

Hazardous drinking by first-year college-athletes: The differential roles of drinking motives, alcohol consequences, and season status

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Abstract:

College student-athletes and first-year students are two undergraduate populations at risk for heavy-episodic drinking and alcohol-related negative consequences. In this study, 63 (56% female, 62% Caucasian) first-year student-athletes completed a preliminary questionnaire assessing demographic characteristics, athlete-specific drinking motives, alcohol-related negative consequences, and season status. Scores of five or more on the 4 UDIT-C defined the at-risk subsample. Participants who met the criteria for hazardous drinking (n = 19) reported higher levels of alcohol-related negative consequences and drinking motives. A logistic regression, with these variables, successfully distinguished between the two groups. Sport-related coping, and positive reinforcement drinking motives, emerged as the most robust predictors of hazardous drinking. Implications for screening, prevention, and brief intervention strategies for first-year student-athletes are discussed.

Keywords: college student-athlete | First-year student | drinking motives | alcohol use

Article:

Problematic alcohol consumption by undergraduate students remains a significant public health issue on college campuses in the United States. Among college students, student-athletes are a population of students at increased risk for heavy episodic drinking (i.e., on at least one occasion in the past 2 weeks, consuming five or more drinks in one sitting for men and consuming four or more drinks for women; Ford, 2007; Nelson & Wechsler, 2001). A breadth of research has demonstrated that college student-athletes engaged in more heavy episodic drinking occasions, endorsed drinking more on peak drinking occasions, and reported getting drunk more frequently than their non-athlete peers (Turrisi, Mastroleo, Mallett, Larimer, & Kilmer, 2007). According to the National Collegiate Athletic Association (NCAA; 2012), over 83% of college student-

athletes reported past year alcohol consumption and approximately 49% of those reporting heavy episodic drinking on one or more occasions.

Heavy episodic drinking exposes college student-athletes to a number of psychosocial and physical alcohol-related negative consequences (Martens, Dams-O'Connor, & Beck, 2006). Indeed, student-athletes have been shown to experience alcohol-related consequences at higher rates compared to their non-athlete peers (Nelson & Wechsler, 2001). These negative consequences range from experiencing academic problems such as missing class to serious physiological issues such as memory loss because of heavy alcohol consumption. Rates of alcohol-related negative consequences among college student-athletes are alarming. Among student-athletes, nearly 1-in-4 reported that they had driven a car while under the influence and 36% reported getting into a fight or argument because of their alcohol use at least once during the past year (NCAA, 2012).

Given these concerning trends, researchers have attempted to identify the contextual and motivational factors that influence college student-athlete high-risk drinking behaviors. In a longitudinal study of college student-athlete drinking patterns, Martens, Dams-O'Connor, and Duffy-Paiement (2006) found that alcohol use and alcohol-related negative consequences decreased during the competitive season. These findings indicate that alcohol use among student-athletes is at its peak during the off-season when there are fewer athletic performance-related demands.

Specific drinking motives that are unique to student-athletes have been found to be a robust predictor of alcohol consumption during both the competitive season and off-season (Martens & Martin, 2010). Martens, Watson, Royland, and Beck (2005) identified three categories of student-athlete drinking motives, (a) positive reinforcement (e.g., I drink to celebrate athletic victories), (b) sport-related stress and coping (e.g., I drink to help me deal with poor performances), and (c) team/group (e.g., I drink to "fit in" with my teammates). These athlete-specific motives have been found to be associated with alcohol use and alcohol-related negative consequences among college student-athletes even after controlling for general college student drinking motives (Martens, LaBrie, Hummer, & Pedersen, 2008). More specifically, positive reinforcement drinking motives were found to have the most robust association with rate of alcohol use, and sport-related coping possessed the strongest relationship with alcohol-related negative consequences (Martens, LaBrie, Hummer, & Pedersen, 2008).

