Use, Perceived Drinking Norms, and Attraction to Team**

Predictor	<i>B</i>	<i>B SE</i>	$\beta$	<i>t</i>	<i>d</i>
Step 1: $R^2 \Delta = .289\ddagger$					
Alcohol Use	1.79	0.13	0.53	14.27 $\ddagger$	1.21
Gender	0.41	0.41	0.04	1.00	0.08
Step 2: $R^2 \Delta = .003$					
Perceived Drinking Norms	-0.31	0.19	-0.07	-1.58	-0.13
Step 3: $R^2 \Delta = .024\ddagger$					
Attraction to Team	-0.61	0.14	-0.16	-4.41 $\ddagger$	-0.38
Step 4: $R^2 \Delta = .001$					
Gender $\times$ Perceived Norms	-0.23	0.34	-0.03	-0.68	-0.06
Gender $\times$ Attraction to Team	-0.13	0.29	-0.02	-0.43	-0.04
Perceived Norms $\times$ Attraction to Team	0.07	0.11	0.03	0.65	0.06
Step 5: $R^2 \Delta = .001$					
Gender $\times$ Norms $\times$ Attraction to Team	0.22	0.23	0.04	0.99	0.08

Note.  $\ddagger p < .001$ .

## DISCUSSION

Intercollegiate athletes are a subgroup at risk for heavy alcohol use and related negative consequences (Wechsler et al., 1997). Despite the potential for drug testing and the demand on athletes to stay healthy to maximize performance, research also suggests prevalence rates of marijuana use among athletes are similar to marijuana use rates among their non-athlete peers (CORE, 2001). The current investigation extends previous research on substance use among athletes by examining the influence of attraction to one's team on individual alcohol use, alcohol-related consequences, and marijuana use, above and beyond the effects of gender and perceived norms. Consistent with previous research, results provide further evidence that male and female athletes overestimate the substance use of other athletes at their school. Interestingly, a positive relationship between perceived alcohol use norms and drinking was most pronounced among males and individuals with higher levels of attraction to their team, and athletes with higher levels of attraction to their team had significantly fewer alcohol-related consequences compared to those with weaker attraction to their team. In terms of marijuana use, stronger attraction to team predicted less marijuana use compared to those exhibiting weaker attraction. Although greater overestimations of marijuana use predicted greater individual use regardless of attraction to team, this relationship was stronger for athletes with weaker attraction to their team.

The current investigation is the first to our knowledge to investigate relationships between attraction to team, perceived substance use norms, and individual alcohol and marijuana use among male and female intercollegiate athletes. With respect to alcohol use, perceptions of drinking norms were more strongly associated with individual alcohol use among athletes reporting higher levels of attraction. In light of research suggesting greater isolation on college campuses among student-athletes compared to their non-athlete peers (Damm & Murray, 1996; Harvey, 1999), it is possible the social drinking milieu of athletes may primarily include their team members or other athletes. Male and female athletes may engage in alcohol use with other team members as a way to enhance team cohesiveness. Interestingly, team attitudes were negatively related to alcohol-related consequences after controlling for alcohol consumption. It is unclear what accounts for this relationship, although one explanation may be that

athletes who exhibit more favorable team attitudes may drink with teammates but avoid the subsequent consequences in order to prevent negative repercussions for their team or athletic performance. Alternatively, greater team connectedness among athletes exhibiting stronger attraction to their team may promote greater social support among team members to limit consequences.

In terms of marijuana use and attraction to team, our findings demonstrate that among male athletes, attraction was negatively associated with marijuana use, suggesting that marijuana use among athletes may occur outside of the social network of one's athletic team. One possible explanation is that illicit drug use, more so than alcohol use, would potentially have greater negative implications on team or athletic eligibility particularly among Division I male athletes. Owing to marijuana's perceived association with physical symptoms (e.g., shortness of breath) or decreased motivation, an athlete with strong attraction to team may seek to avoid this negative perception by not engaging in use. Thus, greater team connectedness may be a protective factor for marijuana use. Conversely, having a weak attraction to one's athletic team may be an impetus for engaging in risk-taking behaviors that may have a detrimental effect on one's athletic team. Further assessment of individual difference and social affiliation factors contributing to unique patterns of substance use among athletes may provide insight into the underlying mechanisms accounting for such emergent behavioral patterns. Previously, Wechsler and colleagues (1997) had found that although intercollegiate athletes were less likely to use marijuana than their non-athlete peers, athletes who reported marijuana use were more likely to engage in heavy episodic drinking than athletes who did not report marijuana use. It is important to consider the combined influence of alcohol and marijuana use among athletes, because research suggests greater negative alcohol-related consequences among college students reporting alcohol and marijuana use, compared to students exhibiting alcohol or marijuana use exclusively (Simons & Carey, 2006).

