Health Behavior and College Students: Does Greek Affiliation Matter?

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Abstract

The college years offer an opportunity for new experiences, personal freedom, and identity development; however, this period is also noted for the emergence of risky health behaviors that place college students at risk for health problems. Affiliation with on-campus organizations such as fraternities or sororities may increase a student's risk given the rituals and socially endorsed behaviors associated with Greek organizations. In this study, we examined alcohol and drug use, smoking, sexual behavior, eating, physical activity, and sleeping in 1595 college students ($n = 265$ Greek members, $n = 1330$ non-Greek members). Results show Greek members engaged in more risky health behaviors (e.g., alcohol use, cigarette smoking, sexual partners, and sex under the influence of alcohol or drugs) than non-Greek members. Greek and non-Greek members did not differ in condom use, unprotected sex, eating, and physical activity behaviors. Implications for prevention and intervention strategies among Greek members are discussed.

Keywords

fraternities; sororities; sexual behavior; substance use; physical activity; sleep

College students engage in a variety of behaviors that put them at risk for serious health problems (Douglas et al., 1997; Hoban & Leino, 2006). Excessive alcohol and other substance use, cigarette smoking, risky sexual behavior, and sedentary behavior jeopardize academic achievement and performance (Prendergast, 1994; Trockel et al., 2000; Wechsler et al., 1994). Such health-related behaviors are associated with short- and long-term health consequences including injury and violence (Hingson et al., 2002; Turner & Shu, 2004), lower post-college wages (Jennison, 2004), greater risk of heart disease (Spencer, 2002), and sexually transmitted diseases (STDs) (Lewis et al., 1997).

Ample research has examined the prevalence of excessive alcohol and other substance use, risky sexual behavior, and other harmful health behaviors on college campuses in the general student population (Center for Disease Control and Prevention [CDC], 2006a; Keating et al., 2005; Mohler-Kuo et al., 2003; Prendergast, 1994; Siegel et al., 1999; Strote et al., 2002; Wechsler et al., 2000). Yet very limited attention, with the exception of alcohol use and more recently substance abuse, has been focused on health behaviors among Greek members (i.e., fraternity or sorority members). National surveys indicating that Greek members' alcohol and substance use exceeds that of non-Greek members (Cashin et al., 1998; McCabe et al., 2005; Wechsler et al., 1996) have increased concern among college administrators. The continued

risks associated with Greek organizations have prompted some to request the removal of fraternities or sororities entirely (Maisel, 1990).

Greater alcohol and substance use is not surprising given the central role alcohol and/or drugs play in socialization and bonding processes within many Greek organizations (Kuh & Arnold, 1993). Both a student's need to be socially accepted and the powerful peer influence of a fraternity/sorority environment contribute to excessive alcohol use (Borsari & Carey, 1999). Moreover, the available evidence supports two views, namely, (a) that young adults self-select into peer groups (McCabe et al., 2005), and (b) that socialization processes promote greater alcohol use (McCabe et al., 2005; Read et al, 2005). Other health behaviors, such as cigarette smoking and risky sex, are also likely to be influenced by one's social milieu. For example, research on cigarette smoking has shown that adolescents are more likely to smoke if their friends, family members, and peers smoke (Eisenberg & Forster, 2003; Leatherdale et al., 2005). Evidence also suggests that membership in certain organizational groups, such as athletic teams and Greek organizations, can be associated with peer norms supporting sexual aggression (Adams-Curtis & Forbes, 2004; Humphrey & Kahn, 2000). Yet, little is known about how affiliation with Greek organizations relates to other health behaviors such as sexual risk behaviors, cigarette smoking, physical activity, nutrition, and sleeping behaviors.

The purpose of this exploratory study was to examine several important health behaviors (i.e., alcohol use, cigarette smoking, drug use, sexual behavior, eating, physical activity, and sleeping (U. S. Department of Health and Human Services, 2000) as a function of membership in fraternity or sororities (Greek vs. non-Greek members). Consistent with prior research (e.g., McCabe et al. 2005; Weschler et al., 1996), we expected Greek members to use more alcohol and other substances compared to non-Greek members. We also expected Greek members would engage in riskier sexual behaviors, given the association of alcohol use and risky sexual behavior (Kaly et al., 2002; Wechsler et al., 1995), and report more cigarette smoking in light of their association with heavy episodic drinking (Wechsler et al., 1995). We had no basis for making predictions regarding eating and sleeping behaviors, or physical activity. In addition, we expected sorority members would report more risky sexual behavior (e.g., less condom use, more sexual partners) compared to their non-Greek female peers given the association between sorority membership and coercive or forced sex (e.g., Copenhaver & Grauerholz, 1991; Kalof, 1993). Greek members living in fraternity or sorority housing were expected to engage in riskier behaviors than those living in non-Greek housing due to increased opportunity and lower supervision relative to traditional, on-campus residential housing (see Borsari & Carey, 1999).