Although both season status and drinking motives have been associated with alcohol consumption and alcohol-related negative consequences, questions remain as to which factors better predict hazardous drinking among college student-athletes. Whereas previous research has found that alcohol consumption among student-athletes decreases during their competitive season (e.g., Martens, Dams-O'Connor, & Duffy-Paiement, 2006; Thombs, 2000; Yusko, Buckman, White, & Pandina, 2008), Martens and Martin (2010) found that athlete-specific drinking motives actually increased among student-athletes during their competitive season. The authors surmised that athlete-specific drinking motives increased during the competitive season because they were more salient at that time (i.e., more time spent with team, more sport-related stress), yet they noted that these findings were counterintuitive given that rates of alcohol use declined during this period. Examining these factors together may help determine how to identify student-athletes who engage in hazardous drinking and when these students can be targeted with high-risk drinking prevention and intervention strategies.

Similar to college student-athletes, first-year undergraduate students are a subgroup of college students that are also at an increased risk for heavy-episodic drinking and alcohol-related negative consequences (Borsari, Murphy, & Barnett, 2007). The transition from high school into college creates opportunities for first-year students to consume alcohol in their desire to develop autonomy and establish a social network (Schulenberg & Maggs, 2001). In addition to these developmental issues, many first-year student-athletes also experience sports-related stress related to training intensity and high performance expectations (Giacobbi et al., 2004). Although first-year student-athletes report heavier alcohol use and higher rates of alcohol-related problems than their first-year student non-athlete peers (Doumas, Turrisi, Coll, & Haralson, 2007), questions remain regarding the psychosocial and contextual factors that best predict hazardous drinking among these students.

The prevalence of heavy drinking and negative consequences by first-year student-athletes provides the rationale for use of screening and brief interventions (SBI) with this population. SBIs combine the use of a screening tool to identify students at-risk for an alcohol use disorder and a brief motivational conversation to guide students in reflecting on how to change their drinking behaviors (Larimer & Cronce, 2007). This approach, typically delivered within a college health center, has demonstrated efficacy in reducing alcohol consumption and occurrence of alcohol-related negative consequences among undergraduates (Seigers & Carey, 2010). In a study of a two session SBI that included personalized feedback on blood alcohol content, perceptions of drinking by other students, and beliefs about the effects of drinking, Amaro et al. (2010) observed reductions in drinking and alcohol-related problems between baseline and six-month follow up.

Because of its brevity and accuracy in detecting problem drinking, increased attention has been given to the AUDIT-C as a screening tool for college students (DeMartini & Carey, 2012). Consisting of the first three items of the Alcohol Use Disorder Identification Test (AUDIT; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001), the AUDIT-C includes questions about heavy episodic drinking (six or more drinks on one occasion), alcohol use quantity, and frequency of drinking. Researchers have found that the AUDIT-C performs as well as the full 10-item AUDIT in detecting problem drinking (Bradley et al., 2007).

Utilizing a representative sample of US adults, Dawson, Grant, Stinson, and Zhou (2005) determined that a cut off score of 5 (maximum score of 12) provided optimal sensitivity and specificity to detect hazardous drinking among college students (aged 18-29). In this study, hazardous drinking was based on criteria established by the NIAAA (2005) for weekly and daily consumption. Hazardous drinking was defined as (a) exceeding a maximum of 14 standard drinks for men or 7 standard drinks for women in a week, or (b) exceeding a maximum of 4 drinks for men or 3 drinks for women in one sitting once a month or more. This cut off score can serve as the threshold for delivery of a brief intervention designed to enhance motivation for students to change their drinking behaviors.

The efficacy of existent interventions to reduce high-risk alcohol use among college student-athletes is limited. In a meta-analysis of individual-level alcohol abuse intervention studies published between 1985 and 2007, Carey, Scott-Sheldon, Carey, and DeMartini (2007) found that interventions were less effective when geared to high-risk groups, such as student-athletes. These authors posited that the limited effectiveness was because drinking serves different functions among these groups compared to typical students and recommended that tailored interventions be designed to address these specific purposes of drinking (2007). Martens, Dams-O'Connor, and Beck (2006) noted that there was a paucity of research on alcohol abuse interventions specific to college student-athletes and encouraged future researchers to tailor existing empirically supported programs, such as SBIs, for this population by incorporating the specific motives and context of student-athlete drinking.

