Psychology of Addictive Behaviors
2001, Vol. 15, No. 1, 42–51

Copyright 2001 by the Educational Publishing Foundation
0893-164X/01/$5.00 DOI: 10.1037//0893-164X.15.1.42

Short- and Long-Term Effects of Fraternity and Sorority Membership on Heavy Drinking: A Social Norms Perspective

Kenneth J. Sher, Bruce D. Bartholow, and Shivani Nanda
University of Missouri—Columbia and Missouri Alcoholism Research Center

This study sought to determine whether the well-established relation between fraternity/sorority (Greek) membership and heavy alcohol use persists beyond the college years and whether some common third variables might account for the relation between Greek status and heavy drinking. During each of 4 years of college and 1 additional year, young adults ($N = 319$) completed measures of alcohol use, personality, alcohol expectancies, and environmental influences on drinking. Throughout the college years, Greeks consistently drank more heavily than non-Greeks. Statistically controlling for previous alcohol use did not eliminate this effect. However, Greek status did not predict postcollege heavy drinking levels. Also, perceived peer norms for heavy drinking mediated the relation between Greek affiliation and heavy alcohol use. Results are discussed in terms of situational determinants of heavy alcohol involvement in young adults.

Alcohol use and abuse on college campuses has long been a concern among members of the academic community. Recent research findings (e.g., Berkowitz & Perkins, 1986; Presley, Meilman, & Lyerla, 1994; Wechsler, Dowdall, Davenport, & Castillo, 1995; Wechsler & Issac, 1992) and highly publicized alcohol-related accidents and deaths on campuses around the United States have raised the level of this concern considerably. Research efforts directed at understanding the nature and extent of college student drinking indicate a troubling and pervasive pattern. Seven out of eight college students drink (Wechsler & Issac, 1992), and results from a large, nationally representative sample (Wechsler et al., 1995) indicate that 44% of college students engage in binge drinking (i.e., heavy, episodic alcohol consumption), a practice associated with elevated risk for acute health problems, including serious injury and psychological distress (e.g., Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994). It is clear that college alcohol use is a normative practice, but one with the potential for serious health risks, particularly among students engaged in heavier drinking. An important first step in determining intervention strategies for college student problem drinkers is understanding the factors that consistently relate to persistent, problematic levels of alcohol use.

One such factor that has received considerable attention in the literature is affiliation with a Greek letter social organization. Across many studies that have used a variety of research strategies, findings indicate that fraternity and sorority members (Greeks) drink more frequently (e.g., Lo & Globetti, 1995; Werner & Greene, 1992) and more heavily (e.g., Alva, 1998; Cashin, Presley, & Meilman, 1998; Haworth-Hoeppner, Globetti, Stem, & Morasco, 1989; Lo & Globetti, 1995; Prendergast, 1994; Wechsler et al., 1995; Werner & Greene, 1992), show more alcohol dependence symptoms (e.g., Baer, Kivlahan, & Marlatt, 1995), are more likely to initiate and continue abusive alcohol use patterns (e.g., Berkowitz & Perkins, 1986; Lo & Globetti, 1993), and are more likely to experience alcohol-related problems (e.g., Cashin et al., 1998; Engs, Diebold, & Hanson, 1996; Lo & Globetti, 1995) than are nonaffiliated students (non-Greeks). Hence, it is well established that affiliation with the Greek system on college campuses is related to problematic levels of college alcohol use.

Unanswered Questions Concerning Greeks and Alcohol Use

Causation Versus Selection

Several issues related to alcohol involvement in the Greek system have yet to be systematically explored, however. First, it is unclear at present whether joining a fraternity or sorority leads students to drink more than they might otherwise (i.e., a causal effect) or whether students with heavy drinking propensities seek out Greek affiliations once they enter college, perhaps in order to facilitate alcohol involvement or other activities typically associated with fraternity and sorority life, such as partying and socializing (i.e., a selection effect). Prior research on this matter has been inconsistent, with some studies suggesting a causal effect (e.g., Lo & Globetti, 1993; Wechsler et al., 1995) and some finding evidence for a selection effect (e.g., Baer, 1994; O'Connor, Cooper, & Theil, 1996; Werner & Greene, 1992), whereas still other

Kenneth J. Sher, Bruce D. Bartholow, and Shivani Nanda, Department of Psychology, University of Missouri—Columbia, and Missouri Alcoholism Research Center, Columbia, Missouri

Bruce D. Bartholow is now with the Department of Psychology, University of North Carolina at Chapel Hill.

This research was supported by Grants R01 AA7231 and P50 AA11998 from the National Institute on Alcohol Abuse and Alcoholism. Protection of participants' data was secured through a Certificate of Confidentiality from the Department of Health and Human Services. Portions of this research constituted a senior undergraduate honors thesis at the University of Missouri, completed by Shivani Nanda. We acknowledge Kristina Jackson, Wendy Slutske, Phillip K. Wood, and Susan O'Neill for research support and assistance.