Method

Participants and Procedures

Participants were 1595 undergraduate students (64% female, 81% White, *M* age = 19.5 years, 17% fraternity/sorority members). Most of the students were either freshman (52%) or sophomores (32%). Data were collected between 2001 and 2003 from introductory psychology students who volunteered to participate in the study in exchange for partial course credit. Questionnaires were administered in groups. The study was approved by Syracuse University Institutional Review Board and written informed consent was obtained from all participants.

Measures

Alcohol use—A modified version of the Daily Drinking Questionnaire (Collins, Parks, & Marlatt, 1985) was used to measure alcohol use. Alcohol use was assessed by asking students the number of standard drinks (described as 12 oz of beer, 4 oz of wine, or 1 oz shot of liquor straight or in a mixed drink) they consumed on a typical drinking day in the past 30 days. To

assess heavy episodic drinking, separate questions asked men [women] how many times, in the past 30 days, they consumed 5 or more [4 or more] drinks on one occasion (Wechsler et al., 1994).

Cigarette use—Adapted from the National College Health Risk Behavior Survey (CDC, 1995), cigarette smoking was assessed using two measures: frequency of cigarette smoking (never, quit, less than once a month, at least monthly, at least weekly, daily) and the number of cigarettes smoked per day. To further characterize smoking frequency, participants were categorized as non-smokers (never or quit), infrequent smokers (monthly or less), or frequent smokers (weekly or daily).

Other drug use—Participants' other drug use was assessed over their lifetime and the past 30 days using questions adapted from the National Household Survey on Drug Abuse (Substance Abuse and Mental Health Services Administration, 2000). Drug use (1) versus no drug use (0) was indicated by responding *yes* to having used any of the following substances in the past 30 days: marijuana/hashish, PCP, tranquilizers/sedatives, cocaine, GHB, amphetamines, over-the-counter stimulants, ecstasy, hallucinogens, inhalants, opiates, rohypnol, and others. A parallel list assessed lifetime use. Because use of individual drugs (other than alcohol and marijuana) was relatively infrequent, participants who indicated any other drug use (e.g., indicated "yes" for inhalants) were categorized as other drug use.

Sexual behaviors and norms—Participants were asked several questions regarding their sexual behaviors and beliefs about condom use. All questions followed published guidelines (Weinhardt et al., 1998), and have been used in previous research (Carey et al., 2000; Jaworski & Carey, 2001). These items included: (a) lifetime and past 3 months sexually transmitted diseases (yes/no), (b) always using any birth control use in past 3 months (yes/no), (c) always using condom use in past 3 months (yes/no), (d) proportion of unprotected sexual events in past 3 months (number of times sex occurred without a condom divided by the total number of sexual events), (e) sexual frequency in the past 3 months, (f) number of sexual partners in the past lifetime, year, and 3 months, (g) had sex under the influence of alcohol or drugs in past 3 months (yes/no), and (h) based on past year sexual behavior, perception of HIV risk (4-point scale: *no risk* to *a lot of risk*). Condom use norms were assessed using three measures (4-point scale: *disagree* to *agree*): (a) "my friends think it's necessary to use condoms even if the women is taking the pill," (b) "my friends use condoms regularly," and (c) "my partner would agree if I wanted to use condoms." Higher scores on the condom use norms measures indicate more agreement.

Eating, caffeine use, physical activity, and sleeping—Eating behaviors were assessed by asking participants how often they ate 3 meals/day (4-point scale: *rarely/never* to *nearly every day*). Caffeine use was assessed by asking students to report the number of caffeinated beverages (cups of coffee, tea, or bottles/cans of cola) consumed per day. For physical activity, participants indicated the number of hours they spent exercising per week (i.e., total time spent exercising during the school week and on weekends) and frequency of participating in vigorous physical activity (e.g., swimming, running, basketball, aerobics, weight lifting; 5-point scale: *rarely/never* to *every day*). Sleeping was assessed by asking participants the average number of hours they slept per day. The physical activity items were adapted from the National College Health Risk Behavior Survey (CDC, 1995); all other items (e.g., eating, caffeine use, and sleeping) were created for this study.

