Game-Day Survey Results: Looking at Football Fan Alcohol-related Behaviors

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ABSTRACT

On college campuses, alcohol abuse is a challenge particularly on football game days. From previous research, it is known that fans drink more and are more affected by excessive alcohol consumption than non-fans. This study explored age and gender issues regarding behaviors and consequences of typical game-day alcohol consumption. A self-administered paper-pencil survey, given to 497 respondents, evaluated alcohol consumption behaviors of fans "tailgating" at a college football game. A descriptive discriminant analysis was conducted with data from respondents who reported drinking (N=352). Three discriminant variables interpreted from data suggest the following: (1) males drink more than females, but females have more adverse consequences when drinking on game days; (2) respondents ages 21–26 years drink more alcohol and are more likely to perceive that friends drink excessively versus other age groups; and (3) respondents ages 24–26 years were more aware than other groups of anti-alcohol campus campaigns, but drink more on game days, and are more likely to frequent bars and tailgating areas. A "one-size-fits-all" approach to intervention is not adequate for college campus population needs. It is important to identify target populations for tailored intervention efforts concerning outcomes of excessive drinking during game days.

INTRODUCTION

Alcohol misuse is a serious health issue for colleges and universities around the country.[1] Surveys indicate that the majority of college students drink regardless of their age and that approximately two out every five college students binge drink.[2] Binge drinking or heavy episodic drinking is defined by Wechsler and colleagues as having five or more drinks in one sitting for men and four or more for women, at least once in the past two weeks. Binge drinking is associated with unintentional injury (e.g., motor vehicle crashes, falls, and drowning), sexually transmitted diseases, unintended pregnancy, sexual assault, violence, and poor academic performance.[3,4] Moreover, binge drinkers affect others by interrupting sleep or study, having to be taken care of, making unwanted sexual advances, insulting or humiliating others or damaging property.[2] Further, in 2002 the National Institute on Alcohol Abuse and Alcoholism (NIAAA) estimated that there are over 1,400 student deaths, 500,000 injuries, and 600,000 assaults annually associated with excessive alcohol consumption.[5] These statistics illustrate the serious consequences of alcohol abuse on college campuses throughout the country.

Throughout the United States, high-risk drinking on campuses during college football games, also known as *game days*, is a challenge. Research indicates that sports fans typically drink more than non-fans and thus are more likely to be affected by the behavior-altering effects of alcohol consumption.[6] College football games pose a considerable increase in the probability of excessive drinking and negative outcomes, such as violence, sexual assault, and vehicle accidents. Alcohol consumption is a factor in fan/spectator aggression.[7] Since 1999, more than a dozen disruptive and even deadly documented events have occurred among college sports spectators. Alcohol-induced riots, stampedes, fights, and fatal beatings

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involving rowdy spectators have become all too frequent occurrences.[8]

Though previous studies have assessed alcohol use and the negative outcomes associated with excessive drinking, little is known about the tailgating behaviors of college football fans, including college students, alumni, and others. This study seeks to address the following questions concerning college football fans and their typical game-day drinking behaviors: (1) Is age related to game day alcohol consumption behaviors and consequences of consumption? (2) Is gender related to game-day alcohol consumption behaviors and consequences of consumption? (3) Are gender and age related to one's alcohol consumption? This research is unique in that the Game-Day Survey utilized in this study was created specifically to measure typical student drinking behaviors associated with college football game days.

METHODS

In November 2003, on a game-day afternoon, a self-administered paper-based survey was distributed to a convenience sample of 497 fans at popular on-campus tailgating areas at a large Southeastern university. Tailgating areas were defined as areas with large gatherings of fans socializing in the general area of campus parking lots. Inclusion criteria for respondents included those fans that were not visibly intoxicated, present at tailgating areas on campus, and voluntarily consenting to completing the survey. All respondents completed the survey in the tailgating areas. Survey administration began approximately three hours before the scheduled football game and ended at game time.

