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<https://dx.doi.org/doi:10.21220/s2-x83v-vv33>

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COLLEGIATE DRUG USE:
KNOWLEDGE, PERCEPTIONS, AND BEHAVIORS

A Thesis

Presented to
The Faculty of the Department of Psychology
The College of William & Mary

In Partial Fulfillment
Of the Requirements for the Degree of
Master of Arts

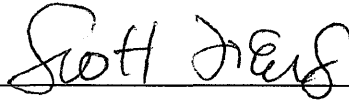
by
Scott Joens

1994

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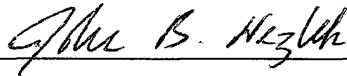
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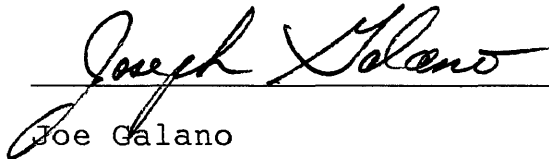


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Abstract

According to the National Institute on Drug Abuse (1991), substance abuse on college campuses continues to be a serious problem. A representative sample of undergraduate students at an eastern public university (N=126) were surveyed concerning substance abuse knowledge, perceptions, and behavior. Knowledge levels were tested with a newly developed questionnaire. The overall correct response rate was 44% and most new information concerning substance abuse was learned from peers. Students accurately perceived campus alcohol, marijuana, and LSD use but overestimated the use of cocaine and steroids. Reported substance use by the students was alcohol 83%, marijuana 31%, LSD 11%, Cocaine 1%, and Steroids 0%. Athletes were not perceived by non-athletes as being a group at risk for substance abuse problems. The most frequent predictor for problematic substance use was Greek membership, with non-athlete males having the most substance abuse problems. The implications of these results for Counseling Center substance abuse programming are discussed.

COLLEGIATE DRUG USE:
KNOWLEDGE, PERCEPTIONS, AND BEHAVIORS

INTRODUCTION

Undergraduate substance abuse has been studied extensively in recent years. One of the most comprehensive projects has been the National Institute on Drug Abuse (NIDA) (1989) study, "Monitoring the Future", which began in 1975. Conducted by the University of Michigan's Institute for Social Research, the project annually surveys a random sample of 17,000 students nationwide about their drug usage. The survey found that over 26% of college students had used marijuana in the past year, 6% had used hallucinogens, and about 3.5% had used cocaine. These figures all represent declining usage since 1975, but the findings represent millions of students currently using illicit drugs.

While illicit drug use exists on college campuses, the drug of choice for most undergraduates is alcohol. A comprehensive review of the literature on college student alcohol use was provided by Berkowitz and Perkins (1986), who reported that several studies have found at least occasional alcohol use for over 90% of college students. Consumption rates for student alcohol users ranged from 1 to 10 drinking occasions per month, with one to five drinks consumed per occasion being average.

Since small quantity drinking will not likely lead to problematic behavior, some researchers have focused on "frequent heavy drinkers": those who consume five or more

drinks at one occasion at least once a week. In a survey of over 7000 college students in New England, 29% of the men and 11% of the women could be classified as frequent heavy drinkers (Wechsler and McFadden, 1979). Of the frequent heavy drinkers, students who became intoxicated weekly or more often were identified. Eight percent of the males and 2% of the females met this criterion. Negative consequences (blackouts, getting into fights, trouble with authorities, etc.) were experienced two to five times more often for the frequently intoxicated students than for all other students. In a survey of 13 college campuses, Engs (1977) found that 51% of students overall had experienced problems relating to alcohol use in the previous year. Only 20% of drinkers reported never having any problems from using alcohol.

The literature indicates that substance use by college students is widespread, particularly for alcohol. For those who drink heavily and often, a majority will experience behavioral problems each year. Given that substance abuse is a significant problem on the college campus, what framework can be used to analyze this situation?

One possible method would be to examine the reference groups that college students identify with. Reference groups refer to any group which has implicit or explicit sets of beliefs, attitudes, or behaviors which individuals refer to in order to evaluate and regulate their opinions and actions. Reference groups obtain compliance from their members, since

any individual who strays from the established social norms will risk social disapproval and isolation. Individuals may identify with one or several different reference groups. On a college campus, some of the most important reference groups include those for gender, class, race, Greek membership, and athletic status.

Studies which have examined the gender differences in substance abuse have almost unanimously agreed that men have more drug abuse problems than women. NIDA (1991) found that men were more likely than women to use illicit drugs, with the largest differences in use coming at the highest frequency levels. As for alcohol use, NIDA found that men were almost twice as likely as women to report occasions of heavy drinking over the last two weeks (52% to 37%).

In a review of the research on gender differences in collegiate alcohol use, Berkowitz and Perkins (1987) found that there was considerable agreement in the literature regarding overall gender differences: Men drank more often, in greater quantities, with more negative consequences, and were more likely to drink to get drunk. In the literature, males have predominated at the heavy-drinking end of the spectrum by up to a 5:1 margin, while females represented the lower end of the spectrum (Brennan, Walfish, and AuBuchon, 1986).

The fact that females consume less than males does not mean that only males have problems resulting from alcohol use.

As Berkowitz and Perkins have (1987) pointed out, "a bias exists in the literature toward surveying socially disruptive negative consequences that are more likely to be experienced by men, while excluding other (less visible) drinking related negative consequences that may be more frequently experienced by women, such as depression, unwanted sexual experiences, or pregnancy". Alcohol abuse, therefore, is a problem for both genders.

Much like the data for gender differences, the data for class differences in alcohol usage are generally in agreement. A review by Berkowitz and Perkins (1986) reported an increase in alcohol consumption for both men and women after arriving at college. This conclusion is supported by Mills and McCarty (1983), who showed that the percentage of abstainers uniformly declined as class year increased, while the percentage of heavy drinkers (56 drinks or more drinks per month) increased. The highest percentage of heavy drinkers (32%) was for seniors.

