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## School spirits: Alcohol and collegiate sports fans

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### Abstract

While studies have addressed alcohol use and related problems among college athletes, little is known about the drinking patterns of non-athletes who are sports fans. This study examines the relationship between alcohol use and interest in collegiate sports on two levels. First, do sports fans in college binge drink more and exhibit more negative alcohol-related outcomes than other students? Second, do colleges with large numbers of sports fans have higher rates of heavy drinking and accompanying secondhand effects affecting other students? The study analyzed the responses of a nationally representative sample of students who completed questionnaires in the spring of 1999 regarding their extracurricular activities and substance use. The responses of 3445 student sports fans were compared to those of 8405 students who were not sports fans. More sports fans drank alcohol, engaged in binge drinking, had a heavy drinking style and reported alcohol-related problems than nonfans. The percentage of sports fans at a school was associated with binge drinking rates and the secondhand effects. The implications for those working with college athletics and for alcohol prevention personnel are discussed. © 2002 Elsevier Science Ltd. All rights reserved.

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### 1. Introduction

Binge drinking may be regarded as the most serious public health problem facing US colleges and universities. Approximately two in five college students engage in binge

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drinking (Johnston, O'Malley, & Bachman, 1997; Presley, Leichliter, & Meilman, 1999; Presley, Meilman, Cashin, & Lyerla, 1996; Wechsler, Davenport, Dowdall, Grossman, & Zanakos, 1997; Wechsler, Dowdall, Maenner, Gledhill-Hoyt, & Lee, 1998; Wechsler, Lee, Kuo, & Lee, 2000) and a significant percentage of these binge drinkers experience serious negative consequences related to their drinking. These negative consequences include academic difficulties, antisocial behavior, psychosocial problems, medical issues, high-risk sexual behavior, and other risk-taking behavior, such as drinking and driving. In addition, students who attend schools with high binge drinking rates have a greater risk of experiencing the secondhand effects of other students' drinking than those who attend schools with low binge drinking rates (Wechsler et al., 2000; Wechsler, Moeykens, Davenport, Castillo, & Hansen, 1995).

One correlate of binge drinking is an interest in athletics (Wechsler et al., 1997; Wechsler, Dowdall, Davenport, & Castillo, 1995). Increased risk of engaging in heavy alcohol use has been noted among athletes in several studies of college students (Leichliter, Meilman, Presley, & Cashin 1998; Nattiv & Puffer, 1991; Nattiv, Puffer, & Green, 1997; Nelson & Wechsler, 2001; Overman & Terry, 1991; Wechsler et al., 1997). However, only limited research has systematically examined the alcohol use patterns of another group of individuals invested in collegiate sports, the fans. Studies of alcohol-related fan behavior have focused on outcomes such as drunk driving or violent behavior at single sport venues (Bormann & Stone, 2001; Vingilis, Liban, Blefgen, Colbourne, & Reynolds, 1992; Wolfe, Martinez, & Scott, 1998). These reports are not limited to college-affiliated events. Wann (1998) found no significant relationship between alcohol use and sport fandom among college students, although the sample for this study was small, nonrandom and limited to a single school.

The influence of alcohol in athletics may extend beyond those who participate on intercollegiate athletic teams to those who are interested in sports as spectators or fans. In a recent examination of collegiate sports, Sperber (2000) suggested that an institutional emphasis on athletics is strongly associated with heavy alcohol consumption among its students. In his book, Sperber used a variety of qualitative methods to develop a compelling case linking declines in academic expectations of undergraduate performance with increased emphasis on sports entertainment and an increased effort by the alcohol industry to market its product to college students, especially to male sports fans.

Despite the lack of quantitative evidence, the relationship between college athletics and alcohol has also drawn the attention of groups including the federal government. In 1998, then Secretary of Health and Human Services Donna Shalala called on universities and the National Collegiate Athletic Association "to sever the tie between college sports and drinking" (Shalala, 1998). Recently, the Center for Science in the Public Interest (2001) launched an advocacy campaign aimed at getting alcohol advertising out of collegiate athletics and several university athletic departments have developed an institutional policy against accepting alcohol-related advertising for their programs.

The present study seeks to answer two questions not addressed in previous research. First, do sports fans in college binge drink more often and exhibit more negative alcohol-related

outcomes than other students? Second, do colleges with large numbers of sports fans have higher rates of heavy drinking and accompanying secondhand effects?