To better inform prevention and intervention efforts, researchers need to clarify the specific factors that predict hazardous drinking among student-athletes. The purpose of this study was to address this gap by identifying a predictive model for hazardous drinking among first-year student-athletes, defined by elevated (i.e., [greater than or equal to] 5) AUDIT-C scores, using athlete-specific drinking motives (e.g., team/group, positive reinforcement, sport-related coping),

alcohol-related negative consequences, and season status (e.g., off-season versus competitive season). Accordingly, this study addressed the following research questions: (a) Is there a statistically significant difference in reported drinking motives, alcohol-related negative consequences, and season status between student-athletes who meet the criteria for hazardous drinking and those who do not? and (b) which of these statistically significant factors best predict endorsement of hazardous drinking? Consistent with past research of college student-athlete drinking, we expected that first-year student-athletes who screen positive for hazardous drinking to display greater athlete-specific drinking motives and endorse more alcohol-related negative consequences. We further hypothesized that these high-risk students would be in their off-season (i.e., non-competitive season). Among these factors, we hypothesized that sport-related coping motives would be the most robust predictor of hazardous drinking among student-athletes. Findings are expected to broaden the literature and contribute to the design of prevention and intervention programs tailored to student-athletes.

METHODS

Participants and Procedures

Recruitment of participants was conducted utilizing convenience-sampling procedures during the 2011 fall semester at a midsized public university located in the Southeastern United States. Participant recruitment occurred during a seminar that is a required course for all first-year student-athletes at the university. Participation was voluntary and recruitment criteria included being a first-year student-athlete who was 18 years of age or older. All procedures for this study were approved by the university institutional review board.

Measures

Participants completed a brief questionnaire that included information regarding ethnicity, age, and current competitive season status (i.e., is your team currently in season)? Additionally, this questionnaire included three previously validated and commonly used measures; the AUDIT-C (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998), the Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ; Kahler, Strong, & Read, 2005), and the Athlete Drinking Scale (ADS; Martens, Watson, Royland, & Beck, 2005).

Alcohol Use Disorder Identification Test--Consumption (AUDIT-C). The AUDIT-C (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998) consists of the first three items of the AUDIT (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001). The questions assess frequency of drinking, typical number of drinks consumed on a drinking day, and the frequency of heavy drinking (e.g., consuming six or more drinks on one occasion). Responses to each item are scored from 0 to 4, yielding a maximum possible score on the AUDIT-C of 12. Coefficient alpha for the present sample was .90. Higher scores reflect intensity of drinking.

Brief Young Adult Alcohol Consequences Questionnaire (BYAACQ). The BYAACQ (Kahler, Strong, & Read, 2005) assesses 24 psychosocial consequences of alcohol consumption during the previous 30 days using a dichotomous (yes/no) format (e.g., "I have felt very sick to my stomach or thrown up after drinking"). "Yes" responses are summed to create a total score on the measure. Higher scores reflect greater involvement with alcohol related consequences. The BYAACQ has been shown to be a valid and reliable indicator of alcohol-related problems among college student drinkers (Kahler, Hustad, Barnett, Strong, & Borsari, 2008). Coefficient alpha for the BYAACQ in the present sample was $[\alpha] = 0.85$.

Athlete Drinking Scale (ADS). The ADS (Martens, Watson, Royland, & Beck, 2005) is a 19-item scale that asks participants to indicate how much they agree with the items on a scale ranging from 1 (strongly disagree) to 6 (strongly agree). The ADS contains three subscales: Positive reinforcement (nine items), team/group (seven items), and sport-related coping (three items). Research has demonstrated that the ADS is a valid measure and that it is associated with alcohol use and alcohol-related negative consequences among college student-athletes (e.g., Martens, Labrie, Hummer, & Pedersen, 2008). Higher scores reflect greater endorsement of specific reasons for alcohol consumption. Internal consistency for the subscales in the present sample were .91 for positive reinforcement, .87 for sports-related coping, and .89 for team/group.