Correspondence concerning this article should be addressed to Kenneth J. Sher, Department of Psychology, 200 South Seventh Street, University of Missouri, Columbia, Missouri 65211. Electronic mail may be sent to sherk@missouri.edu.

studies have found evidence for both effects (e.g., Baer et al., 1995; Lo & Globetti, 1995). Lo and Globetti (1993) found that among students who entered college as nondrinkers (i.e., reported no alcohol use during their senior year of high school), those who joined a fraternity or sorority were two to three times as likely to begin drinking during the first year of college than those who did not affiliate with the Greek system, suggesting a causal influence. Interpretation of these data is unclear, however. High school abstainers who become Greeks may decide ahead of time to drink on matriculation to college and may join a fraternity or sorority to facilitate that decision. In a subsequent study, Lo and Globetti (1995) found that both Greek and non-Greek students increased their drinking levels in college compared to high school. However, Greek students in their study were more likely to have been binge drinkers in high school and to have a history of alcohol-related problems in high school.

Duration of Effects

Another issue that has received too little attention in the literature is whether the effects of Greek involvement on alcohol use are limited to the college years. It may be, for example, that members of fraternities and sororities are likely to not only drink more during college than their nonaffiliated peers but also to continue this pattern of heavier use beyond the college years. If the Greek system serves mainly to facilitate a desire to initiate or maintain a pattern of heavier alcohol use (i.e., a selection effect), one might expect Greeks to continue their patterns of heavy use after college. On the other hand, if the effects are short-term, situationally bound, or both, students in Greek organizations should be likely to reduce their drinking to the (more moderate) level of their nonaffiliated peers once they leave campus. This might especially be the case if membership in a Greek organization has an acute, causal effect on increased alcohol use, perhaps driven by higher alcohol use norms, social pressures in fraternities and sororities, or greater alcohol availability in the Greek environment (e.g., Cashin et al., 1998; Kuh & Arnold, 1993). To date, the duration of the effects of Greek involvement during the college years on young adults' alcohol use has not been examined.

Importance of Third Variables

Two distinct issues related to third-variable explanations of the Greek–alcohol use relation have not been examined in the literature. First, certain background or personality factors may predispose some individuals to affiliate with the Greek system (i.e., Greek status may be a proxy for underlying temperament or background factors related to selection effects). The literature suggests that certain personality or individual-difference factors may relate to both heavy alcohol use and a propensity to become Greek. High scores on measures of extraversion/sociability may relate to excessive alcohol use (e.g., Kilbey, Downey, & Breslau, 1998; Sieber, 1981), although findings have been mixed (see Sher, Trull, Bartholow, & Vieth, 1999). Also, traits related to impulsivity/disinhibition consistently and strongly relate to alcohol and other substance use (see Sher et al., 1999). We are unaware of any research relating Greek membership with personality factors. Nevertheless, examination of such factors as potentially important confounds of the Greek–alcohol use relation is useful.

Incoming academic ability also may serve as a selection factor for joining a fraternity or sorority. Some findings suggest that Greek membership is negatively related to cognitive outcomes of higher education, such as reading comprehension, mathematics, critical thinking, and academic achievement (e.g., Pascarella, Whitt, Nora, & Edison, 1996; Terenzini, Pascarella, & Blimling, 1996; Wood, Sher, Erickson, & DeBord, 1997). However, it is unclear whether academic problems associated with Greek affiliation, heavy alcohol use, or both, are a consequence of or a precursor to the college environment. That is, students with a history of poor academic achievement may be likely to drink heavily in college and may join fraternities and sororities to facilitate a drinking lifestyle. If so, entering levels of academic ability may partially confound the relation between Greek membership and heavy drinking.

In addition to potential background or temperament factors, certain contemporaneous variables may account for (i.e., mediate) both heavy drinking and Greek affiliation. For example, perceived peer norms are extremely important in determining collegiate drinking in general (e.g., Baer, Stacy, & Larimer, 1991; Berkowitz & Perkins, 1986; Collins, Parks, & Marlatt, 1985) and among Greek members in particular (e.g., Baer, 1994; Cashin et al., 1998; Larimer, Irvine, Kilmer, & Marlatt, 1997). Baer (1994) reported that Greek members rated a number of drinking norms as more extreme than nonmembers and that these beliefs existed before entry into college. This finding suggests that perceived peer norms may be important in determining both alcohol use and Greek affiliation.

Finally, alcohol outcome expectancies consistently have been linked to alcohol use among college students in general (e.g., Sher, Wood, Wood, & Raskin, 1996; Wood, Nagoshi, & Dennis, 1992) and Greek members specifically (e.g., Alva, 1998; Werner & Greene, 1992). Findings consistently indicate that students with the most positive expectations regarding the benefits of drinking (e.g., that drinking makes one smarter or more attractive) also are likely to engage in the heaviest drinking patterns. If such students also join fraternities and sororities in disproportionate numbers, then controlling for the effects of expectancies may reduce or eliminate the relation between Greek membership and alcohol use.