While it may be clear that consumption increases as all students advance through the college years, there appear to be important gender differences in the data. Both Wechsler and McFadden (1979) and Harford, Wechsler, and Rohman (1983) found that even though the frequency of consumption increases for both genders with increasing class year, women reduced the total amount of consumption and the negative consequences from alcohol use (women drank more often but smaller amounts each

time, thus reducing total consumption). Neither study found class differences for men concerning frequent heavy drinking or negative behavioral consequences.

As for racial differences in alcohol usage, a review of the literature by Brennan, Walfish, and AuBuchon (1986) found that white college students drank more frequently than black college students and also had higher total rates of consumption. White students also had more complications due to alcohol use than Black students.

Personal characteristics like race or gender are not the only influences on drug usage; other reference groups influence usage as well. Brennan, Walfish, and AuBuchon (1986) reviewed the literature on the environmental influences on alcohol consumption and found that increased amount and frequency of alcohol consumption was related to involvement in a Greek organization (a fraternity or sorority). Goodwin (1991) surveyed over 2000 fraternity and sorority members and discovered that 38% of the students used marijuana in the previous 30 days while 27% had used cocaine. These figures far exceed the national norms as reported by NIDA (1991), with cocaine use being approximately 8 times higher. Mills and McCarty (1983) classified their sample of 452 subjects into four categories: abstainers, light drinkers, moderate drinkers, and heavy drinkers. Only 1.9% of Greek-affiliated students were abstainers, compared to 18% of non-Greeks. The heavy drinker category included 19.7% of non-Greeks and 48.5%

of the Greek-affiliated students. Even when year in school and gender were controlled for statistically, the average Greek student drank the equivalent of 40 drinks more per month than the average non-Greek. Not surprisingly, Mills and McCarty also found that Greeks had alcohol-related problems at a rate three times that of non-Greeks. The most frequent problems reported by Greek students were driving while intoxicated, having a hangover, passing out, property damage, and getting into fights.

While Greek membership has been found to be related to substance abuse problems, what relationship exists between another reference group, membership on a varsity athletic team, and drug usage? Anderson, Albrecht, McKeag, Houh, and McGrew (1991) surveyed 2282 varsity athletes at 11 universities nationwide and found that college athletes reported using less alcohol and fewer drugs than non-athletes. Other studies have found that drug use by athletes is the same as drug use by non-athletes (Kraushaar, 1980; Nattiv and Puffer, 1991; Overman and Terry, 1991; Toohey, 1978; Toohey and Corder, 1981). The relationship between athletic status and substance abuse is still equivocal.

So far, collegiate drug use has been related to gender, college class, race, and Greek status, with the effect of athletic status still unclear. A question arises as to whether a pattern can be identified within these reference groups which might explain their different usage rates.

Could the differences in usage rates among gender, race, college class, and Greek status be related to differences in the perceptions of their social environments? Perkins and Berkowitz (1986) discussed how perceptions of peer attitudes and behavior can influence drug usage, even if the perceptions are incorrect. They found that over 62% of students surveyed thought their peers drank both more alcohol than was actually true. These misperceptions of student substance use were associated with greater use of alcohol and drugs. Overly liberal student misperceptions of campus drug use have been routinely found since the first comprehensive survey of campus alcohol use, Straus and Bacon (1953). The differences in drug usage may be related to the diverse perceptions of the campus social environment. More research is necessary on this topic.

One hypothesis is that the usage differences may be related to differences in knowledge about drug usage among the various groups. A literature review by Meacci (1990) concluded that possessing factual knowledge does not significantly reduce alcohol consumption and negative consequences. However some research does relate reduced consumption and negative consequences to factual knowledge acquisition (Blum, 1980; Caleekal and Pletsch, 1984; Chen, Dosch, and Cychosz, 1982; Goodstadt and Caleekal-John, 1984; Robinson, 1981; Rozelle, 1980). The relationship between knowledge and behavior needs to be explored further.

Understanding the knowledge/behavior relationship is

important in order to effectively prevent substance abuse problems. The purpose of this study is to explore the relationship between substance abuse knowledge and behavior in order to assist a university Counseling Center's efforts at substance abuse prevention. Several related questions will be addressed. First, an estimate of student knowledge levels about substance abuse topics needs to be made. What do students know about substance abuse and, more importantly, what don't they know. Can the students' knowledge levels be considered adequate? Where do students get their information concerning substance abuse: from reputable sources such as the Counseling Center and Student Health or from less knowledgeable sources such as their peers? Were the students reading the substance abuse prevention material distributed by the university?

The current levels of student alcohol and drug use also have to be determined. Do higher levels of knowledge correspond to fewer substance abuse problems? Does a lack of knowledge predict excessive drug or alcohol use? All of these questions are important for planning substance abuse prevention programs.

The current study will also clarify an important point in the work conducted by Meilman (1991). Meilman conducted a survey of student alcohol and drug use at the same university as the current study. As discussed earlier, perceptions of campus substance use influence student usage patterns. The

Meilman survey attempted to identify student perceptions of campus substance use by asking the students to estimate "how often the average student used" various substances. This question was problematic due to varying rates of substance use among the students: many students would not use a substance at all, while a few students might use it often. A much better way to identify student perceptions of campus drug use would be to ask the students to estimate the percentage of students who use various substances. The new procedure would allow a more accurate estimate of student perceptions for substances with low usage rates (this change was made on the following university drug and alcohol survey).