Participants

Only two of the 76 students enrolled in the seminar course did not participate in the study. Among the 74 first-year student-athletes who agreed to participate, 62% were Caucasian, 19% Black, and 56% were female. Fifty percent reported that they were currently in their competitive season, and the average age was 18.62 ($SD = 1.143$). Eventually, 11 participants (15%) were not included in the analysis because they did not complete the AUDIT-C. As such, this left 63 (85%) completed surveys for analysis.

Analysis Plan

First, group differences in drinking motives, season status, and key demographic variables were examined between students who met the AUDIT-C criteria for hazardous drinking ($n = 19$) and those who scored below the cut off ($n = 44$). Group differences in demographic characteristics (i.e., age, gender, and ethnicity) also were included in the analysis because these variables have been associated with rates of alcohol consumption among college students (Ham & Hope, 2003). By including these demographic variables, we wished to account for other possible factors that are associated alcohol consumption. The variables found to be statistically significant between groups were then entered simultaneously into a logistic regression model to identify the factors that best predicted group membership.

RESULTS

Independent samples t tests of data indicated that students who met the AUDIT-C criteria for hazardous drinking exhibited significantly higher athlete drinking motives than students who scored below the cut off. Compared to first-year student-athletes below the cut off, hazardous drinkers reported higher levels of sports-related coping motives, $t(61) = 5.75$, $p < .001$, team/group motives $t(61) = 2.53$, $p = .01$, and positive reinforcement motives $t(61) = 5.51$, $p < .001$. Further, compared to first-year student-athletes below the AUDIT-C cut-off, hazardous drinkers reported a greater number of psychosocial consequences, $t(61) = 5.50$, $p < .001$. Chi square tests of categorical variables revealed no statistically significant differences in age, $\chi^2(4) = 3.89$ ($p = .42$), gender, $\chi^2(1) = 3.72$ ($p = .05$), or ethnicity, $\chi^2(4) = 5.96$ ($p = .20$) between groups. Contrary to our prediction, no differences were found in reported season status by group, $\chi^2(1) = .549$ ($p = .46$). Means and standard deviations of drinking motives and alcohol-related negative consequences for students above the AUDIT-C cut off and students below the cut off, are contained in Table 1.

TABLE 1 CAN BE FOUND AT THE END OF THE ARTICLE

Logistic Regression

Based on the independent sample t -tests, alcohol-related negative consequences, sports-related coping motives, team/group motives, and positive reinforcement motives were entered into a logistic regression to determine which predictors accounted for unique variance in the criterion variable, AUDIT-C risk status. Three variables (psychosocial problems, sports-related coping motives, and positive reinforcement motives) emerged as significant predictors. As shown in Table 2, the predictor set had a significant effect on drinking behavior (Model chi-square = 38.01, $df = 4$, $p = .01$). The Nagelkerke pseudo statistic indicated that 64.2% of the variance in drinking behavior was accounted for by the set of predictors. The Hosmer and Lemeshow inferential test was not significant, $\chi^2(8) = 14.38$, $p = .07$, indicating that the data fits the model

well. These variables correctly identified 89.5% (17 of 19) of the student-athletes with elevated AUDIT-C scores (i.e., above the AUDIT cut off of 5) and 95.5% (42 of 44) of student-athletes with scores below the cut off, for an overall accuracy of 93.7%.

The predictor variable that best distinguished hazardous from non-hazardous student-athlete drinkers was coping motives (OR = 7.28, CI = 1.26 - 42.13). In other words, for a one-unit increase in coping motives, student athletes have 7.28 times greater odds of being a hazardous drinker. Positive reinforcement motives was the next strongest predictor (OR = 3.59, CI = 1.13-11.42); as such, for a one unit increase in positive reinforcement motives, student athletes have a 3.59 greater odds of being a hazardous drinker. Psychosocial problems also had a significant, independent association with drinking status (OR = 1.29, CI = 1.01-1.67). Table 2 shows the logistic regression coefficient and standard error as well as the odds ratio and confidence interval for each of the predictor variables.