Additional measures—Participants completed additional measures (e.g., drinking norms) as part of a larger study examining college students' health. (Results from the additional survey

measures are reported elsewhere; Carey et al., 2006; Henson et al., 2006). Finally, participants were asked demographic questions (gender, ethnicity, age, and Greek affiliation).

Data Analysis

Summary statistics (means and standard deviations, frequencies) were used to describe health behaviors for the overall sample and by Greek membership ($n = 265$ Greek members, $n = 1330$ non-Greek members). Differences between Greek and non-Greek members were examined using t-tests (for continuous measures) or chi-square analysis (for dichotomous and polytomous measures). In order to control the overall Type I error rate at the 0.05 level, an adjustment of the p-values was performed due to the multiple comparisons (29). Following procedures presented by Holm (1979), the p-values were ranked and sequentially adjusted for the number of statistical tests performed.

Effect sizes (d) were calculated as the mean difference between Greek and non-Greek members' health outcomes divided by the pooled standard deviation (Cohen, 1988). For frequency outcomes, an odds ratio was calculated and transformed to d using the Cox transformation (Sánchez-Meca, Marín-Martínez, & Chacón-Moscoso, 2003).[1] A positive effect size indicated greater health benefit (i.e., reduced alcohol use, less cigarette/drug use, fewer STDs diagnosed, more condom use, and fewer sexual partners/frequency of sex) for non-Greek members compared to Greek members. Effect sizes of 0.20, 0.50, and 0.80 are considered small, medium, and large effects respectively (Cohen, 1988). Subsequent analyses examined differences (a) among men and women by Greek member status and (b) between Greek members who were and were not living in fraternity or sorority housing.[2]

Results

All health outcomes were examined based on year in college; none of these analyses showed significant differences between freshman and upper class students on any health behavior measured.

Alcohol and Cigarette Use

As detailed in Table I, students reported drinking an average of 4.79 ($SD = 3.89$) drinks in a typical drinking day and reported 4.63 days ($SD = 4.70$) of heavy drinking in the past 30 days. Independent t-tests show Greek members drank more alcoholic beverages on a typical drinking day and engaged in heavy episodic drinking more frequently in the past 30 days compared to non-Greek members (both ps <.003, ds = 0.23 and 0.56 respectively). Overall, 77% of students were non-smokers; of those who did smoke ($n = 356$; 23%), they smoked an average of 4.85 ($SD = 5.40$) cigarettes per day. Chi-square tests show that Greek members were more likely than non-Greeks to be frequent cigarette smokers (i.e., 23% vs. 14% smoked at least weekly

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[1]Effect sizes cannot be computed for chi-square tests when degrees of freedom are greater than 1 (Lipsey & Wilson, 2001). Therefore, effects sizes were not computed for cigarette smoking frequency, eating behaviors, and vigorous physical exercise.
[2]We also examined gender differences among Greek and non-Greek members using a 2 (gender: men, women) × 2 (Greek membership: Greek, non-Greek) analysis of variance (ANOVA) for all continuous dependent variables (e.g., alcohol use, sexual frequency), and logistic or ordinal regression procedures for dichotomous (e.g., drug use) or ordinal categorical (e.g., frequency of cigarette smoking) dependent variables, respectively. Results showed a significant interaction between Greek status and gender for number of drinks in a typical drinking day, number of cigarettes smoked per day, and always using any form of birth control in the past 3 months. For alcohol use, Greek ($M = 7.52$, $SD = 4.05$) and non-Greek ($M = 5.83$, $SD = 3.85$) men consumed more drinks in a typical drinking day than Greek ($M = 4.37$, $SD = 2.44$) and non-Greek women ($M = 3.96$, $SD = 3.86$), $F(1, 1449) = 5.77$, $p = .02$. Of the participants who smoked cigarettes, Greek men ($M = 6.61$, $SD = 6.40$) and non-Greek women ($M = 4.75$, $SD = 5.97$) report smoking more cigarettes per day than non-Greek men ($M = 4.54$, $SD = 4.71$) and Greek women ($M = 3.92$, $SD = 2.49$), $F(1,350) = 4.33$, $p = .04$. Finally, Greek women (69%) and non-Greek men (50%) report always using birth control more than non-Greek women (57%) or Greek men (41%), $OR = 2.24$ (95% $CI = 1.17$, 4.27), $SE = 0.33$, $p = .02$. No other interactions were found for the remaining 26 dependent variables. To simplify reporting of results, we focus on contrasts between Greek and non-Greek members rather than report the main effects and interactions of the analyses for the 29 health behaviors (all of the main effects were consistent with our t-test and chi-square analyses).

in the last month) than infrequent/non-smokers (p =.002). Greek members did not smoke significantly more cigarettes per day than non-Greek members.