Fifteen undergraduate volunteers were recruited to administer the Game-Day Survey. Prior to game day, the principal investigator provided training to the volunteers relating to recruiting participants, as well as details concerning the informed consent process. Volunteers were instructed to distribute the survey in popular tailgating areas on campus prior to the game to individuals who were tailgating. Potential participants were approached by trained volunteers; they were read a brief statement about the study emphasizing that participation was voluntary and anonymous, and upon consent each respondent was provided with a clipboard and attached survey for completion. If the person declined to participate, the volunteer thanked him or her and sought another participant. In an attempt to avoid potential confrontation and minimize risk, volunteers were instructed to refuse administration of the survey to respondents who appeared to be belligerent or otherwise compromised by alcohol consumption. Due to the subjective nature of determining one's level of intoxication, data collectors were directed to use their best judgment to determine if potential respondents were intoxicated as to not jeopardize the perceived safety and comfort of the data collectors. The volunteer data collectors, upon debriefing with the PI, reported no encounters with intoxicated individuals, or anyone who appeared to avoid, or seek out, the data collectors.

The paper-based Game-Day Survey was designed and employed to evaluate knowledge, perceptions, and typical behaviors related to alcohol use by football game attendees. This survey was designed for campus health data collection, pilot tested and revised by a panel of experts in alcohol and other areas of drug prevention. Survey items were modified and adapted from the standardized and nationally recognized Core Alcohol and Drug Survey Long Form.[9] The Game-Day Survey consisted of 30 items: three demographic items (age, gender, attendee status [undergraduate, graduate, employee, UF Alumni, Gators fan, visiting fan, other]); thirteen dichotomous items with "yes" and "no" response options (four related to campus alcohol and drug campaign recognition and nine related to drinking consequences); three seven-point Likert nominal scale items related to geographic settings for alcohol consumption (home, friend's house, restaurant, bar, tailgate area, other); four seven-point Likert interval scale items related to alcohol consumption; three five-point Likert interval items related to social norms related to alcohol consumption of others; and four five-point Likert ordinal items related to attitudes about game-day drinking alternatives. The survey items and response means for males and females by age group can be seen in Table 1. An item analysis was conducted to test for internal validity on items related to alcohol consumption, consequences to alcohol consumption, and social norms related to alcohol consumption. Cronbach's alphas were all acceptable: alcohol consumption items (.859), consequences to alcohol consumption items (.822), and social norms related to alcohol consumption of others items (.842).

The survey was completed by 497 participants. However, 352 were used to analyze the data of respondents who reported game-day drinking. Pre-game nondrinkers represented nearly a third of the sample (N=145). Of the non-drinkers, 54.5% were female and 45.5% were male. Consistent with current literature, the survey indicated that females are more likely to abstain from drinking than males. However, more than two-thirds (N=352) of respondents reported drinking at pre-game events.

Participants who indicated not drinking on game days were removed from the analysis because they do not pose a health risk to themselves or others. The sample of those reporting pre-game drinking consisted of 22.4% alumni; 21% undergraduates; 11.1% graduate students; 9.9% visiting fans; 8.2% other; 1.4% employees of the university; and 26% fans who did not identify with any of the other categories. Interestingly 44.6% of the participants were age 27 or older, with the remaining age distribution of 20.5% between the ages of 18–20 years; 21.6% between the ages of 21–23 years, and 13.4% between the ages of 24–26 years, as seen in Table 2. Of the participants who reported pre-game drinking, pre-game males represented 58.5% of the sample and females represented the remaining 41.5%.