DISCUSSION

In the present study, we sought to examine differences among a cohort of first-year student-athletes based on drinking risk status, as determined by the AUDIT-C. First-year student-athletes at or above the AUDIT-C cut off differed on several variables in comparison to their peers who scored below the cut off, including psychosocial consequences, sports-related coping drinking motives, peer/group drinking motives, and positive reinforcement drinking motives. No differences, however, were observed in reported competitive season status based on risk group. Logistic regression revealed that sports-related coping drinking motives, alcohol-related psychosocial consequences, and positive reinforcement drinking motives significantly predicted AUDIT-C risk status with an overall accuracy of 94%. This model indicates that higher rates of drinking to cope with sports-related stress, psychosocial consequences, and drinking to experience the positive effects of alcohol were predictive of first-year student-athletes who engaged in hazardous drinking.

The results presented in this study confirm previous findings using samples of student-athletes. Martens, LaBrie, Hummer, and Pedersen (2008) reported that sport-related coping exhibited a relationship with alcohol-related problems among a group of undergraduate college athletes. Additionally, these authors reported that team/group drinking motives were not uniquely associated with alcohol consumption or alcohol-related problems (when examined together with

sport-related coping and positive reinforcement motives), which was a result corroborated in the present study.

Another notable finding of this study was that there were no differences between AUDIT-C groups when observing competitive season status. This is contrary to the authors' original hypothesis that more problematic drinking occurs more often in the off-season, and this finding is contrary to a number of studies that contend that problematic drinking occurs more often during the off-season for college student-athletes (e.g., Lewis, 2008). Further, it was underscored that sport-related coping is a robust predictor of problematic drinking, therefore it can be postulated that sport-related coping occurs through the year and not only during in-season competition. These findings are particularly important when attempting to prevent problematic drinking among first-year student-athletes. Thus, the need for prevention and intervention programming throughout the academic year (i.e., during both in and out-of season) for first-year student-athletes is imperative.

Study findings reveal several important implications for the delivery of prevention and intervention methods with first-year college student-athletes. Nearly one third of participants scored at or above the hazardous drinking cut-off score, a higher rate than found by previous researchers (e.g., Dawson, Grant, Stinson, & Zhou, 2005). Given this relatively high ratio of participants who screened positive for hazardous drinking, it may be advantageous for colleges and universities to integrate alcohol-screening protocols into existent student-athlete health, wellness, and prevention programming. Before participation in any athletics related practices or activities, the NCAA (2012) requires that student-athletes undergo a medical examination. By incorporating the brief three-item AUDIT-C into this required examination, university personnel may be able to identify and refer high-risk students to participate in a brief motivational intervention designed to address the sports-related motives that encourage alcohol consumption among this population. Further, considering the role of alcohol-related negative consequences in predicting hazardous drinking, athletic trainers or team physicians examining student-athletes who have reported physical injuries that occurred outside of sanctioned workouts, practice, or competition may want to include the AUDIT-C screening as part of their assessment protocol.

Existing collegiate prevention and intervention methods can be modified to target the specific reasons for alcohol consumption reported by first-year student-athletes. Given the importance of sport-related coping motives in predicting hazardous drinking, brief motivational interventions delivered to first-year student-athletes can include a component that assists students in enhancing coping skills and establishing a behavioral plan for coping with sport-related stress. Within the literature, there are numerous examples of coping skills training programs on areas including

relaxation, thought stopping, and goal setting that have demonstrated success in enhancing student-athlete psychological well-being as well as sport-related performance (e.g., Curry & Maniar, 2003; Sheard & Golby, 2006).