## 2. Methods

### 2.1. Survey

The study analyzed the responses to the Harvard School of Public Health College Alcohol Study (CAS), a survey of students attending 4-year colleges and universities in the United States. The CAS was conducted initially in 1993 and repeated in 1997 and 1999. The data for the present study are taken from students at the 128 schools that participated in the 1999 survey. The schools are a representative sample of 4-year postsecondary academic institutions in the United States. Nine schools were dropped from the 1999 data set for failure to achieve an adequate response rate. Inclusion criteria for response were rates of 50% in two of the three surveys and at least 40% in the third. The overall response rate for the remaining schools ( $n=119$  colleges) was 60%. Response rates were calculated by dividing the number of returned surveys by the number sent to eligible students. The response rate at a school was not significantly associated with any of the outcome measures.

### 2.2. Subjects and procedure

Subjects were selected at random from full-time students and were provided by the registrar at each school. Participation in the survey was voluntary and the identity of the respondent was kept anonymous. In the spring of 1999, students were mailed a twenty-page questionnaire, which included questions on student activities, behaviors and attitudes related to alcohol use, and personal background characteristics. The design, sampling methods and procedure employed by the CAS are described in greater detail elsewhere (Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994; Wechsler et al., 1998, 2000).

### 2.3. Measures

Sports fans were defined according to responses to the question “How important is it for you to participate in the following activities?” “Attend sports events” was one of 12 activities listed. Sports fans were those respondents who indicated that attending sports events was either “important” or “very important.” Those who indicated that attendance at sports events was “somewhat important” or “not at all important” were coded as nonfans. Nonresponders to the sports fans question ( $n=71$ ) were dropped from the analyses. In addition, the importance of athletics on a particular campus was measured on an aggregate level. Those campuses that had 40% or greater of the total respondents identify themselves as sports fans were considered to be sports schools. This cutting point resulted in 34 (29%) of the 119 schools being classified as sports schools. Athlete status was determined using the question: “In the past 30 days, how many hours per day on

average have you spent on each of the following activities (playing or practicing intercollegiate athletics)” and were defined as those students who participated an average of 1 or more hours per day (Nelson & Wechsler, 2001). Athletes ( $n=2109$ ) were included in the calculation of the aggregate sports school measure but were removed from all other analyses. The final sample included 11,850 college students, 3445 of which were classified as sports fans.

A “drink” was defined as 12 oz of beer (one can), 4 oz of wine (glass), 12 oz of wine cooler, or one shot of liquor. Binge drinking was defined as consuming five or more drinks in a row for men (four for women) on one or more occasions during the past 2 weeks; a measure of alcohol use among college students strongly associated with adverse social consequences (Wechsler & Austin, 1998; Wechsler, Dowdall, Davenport, & Rimm, 1995; Wechsler & Nelson, in press).

School binge rate was determined by an aggregate measure of binge drinking at each participant school. Binge drinking rates ranged from 0% to 76% at the participant schools. High binge schools were those with rates in the top one-third of all schools and low binge schools were those with rates in the lowest one-third (Wechsler et al., 2000).

#### 2.4. *Statistical analyses*

Differences in characteristics between sports fans and nonfans were measured using  $2 \times 2$   $\chi^2$  analyses. Adjusted odds ratios (OR) were computed using multiple logistic regression to determine the degree of difference between the groups of interest on measures of alcohol use and alcohol-related problems. These analyses were also conducted using the Generalized Estimating Equation (GEE) procedure for the multiple logistic regression models to account for school-level effects (Liang & Zeger, 1992; Zeger, Liang, & Albert, 1998). No differences in the point estimates were noted between the two models and the results are reported using the logistic regression results. A school level variable was used in the analyses on the secondhand effects of alcohol use so the GEE procedure results are reported. Due to differences between sports fans and nonfans on several important variables, which have been previously found to be related to alcohol use (Wechsler, Dowdall, Davenport, & Rimm, 1995), the analyses were adjusted for demographic factors of age (under 21 years; 21 years and over), sex (male; female), race (white; non-white), and membership in Greek letter organizations (Greek; non-Greek) in all of the multiple logistic regression models.