RESULTS

A multivariate statistical analysis was conducted to determine the number of new discriminant variables required to evaluate differences among groups. Multivariate discriminant statistical analysis is an advanced

Table 1. Game-Day Drinking Response Means by Gender and Age Group

Item	Variable Type	Ages 18-20 Mean (STD) Males N = 40	Ages 18-20 Mean (STD) Females N = 32	Ages 21-23 Mean (STD) Males N = 42	Ages 21-23 Mean (STD) Females N = 34	Ages 24–26 Mean (STD) Males N = 29	Ages 24–26 Mean (STD) Females N = 18	Ages 27 or older Mean (STD) Males N = 95	Ages 27 or older Mean (STD) Females N = 62
4.–7. Composite Sore: Total awareness score of campus campaigns and "school" code of conduct.	Dichotomous	6.28 (1.01)	6.41 (1.21)	6.71 (1.24)	6.82 (1.06)	6.79 (1.05)	6.61 (1.14)	6.37 (1.19)	6.69 (1.05)
8. Where do you spend majority of time drinking before game on game day?	Nominal	4.00 (2.40)	3.03 (2.38)	5.19 (1.73)	4.24 (2.32)	5.52 (1.45)	5.33 (1.57)	4.58 (2.25)	4.02 (2.42)
9. Where do you spend majority of time drinking during game?	Nominal	2.55 (2.52)	1.75 (1.78)	3.05 (2.56)	2.32 (2.00)	3.69 (2.75)	2.22 (2.37)	2.22 (2.25)	1.90 (1.92)
10. Where do you spend majority of time drinking after the game?	Nominal	3.25 (2.06)	2.91 (2.07)	3.62 (2.05)	2.85 (1.69)	3.83 (2.09)	3.50 (2.09)	3.07 (2.29)	3.21 (2.23)
11. How many drinks do you typically have before game?	Interval	2.83 (1.80)	1.88 (1.10)	4.55* (1.67)	2.44 (1.33)	4.34* (1.88)	3.78* (1.96)	2.91 (1.85)	2.02 (0.97)
12. How many drinks do you typically have during game?	Interval	1.50 (1.40)	1.31 (1.09)	2.19 (1.89)	1.50 (0.90)	1.97 (1.53)	1.89 (1.75)	1.51 (1.28)	1.27 (0.71)
13. How many drinks do you typically have after the game?	Interval	3.03 (2.01)	1.75 (1.02)	4.24* (2.27)	2.35 (1.43)	3.55 (2.05)	3.17* (1.92)	2.25 (1.73)	1.74 (0.85)
14. Not including game day, how many alcoholic drinks did you have the last time you partied?	Interval	3.48 (2.21)	2.88 (1.45)	4.93* (1.89)	3.06* (1.37)	5.21* (1.80)	4.28* (1.56)	2.99 (1.72)	2.73 (1.13)
15–23. Composite Score: During football season did you experience adverse consequences due to drinking on game day?	Dichotomous	16.68 (2.20)	17.53 (1.08)	15.88 (2.22)	17.24 (1.23)	15.79 (2.47)	16.78 (1.52)	17.20 (1.63)	17.63 (0.96)
24. Estimate the percentage of friends who have 5 or more drinks on game day.	Interval	2.98 (1.53)	2.59 (1.29)	3.79 (1.39)	3.18 (1.36)	3.55 (1.15)	3.50 (1.25)	2.34 (1.48)	1.97 (1.32)
25. Estimate the percentage of "school" students who have 5 or more drinks on game day.	Interval	2.95 (1.26)	3.19 (1.12)	3.36 (1.21)	3.74 (0.99)	3.14 (1.16)	3.44 (0.98)	2.57 (1.24)	2.81 (1.21)
26. Estimate the percentage of "school" fans that have 5 or more drinks on game day.	Interval	3.05 (1.40)	3.38 (1.31)	3.40 (1.21)	3.38 (1.13)	3.34 (1.14)	3.50 (1.30)	2.63 (1.30)	2.58 (1.24)
27. I would support a public relations campaign to encourage fans to celebrate responsibly on game day.	Ordinal	3.68 (1.35)	4.19 (0.78)	3.33 (1.41)	4.00 (0.85)	3.66 (1.14)	3.44 (1.30)	4.27 (0.95)	4.35 (0.75)
28. I would support alcohol-free alternatives.	Ordinal	3.10 (1.45)	3.22 (1.18)	2.17 (1.34)	3.06 (1.37)	2.38 (1.37)	2.67 (1.24)	3.31 (1.47)	3.60 (1.23)
29. I would support designated tailgating areas where open containers are illegal.	Ordinal	3.80 (1.42)	3.94 (0.95)	3.69 (1.70)	4.35 (0.98)	3.79 (1.47)	4.50 (1.04)	3.73 (1.48)	4.15 (1.20)
30. I would support increased enforcement of underage drinking laws on game day.	Ordinal	2.85 (1.49)	2.91 (1.33)	2.26 (1.48)	3.21 (1.30)	2.76 (1.53)	3.11 (1.45)	3.78 (1.21)	3.98 (1.15)