Methodological Limitations in the Extant Literature

A shortcoming of the majority of studies in this literature is the cross-sectional nature of their research designs. Most studies that have investigated Greek membership and alcohol involvement have used research strategies in which these variables are correlated at a single point in time, usually during the first or second year of college (e.g., Alva, 1998; Haworth-Hoeppner et al., 1989; O'Connor et al., 1996; Werner & Greene, 1992). Some studies also have used retrospective designs in which, for example, college freshmen are asked to recall their high school drinking or alcohol-related problems (e.g., Lo & Globetti, 1995). Cross-sectional and retrospective designs are unable to resolve issues related to the causal precedence of variables related to alcohol use and are not particularly informative as to whether Greek membership effects are short or long term. In contrast, prospective research designs are ideal for addressing causal precedence in such studies (see Sher & Trull, 1994; Sher et al., 1999) and can be useful for understanding the duration of Greek membership effects on drinking. However,

extant prospective studies are limited in terms of their ability to address issues related to duration of effects and third-variable alternative explanations. For example, Baer et al. (1995) used a prospective design to track the changing nature of alcohol use among students between their senior year of high school and freshman year in college as well as whether students became Greeks. However, these authors did not examine potential mediators of the relation between Greek membership and alcohol use, and their study did not include any multiyear follow-up assessments that might have provided data bearing on the duration of Greek membership effects. In the current study we used a multiyear, longitudinal study design that allowed us to track the alcohol use of Greek and non-Greek students over the course of the college years and at 3 years postcollege.

Summary and Overview

We adopted four goals for this study, all of which represent important advances in this literature. First, we sought to determine whether membership in a fraternity or sorority has long-term implications for young adults' alcohol use or whether the effects are short-lived and disappear once students leave the campus environment. To address this issue we examined the nature of the Greek–heavy drinking relation throughout the college years and extended this analysis to a single time point at 3 years postcollege. Second, we were interested in determining the magnitude of prospective effects of Greek membership on heavy drinking while controlling for baseline heavy drinking. Without controlling for baseline levels, it becomes difficult to determine whether any prospective effects of Greek involvement are due simply to the influence of prior drinking (i.e., autoregressivity; see Sher & Wood, 1997). Third, we were interested in examining several potential third variables (personality factors, academic ability, perceptions of peer norms, and alcohol outcome expectancies) that may account for the effects of Greek membership on heavy drinking. Finally, we were interested in addressing whether membership in a Greek organization may be a causal factor leading to increased student drinking or whether heavy drinkers disproportionately self-select into the Greek system.

Method

Participants and Procedure

Baseline screening. An extended description of participant ascertainment and recruitment was provided by Sher, Walitzer, Wood, and Brent (1991). All incoming, first-time freshman (N = 3,944) at a large Midwestern university were contacted as potential participants in a longitudinal study of health behaviors. Approximately 80% (N = 3,156) agreed to participate, and those students were screened for the presence of alcoholism in biological parents using versions of the Short Michigan Alcoholism Screening Test (SMAST; Selzer, Vinokur, & van Rooijen, 1975) adapted for assessing alcoholism in biological fathers (F-SMAST) and biological mothers (M-SMAST; Crews & Sher, 1992). Approximately 26% (n = 808) of participants in the screening were tentatively classified as either family history positive (FH+) or family history negative (FH–) on the basis of their SMAST scores (the remainder had SMAST scores that did not clearly identify them as either positive or negative for family history and were not assessed further). Portions of the Family History–Research Diagnostic Criteria interview (FH–RDC; Endicott, Andreason, & Spitzer, 1978) were administered to 97% of FH+ participants (n = 362). A random sample of FH– participants (n = 435) also were targeted for FH–RDC interviews; 95% (n = 413) completed interviews. Participants whose biological fathers met both F-SMAST and FH–RDC criteria for alcoholism then were classified as FH+s, and participants whose first-degree relatives did not meet either F-SMAST or FH–RDC for alcoholism, drug abuse, or antisocial personality disorder, and whose second-degree relatives did not meet FH–DRC criteria for alcohol or drug abuse, were classified as FH–s. Because of a very low base rate, participants whose biological mothers but not fathers were alcoholic were not retained for further study (n = 20). Participants also were excluded because of inconsistency between SMAST scores and FH–RDC interviews (n = 154) and because of concern for possible substance use disorder and antisocial personality disorder in relatives of our FH– participants (n = 33). The sample targeted for further study (n = 489) was composed of roughly equal numbers of male and female offspring of alcoholics and controls (ns ranging from 113 to 134). The mean age of this sample (at screening) was 18.2 years, and most participants (94%) were White.

Participants were assessed at baseline (Year 1) when they were freshmen, at three subsequent yearly intervals (Years 2, 3, and 4, corresponding to the sophomore, junior, and senior years of college), and again 3 years later at Year 7. For each annual assessment in which they took part participants received either course credit (if enrolled in introductory psychology) or were paid $25 (at Years 1–4) or $75 (at Year 7), plus additional stipends for travel to the testing location.

Present study sample. Although efforts were made to assess all participants from the initial baseline sample (described previously; n = 489) at each year of the study, not all participants were retained. By Year 7, individuals who refused further participation (n = 29), whom we were unable to locate (n = 2), or who were deceased (n = 1) were no longer in the data set. The remaining sample size at Year 7, therefore, was 457 (93% of participants targeted for follow-up). Because of participant relocation away from the area, some were interviewed by telephone and mailed a questionnaire. By Year 7, 27% of participants were assessed in this way. In addition, for the purposes of this study, participants were excluded from the sample if they were not continuously enrolled at a college or university as full-time students throughout the first 4 years of the study (n = 170; 57% were men, 41% were Greek while in school). As a result, the final sample on whom all analyses for the current study are based consisted of 319 participants.[1] The mean age of the sample at Year 7 was 24.5 years.