Finally, this study will extend the Meilman (1991) survey. While 1991 survey was comprehensive and reliable, it did not identify two important reference groups in the student body: athletes and members of Greek organizations, which account for 8% and 27% of the student body, respectively. Special outreach efforts were planned for both groups as part of a campus wide substance abuse prevention program. However, the usage patterns of the two groups were not known. Do the two groups influence usage patterns of the group members? Do these groups need specialized prevention efforts? If these groups need specialized programming, what factors need to be addressed? Information on the substance use of athletes and Greek members will be helpful for future prevention efforts at the university.

METHOD

Survey Development

In order to explore the relationship between substance abuse knowledge and behavior, a new survey was created specifically for this application. The survey had a long process of review and refinement during its development. The first step was a meeting with a focus group of students who represented various reference groups to talk in general terms about substance use and abuse on the campus. The meeting was organized by Mary Cozier of the Counseling Center and the students were volunteer peer-alcohol educators for the university's athletic teams. The group consisted of thirteen students, all of whom were athletes, seven of whom were also members of Greek organizations, and six of whom were female. Important themes that came from the meeting included 1) the perception that athletes were not at risk for substance abuse 2) the perception that Greek membership was related to substance abuse problems and 3) the important role of seniors and team captains in setting (and enforcing) the substance use patterns for their respective teams. As a supplement to the focus group meeting, in-depth interviews were conducted with four additional students who were represented a cross section of gender, race, athletic membership and Greek status at the university. A summary of the focus group meeting and the individual interviews appears in Appendix A.

The interview information helped to shape the initial version of the substance use survey that would be used in the study. The survey was designed to examine three different areas: 1) student knowledge concerning substance abuse issues; 2) student perceptions of substance use for the whole campus and for selected sub-groups (athletes, Greeks, and freshmen); and 3) student usage of alcohol and drugs.

Knowledge

A review of existing drug-use knowledge tests indicated none were appropriate for the present survey, so a new instrument was created. The test questions were based on substance abuse material distributed at the College. While the use of an existing test would have given the ability to compare the survey's results with national test norms, it was felt that it was more important to have the test serve both as an examination of general substance abuse knowledge and as an evaluation of the effectiveness of the current dissemination of substance abuse information at the College.

A 15 question knowledge test was subsequently developed. Questions 2, 3, 5, 6, 9, 10, 11, 12, and 13 came from a brochure entitled Alcohol Use and Health Risks published by the College. Questions 1 and 14 came from Alcohol and Drugs vs. Athletic Performance published by the Athletic Department and the Counseling Center at the College. Questions 4, 7, 8, and 15 came from various handouts given out at the Substance Abuse Education Center in the college student union. In

assessing the students' knowledge levels, it was also important to determine where they might go to get information on substance abuse issues. Consequently question 23 was included which asks where students went to obtain information in the past.

Perceptions

In order to test perceptions of substance use, several questions were used. Question 22 asked about peer pressure at social events. Question 24 asked about the necessity for specialized substance abuse education for specific groups (women, freshmen, athletes, and Greeks) which can be used as a rough measure to estimate how many students think these groups are at risk for substance abuse problems. Question 21 asked about the perceptions of athletes and substance abuse problems. Questions 29 and 30 asked the student to estimate the prevalence of substance use for athletes and the student body at large.

Usage

The perception questions can be compared to the usage data from the current study to determine how accurately campus drug usage is identified. Many of the usage questions were taken from the substance abuse survey conducted at the university during the previous year (Meilman, 1991) so the results would be comparable.

A drink was defined for the student as a bottle of beer, a glass of wine, a wine cooler, a shot of liquor, or a mixed

drink. Question 25 asked the average number of drinks consumed both during the school year and when school is not in session, (Athletes were asked for drinks consumed during their athletic season and out of their athletic season). Question 25 asked the number of binges (five or more drinks at a sitting) the student had in the last two weeks. Question 26 asked about the frequency of recreational drug usage in the past year for alcohol, marijuana, cocaine, hallucinogens, and steroids. Question 28 asked about several negative consequences of drug use in the past year.

Survey Refinement

After the initial questions for the survey were selected, the instrument was reviewed by several university staff members. Drs. John Nezelek and Joe Galano of the Department of Psychology reviewed the questionnaire design. Dr. Nezelek, the project advisor, also gave extensive advice concerning the theoretical and methodological basis for the survey. Dr. Phil Meilman, the director of the Counseling Center, discussed how the survey results could best assist the Counseling Center's substance abuse programming. Dr. Diedre Connolly, a member of the Counseling Center staff and the university's Sports Psychologist, evaluated the questionnaire's wording to ensure reliability and validity of the results.

After the reviews of the survey instrument, a field test of the questionnaire was conducted. A second meeting of the peer-alcohol educators focus group was arranged by Mary

Crozier. The survey was completed by all fifteen students in attendance. Problematic questions were identified and discussed. The final version of the survey was then constructed, which appears in Appendix B. The survey was approved for use with the university athletes by the Athletic Director John Randolph.

Sample

The sample was obtained at three different times at the college. Introductory Psychology students filled out the surveys in the spring, 1992 (n = 31) and summer, 1993 (n = 35) for course credit. A sampling of athletes occurred in the fall of 1992 (n = 60). Response rates were 100 % for the Introductory Psychology students and approximately 27 % for the athletes. Total N = 126. There were 57 males (45%) and 69 females (55%). Fifty-two of the students were members of Greek organizations and 74 were not. Forty-two of the students were freshmen, 21 were sophomores, 27 were juniors, 34 were seniors, and 2 were unclassified. The sample had 85 % white students, 6% black, 4% Asian, and 5% other or no response. The sample compares favorably with the gender and racial composition of the college: 46% male, 54% female; 84% white, 6% black, 4% asian, 6% other.