Additionally, because of the reported occurrence of alcohol-related negative consequences among hazardous drinking, health educators may wish to include personalized feedback on the deleterious impact that alcohol use has on physical and mental performance. Martens, Kilmer, Beck, and Zamboanga (2010) found support for the use of a personalized drinking feedback intervention tailored for student-athletes. Student-athletes who completed the targeted intervention, which included feedback on the impact of alcohol use on athletic performance and injury, reported a lower peak blood alcohol concentration at the 6-month follow-up than those student-athletes who participated in a generic personalized drinking feedback intervention or an education only condition (2010).

In addition to learning about the harmful effects of alcohol on athletic performance, first-year student-athletes also may benefit from prevention programming that addresses their beliefs about the positive effects of alcohol use, or alcohol outcome expectancies. Study findings indicate that the odds of hazardous drinking increase by 259% among participants who reported drinking to obtain a reward or pleasing feeling. Accordingly, challenging these positive alcohol outcome expectancies may decrease student-athlete motivation to engage in alcohol consumption. Scott-Sheldon, Carey, Garey, and Carey (2012) conducted a meta-analytic review of alcohol expectancy challenge programs and found that these interventions reduced alcohol use and frequency of drinking among college students. This may be a promising approach for use with first-year student-athletes, many of whom are underage, because no differences in effect were found between experiential learning formats (i.e., consuming a placebo in a simulated bar environment) and didactic learning presentations.

Several limitations of this study have to be addressed. All data collected were self-reported. Even though participants were assured of anonymity, the truthfulness of the respondents could not be determined. Data were collected utilizing convenience sampling procedures from a single cohort of student-athletes attending a Division I university located in the Southeastern United States. Thus, it is unclear if the results generalize to first-year student-athletes in the same or other competitive divisions, conferences, or geographical regions of the United States, thereby compromising external validity. Further research with larger samples of first-year student-athletes representing different campuses is necessary to validate these findings.

Despite these limitations, the present study makes an important contribution to the literature on alcohol consumption among collegiate student-athletes. The AUDIT-C is a brief and effective method to identify hazardous drinkers within collegiate populations. Incorporating this instrument into mandatory physical examinations conducted by medical personnel and athletic trainers will enhance efforts to identify problem drinkers and connect them to appropriate referral sources. Offering year-round prevention and intervention programs tailored to student-athletes, such as alcohol outcome expectancy challenges, coping skills training, and brief motivational interventions, will help to address the key motives that facilitate problematic drinking among these students. Future researchers should examine the efficacy of these tailored intervention programs with students, as well as to assess the utility of these interventions with first-year student-athletes during their competitive and non-competitive seasons.

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Tables

TABLE 1

Means (SD) of Continuous Independent Variables by AUDIT-C Group among a Sample of First-Year Student-Athletes (n = 63)

	AUDIT -C <5 (n = 44)	AUDIT -C 5+ (n = 19)		Range
BYAACQ	2.00 (2.67)	6.58 (3.75) **		0-28
Sports-related coping	1.28 (0.48)	2.28 (0.89) **		1-6
Team/group	1.83 (0.94)	2.45 (0.76) *		1-6
Positive reinforcement	2.25 (0.91)	3.59 (0.83) **		1-6

Note. * p values < .05, ** p values < .01

TABLE 2

Model Predicting AUDIT-C Scores Using a Cutoff Score of 5 among a sample of First-Year Student-Athletes (n = 63)

Predictor Variable	B	Wald	SE B	OR (95% CI)
BYAACQ	0.26 *	3.99	0.13	1.29 (1.01, 1.67)
Sport-related coping	1.99 *	4.92	0.90	7.28 (1.26, 42.13)
Team/group	-0.90	1.37	0.77	0.41 (0.09, 1.84)
Positive reinforcement	1.28 *	4.70	0.59	3.59 (1.13, 11.42)

Note. * p values <.05; BYAACQ = Brief Young Adult Alcohol Consequences Questionnaire; Nagelkerke pseudo = .64