[1] It is important to note that restricting our analyses to continuously enrolled students may introduce a conservative bias into our data; that is, if we assume that alcohol involvement is related to attrition from the university (e.g., Andreason, 1992; Wood, Sher, & McGowan, 2000) and is associated with Greek affiliation, then omitting students who leave the university may eliminate Greek students with the highest levels of alcohol use. Nevertheless, we used this strategy because it would be difficult to make accurate claims regarding the influence of Greek membership on college and postcollege drinking with attriters in the sample. Ancillary analyses conducted on the entire sample (N = 489) indicated that including participants who left the university does not change the nature of our conclusions. In the present sample Greeks, women, and individuals with higher ACT scores and high school class ranks were more likely to persist in college for 4 years. Attrition was associated with alcohol or drug abuse problems; high scores on personality dimensions, such as EPQ-Psychoticism and TPQ-NS (both measures of behavioral disinhibition); and family history of alcoholism. Some measures used in these ancillary analyses (e.g., high school class rank, ACT scores, alcohol use disorder diagnoses) were taken from the larger study database and are not described in this study. Full descriptions of these measures may be obtained from Kenneth J. Sher.

Measures

Fraternity/sorority affiliation. At each assessment, participants indicated their degree of affiliation with a fraternity or sorority. During Years 1–4 of the study participants indicated whether they were an active member (0), a little sister or houseboy (1), a nonmember who frequently associated with members (e.g., regular attendance at fraternity parties; 2), a nonmember who occasionally associated with members (3), or not at all affiliated (4). For the purposes of this study responses were recoded such that responses of 0 or 1 during Years 1–4 indicated membership in a fraternity or sorority (Greek) and responses of 3 or 4 indicated nonmembership in Greek organizations (non-Greek). In addition, we created a lifetime Greek membership variable by coding participants who responded with a 0 or 1 during any of the first 4 years as Greeks. This variable was used in the analyses of Year 7 data to indicate Greek involvement during the college years. Frequencies of participants in the Greek and non-Greek categories for each year of the study, including lifetime Greek status, are shown in Table 1.

Table 1
Mean Levels of Heavy Drinking, Bivariate Correlations, and Numbers of Participants as a Function of Study Year, Greek Membership, and Sex

Year of study, sex, & Greek status	*M*	*SD*	*r*
Year 1			
Male			
Greek (n = 52)	0.93	0.88	.08
Non-Greek (n = 83)	0.56	0.89	
Female			
Greek (n = 86)	0.73	0.73	.14*
Non-Greek (n = 98)	0.40	0.66	
Year 2			
Male			
Greek (n = 60)	1.13	1.14	.28**
Non-Greek (n = 75)	0.58	0.68	
Female			
Greek (n = 98)	0.64	0.75	.20**
Non-Greek (n = 85)	0.31	0.40	
Year 3			
Male			
Greek (n = 60)	1.13	1.19	.31**
Non-Greek (n = 75)	0.54	0.70	
Female			
Greek (n = 80)	0.61	0.78	.13
Non-Greek (n = 104)	0.35	0.54	
Year 4			
Male			
Greek (n = 57)	1.10	1.12	.34**
Non-Greek (n = 78)	0.62	0.66	
Female			
Greek (n = 65)	0.49	0.58	.02
Non-Greek (n = 119)	0.27	0.44	
Year 7[a]			
Male			
Greek (n = 79)	0.64	0.66	.05
Non-Greek (n = 56)	0.57	0.83	
Female			
Greek (n = 125)	0.34	0.15	.22**
Non-Greek (n = 59)	0.15	0.24	

Note. Means are unadjusted for sex. See text for analyses of mean differences. Correlations are between Greek status and the heavy alcohol use measure.
[a] The Greek status variable used at Year 7 is lifetime status (ever a Greek member during college).
* $p < .05$. ** $p < .01$.

Demographics. Sex (coded male = 0, female = 1), ethnicity, and family history of alcoholism were determined at Year 1. Age was determined at each year.

Alcohol use. Participants estimated their alcohol involvement during the previous 30 days and also during the past year. Heavy alcohol involvement was assessed by obtaining per-week estimates for the number of times participants had gotten high from alcohol, the number of times participants had gotten drunk, and the number of occasions on which participants had engaged in heavy drinking, based on the past month. For this study we created a heavy drinking composite variable (HEAVY) by calculating the mean of the heavy alcohol involvement items (α = .87).[2]

Peer norms. Perceptions of norms regarding peer alcohol use were assessed with six items (α = .89) related to how one's friends feel about drinking, number of close friends who drink, the amount that close friends drink, and so on. In addition, peer support for heavy drinking was assessed with three items related to perceptions of how close friends feel about getting drunk (α = .87).

Alcohol expectancies. Forty-four items measuring positive expectations regarding the positive outcomes of alcohol use were used to assess alcohol expectancies. Previous factor analytic work (Sher et al., 1996) identified four subscales: Tension Reduction (9 items, α = .89), Social Lubrication (8 items, α = .88), Activity Enhancement (9 items, α = .85), and Performance Enhancement (9 items, α = .81). This study focused on the Social Lubrication subscale, because the items may be most closely related to the college drinking experience and social motives. Sample items include "Drinking makes me feel less shy," and "Drinking helps me fit in better with people."