RESULTS

Knowledge

The knowledge questions can be grouped on into three general categories: 1) general knowledge -- questions 1, 2, 3, 4, 5, 6, 7, 8, 9; 2) women's issues -- questions 10, 11, 12, 13; and 3) men's issues -- questions 14, 15. Overall, 44% of all knowledge questions were answered correctly and 56% were answered incorrectly (25% were wrong answers and 31% were "don't know" responses).

Insert Table 1 here

Though none of the three categories had many questions answered correctly, of the 6 questions answered correctly most frequently, three of them were women's issue questions.

The highest correct response rate was 92% for question 5 (one can not sober up quickly with coffee or a cold shower) while the lowest correct response rate was 12% for question 1 (NCAA regulations on over-the-counter drug use). The most frequent "don't know" responses were 64% for question 1 (NCAA regulations) and 56% for question 8 (suicides and alcohol use). Question 5 (how to sober up) had the lowest "don't know" response rate (2%).

Variations existed in the response patterns for several sub-groups. These variations are difficult to interpret since many of the subjects belong to more than one sub-group: 25 of

the 60 athletes are also Greeks, 33 of the 59 upper-class students (juniors and seniors) are female, 20 of the 52 Greek students are lower-class (freshmen and sophomores), etc. In order to disentangle the effect of the multiple group memberships, a multiple regression was run in SAS. Since the dependent variable was a dichotomous measure (knowledge question responses were coded either CORRECT or INCORRECT), a logistic regression was used.

Question 3 (number of days a person is affected after drinking) was predicted by class membership, $X^2 = 3.7$, $p < .05$ (lower-class 27% correct, upper-class 13% correct). Question 9 (the relationship of alcohol to sexual assaults) was predicted by both athlete status (non-athletes 52% correct, athletes 32% correct) $X^2 = 5.1$, $p < .05$ and class membership (lower-class 52% correct, upper-class 31% correct) $X^2 = 5.7$, $p < .01$. Question 11 (women's tolerance vs men's tolerance) was significantly predicted by gender (women 68 % correct, men 39 % correct) $X^2 = 11.0$, $p < .01$, and athlete status (athletes 75% correct, non-athletes 36% correct) $X^2 = 18.9$, $p < .01$. Question 12 (oral contraceptives and alcohol tolerance) was significantly predicted by gender (women 33% correct, men 11% correct) $X^2 = 9.1$, $p < .01$, athlete status (athletes 35% correct, non-athletes 12% correct) $X^2 = 9.3$, $p < .01$, class membership (upper-class 31% correct, lower-class 16% correct) $X^2 = 9.0$, $p < .01$, and Greek status (Greeks 37% correct, non-Greeks, 14% correct) $X^2 = 9.1$ $p < .01$. Finally,

question 15 (effects of chronic marijuana use) was predicted by class membership (upper-class 67% correct, lower-class 43% correct) $X^2 = 7.4$, $p < .01$.

So far we have examined what the students already knew about the topic of substance abuse. When they want to find out additional information, where do they go? Question 23 asked this, and the most popular response was FRIENDS, given by 61% of the sample. A logistic regression showed athlete status (athletes 73%, non-athletes 46%) $X^2 = 11.2$, $p < .01$ and gender (females 65%, males 52%) $X^2 = 4.2$, $p < .05$ were significant predictors. Other answers for this question were COUNSELING CENTER (21%), STUDENT HEALTH (20%), and RESIDENT ASSISTANT (14%).

Perceptions

In order to determine if any groups in the population were perceived as having unique substance abuse educational needs, question 24 asked whether it would be valuable to have specialized instruction about substance abuse for specific groups (WOMEN, FRESHMEN, ATHLETES, and GREEKS). Overall, more students chose FRESHMEN (64%) than any of the others (ATHLETES (46%), WOMEN (40%), and GREEKS (33%)). Sub-group analyses show that except for lower-class students, members of each category think that their group would benefit: 66% of athletes think athletes would benefit from specialized training (compared to 28% of non-athletes), 50% of women thought women would benefit from special instruction (as

opposed to 29% of the men), and 44% of the Greeks think that Greeks would benefit (compared to 25% of the non-Greeks). There was no difference in the response rate of lower-class students compared to upper-class students. Since athletes are a high-visibility group on a college campus, two additional survey questions were included to determine whether students consider athletes to be at risk for substance abuse problems. Question 21 specifically asked about the prevalence of substance abuse problems for athletes as compared to non-athletes. Forty four percent of all students thought that athletes had fewer problems than non-athletes, 43% perceived that athletes have the same number of substance abuse problems compared to non-athletes, and 11% thought athletes had more problems.

As a check on these data, the students were asked to estimate the percentage of drug use for athletes and non-athletes (questions 29 and 30). The results were consistent with the previous results. Athletes were perceived to have lower rates of marijuana, cocaine, and LSD usage. Alcohol usage was perceived to be the same for both groups, while athletes were perceived to have higher rates of steroid usage.

As for steroid use, non-athletes were much more likely than athletes to estimate athlete steroid use at high levels. Ten percent of non-athletes perceived that more than half of the athletes used steroids. None of the athletes perceived steroid use at such high levels. The athletes themselves were

much more likely to perceive no steroid use (10%) or trace steroid use (19% said one or two percent usage) than non-athletes (1% and 15%, respectively).

Overall, there was an accurate perception of substance use rates by the students as compared to the actual usage data for alcohol, marijuana, and LSD. Students over-estimated steroid and cocaine use.

Insert Table 2 here

The last perception question examined the social pressure to drink alcohol at a social gatherings. Question 22 asked if one would be considered a "geek" if he or she decided not to drink alcohol at a party. The vast majority of students (93%) responded that they would not be considered a social outcast for abstaining at a party.