### 3. Results

#### 3.1. *Student characteristics*

The final sample on which the analyses were conducted included 11,850 students. Among these respondents, 3445 were classified as sports fans and 8405 as nonfans. Significant differences existed between these two groups by sex. More than two in five

(43%) of the sports fans were male compared to one-third (33%) of the nonfan group ( $\chi^2_{(1)}=107.4$ ,  $P<.0001$ ). Sports fans were also more likely to be under the legal drinking age compared with nonfans (55% vs. 47%;  $\chi^2_{(1)}=68.0$ ,  $P<.0001$ ). Significant differences also existed for race/ethnicity between fans and nonfans; more sports fans than nonfans were white (81% vs. 74%;  $\chi^2_{(1)}=63.3$ ,  $P<.0001$ ) and fewer sports fans were Asian/Pacific Islander (5% vs. 9%;  $\chi^2_{(1)}=74.9$ ,  $P<.0001$ ). Sports fans were more often first year students than nonfans (25% vs. 21%;  $\chi^2_{(1)}=27.5$ ,  $P<.0001$ ) and less often seniors (20% vs. 24%;  $\chi^2_{(1)}=13.2$ ,  $P=.0003$ ). Sports fans more often reported being a member of a Greek organization (19% vs. 10%;  $\chi^2_{(1)}=181.7$ ,  $P<.0001$ ) and were more likely to have never been married (93% vs. 88%;  $\chi^2_{(1)}=74.4$ ,  $P<.0001$ ). Sports fans more often reported that they usually engaged in binge drinking when they were in high school than nonfans (36% vs. 27%;  $\chi^2_{(1)}=80.1$ ,  $P<.0001$ ) and were more likely to have participated in high school athletics (75% vs. 56%;  $\chi^2_{(1)}=390.6$ ,  $P=.0001$ ).

### 3.2. Drinking behavior

Table 1 reports the patterns of alcohol use by sports fan status and sex. A higher percentage of sports fans reported engaging in binge drinking. Fewer sports fans reported that they abstained from alcohol in the past year. Among drinkers only, more sports fans drank on 10 or more occasions and were drunk on three or more occasions during the previous 30 days,

Table 1  
Drinking patterns of college student sports fans (in %)

Outcome <sup>a</sup>	Males		Females		Adjusted odds ratio (95% CI) <sup>b</sup>
	Fans, n=1465	Nonfans, n=2712	Fans, n=1929	Nonfans, n=5513	
Abstained from alcohol past 1 year	17	21	16	20	0.85 (0.76, 0.94)
Binged 1 or more times past 2 weeks	59	45	49	35	1.55 (1.43, 1.69)
Usually binge drinks when drinking <sup>c</sup>	53	41	53	37	1.56 (1.14, 1.73)
Drank on 10+ occasions past 30 days <sup>c</sup>	37	28	21	14	1.43 (1.27, 1.61)
Drunk on 3+ occasions past 30 days <sup>c</sup>	43	31	32	21	1.52 (1.36, 1.69)
Drinking "to get drunk" is important <sup>c</sup>	61	51	48	39	1.32 (1.20, 1.45)

<sup>a</sup> Outcomes are dichotomous (yes or no).

<sup>b</sup> Odds ratios and 95% confidence intervals are reported and compare fans and nonfans using nonfan as the referent group for the outcome of interest using logistic regression and are adjusted for sex, age, race, and membership in Greek organizations.

<sup>c</sup> Among those who drank any alcohol in the past 1 year (n=1214, 2132, 1614, 4425, respectively, for each column).

Table 2  
Alcohol-related problems among college student sports fans (in %, drinkers only)

Outcome <sup>a</sup>	Fans, <i>n</i> =2828	Nonfans, <i>n</i> =6557	Adjusted odds ratio (95% CI) <sup>b</sup>
Miss a class	38	25	1.63 (1.48, 1.80)
Fall behind in school work	28	22	1.27 (1.15, 1.41)
Do something you later regretted	44	31	1.51 (1.37, 1.66)
Forget where you were or what you did	34	22	1.54 (1.39, 1.70)
Got in an argument with friends	28	19	1.52 (1.37, 1.69)
Engaged in unplanned sexual activity	25	18	1.37 (1.23, 1.53)
Unprotected sex	12	8	1.28 (1.10, 1.48)
Vandalized property	12	7	1.23 (1.05, 1.45)
Got in trouble with the police	7	4	1.45 (1.19, 1.76)
Alcohol-related injury	15	10	1.30 (1.13, 1.49)
Required medical treatment for alcohol overdose	0.6	0.4	1.56 (0.83, 2.95)
Drove after drinking <sup>c</sup>	47	41	1.24 (1.12, 1.39)
Drove after bingeing <sup>c</sup>	23	15	1.48 (1.29, 1.69)
Experienced five or more alcohol-related problems <sup>d</sup>	24	16	1.43 (1.28, 1.60)

<sup>a</sup> Outcomes are dichotomous (zero times or one or more times during the school year).

<sup>b</sup> Odds ratios and 95% confidence intervals are reported and compare fans and nonfans using nonfan as the referent group for the outcome of interest using logistic regression and are adjusted for sex, age, race, and membership in Greek organizations.