Extraversion. At Year 1 participants completed the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1975), which consists of 90 items designed to assess the personality traits of Extraversion, Neuroticism, and Psychoticism. In this study the Extraversion subscale (EPQ-E; α = .83) served as a measure of extraversion/sociability.

Novelty seeking. At Year 1 participants also completed the Tridimensional Personality Questionnaire (TPQ; Cloninger, 1987), which consists of 98 items designed to assess the personality traits of Novelty Seeking, Harm Avoidance, and Reward Dependence. The Novelty Seeking subscale (TPQ-NS) may be considered a measure of impulsivity/disinhibition (see Sher et al., 1999). In the current sample coefficient alpha for TPQ-NS was .80.

Academic ability. We determined baseline levels of academic ability by creating a composite variable consisting of ACT Math and English subtest scores, high school class rank, and Year 1 scores on the Similarities and Vocabulary subtests of the Wechsler Adult Intelligence Scale—Revised (WAIS–R; Wechsler, 1981). Coefficient alpha for this academic composite variable was .74.

Results

Analytic Approach

We took several approaches to examine the goals set forth for this study. First, we examined the nature of the relation between Greek membership and heavy drinking both cross-sectionally (using bivariate correlations and regression models) and prospectively (using regression models, controlling for baseline levels of alcohol

[2] Although the focus of this article is on heavy drinking, we also conducted a set of analyses similar to those we report here, using other indicators of alcohol use, such as drinking quantity and frequency estimates and the separate variables that comprise the heavy drinking composite measure. The patterns of findings for these other analyses are highly similar to those for the heavy drinking composite variable. These analyses may be obtained from Kenneth J. Sher.

use) at each year of the study. These analyses address the short- and long-term effects of Greek status on alcohol involvement. Second, we used the series of regression analyses suggested by Baron and Kenny (1986) to test for possible third-variable explanations of the Greek–alcohol use relation. Finally, to examine possible selection effects in our data, we used logistic regression models to predict Greek membership at later years from Year 1 heavy drinking among a subset of participants who were non-Greeks at Year 1 but who later joined a fraternity or sorority.

Overall Trends

Bivariate correlations. Table 1 presents simple bivariate correlations between Greek status and our measure of heavy alcohol use at each year of the study as a function of sex. Among men, heavy drinking and Greek status were largely unrelated in both the first year of college (Year 1) and 3 years after college (Year 7). However, during Years 2–4 heavy drinking was greater among Greek men than among non-Greek men. The pattern of relations appears rather different for the women in our sample. As opposed to men, Greek women reported more heavy drinking than non-Greek women in Year 1. At Year 2, the patterns were similar for Greek men and Greek women. Also in contrast to the men, no significant relation was evident between Greek status and heavy drinking among women at Year 3 and Year 4. It is interesting that at Year 7 women who had ever been Greeks appeared to engage in more alcohol use than women who were never Greeks. Taken together, these findings are suggestive of a sex difference in the origination and duration of Greek effects on heavy drinking. However, we present below a more probing test of this pattern of effects using cross-sectional and prospective regression analyses, controlling for baseline levels of alcohol use.

Mean differences over time. Mean levels of heavy drinking at each year as a function of Greek status and sex also are presented in Table 1. To assess change in alcohol use over time, we analyzed these means with a 2 (Greek status) × 2 (Sex) × 5 (Years) repeated measures analysis of variance (ANOVA).[3] Main effects of Greek status and sex were significant, indicating that overall, levels of heavy drinking were higher for Greeks than for non-Greeks, $F(1, 301) = 24.34$, $p < .01$, and that men drank more heavily than women, $F(1, 301) = 27.32$, $p < .01$. The Greek × Sex interaction was not significant, $F(1, 301) = 1.39$, $p > .20$. Mean levels of heavy drinking decreased significantly over time, $F(4, 1204) = 8.47$, $p < .01$ ($F[1, 301] = 27.72$, $p < .01$, for linear trend). A significant Greek × Year interaction also was evident, $F(4, 1204) = 3.11$, $p < .05$. The difference in heavy drinking between Greeks and non-Greeks remained fairly steady throughout the college years ($ps < .01$ during Years 1–4) and was no longer reliable by Year 7 ($p > .05$). The decrease in alcohol use between the college years and Year 7 was greater among Greeks than among non-Greeks, $F(1, 301) = 4.74$, $p < .05$.

As a more focused approach to estimating the contemporaneous effects of Greek involvement on alcohol use we modeled this relation at each year along with the effects of sex and the Greek × Sex interaction using a series of linear regression equations. It is important that, for analyses of Years 2, 3, 4, and 7, we also included baseline (Year 1) heavy drinking in these models to control for autoregressivity. These analyses are presented in Table 2. Two main patterns are discernable with respect to Greek status and sex. First, men generally engaged in heavier drinking than women at each year of the study. Second, Greeks generally drank more heavily than non-Greeks during Years 1 and 2, but this pattern was moderated by sex during Years 3 and 4. During these later years, Greek men engaged in heavier drinking than their non-Greek peers, but Greek status did not significantly influence heavy drinking among women. The most unique finding in Table 2 is that when baseline levels of alcohol use were controlled, lifetime Greek status was not significantly related to heavy drinking during Year 7 for men or women. This finding is in contrast to the bivariate correlations presented in Table 1, which suggest a potential sex difference in the effects of Greek status on heavy drinking during Year 7 and indicate that Greek effects may importantly depend on modeling autoregressivity in alcohol use variables.