Usage

Marijuana use at least once in the last year was reported by 31 % of the students (50 % of these respondents had used the drug just one time in the past year). A logistic regression showed that marijuana use was significantly predicted by athlete status (non-athletes 42%, athletes 16%) $\chi^2 = 14.7, p < .01$

LSD use at least once in the last year was reported by 11 % of the sample (71 % of these students used LSD one time).

Only one student had used cocaine in the last year, and no one admitted using steroids. None of these drugs were used enough in the sample to permit further analyses.

The most popular drug was alcohol, with eighty-three percent of subjects reported using alcohol in the past year (21 % drank alcohol five times per week or more). A logistic regression showed alcohol use was significantly predicted by Greek status (Greeks 83%, non-Greeks 48%) $X^2 = 13.2, p < .01$.

The mean number of drinks per week for the sample was 5.4, while the median was 2.0. A multiple regression with "number of drinks per week" as the dependent variable was performed. A combination of three variables explained 28.7 % of the variance: gender ($F = 11.4, p < .01$), Greek status ($F = 10.7, p < .01$) and athlete status ($F = 7.8, p < .01$). The mean differences for these groups are given in Table 3.

Insert Table 3 Here

Forty-four percent of the sample reported at least one binge drinking episode (greater than 5 drinks at a sitting) within the previous two weeks. Sixteen percent had 3 or more binges. Binges were significantly predicted by Greek status (Greeks 54%, non-Greeks 33%) $X^2 = 8.0, p < .01$ and gender (men 49%, women 36%) $X^2 = 4.5, p < .05$. In fact, of the 19 subjects who reported 3 or more binges in the past two weeks, 11 were Greek, male, non-athletes. While reporting over 57%

of the binge drinking episodes, Greek, male, non-athletes accounted for only 15% of the sample.

Insert Table 4 here

A review of the negative consequences of substance abuse shows similar patterns to the 1991 survey. A higher percentage of students reported property damage, vomiting, hurt, and blackouts, while the number of number of students reporting fights decreased. Intercourse without normal safe-sex techniques occurred after substance use for 23.5 % of the sample.

Insert Table 5 here

Since many of the negative consequences had low frequencies, subgroup analyses were not possible for all of the variables. Logistic regressions were performed on the variables with sufficient frequencies and the all variables were transformed into dichotomous responses (yes or no). Greek-affiliated students reported significantly more episodes of at least one memory loss or more in the past year than non-Greeks (Greeks 56%, non-Greeks 36%) $\chi^2 = 6.78$, $p < .05$. Upper-class students reported driving a car at least once or more in the past year while they were intoxicated more frequently than lower-class students (upper-class 31%, lower-

class 11%) $X^2 = 8.18$, $p < .01$. Property damage at least once or more was predicted by gender (men 37%, women 9%) $X^2 = 13.0$, $p < .01$ and athlete status (non-athletes 35%, athletes 11%) $X^2 = 5.89$, $p < .01$. Vomiting was not significantly predicted by any subgroup memberships.

In order to examine the relationship between knowledge and behavior, the results of the knowledge questionnaire had to be summarized. A new variable was created which represented the sum of the correct knowledge questionnaire responses for each subject. The value of the new variable, TOTAL, ranged from 0 to 12, with a mean of 6.7. The variable was then transformed into a dichotomous variable, TOTAL2, with LOW for less than the mean (57) and HIGH for greater than the mean (69). When TOTAL2 was compared to all of the usage and behavior measures, none had clearly significant results. Only one behavior, vomiting, had a marginally significant result ($X^2 = 3.6$, $p < .06$), with the HIGH knowledge group reporting at least one or more vomits in the past year (70%) more often than the LOW knowledge group (52%).

DISCUSSION

The knowledge questions in the survey were based on the substance abuse prevention information distributed at the university. Since the correct response rate was low (44%), the students may not be reading the material (or if they are reading the material, the students are not retaining it). However, it is impossible to predict what the correct response rate would have been if no reading material had been provided at all. Nevertheless, since behavior was unrelated to knowledge levels in this sample, one must conclude as Meacci (1990) did, that "alcohol education alone fails to influence responsible attitudes and reduce negative consequences". As a consequence, the university may want to stop providing knowledge-focused substance abuse literature for the students.

Of the knowledge questions, one in particular requires further discussion. Question 1 (NCAA regulations), was answered incorrectly by most of the non-athletes, a result which is not surprising. However, the question was answered correctly by only 9 out of 58 athletes, revealing a potential problem for the athletic department. For example, a track athlete could unknowingly take an over-the-counter medication and subsequently be disqualified for an NCAA event. Further education of the athletes on this issue by the athletic department seems necessary.

When students do have questions about substance abuse issues, they most often turn to their friends for the answers.

In fact, the FRIENDS response of question 23 was selected more often than the other three categories combined (COUNSELING CENTER, STUDENT HEALTH, and RESIDENT ASSISTANTS). There are probably many reasons why this occurs. One reason may be that students turn to their peers simply because of the ease of access to them. For any intervention program to be successful, barriers to access need to be reduced. Since students are constantly around their peers, it is easy for the students to ask them questions about substance use. Students would have to make an effort in order to go to the Counseling Center or Student Health to get substance abuse information. Since the trip to the Counseling Center "costs" more than the peer discussion, the students more likely to simply ask their friends about substance abuse issues.

Another reason may be confidentiality. Students may trust their peers more about potentially damaging information (questions about whether one may have a drinking problem) than they would a university staff member of Student Health or the Counseling Center. Students would also have better rapport with fellow students than with older health professionals or university staff members.

These data show the potential value of Peer-Alcohol Educators, since they can easily disseminate accurate and confidential information about substance abuse. Since athletes and women significantly selected "friends" as a resource for substance abuse information, peer educators might

be especially effective for these two groups.