Drug Use

Table II shows that more than half of the students reported lifetime drug use (65% marijuana; 48% other drugs) with 40% using marijuana and 20% using other drugs in the past month. Chi-square tests show Greek members report more lifetime and past 30 day marijuana and other drug use (specifically, cocaine, amphetamines, ecstasy, hallucinogens) than non-Greek members (ps =.002; ds = 0.51 to 0.74).

Sexual Behavior and Norms

All sexual behavior and normative beliefs are reported in Table III. Both lifetime and recent STD diagnoses were relatively rare in this sample (2% overall in the last 3 months). A third of the students reported always using condoms (37%); 55% reported always using any form of birth control in the past 3 months. Slightly more than one-third of all penetrative sexual events in the past 3 months were unprotected ($M = 0.38$, $SD = 0.42$). No differences were found between Greek and non-Greek members for the protection measures (always using any form of birth control, always using condoms, or having unprotected sex). Overall, students reported an average of 11.51 ($SD = 32.09$) sexual events in the past 3 months with no differences found between Greek and non-Greek members. Students had an average of 4.05 ($SD = 9.61$) sex partners in their lifetime, 1.89 ($SD = 2.49$) partners in the past year, and 1.04 ($SD = 1.32$) partners in the past 3 months. Greek members reported more sexual partners in the past year and past 3 month than non-Greek members (t-tests; ps = .002). Overall, few students (8%) reported having sex due to the influence of alcohol or drugs, and perceived themselves to be at no risk to very little risk ($M = 1.38$, $SD = 0.61$) of contracting HIV; however, compared to non-Greek members, Greek members had more sex under the influence of alcohol or drugs (13% vs. 7%; $d = 0.44$) and perceived themselves to be at greater risk for HIV infection ($M = 1.49$ vs. $M = 1.36$; $d = 0.20$). Overall, students thought their partners' would agree to use condoms ($M = 3.88$, $SD = 0.46$), friends would think condoms were necessary even if using oral contraceptives ($M = 3.41$, $SD = 0.82$), and friends used condoms regularly ($M = 3.30$, $SD = 0.97$). Compared to non-Greek students, Greek students were less likely to support the belief that their friends would think condoms were necessary even if using oral contraceptives and friends used condoms regularly (ps =.003; ds = −0.21 and −0.22 respectively).

Other Health Behaviors

As indicated in Table IV, only 20% of students ate 3 meals per day. On average, students drank an average of 1.66 ($SD = 2.88$) caffeinated beverages each day, exercised an average of 6.39 hours/week ($SD = 5.83$), engaged in vigorous physical activity at least once per week (70%), and slept an average of 7.30 hours/day ($SD = 2.66$). Independent t-tests and chi-square tests show no differences between Greek and non-Greek members on eating behaviors, number of caffeinated beverages consumed, number of hours spent exercising, and frequency of vigorous activity, however, there was a significant difference between groups regarding the number of hours of sleep per day; Greeks reported sleeping more than non-Greeks (p =.003; $d = 0.29$).

Exploratory Analyses

Gender Differences among Greek and Non-Greek Members—Exploratory analyses (repeating the t-tests and chi-square analyses used to compare Greeks and non-Greeks) examined differences among men ($n_{Greek} = 99$; $n_{Non-Greek} = 469$) and women ($n_{Greek} = 164$; $n_{Non-Greek} = 856$) as a function of Greek status. All p-values were adjusted due to the multiple comparisons (Holm, 1979). Independent t-tests and chi-square analyses showed that, compared to men who were not Greek members, fraternity members drank more alcoholic beverages on