Table 2
Cross-Sectional Regression Analyses Relating Greek Membership and Heavy Drinking at Each Year

	Heavy drinking	
Year and variable	β	R^2
Year 1		.02*
Greek	.11*	
Sex	−.12**	
Controlling for baseline heavy drinking		
Year 2		.33**
Baseline	.49**	
Greek	.17**	
Sex	−.17**	
Year 3		.26**
Baseline	.42**	
Greek	.23**/.05	
Sex	−.16**	
Year 4		.36**
Baseline	.48**	
Greek	.21**/−.06	
Sex	−.26**	
Year 7		.20**
Baseline	.35**	
Greek	.04	
Sex	−.25**	

Note. R^2 values are adjusted. Greek status was coded 1 = Greek, −1 = non-Greek. Greek status variable used at Year 7 is lifetime status (ever a Greek member during college). For each equation in which the Greek × Sex interaction was significant, the effects of Greek status are presented separately as β for men/β for women.
* $p < .05$. ** $p < .01$.

[3] Given that our interest in these ANOVAs was to examine mean differences between participants who had ever been Greeks and those who had not, the Greek status variable we used was lifetime Greek status (ever having been Greek at any point during Years 1–4). It is important to note that use of this strategy might underestimate the specific effects of Greek involvement among participants who were affiliated with the Greek system for only a short time. To address this issue, we conducted ancillary analyses in which Greek status at each of the college years was used instead of lifetime Greek status, and these produced highly similar results to those we report.

Prospective Associations

To examine the stability of the Greek–heavy drinking relation over time we constructed regression models predicting heavy drinking from Greek status assessed the year before, controlling for sex, the Greek × Sex interaction, and baseline (Year 1) alcohol involvement (see Table 3). Greek status was generally a reliable predictor of future heavy drinking within the college years. Year 1 Greek status was a reliable predictor of heavy drinking at Year 2, and the same general pattern held in predicting Year 4 heavy drinking from Year 3 Greek status. In contrast, having been a Greek at Year 2 was not significantly related to heavy drinking at Year 3. As with the cross-sectional analyses presented in Table 2, the most notable finding in Table 3 appears to be the lack of prediction afforded by Year 4 Greek status for Year 7 heavy drinking. In other words, having been Greek during the fourth year of college did not significantly affect heavy drinking 3 years later.

Potential Third-Variable Explanations

Two distinct questions were asked with respect to third-variable explanations. First, do peer norms, expectancies, or both, mediate the relation between Greek status and heavy drinking, and second, is Greek status a proxy for underlying temperament or background variables, such as extraversion/sociability, impulsivity/disinhibition, or academic ability, that might have been related to self-selection into a Greek organization? To examine potential third-variable explanations of the link between Greek status and heavy drinking, we adopted the mediational analytic strategy suggested by Baron and Kenny (1986). Accordingly, we estimated three regression equations for each potential third variable: First, the presumed mediators/confounders (peer alcohol use norms, expectancies, personality dimensions, academic ability) were regressed onto Greek status; second, level of heavy drinking was regressed onto Greek status; and third, heavy drinking was regressed onto both Greek status and each third variable together. If in the third equation the presumed mediator/confounder is significantly associated with heavy drinking, and if the effect of Greek status is eliminated or reduced (relative to the effect in the second equation), a third-variable explanation (mediation) is established. We estimated these equations both cross-sectionally and prospectively (Year 1 Greek status and mediators predicting Year 2 heavy drinking). These results are presented separately below. In keeping with our other analyses, we also controlled for sex (and baseline alcohol use for prospective tests) in our third-variable models.

Table 3
Prospective Regression Analyses Predicting Later Heavy Drinking From Greek Status the Previous Year, Controlling for Baseline Heavy Drinking

	Heavy drinking	
Time span	β	R^2
Year 1–Year 2		.33*
Baseline heavy drinking	.50**	
Greek	.12*	
Sex	−.24**	
Year 2–Year 3		.24**
Baseline heavy drinking	.44**	
Greek	.09	
Sex	−.16**	
Year 3–Year 4		.37**
Baseline heavy drinking	.48**	
Greek	.21**/.12	
Sex	−.34**	
Year 4–Year 7		.19**
Baseline heavy drinking	.35**	
Greek	.01	
Sex	−.24**	

Note. R^2 values are adjusted. Greek status is coded 1 = Greek, −1 = non-Greek. Greek status variable used at Year 7 is lifetime status (ever a Greek member during college). For the equation in which the Greek × Sex interaction was significant (Year 3 to Year 4), the effects of Greek status are presented separately as β for men/β for women.
* $p < .05$. ** $p < .01$.