While the data on substance abuse resource utilization seems clear, students' opinions on specialized substance abuse instruction is more equivocal. For Women, Greeks, and Athletes, in-group members favored specialized instruction for themselves more than out-group members did. This may be due to a combination of strong reference group identification and the commonly held liberal misperceptions of student drinking behavior. The result would be a greater perceived need for specialized training for the students' particular group.

It is ironic that freshmen were identified most frequently as needing specialized instruction (64%), yet they reported lower rates of alcohol consumption and fewer negative consequences than upper-class students. Furthermore, the group with the highest rates of alcohol abuse problems, the Greek affiliated students, had the lowest perceived need for specialized substance abuse training.

One group that does not appear to be at risk for substance abuse problems is athletes. Athletes were perceived as having the same or fewer number of alcohol and drug (LSD, marijuana, cocaine) problems than non-athletes and reported significantly fewer drug and alcohol usage than non-athletes. The only area where athletes were perceived as having higher usage rates was for steroids, a perception that was similar for both athletes and non-athletes (though only the non-athletes perceived widespread (> 50%) steroid usage).

According to the self-report data, however, not one athlete had used steroids in the past year. Given this discrepancy between perception and reality, the athletic department may want to consider a plan to better educate the university community about the lack of steroid use among university athletes.

When the data on drug usage is reviewed, it becomes clear that most of the substance abuse on campus occurs with alcohol. The use of marijuana, cocaine, and LSD on campus can best be described as experimentation, since half of the marijuana use and 71 % of the LSD use occurred only once in the last year (cocaine use was reported by only one student). In contrast, 44% of the students reported at least one binge drinking episode (greater than 5 drinks at a sitting) in the last two weeks. Of all the reference groups examined, Greek status significantly predicted binge drinking, higher drinking frequency, the greatest number of drinks per week, and the most frequent occurrences of memory loss. In fact, male Greek non-athletes were the highest risk group of all.

While Greek membership may encourage alcohol consumption, dangerous negative behaviors exist in surprisingly high frequency among all students, not just the Greeks. One-fifth of all students surveyed admitted driving while intoxicated in the last year, 59 % reporting vomiting, and almost a quarter of them did not practice normal safe-sex procedures after drinking alcohol. All of these behaviors could have

potentially serious consequences.

What implications do these data have for future substance abuse programming on the campus? The Counseling Center should target greek alcohol use and dangerous negative consequences among all students using Peer-Alcohol Educators. Broad based intervention efforts for all students should have as a goal reducing the potentially lethal consequences of substance abuse.

One widely accepted theory may be useful in explaining some of these data. The Health Belief Model (Becker, 1974) states that whether or not a person practices a particular health behavior can be understood by knowing two factors: the perceived threat to the person's health and the perception that the intervention will be effective in reducing the threat. The perception of a personal health threat is itself influenced by at least three factors: 1) general concern about health, 2) specific beliefs about how susceptible one is to a disorder, and 3) beliefs about the severity of the disorder. For example, a student with an alcoholic parent might decide to stop drinking alcohol if she 1) valued her health, 2) felt threatened by the possibility of alcoholism, and 3) perceived that the consequences of alcoholism were severe.

Whether an individual actually changes a health behavior depends on whether the person believes 1) a health measure will be effective against a disorder in question and 2)

whether or not the cost of participation outweighs the benefits. For the previous example, even though the student might believe in the effectiveness of abstinence, she might decide that the "cost" of abstinence (the loss of social interaction with her previous peer group) would exceed the benefit. As a consequence, the model would predict her continued alcohol use.

The Health Belief Model is useful since it can be used to improve behavior change strategies. For example, the model states that increased compliance occurs when the subject has a personalized fear of the threat. An example of this was given in the athlete focus groups, when the most effective speakers were described as those who could "make you feel it could really happen to you". As a consequence, the campaign against negative consequences should be as personalized and fear-inducing as possible, and the Peer-Alcohol Educators should be encouraged to remind their classmates on a regular basis of the potential negative consequences from substance abuse.

Another theory that may be especially useful for planning interventions in the Greek community is Fishbein and Ajzen's Theory of Reasoned Action (Ajzen and Fishbein, 1980). According to this model, a health behavior is a result of a behavioral intention. Behavioral intentions are made up of two components: attitudes toward an action and the normative beliefs about whether an action is appropriate. Within the

Greek system the Peer-Alcohol Educators could help to redefine what behavior is considered acceptable and what is irresponsible for the reference group. Peer Health Educators could help to discourage binge drinking from within the group. The reduction in binge drinking episodes and their consequent negative behaviors would help to significantly reduce substance abuse on campus.

Although the present analysis has attempted to be as thorough as possible, several limitations to the study must be acknowledged. First of all, the athlete survey had a low response rate (27%). When reviewing these data, it is important to remember that the athlete survey was a census of the entire athletic population, not a sample of students, such as the psychology students. Even though only 27% of the athletes responded, that still represents 60 completed surveys, which compares favorably to several other published studies: Nattiv and Puffer (1991) only had an 18% completion rate for the athletes in their survey. Overman and Terry (1991) surveyed 71 athletes for substance abuse, while Toohey and Corder (1981) had 77 athletes participate (Percentages of respondents were not given for either of these studies, but both would be low since they came from universities with large athletic programs -- Louisiana State University and Arizona State University, respectively).

While the low response rate for athletes in the current study is similar to other studies, the issue of respondent

selectivity must still be acknowledged. Respondent selectivity determines to what degree the present findings may be generalized. However, bias due to nonresponse is difficult to estimate or correct. The best that can be done is to caution the reader that these results cannot be generalized without acknowledging the possibility of bias due to nonresponse. Future studies need to achieve higher response rates so that the possibility of this bias can be eliminated.