### **Study Limitations and Future Directions**

Although this investigation adds significantly to research on the relationship between social norms and college athlete alcohol and marijuana use, there are limitations to consider and ideas for further research. The use of self-report measures is a limitation, because students may not accurately report information regarding their substance use. Nevertheless, confidentiality of participants' responses was assured, and previous research suggests that self-report of drinking behavior is generally accurate under these conditions (Babor, Steinberg, Anton, & Del Boca, 2000; Chermack, Singer, & Beresford, 1998). Another limitation is that the cross-sectional data reported prevent making causal statements about the observed relationships. Although this study demonstrates an association between attraction to team, perceived descriptive norms, and individual substance use, the current study did not assess whether athletes engaged in alcohol and marijuana use with fellow teammates, other athletes, or non-athlete friends. Closer examination of the group dynamic with respect to alcohol, marijuana, and other substance use among athletes participating in team and individual sports is warranted. Because alcohol use varies as a function of sport type (Martens, Watson, & Beck 2006), it is possible that participation in team sports, such as football or swimming, may strengthen the influence of attraction to team and perceived norms on personal alcohol and marijuana use, as opposed to sports based on individual performance (e.g., track and field, tennis). Additionally, a broader conceptualization of the reciprocal relationship between individual and team/group identity should be considered for further study. For example, theories from social psychology suggest that individuals attempt to balance their self-identity in terms of collectiveness and uniqueness

(Brewer, 1991) or in positive feelings associated with group membership (Cameron, 2004). Although the current study provides support for attraction to team as an important moderating variable, other recent research points towards group identification as being multi-dimensional (Cameron). A more robust examination of this small group process should be included in research using group identification as a moderator of the norms and health-related behaviors link. Measures of how important one's self-identity is in the context of the group, such as measures of collective self esteem (e.g., Luhtanen & Crocker, 1992) or inclusion of others in the view of self (Aron, Aron, & Smollan, 1992) should be included in a more complex approach.

### Clinical Implications

Results of the current study demonstrate the importance of considering attraction to one's team in conjunction with perceived norms for substance use among college athletes when developing social norms interventions targeting male and female athletes. For most athletes, there is a high level of investment in positive and successful participation in one's team, and scholarships, friendships, and health are generally factors of importance to student athletes. Highlighting discrepancies between goals and engagement in risky behavior may aid in reducing the negative effects of alcohol and drug use. In addition, because performing well can contribute to individual and team success, building students' connectedness to other team members may serve as a protective factor against marijuana use and alcohol-related consequences. Although team connectedness may be associated with drinking, encouraging responsibility for one's actions that may negatively affect the team may aid in reducing the consequences of use.

In conclusion, a better understanding of the key social, cognitive, and motivational factors contributing to the influence of attraction to team and normative perceptions enhances the specificity of interventions targeting groups engaging in problematic alcohol and marijuana use. Our findings warrant consideration when developing normative feedback interventions targeting college athletes. Feedback on athlete or team-specific norms, as well as team or group-based interventions, may be effective in reducing individual substance use for those athletes exhibiting strong attraction to their team.

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**APPENDIX****Descriptive Norms Questionnaire**

1. How often does a *typical 'X' University "Gender" athlete* [you\*] consume alcohol?
 

1. Never—six times a year	2. 1x a month
3. 2× a month	4. 1× a week
5. 2× a week	6. 3× a week
7. 4× a week	8. 5–6× a week
9. Everyday	
2. How many drinks, on average, does a *typical 'X' University "Gender" athlete* [you\*] consume during a typical drinking occasion?
 

1. None	2. 1–2
3. 3	4. 4
5. 5–6	6. 7–8
7. 9–10	8. 11–12
9. 13 or more	
3. How many drinks does a *typical 'X' University "Gender" athlete* [you\*] drink each week?
 

1. None	2. 1–2
3. 3–5	4. 6–8
5. 9–10	6. 11–14
7. 15–18	8. 19–21
9. 22 or more	
4. Within the past 30 days, what is the maximum number of drinks the *typical 'X' University "Gender" athlete* [you\*] consumed during one occasion?
 

1. None	2. 1–3
3. 4–6	4. 7–9
5. 10–12	6. 13–15
7. 16–18	8. 19–21
9. 22 or more	
5. Over the past two weeks, how many times has a *typical 'X' University "Gender" athlete* [you\*] had 4/5 or more drinks in a two hour period?
 

1. None	2. 1 time
3. 2 times	4. 3 times
5. 4 times	6. 5 times
7. 6 times	8. 7–9 times
9. 10 or more times	

\*Note: [you] refers to individual behavior questions assessed in parallel.