a typical drinking day, $t(514) = 3.82$, $p = .002$, $d = 0.43$, engaged in heavy episodic drinking more frequently in the past 30 days, $t(515) = 5.60$, $p = .002$, $d = 0.63$, reported more lifetime marijuana use, $\chi^2(1) = 12.83$, $p = .002$, $d = 0.61$, and past 30 day marijuana use, $\chi^2(1) = 17.16$, $p = .002$, $d = 0.56$, more lifetime other drug use, $\chi^2(1) = 18.29$, $p = .002$, $d = 0.62$, and past 30 day other drug use, $\chi^2(1) = 11.87$, $p = .002$, $d = 0.52$, and reported more sexual partners in the past 3 months, $t(448) = 3.40$, $p = .002$, $d = 0.42$. For women, independent t-tests and chi-square analyses showed that, compared to non-Greek women, sorority women engaged in heavy episodic drinking more frequently, $t(941) = 6.02$, $p = .002$, $d = 0.52$, were more likely to be frequent smokers, $\chi^2(1) = 10.53$, $p = .003$, $d = 0.41$, reported more lifetime marijuana use, $\chi^2(1) = 38.12$, $p = .002$, $d = 0.81$, and marijuana use in the past 30 days, $\chi^2(1) = 23.22$, $p = .002$, $d = 0.50$, and more other drug use in their lifetime, $\chi^2(1) = 16.33$, $p = .002$, $d = 0.44$, and more other drug use in the past 30 days, $\chi^2(1) = 24.57$, $p = .002$, $d = 0.59$, more sexual partners in their lifetime, $t(856) = 3.55$, $p = .002$, $d = 0.33$, past year, $t(843) = 5.21$, $p = .002$, $d = 0.49$, and past 3 months, $t(877) = 4.64$, $p = .002$, $d = 0.43$, and slept more, $t(795) = 3.43$, $p = .002$, $d = 0.33$. Non-Greek women reported that their friends would think condoms were necessary more than sorority members, $t(1005) = 3.02$, $p = .003$, $d = 0.26$. No other differences in health behaviors were found among men and women as a function of Greek status.

Living Arrangements and Health Behaviors among Greeks—Repeating the t-tests and chi-square analyses used to compare Greeks and non-Greeks, we also examined differences in health behaviors among Greek members who were ($n = 52$) and were not ($n = 211$) living in fraternity or sorority housing. After adjusting the p-values due to the multiple comparisons (Holm, 1979), we found no differences in health behaviors among Greeks who were or were not living in fraternity or sorority housing.

Discussion

In this study, we examined the associations of a wide range of health behaviors with membership in Greek organizations in a large sample of college students. The health behaviors chosen for investigation include those identified in *Healthy People 2010* (U. S. Department of Health and Human Services, 2000), the nation's public health blueprint, as well as behaviors identified by scholars as the leading behavioral causes of premature morbidity and mortality (Mokdad et al., 2004) as well as cost (Michaud et al., 2001) in the U. S. Because health behaviors established during late adolescence correlate with patterns of health behavior in adulthood, recognizing (and addressing) factors that encourage health damaging behaviors during adolescence is important in promoting long-term health (Nelson et al. 2006).

Consistent with prior research (Engs et al., 1996; Kuh & Arnold, 1993), and numerous depictions in the popular press (Reitman, 2006; Seaman, 2005; Zailckas, 2005) and fiction (Wolfe, 2004), Greek members reported heavier alcohol use than non-Greeks. Also consistent with the associations between alcohol use and other drug use (Kim et al., 1997; Wechsler et al., 1995), we found that Greek members were more likely to smoke cigarettes and to smoke on a daily basis, and they were more likely to report using marijuana and other drugs in the last month than were non-Greek students. Thus, Greek members exhibit higher rates of a constellation of alcohol, cigarette and drug use, which suggests that targeted substance use prevention interventions should be broadly focused within this community.

Less studied by social scientists, but well-recognized in the popular press (Reitman, 2006; Robbins, 2005; Seaman, 2005; Stepp, 2007), is the association we found between Greek status and (a) number of sexual partners and (b) having sex under the influence of alcohol or drugs. Although these two characteristics are typically associated with increased risk for STDs, we did not find higher rates of reported STDs among Greek-affiliated students. However, this non-finding may reflect the fact that most college students have not undergone medical screening

for STDs, and that many STDs are asymptomatic (Eng & Butler, 1996). Nonetheless, more fine-grained analysis of the alcohol—risky sex connection, perhaps using event-level analyses, is needed to determine if the higher rates of sex under the influence of alcohol and/or drugs is associated with unprotected sex (Weinhardt & Carey, 2000; Weinhardt et al., 2001).