In addition to the possibility of nonresponse bias, another limitation for this study is that the results are based on self report data. No objective measures are present which might validate the subjects' responses. The possibility of faulty recall and biased results exists. To reduce this possibility, future studies might reinforce survey data with data collected through other techniques such as keeping a daily diary of the subject's drinking behavior.

Another methodological improvement for future research would be the use of a nationally standardized knowledge questionnaire so that the results could be compared to other studies. Even though the questionnaire used in the current study was appropriate, the unique nature of the knowledge questionnaire used makes generalization of the findings difficult. A standardized knowledge questionnaire would also make a future survey more reliable, though the results could be less helpful to the Counseling Center, since it would not be based on materials distributed on the campus.

Table 1

Questionnaire Responses

Question	% Correct	
5	there is no way to sober up quickly	92
14	steroids decrease sperm count	73
10	not safe for pregnant women to drink	63
11	men > alcohol tolerance than women	55
6	identify high blood alcohol levels	52
13	menstruation decreases alcohol tolerance	48
9	alcohol use and sexual assaults	42
2	# of drinks until DUI	35
15	affects of marijuana use in males	34
7	how addictive is alcohol	29
12	oral contraceptives & alcohol tolerance	23
8	% of suicides after using alcohol	21
3	alcohol affects last for 2 days	21
4	carbonation increases intoxication	17
1	NCAA rules	12

Table 2

Perceived Drug Use Compared to Actual Drug Use

Drug	Perceived Usage	Estimates of Actual Use	
		Current Survey	1991 Survey
Alcohol	74 %	83 %	89 %
Marijuana	29 %	31 %	16%
Steroids	12 %	0 %	0 %
LSD	11 %	11 %	2 %
Cocaine	8 %	1 %	1 %

Table 3

Mean Group Differences for Drinks per Week

Group	Means
Athlete	2.8
Non-athlete	7.5
Female	2.4
Male	8.5
Greek	8.0
Non-Greek	3.0

Table 4

Comparison of gender, Greek, and athletic status
for subjects reporting >3 binges in the last 2 weeks
(19 total)

Greek (rows) X Athlete (columns) for
Gender = Female
Binges = 3 or more in the last two weeks

	Athlete	Non-athlete	Total
Greek	1	0	1
Non-Greek	1	2	3
Total	2	2	4

Greek (rows) X Athlete (columns) for
Gender = Male
Binges = 3 or more in the last two weeks

	Athlete	Non-athlete	Total
Greek	2	<u>11</u>	13
Non-Greek	1	1	2
Total	3	12	15

Table 5

Negative Consequences

Consequence	Current Sample	1991 Sample
Trouble with authorities	15.8 %	12.5 %
Property Damage	21.7	12.5
Fights	15.0	28.0
Vomiting	59.1	46.8
Driving While Intoxicated	20.4	25.1
Blackouts	47.0	30.0
Got hurt	26.0	13.2
Been taken advantage of sexually	8.3	
Taken advantage of another sexually	4.2	
Intercourse without safe sex normally used	23.5	

APPENDIX A

A summary of comments with actual responses in quotes

1. Do you think Substance Abuse is a problem for W&M athletes?

Response: "No more so than for students in general"

2. Are some teams famous for having lots of "partiers"?

Response: Several teams mentioned, especially Football and Men's Soccer

3. Do you think there might be pressure to fulfill these stereotypes?

Response: Some pressure might exist (especially for team initiation rites that involve alcohol), but "most of the pressure to fulfill stereotypes occurs in the fraternities"

4. Do some athletes use alcohol as a way to relieve pressure (academic or athletic)?

Response: Not to relieve pressure per se, but just "enjoying life like everyone does" However, with more restrictions (competition dates and team rules) on athletes' behavior, when they get the (infrequent) chance, they let it "all hang out"

5. Do team rules / College Sanctions keep athletes from drinking, whether during the season or off season?

Response: Different teams have different rules (and some have no rules). "Seniors set the substance use standards, the rules do not"

6. What do you want to know about alcohol/substance abuse?

Response: Programs tailored to specific groups, especially women and freshmen. Both skills training and general knowledge desired

7. Would you like to see guest speakers, small group discussions, or large presentations?

Response: Guest speakers preferred. Best ones were Dartmouth ex-football player and Len Bias's mom -- "they brought a human side to the topic" The athletes didn't feel lectured at and "you felt it could really happen to you"

8. Do you think W&M would benefit from substance abuse prevention program for athletes?

Response: "W&M needs one for all students not just for athletes" Also set realistic goals for the program (" 'Just say no' doesn't cut it"). "Realize that the students will drink and tailor the training accordingly"

9. Would you refer another athlete for substance abuse counseling?

Response: "Would not tell a coach, but would have the team leaders (like seniors/captains) talk to the person"

APPENDIX B

IF YOU HAVE NO IDEA ABOUT THE CORRECT ANSWER, PLEASE CIRCLE "DON'T KNOW"

1. Along with street drugs, what else does the National Collegiate Athletic Association (NCAA) ban varsity athletes from taking?
 - a. antihistamines (allergy relief medicines)
 - b. Visine
 - c. a and b and lots of other over-the-counter medications
 - d. nothing else is banned by the NCAA
 - e. don't know
2. What is the most number of drinks a 220 pound person could have in one hour and legally drive home sober?
 - a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. don't know
3. If a person gets drunk enough on Saturday night so he/she can't legally drive, how long can that person be affected?
 - a. until Sunday night
 - b. until Monday night
 - c. until Tuesday night
 - d. until Wednesday night
 - e. don't know
4. Drinking alcohol mixed with carbonated soda is _____ drinking the same amount of alcohol straight.
 - a. less intoxicating than
 - b. just as intoxicating as
 - c. more intoxicating than
 - d. sometimes less intoxicating and sometimes more intoxicating than (7-Up is less intoxicating, Pepsi is more intoxicating)
 - e. don't know
5. When a person is drunk, what's the fastest way to sober up?
 - a. drink hot coffee
 - b. eat a hamburger
 - c. take a cold shower
 - d. nothing you can do will sober you up quickly, you just have to wait several hours
 - e. don't know