*Participant reports indicate high-risk drinking.

statistical method that allows for the analysis and interpretation of multiple independent and dependent variables within one analysis. This analysis is appropriate when comparing several groups that are measured on several variables. Means and standard deviations for participant scores on the original variables are provided in Table 1.

A multivariate analysis of variance (MANOVA) indicated significant gender differences [F (16, 329) = 5.67, p < .0001]. The discriminant variable for gender accounts for 100% of the differences among the group means. This *gender discriminant* variable was interpreted as "alcohol consumption and consequence contrast"; the marginal means suggest that males reported drinking more than females, but females reported more adverse consequences of drinking on game days. High scores on the gender discriminant variable indicate low consumption but high consequences; low scores indicate high consumption and low consequences. Marginal means on the canonical variable "alcohol consumption and consequence contrast" were 3.37 for males and 2.90 for females. These adverse consequences include hangovers, vomiting, driving under the influence, blackouts, injury, fights, sexual assault, or trouble with police. These results are consistent with the national trends that indicate females suffer adverse consequences from alcohol consumption at disproportionately high rates.[10]

Results of the statistical analysis for the age groups indicate the first two discriminant functions were statistically significant [F (48, 979) = 3.52, p < .0001] and [F (30, 660) = 2.08, p = .0007]. These two statistically significant discriminant functions are defined in the following paragraphs. The first age discriminant variable accounts for 63.81% of the differences among the group means. The second age discriminant variable accounted for another 29.11% of variance, totaling 92.92% of the differences among the group means. The third age discriminant variable was not statistically significant [F (14, 331) = 0.89, p = .5708]. The statistical analysis results of the age*gender interaction discriminant functions indicated no statistical significance, [F (48, 813) = 1.14, p .2485].

The first age discriminant variable was interpreted as "alcohol culture variable," which suggests respondents between ages 21–26 drink more and perceive that their friends drink more alcohol than those respondents in the age groups 18–20 and 27 and older. Further, descriptive statistics suggest both males and females between the ages of 21–26 indicate binge drinking in their reports of typical alcohol consumption (Table 1). A t-test comparing the average of the means for the 21–23 and 24–26 year old groups to the average of the means for the other groups was significant [t (344) = 6.61, p = <.0001], based on Roy's largest root critical value (± 5.90). This suggests that respondents between ages 21–26 drink more and perceive that their friends drink more alcohol than those respondents in the both younger (18–20) and older (27 and older) age groups. Pairwise comparisons were conducted to analyze group differences on the first age discriminant variable, alcohol culture. The post-hoc t-critical value was calculated and found to be +/- 5.90. Results for the alcohol culture variable indicated statistically significant group differences between respondents ages 21–23 and respondents ages 27 or older [t (351) = 6.06, p = <.0001]. The remainder of pairwise comparisons did not indicate significant results. Not only did these two age groups (21–23 and 24–26) report drinking more on game days, they reported perceiving that their friends drink more. Results also show that fans ages 18–20 report drinking significantly less on game days, tailgate less, and are less aware of campus alcohol-intervention campaigns.

The second age discriminant function was interpreted as "game-day alcohol-related behavior and awareness variable." The marginal means suggest that respondents between ages 24–26 drink more in general and pre-game on game days, and more often frequent bars and tailgating areas, though they are more aware of campus prevention campaigns. Following, respectively, are respondents in the age groups 21–23, respondents aged 27 or older, and the respondents aged 18–20, which scored the lowest.