Overall, the proportion of unprotected penetrative sex acts was high among both student sub-groups, which did not differ from each other; the results revealed that slightly more than one-third of students reported using condoms consistently (the practice recommended by the CDC). Several behavioral science theories suggest ways to better understand (and modify) condom use patterns (Fishbein, 2000; Fishbein et al., 2001). Such models look to antecedent psychological factors such as social norms and attitudes. In our study, we found that Greek members expressed less confidence that friends would approve of condom use, revealing a weaker set of protective norms in the Greek community than among non-Greek students. Thus, the data provide some evidence for greater sexual risk among Greek students, and suggests that risk reduction efforts might explore and strengthen norms for HIV protective behaviors among Greek students. There are precedents for this work (Jaworski & Carey, 2001), but continued research is warranted.

Our data revealed that Greek students do not distinguish themselves on the measured variables related to eating, caffeine use, and physical activity. Although only a fifth of our college sample reported eating three meals everyday, the pattern did not differ for Greek members. Clearly, all college students would benefit from guidance regarding the importance of regular eating (e.g., Farshchi, Taylor, & MacDonald, 2005). Similarly, our sample reported exercising over 6 hours every week, and 44% reported exercising vigorously three or more times weekly during the last month (the practice recommended by the CDC). Engaging in regular exercise is often used by college students to promote their physical attractiveness (Reitman, 2006); despite the non-health reason for exercise, these practices provide real benefits to their health and happiness (Penedo & Dahn, 2005).

Greek students reported sleeping more than non-Greek students: that is, Greeks reported nearly 8 hours (more consistent with age-appropriate guidelines; Dement & Vaughan, 1999) whereas non-Greeks reported about 7 hours. One explanation for this finding is that Greeks students recognize their sleep needs and make sleep hygiene a priority; alternatively, this somewhat atypical finding might be explained using anecdotal evidence suggests that many students "sleep in" following alcohol and other drug use (Reitman, 2006). Our data do not allow us to determine the accuracy of either interpretation. Sleep remains an understudied but important health behavior in all age groups, but especially among college students in light of the links between sleep habits (especially wake-up time) and academic performance (Trockel et al., 2000).

Consistent with our overall findings and prior research (e.g., McCabe et al., 2005), exploratory analyses revealed that both fraternity and sorority members reported more alcohol and drug use than same-sex non-Greek students. Sorority members, but not fraternity members, were also more likely to be frequent smokers than non-Greek women. Given that men, in general, are more likely to smoke than are women (CDC, 2006b), our finding that sorority members are more frequent smokers than non-sorority members is suggestive of the role of the socialization process in the sororities. This interpretation is tentative, however, given the cross-sectional nature of our data. Regarding sexual behaviors, sorority members in our sample also reported more sexual partners (lifetime, past year, and past 3 months), and did not believe their friends would think condoms are necessary; men in fraternities reported more sexual partners in the past three months. Higher number of sexual partners among sorority and fraternity members may be due to sexual-related attitudes and behaviors associated with Greek culture (e.g., Kalof, 1993; Copenhaver & Grauerholz, 1991). Overall, these data describe a relatively

permissive sexual environment for men and women who belong to Greek organizations; in addition, there is also evidence that women who have been more sexually active in their lifetime may select into this more permissive environment.

Borsari and Carey (1999) suggested that living in Greek housing might enable risky behaviors to a greater extent than living in other types of housing as a result of lack of adult supervision, increased opportunity, increased tolerance, and the protective environment. Our findings do not support this observation. It is unclear to what extent the lack of support is due to our small sample of members living in Greek housing (i.e., 20%) or whether the social network, regardless of living arrangements, has more influence on the health behaviors of students who belong to a fraternity or sorority. Nonetheless, we maintain that Greeks living in designated housing might also benefit from targeted interventions that address both substance use prevention and sexual health promotion. Future research should further examine the potential impact of Greek housing on risky health behaviors.

The findings of this study must be considered in light of its limitations. First, all data were obtained by self-report, and may be biased by the limitations of memory or by the desire to conform to social demands or expectations (Schroder et al., 2003a, 2003b). To minimize such biases and to optimize data quality, we followed published guidelines (Weinhardt et al., 1998) by using a 3-month (or briefer) time interval for count behaviors (because this interval can be reliably recalled), and assured participants that all data were confidential (with their identify kept separate from their data). The limits of self-report are perhaps most apparent when examining the self-report of STDs. As acknowledged earlier, self-report of STDs is not sufficient because several STDs (e.g., *Chlamydia trachomatis*) are typically asymptomatic; therefore, future research will be strengthened by the collection of biological samples to supplement self-report.