<sup>c</sup> Calculated only for students who drove at least one time in the past 30 days.

<sup>d</sup> Excluding drive after bingeing but including drive after drinking.

usually binged when they drank and reported that drinking "to get drunk" was an important reason for drinking alcohol.

### 3.3. Alcohol-related harms

Among students who drank alcohol in the past year, sports fans were more likely to experience negative outcomes related to their alcohol use than nonfans. These consequences included antisocial behavior such as arguing with friends, vandalizing property, getting into trouble with the police and health problems such as being hurt or injured. Overall, sports fans who drank alcohol reported a higher rate of experiencing five or more alcohol-related problems than nonfans who drank alcohol (Table 2).

### 3.4. School-level characteristics (sports schools vs. nonsports schools)

Sports schools were more often members of NCAA Division I (77% vs. 49%;  $\chi^2_{(1)}=7.3$ ,  $P<.01$ ) and had enrollments greater than 10,000 students (65% vs. 35%;  $\chi^2_{(1)}=8.5$ ,  $P<.01$ ). Sports schools and nonsports schools did not differ by geographic region of the country (Northeast, South, North Central, and West), location (rural, small

town, suburban, and urban), religious affiliation (Roman Catholic, Protestant, None), admissions criteria, or whether the school was publicly or privately funded.

### *3.5. Sports-schools and binge drinking rates*

A relationship was found between sports school status and high rates of binge drinking. The percentage of students who engaged in binge drinking was significantly correlated with the percentage of students who were identified as sports fans ( $r=.28$ ;  $P<.01$ ). Half of the colleges with the highest rates of binge drinking were sports schools (50%), compared to only one in five of the moderate binge schools (18%) and low binge drinking schools (19%). Sports schools were significantly more likely to be high binge schools than nonsports schools ( $\chi^2_{(1)}=12.6$ ,  $P<.01$ ).

### *3.6. Secondhand effects of alcohol at sports schools*

Students attending sports schools experienced secondhand effects of alcohol at higher rates than students at nonsports schools, including being assaulted, having property vandalized, having their sleep or studying disrupted or experiencing an unwanted sexual advance (Table 3). Nearly one-half of students attending sports schools experienced three or more secondhand effects of alcohol.

#### *3.6.1. Access to specially priced alcohol*

Sports fans were more likely to report taking advantage of specially priced alcohol during the preceding 30 days. In an analysis of drinkers only, 38% of sports fans ( $n=2828$ ) reported

Table 3  
Secondhand effects of alcohol use at sports schools (in percent)

Outcome <sup>a</sup>	Sports schools, $n=3341$	Nonsports schools, $n=8580$	Adjusted odds ratio (95% CI) <sup>b</sup>
Insulted	35	27	1.30 (1.06, 1.58)
Got in argument	28	23	1.19 (0.99, 1.44)
Assaulted	14	10	1.17 (0.94, 1.46)
Property vandalized	16	12	1.34 (1.04, 1.72)
Had to babysit a drunken student	56	46	1.26 (0.96, 1.66)
Found vomit	34	26	1.48 (1.07, 2.05)
Disrupted sleep or studying	52	40	1.41 (1.08, 1.87)
Unwanted sexual advance	27	21	1.27 (1.01, 1.61)
Date rape	2	1	1.13 (0.80, 1.61)
Experienced three or more secondhand effects	49	36	1.41 (1.06, 1.87)

<sup>a</sup> Outcomes are dichotomous (zero times or one or more times during the school year).

<sup>b</sup> Odds ratios and 95% confidence intervals are reported and compare students at sports schools and students at nonsports school using nonsports schools as the referent group for the outcome of interest using logistic regression and are adjusted for sex, age, race, and percentage of students in Greek organizations and conducted using the generalized estimating equation to control for school-level effects.

taking advantage of low-priced promotions at off-campus bars compared with 24% of nonfans ( $n=6557$ ) (OR 1.99, 95% CI=1.79–2.23). Sports fans also reported taking advantage of special promotions by beer companies more often than their nonfan peers (19% vs. 11%, OR 1.64, 95% CI=1.43–1.89).

### 3.6.2. Student activities

More sports fans reported spending an average of 2 or more hours per day watching television (59% vs. 54%;  $\chi^2_{(1)}=26.2$ ,  $P<0.0001$ ) and socializing with friends (79% vs. 69%;  $\chi^2_{(1)}=115.3$ ,  $P<.0001$ ) than nonfans. Fewer sports fans than nonfans worked for wages (53% vs. 59%;  $\chi^2_{(1)}=42.1$ ,  $P<.0001$ ) and the two groups did not differ in their time spent studying. More sports fans reported that they were “very satisfied” with the education they were receiving (61% vs. 52%;  $\chi^2_{(1)}=78.2$ ,  $P<.0001$ ), although fewer reported having a grade point average of a B+ or better (52% vs. 56%;  $\chi^2_{(1)}=18.1$ ,  $P<.0001$ ).