Pairwise comparisons t-tests were also conducted to compare the four groups on the second discriminant variable, "game-day alcohol-related behavior and awareness." Statistically significant group differences were found between respondents between 18–20 and respondents aged 24–26 [t (351) = 6.63, p = <.0001]. The remainder of pairwise comparisons did not indicate significant results. Results for comparison of the two middle-age groups and the oldest and youngest groups on the *alcohol culture* variable were statistically significant, [t (351) = -6.61, p = <.0001] and statistically

Table 2. Demographics of Game-Day Survey Respondents

Drinkers				Non-Drinkers		
Age Group	Males	Females	N	Males	Females	N (%)
18–20	40	32	72 (20.5%)	15	21	36 (24.8%)
21–23	42	34	76 (21.6%)	4	14	18 (12.4%)
24–26	29	18	47 (13.4%)	3	2	5 (3.4%)
27 and older	95	62	157 (44. 6%)	44	42	86 (59.4%)
Total	206	146	352 (100%)	66	79	145(100%)

significant differences were found on the game-day alcohol-related behavior and awareness variable, [t (351) = -6.11, p = <.0001]. These results indicate that even though fans between ages 24–26 reported they recognized prevention messages more than the other age groups, these messages did not influence their drinking patterns, as they reported drinking more than the other age groups.

DISCUSSION

This research contributes to the limited body of knowledge describing college football fans and game-day drinking behavior. This study is unique because a customized instrument was created and administered to college football fans tailgating before a college football game. This technique enabled researchers to obtain data regarding typical game-day drinking behaviors from college students, alumni, visiting fans, and home fans while tailgating. The results of the Game-Day Survey indicate that, among drinkers, heavy episodic drinking is common on game days and, not unlike what occurs in other drinking venues, gender and age are associated with differing drinking rates. From a health promotion standpoint, it is encouraging to note that a third of the participants surveyed did not drink at all on game days, and another one-third drink in moderation. Conversely, one-third of the sample drinks excessively. The results of this study provide evidence needed by campus administrators and health educators when creating interventions and messages specific to game-day alcohol consumption. Reducing the heavy episodic drinking rate on game days may help universities to lower their overall high-risk drinking rates, especially during the fall semester.

Gender differences in drinking behaviors and adverse alcohol-related consequences were an important finding in this study. Table 1 illustrates the high-risk drinking rates between males and females within the various age groups. It appears that while males drink more alcohol, females suffer more consequences from consuming alcohol on game days. These adverse consequences include having a hangover, vomiting, driving under the influence, experiencing a blackout, becoming injured, fighting, being victimized sexually, or getting into trouble with police. These results are consistent with national trends, indicating that females are suffering disproportionately high rates of adverse consequences relating to alcohol consumption.[11–13] These results provide implications for identifying both genders as priority populations for game-day interventions. These findings point to the need for tailored, gender-specific messages aimed at game-day drinking. Additionally, the effects of increased alcohol-industry advertising efforts, specifically targeting females, needs to be further explored. Lastly, the game-day drinking behavior of females who try to "keep up" or match their male counterparts' alcohol consumption should also be addressed.