6. A person with a high tolerance to alcohol could still look and act normal with a blood alcohol level of
- a. .20% b. .40% c. .50% d. .90% e. don't know
7. Psychologically, alcohol is considered to be _____ than heroin.
- a. much less addictive
b. less addictive
c. equally addictive
b. more addictive
e. don't know
8. What percentage of suicides in the United States involve alcohol?
- a. 10% b. 33% c. 66% d. 90% e. don't know
9. What percent of sexual assaults occur after one or both parties has been drinking?
- a. 10% b. 33% c. 66% d. 90% e. don't know
10. When is it considered safe for pregnant women to drink alcohol?
- a. in small amounts, during the first trimester
b. in small amounts, until the end of the second trimester,
c. throughout the entire pregnancy, so long as she never gets drunk.
d. it is never considered safe to have even one drink
e. don't know
11. On the average, women have _____ tolerance to alcohol compared to men.
- a. decreased
b. equal
c. increased
d. equal (when body weights are the same)
e. don't know

12. What effect does taking oral contraceptives have on alcohol tolerance?
- a. decreases tolerance for all women
 - b. does not affect tolerance
 - c. increases tolerance for all women
 - d. decreases tolerance for women under 130 lbs
 - e. don't know
13. During menstruation, women tend to be _____ to the effects of alcohol.
- a. less susceptible than normal
 - b. just as susceptible as normal
 - c. more susceptible than normal
 - d. sometimes more susceptible than normal
 - e. don't know
14. Use of anabolic steroids will usually _____ a man's sperm count.
- a. decrease
 - b. not affect
 - c. increase
 - d. increase (but it will also make him impotent)
 - e. don't know
15. Chronic use of marijuana can cause _____ in males
- a. decreased aggression
 - b. decreased motivation
 - c. a and b
 - d. decreased appetite
 - e. don't know
16. Class Freshman Sophomore Junior Senior Grad
17. Gender Male Female
18. Ethnic Group Asian Black Hispanic White Other
19. Age _____
20. Are you a member of a Greek Organization? Yes No

21. In your opinion, do athletes at William & Mary have
- a lot fewer substance abuse problems than non-athletes
 - fewer substance abuse problems than non-athletes
 - the same number of substance abuse problems as non-athletes
 - more substance abuse problems than non-athletes
 - a lot more substance abuse problems than non-athletes
22. If you were at a party and you decided not to drink alcohol, would you be considered a geek/squid/etc by your friends?
- definitely would
 - probably would
 - unsure
 - probably not
 - definitely not
23. In the past, you may have had questions concerning substance abuse issues. Where did you go to find information? (circle all that apply)
- | | |
|----------------------|-------------------|
| a. friends | b. resident asst. |
| c. counseling center | d. student health |
24. Would it be valuable to have specialized instruction about substance abuse for specific groups such as (circle any that apply)
- | | |
|-------------|-------------|
| a. Women | b. Freshmen |
| c. Athletes | d. Greeks |

For questions 25 and 26, a drink is a bottle of beer, a glass of wine, a wine cooler, a shot of liquor, or a mixed drink

25. Average # of drinks you consume per week during the school year _____

Average # of drinks you consume in a week when **NOT** in school (during the summer, Christmas break, etc.) _____

26. Over the last two weeks, how many times have you had 5 or more drinks at a sitting?

none once twice 3-5 times 6-9 times 10 or more times

27. Within the last year, how often did you **recreationally** (not prescribed by a doctor) use

1x 6x 1x 2x 1x 3x 5x every
never year year mnth mnth week week week day

Alcohol (beer/wine/liquor)

X X X X X X X X X

Marijuana (pot/hash)

X X X X X X X X X

Cocaine (crack/blow)

X X X X X X X X X

Hallucinogens (mushrooms/LSD)

X X X X X X X X X

Steroids

X X X X X X X X X

28. Within the last year, indicate how often you have experienced the following due to your drinking or drug use:

never	once	twice	3-5 times	6-9 times	10 or more times
Vomited					
X	X	X	X	X	X
Had a memory loss					
X	X	X	X	X	X
Got hurt					
X	X	X	X	X	X
Trouble w/police					
X	X	X	X	X	X
Damaged property					
X	X	X	X	X	X
Got into a fight					
X	X	X	X	X	X
Drove a car drunk					
X	X	X	X	X	X
Been taken advantage of sexually					
X	X	X	X	X	X
Taken advantage of another sexually					
X	X	X	X	X	X
Intercourse without safe sex practices normally used					
X	X	X	X	X	X

29. What percentage of athletes at W&M use

Alcohol	0-1-2-5-10-25-33-50-67-75-90-100
Marijuana	0-1-2-5-10-25-33-50-67-75-90-100
Cocaine	0-1-2-5-10-25-33-50-67-75-90-100
LSD/shrooms	0-1-2-5-10-25-33-50-67-75-90-100
Steroids	0-1-2-5-10-25-33-50-67-75-90-100

30. What percentage of **NON**-athletes at W&M use

Alcohol	0-1-2-5-10-25-33-50-67-75-90-100
Marijuana	0-1-2-5-10-25-33-50-67-75-90-100
Cocaine	0-1-2-5-10-25-33-50-67-75-90-100
LSD/shrooms	0-1-2-5-10-25-33-50-67-75-90-100
Steroids	0-1-2-5-10-25-33-50-67-75-90-100

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