Cross-sectional models. Tables 4 and 5 present the results of the regression equations used to examine cross-sectional mediation. In the first set of equations all hypothesized potential mediators were significantly predicted from Greek status, with the exception of alcohol expectancies (EXP; see Table 4). As such, all of these significantly associated variables were "eligible" to be tested as mediators/confounders in the third set of equations. As shown in Table 2, heavy drinking was associated with Greek status. Table 5 presents the results of the third, critical equations testing each of the eligible third variables. The clearest evidence for mediation is found for the variables related to perceptions of peer alcohol use and peer support of heavy drinking. Both of these variables completely mediated the relation between Greek status and heavy drinking at Years 1 and 4. In addition, the peer variables reduced (but did not eliminate) Greek effects on heavy drinking in Years 2 and 3 (compared to betas presented in Table 2), indicating partial mediation. Effect sizes associated with these peer variables are large, indicating a substantial influence even when effects related to sex and Greek status were controlled. In contrast, none of the background factors accounted for a significant portion of the relation between Greek status and heavy drinking.

Prospective models. We examined several prospective third-variable models in which heavy drinking at Years 2–4 was predicted from Greek status and third variables measured at the immediately preceding year (i.e., Years 1–3), controlling for sex and baseline heavy drinking. As was demonstrated, Greek status was associated with each potential third variable cross-sectionally (see Table 4). Note that EXP was significantly associated with Greek status only during Year 2 and, as such, can be tested as a mediator only during that year. Also as previously shown, Greek status was prospectively associated with heavy drinking (see Table 3). According to the analytic scheme of Baron and Kenny (1986), the critical third step for determining a prospective third-variable explanation involves the prediction of heavy drinking from Greek status and each potential mediator measured the year before. These relations are presented in Table 6. Examination of Table 6 indicates that none of the potential third variables we examined totally mediated the Greek–heavy drinking relation prospectively. However, both peer alcohol variables partially mediated this relation prospectively at Year 4; that is, the effect of Year 3 Greek status on Year 4 heavy drinking was reduced from $\beta = .16, p < .01$ (for men and women combined), to $\beta = .10, p < .05$, when either peer alcohol use or peer support of heavy drinking were included in the model.

Table 4
Cross-Sectional Regression Equations Predicting Background/Temperament Factors and Potential Mediators From Greek Status and Sex

Year of study, Greek status, and sex	Background/temperament factors (measured at Year 1 only)			Potential mediators (measured at each year)		
	ACAD	TPQ-NS	EPQ-E	EXP	Peer alc	Peer heavy
Year 1						
Greek	−.09*	.12*	.17**	.09	.21**	.20**
Sex	−.01	−.03	.06	−.11*	−.24**	−.24**
Year 2						
Greek				.11*	.21**	.19**
Sex				−.14**	−.22**	−.23**
Year 3						
Greek				.03	.21**	.21**
Sex				−.08	−.24**	−.26**
Year 4						
Greek				.06	.23**	.21**
Sex				−.15**	−.29**	−.31**

Note. Cell values are standardized regression coefficients (βs). Separate regression equations were estimated for each outcome of interest (i.e., β values were taken from individual analyses for each equation). ACAD = composite academic ability; TPQ-NS = Tridimensional Personality Questionnaire–Novelty Seeking; EPQ-E = Eysenck Personality Questionnaire–Extraversion; EXP = alcohol expectancies; Peer alc = perceived peer alcohol involvement; Peer heavy = peer support of heavy drinking.
* $p < .05$. ** $p < .01$.

Multivariate consideration of all third variables together. To examine which third variables are most important to the Greek–heavy drinking relation when other influences are controlled we constructed a set of models in which all background and confounding variables and potential mediators were included simultaneously at Year 1. We constructed these models using the same three-step analytic scheme as those already described, except that the final step included all potential third variables together. The results of this model differed from the univariate model presented in Table 5 in that both TPQ-NS ($\beta = .10$, $p < .05$) and entering academic ability ($\beta = -.08$, $p < .05$) emerged as significant background factors that confound the Greek–heavy drinking relation. Similar to the univariate model, peer norms had a significant mediating influence ($\beta = .38$, $p < .01$), and EPQ-E had little effect ($\beta = .06$, $p > .10$). The effect of Greek status on heavy drinking was reduced to nonsignificance ($\beta = .02$, $p > .50$) in the multivariate model. We also tested a prospective multivariate model in which all Year 1 third variables were simultaneously entered into the third step of a regression analysis predicting Year 2 heavy drinking. This model produced findings very similar to those presented in Table 6; that is, even with all third variables entered together, the prospective effect of Greek status on heavy drinking was not eliminated.

Testing for Selection Effects

Given that data collection for this study began after participants had begun their freshman year of college, we have no data regarding participants' precollege drinking habits. Furthermore, fraternity and sorority pledgeship began early in the fall term of the freshman year, and students who were pledging Greek organizations already had been exposed to the Greek environment at the time of assessment. Therefore, testing for selection effects in this study was restricted to an analysis of a subsample of participants who did not join a fraternity or sorority during the freshman year but did so in a subsequent year. As such, our ability to examine whether students with a history of heavy drinking patterns seek out Greek membership was limited with respect to sample size and potential biases associated with being a late attriter.

Nevertheless, we addressed this question by constructing a logistic regression equation in which new Greek membership in Years 2–4 was predicted from Year 1 heavy drinking. We created a new variable to identify participants who were not Greeks at Year 1 but who joined a fraternity or sorority during Years 2–4 ($n = 66$). This analysis showed that Year 1 heavy drinking did not significantly predict new Greek membership at later years. However, a nonsignificant trend (standardized coefficient = .11, $p < .12$) suggested that heavy alcohol involvement at Year 1 may be related to later Greek membership in a larger sample.