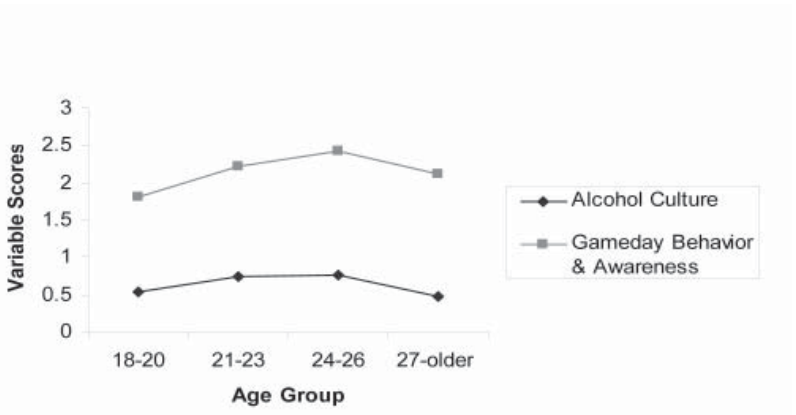
Statistically significant age differences in drinking rates, perceptions, and recognition of game day public relations efforts were also present. Fans aged 18–20 years report drinking significantly less on game days, tailgating less, and less awareness of campus alcohol-intervention campaigns. This result may be due to increased vigilance toward underage drinking by bar/restaurant owners, campus police, and others on game days. These results are somewhat reassuring given the fact that individuals between the ages 18–20 are not legally permitted to drink alcohol. Yet, this group's reported poor recognition of safety messages indicates the need for improved campaign efforts or health message design. Indeed, fans aged 21–23 years indicated a greater awareness of prevention messages, but evidently these messages do not influence their drinking patterns. This is an area for health message designers to carefully consider. Moreover, fans aged 21–23 years and 24–26 years drank significantly more than the younger (18–20 years) and older (27 years or older) respondents as seen in Figure 1. Not only did these two age groups, between the ages of 21 and 26, report drinking more on game days, but they perceived that their friends drink more. This finding is consistent with Neighbors and colleagues (2006) research, that students overestimate the quantity of drinking, among their peers that takes place on game days. These misperceived drinking rates may be justification for a social norms intervention.

Due to study limitations, findings must be interpreted cautiously. The findings are based on self-report data which inherently produce bias. However, self reported data are commonly used to obtain health information and alcohol consumption, and are generally considered valid.[14, 15] Another limitation of this study is that the data presented in these findings are based on a convenience sample; consequently, inferences must be made with caution. This sample was drawn from a large school in the Southeast and drinking patterns at this college may not be reflective of other colleges. Further, the cross-sectional survey design prevents us from determining causal patterns. In other words, we are unable to determine if game days cause heavy drinking or if heavy drinkers participate in game-day activities. Because we surveyed people in the act of tailgating, it is possible that any respondent could have answered our questions inaccurately in an attempt to provide a socially desirable response. Since data supporting or refuting this claim are not available, this must be cited as a study limitation and interpretations must be made with this in mind. Lastly, it is possible that response validity could have been compromised due to undetected alcohol impairment.

TRANSLATION TO HEALTH EDUCATION PRACTICE

Decreasing high-risk or binge drinking among adults is a prominent health objective in both *Healthy People 2010* and *Healthy Campus 2010*. Clearly, reducing high-risk drinking on game days is fundamental to reducing binge drinking rates on college campuses. These findings provide implications for a need to refine policies relating to the university and game-day activities, as well as public policy for local drinking establishments. Suggestions for promoting

Figure 1. Perceived Alcohol Use by Others and Game-Day Drinking Behavior



a healthy game-day environment include but are not limited to: alcohol-free pre- and post-game-day activities, increased enforcement of underage drinking and open container laws, limiting the number of tailgating hours, and having designated tailgating areas on campus. It is clear that different groups of people have different prevention needs and that a "one-size-fits-all" prevention message will not work for everybody. The results found in this study indicate that females and persons aged 21–26 years are most in need of tailored prevention messages concerning game-day activities and the adverse outcomes associated with excessive drinking. However, this does not preclude the need for tailored messages targeting males who drink on game days. Further research in the area of targeted message design is necessary. Hence, health educators developing game-day messages should be cognizant of these findings when developing messages for their campuses. Health educators should work diligently to focus their efforts and tailor messages toward different populations according to needs and relevance. This study contributes to the body of knowledge used to guide practitioners in their efforts to reduce high-risk drinking behaviors and related adverse consequences. Continued work in this area is needed if the adverse effects of game-day behavior are to be alleviated. Further research, specifically qualitative inquiry, will allow health educators to present persuasive messages to their audiences more effectively.

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