## 4. Discussion

The present study is the first to examine alcohol use and related problems of sports fans compared with their nonfan peers in a nationally representative sample of college students. It also examines drinking patterns at schools where many students view collegiate athletics as an important activity on-campus. Sports fans were less likely to abstain from alcohol than their nonfan peers and were more likely to engage in binge drinking. They also exhibited a more extreme drinking style. As a result of this heavier drinking behavior, sports fans were more likely to experience a variety of problems. Schools where many students had a strong sports interest were more likely to have high rates of binge drinking than schools where fewer students were interested in sports. In addition, students at sports schools were more likely to experience negative consequences from the alcohol use of others. Nearly half of the students who attended sports schools reported three or more problems due to others' use of alcohol.

One possible link to account for increased use of alcohol by sports fans is through the marketing and promotion targeted at fans. Sports fans were more likely to take advantage of special low-price alcohol promotions offered by local alcohol outlets. As such, they may be the target of local bar and alcohol industry promotions. Many alcohol outlets, particularly in college towns, emphasize sports themes. More sports fans also indicated frequent television viewing. Although the current study did not ask respondents to report on the content of the television they were watching, it might be reasonable to assume that at least a portion of that television viewing was sports-related content. Especially popular sports content television programs include the ESPN network, which feature college sports (Sperber, 2000). A previous analysis of advertising content on television programming found that alcohol advertisements were more frequent during sports programming than during other television programming (Madden & Grube, 1994). One hypothesis may be that watching sports programming where a higher rate of alcohol

advertisements appears may “prime” viewers for heavy alcohol use. Once students are in an environment where alcohol is plentiful and easily accessible, such as college, they may be more likely to engage in heavy alcohol use. This hypothesis should be tested in further research.

The study has several limitations. As with other surveys, these data are subject to reporting bias. However, the binge drinking and other substance use rates reported by respondents to the CAS are similar to those found in other major national surveys (Douglas et al., 1997; Johnston et al., 1997; Presley et al., 1996). Self-report surveys are common in studies examining alcohol use, and are generally considered to be valid (Cooper, Sobell, Sobell, & Maisto, 1981; Frier, Bell, & Ellickson, 1991; Midanik, 1988). A short form of the questionnaire sent to nonresponders found no difference in alcohol use between them and students who responded to the longer questionnaire. In addition, school response rates were not associated with rates of binge drinking (Wechsler et al., 2000). Another potential limitation of the study is the definition used to identify “sports fans” individually and “sports schools” at the school-level. Sports fans were defined according to the importance they placed on attending sports events. We asked about the importance of attending rather than actual attendance. The importance one places on attending sports events differs from whether or not that person actually attended an event and seems to provide a reasonable measurement of the level of interest in following sports (for a discussion of the definition of sports fans, please see Wann, Melnick, Russell, & Pease, 2001). Sports schools were defined using an aggregate measure of sports fans at a school level and a cut-off of 40%. This threshold was chosen by the authors prior to conducting any analyses as a proxy measure for high emphasis placed on sporting events by students, since it represents a significant minority of students at each school. Further research should examine whether this definition provides a meaningful distinction for the amount of institutional emphasis that schools place on sports.

It appears that high interest in sports may contribute to a high level of binge drinking and a “party atmosphere” on college campuses. The results from the present study suggest that the link between sports and alcohol is an important one for colleges to consider in their efforts to decrease binge drinking and the harm that it produces. One implication of the findings is that intervention efforts should be directed at reducing the heavy drinking of sports fans. Reductions in heavy drinking behavior should result in decreased harms for sports fans and a reduction in secondhand effects for their classmates. On an institutional level, athletic departments and college sports governing bodies should be encouraged to play an active role in reducing alcohol problems on campus. One area where they can show leadership is in sponsorships. Some schools and governing bodies of collegiate athletics have relationships with the alcohol beverage industry that allow the industry to promote their products through college sports events. Athletic administrators and officials should take the findings of the present study into account when considering the role of alcohol in athletic budgets. In addition, potential college students and parents of those students may want to consider the emphasis that schools place on athletics when deciding where they want to attend college. The increased risk of secondhand effects at schools with a heavy emphasis on sports should be a factor in their decision.

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