Second, we employed a cross-sectional design that cannot address the differential effects of selection and socialization. The data we obtained do not allow us to determine if the students in our sample joined Greek organizations because they sought peers and environments that encouraged high risk behaviors such as alcohol and drug use. Although some evidence of such a self-selection process comes from the data for which we have lifetime measures: Greek students reported higher lifetime levels of drug use and numbers of sexual partners. Other investigators have documented self-selection into the Greek system on the basis of alcohol use during high school (Borsari & Carey, 1999; McCabe et al., 2005). Similarly, it is likely that students can be socialized to engage in riskier behaviors within a relatively permissive Greek environment (Cashin et al., 1998; McCabe et al., 2005; Read et al., 2005). Indeed, longitudinal research reveals that Greek status does not predict post-college drinking (Sher et al., 2001). Such findings support the notion that the risky behaviors engaged in during college years are strongly influenced by environmental norms.

Third, our findings cannot be generalized to all institutions of higher learning. At our university, approximately 20% of students are involved in Greek life. Investigators have documented significant variation among fraternity and sorority houses on dimensions related to risky drinking and sexual behavior (Humphrey & Kahn, 2000; Larimer et al., 1997).

In sum, this study confirms and extends knowledge about health risk behaviors and Greek membership among college students. Greek students self-report engaging in a constellation of risk behaviors consisting of alcohol and drug use, cigarette use, and frequent sexual behavior that may confer more risk of HIV. However, on the dimensions of eating, caffeine use and exercise, Greek students do not differ from the rest of the student body. These findings should help campus administrators to better focus their health promotion efforts for Greek students by considering substance use more broadly than just drinking, and focusing on sexual health.

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Table I

Mean (and Standard Deviation) or Frequency of Past 30 Days Alcohol Use and Smoking Behaviors by Greek Membership

	Overall	Greek	Non-Greek	Test for Differences	d (95% CI)
Alcohol use	4.79 (3.89)	5.53 (3.47)	4.63 (3.95)	$t(1458) = 3.44, p = .003$	0.23 (0.10, 0.37)
Binge drinking	4.63 (4.70)	6.73 (5.20)	4.18 (4.45)	$t(1465) = 8.14, p = .002$	0.56 (0.42, 0.69)
Cigarette Smoking, Frequency				$\chi^2(5) = 18.64, p = .004$	
Never	72%	62%	74%		
Quit	4%	5%	4%		
<1 per month	5%	5%	4%		
Monthly	4%	4%	4%		
Weekly	6%	8%	5%		
Daily	9%	15%	8%		
Non-Smokers vs. Smokers	77%	68%	79%	$\chi^2_2(1) = 14.21, p < .001$	0.33 (0.20, 0.47)
Frequent Smokers vs. Other Smokers	15%	23%	14%	$\chi^2(1) = 14.40, p = .002$	0.38 (0.24, 0.51)
No. of Cigarettes/Day ($n = 356$)[a]	4.85 (5.40)	4.94 (4.57)	4.68 (5.54)	$t(354) = 0.39, ns$	0.05 (−0.30, 0.20)

Note. Exact *p*-values are adjusted using Holm's procedure (Holm, 1979); *ns*, non-significant result based on Holm's procedure; *CI*, confidence interval.

[a] Excludes participants who indicated they had never smoked or quit smoking.

Table II

Frequency of Lifetime Drug and Past 30 Day Drug Use by Greek Membership

Drug	Overall	Greek	Non-Greek	Test for Differences	d (95% CI)
Lifetime Use					
Marijuana	65%	85%	62%	$\chi^2_2(1) = 51.24, p = .002$	0.74 (0.61, 0.88)
Other drug use	48%	65%	44%	$\chi^2(1) = 35.86, p = .002$	0.51 (0.37, 0.65)
Past 30 Days					
Marijuana	40%	57%	36%	$\chi^2_2(1) = 42.53, p = .002$	0.53 (0.40, 0.67)
Other drug use	20%	34%	17%	$\chi^2(1) = 36.61, p = .002$	0.56 (0.42, 0.70)

Note. Exact *p*-values are adjusted using Holm's procedure (Holm, 1979); *CI*, confidence interval.

Table III

Mean (and Standard Deviation) or Frequency of Sexual Behavior and Norms by Greek Membership

	Overall	Greek	Non-Greek	Test for Differences	d (95% CI)
STD diagnosed, lifetime	3%	3%	2.5%	$\chi^2(1) = 0.33$, ns	0.14 (0.01, 0.27)
STD diagnosed	2%	3%	2%	$\chi^2(1) = 2.21$, ns	0.37 (0.24, 0.50)
Always used any form of BC	55%	59%	55%	$\chi^2(1) = 1.24$, ns	−0.11 (−0.26, 0.05)
Always used condom	37%	37%	37%	$\chi^2(1) = 0.01$, ns	0.01 (−0.14, 0.16)
M proportion of unprotected sex acts	0.38 (0.42)	0.41 (0.44)	0.37 (0.42)	$t(837) = 1.12$, ns	0.09 (−0.08, 0.27)
Sexual frequency	11.51 (32.09)	12.53 (21.26)	11.30 (33.89)	$t(1469) = 0.55$, ns	0.04 (−0.10, 0.17)
Sexual partners, lifetime	4.05 (9.61)	5.20 (4.86)	3.82 (10.28)	$t(1308) = 1.93$, ns	0.14 (−0.02, 0.29)
Sexual partners, past year	1.89 (2.49)	2.64 (3.08)	1.66 (2.32)	$t(1287) = 5.34$, $p=.002$	0.40 (0.25, 0.55)
Sexual partners	1.04 (1.32)	1.50 (1.89)	0.95 (1.16)	$t(1333) = 5.77$, $p=.002$	0.42 (0.27, 0.57)
Had sex due to alcohol or drug use	8%	13%	7%	$\chi^2(1) = 12.11$, $p=.003$	0.44 (0.30, 0.57)
Perceived HIV risk	1.38 (0.61)	1.49 (0.66)	1.36 (0.59)	$t(1585) = 3.16$, $p=.003$	0.20 (0.09, 0.32)
Partner would agree to condom use	3.88 (0.46)	3.81 (0.57)	3.89 (0.43)	$t(1342) = -2.58$, ns	0.17 (0.04, 0.31)
Friends think condom use necessary even if on BC	3.41 (0.82)	3.27 (0.92)	3.44 (0.80)	$t(1578) = -3.17$, $p=.003$	0.21 (0.07, 0.34)
Friends use condoms regularly	3.30 (0.97)	3.13 (1.04)	3.34 (0.95)	$t(1582) = -3.19$, $p=.003$	0.22 (0.09, 0.35)

Note. Unless otherwise indicated, behavior assessed over past 3 months. Exact *p*-values are adjusted using Holm's procedure (Holm, 1979); *ns*, non-significant result based on Holm's procedure; CI, confidence interval; STD, sexually transmitted disease; BC, birth control; HIV, human immunodeficiency virus.

Table IV

Mean (and Standard Deviation) or Frequency of Past 30 Day Eating, Physical Activity, and Sleeping Behaviors by Greek Membership

	Overall	Greek	Non-Greek	Test for Differences	d (95% CI)
Eating Behaviors: 3 meals/day (%)				$\chi^2(3) = 1.68$, ns	
Never/Rarely	36%	35%	36%		
1–2 times/week	24%	24%	24%		
>2 times/week	20%	22%	19%		
Nearly everyday	20%	19%	21%		
Number of Caffeinated Beverages	1.66 (2.88)	1.89 (3.54)	1.61 (2.73)	$t(1583) = 1.39$, ns	0.10 (−0.04, 0.23)
Number of hours exercising/week	6.39 (5.83)	6.11 (5.23)	6.45 (5.94)	$t(1224) = -0.74$, ns	−0.06 (−0.21, 0.09)
Vigorous Physical Activity (%)				$\chi^2(4) = 6.66$, ns	
Rarely/Never	15%	13%	15%		
1–2 times/month	15%	13%	16%		
1–2 times/week	26%	33%	25%		
>2 times/week	32%	30%	32%		
Everyday	12%	10%	13%		
Number of hours sleeping/day	7.30 (2.66)	7.94 (2.29)	7.18 (2.71)	$t(1225) = -3.70$, $p=.003$	−0.29 (−0.44, −0.13)

Note. Exact p-values are adjusted using Holm's procedure (Holm, 1979); ns, non-significant result based on Holm's procedure; CI, confidence interval.