Discussion

The most important and unique finding to emerge from this study is that the often-cited relation between Greek membership and heavy drinking in college (e.g., Alva, 1998; Cashin et al., 1998; Haworth-Hoeppner et al., 1989; Lo & Globetti, 1995; Prendergast, 1994; Wechsler et al., 1995; Werner & Greene, 1992) does not appear to have long-term consequences for Greek mem-

Table 5
Cross-Sectional Regression Equations Predicting Heavy Drinking From Significantly Associated Background/Temperament Factors and Potential Mediators

Background factors & potential mediators	Year 1	Year 2	Year 3	Year 4
Background factor				
Greek	.13**			
ACAD	−.18**			
Greek	.11*			
TPQ-NS	.29**			
Greek	.11*			
EPQ-E	.19**			
Potential mediators				
Greek	—	.16**	—	—
EXP	—	.24**	—	—
Greek	**.04**	.10*	.11*	**.02**
Peer alc	.50**	.43**	.42**	.52**
Greek	**.04**	.10*	.11*	**.02**
Peer heavy	.50**	.44**	.42**	.54**

Note. Cell values are standardized regression coefficients (βs). Separate regression equations were estimated for each outcome of interest (i.e., β values were taken from individual analyses for each equation). Coefficients in boldface type indicate totally mediated effects. ACAD = composite academic ability; TPQ-NS = Tridimensional Personality Questionnaire–Novelty Seeking; EPQ-E = Eysenck Personality Questionnaire–Extraversion; EXP = alcohol expectancies; Peer alc = perceived peer alcohol involvement; Peer heavy = peer support of heavy drinking. Cells in which a dash appears could not be estimated because the Greek status was not significantly related to EXP in the analysis presented in Table 4.
* $p < .05$. ** $p < .01$.

Table 6
Prospective Prediction of Heavy Drinking From Prior Year Greek Status and Third Variables, Controlling for Sex

	Year 2		Year 3		
Year 1	Heavy	Mediator	Heavy	Mediator	Year 4: Heavy
Mediator					
Greek	—	Greek	.15**	Greek	—
EXP	—	EXP	.17**	EXP	—
Greek	.10*	Greek	.09*	Greek	.10*
Peer alc	.38**	Peer alc	.35**	Peer alc	.46**
Greek	.11*	Greek	.09*	Greek	.10*
Peer heavy	.38**	Peer heavy	.36**	Peer heavy	.47**
Background factor					
Greek	.17**				
ACAD	−.15**				
Greek	.15**				
TPQ-NS	.23**				
Greek	.16**				
EPQ-E	.15**				

Note. Cell values are standardized regression coefficients (βs). Separate regression equations were estimated for each outcome of interest (i.e., β values were taken from individual analyses for each equation). Heavy = heavy drinking composite; EXP = alcohol expectancies; Peer alc = perceived peer alcohol involvement; Peer heavy = peer support of heavy drinking; ACAD = composite academic ability; TPQ-NS = Novelty Seeking; EPQ-E = Extraversion. Cells containing a dash (—) could not be estimated because the predictor (Greek status) was not significantly related to the criterion (EXP).
* $p < .05$. ** $p < .01$.

bers. Our analyses consistently indicated that Greeks drank more heavily than non-Greeks during the college years but that this difference was no longer apparent 3 years after college.

In addition, our examination of potential third-variable explanations showed that peer alcohol use norms at least partially account for the relation between Greek membership and heavy drinking. Our analyses showed little evidence for the influence of other potential third-variable explanations suggested in the literature, such as alcohol outcome expectancies, temperament dimensions (extraversion/sociability and impulsivity/disinhibition), and incoming academic ability, although some support for the influence of TPQ-NS and entering academic ability was found in our multivariate model. To our knowledge, these data are the first to show that any third-variable explanation of the Greek–alcohol use relation is plausible. Whereas other studies have demonstrated that alcohol use norms among Greeks tend to be higher than those for non-Greeks (e.g., Baer, 1994), formal tests of mediation involving peer norms previously have not been reported. Prior research has shown that college students' alcohol use norms are biased in that college students tend to believe that their peers (close friends or others with whom they share housing) drink more than they do themselves (e.g., Baer et al., 1991). It is interesting to note that of the groups in Baer et al.'s (1991) study, only fraternity house residents (but not dormitory residents or sorority house residents) perceived that their own level of drinking was comparable to that of the average university student. Taken together, the current findings and those of Baer et al. strongly indicate that all college students, but particularly fraternity members, would benefit from educational programs designed to counter faulty beliefs about normative drinking levels on campus. Such programs have proven to be effective in reducing adolescent and young adult tobacco use (see Chassin, Presson, & Sherman, 1995; Viswesvaran & Schmidt, 1992).

Although not conclusive, these findings suggest that the Greek system provides a social environment that facilitates a heavy drinking lifestyle among its members. Previous research documents the importance of the social environment in determining the drinking behavior of young adults. Specifically, perceptions of peer norms related to alcohol use appear to be especially important environmental influences on college student drinking (e.g., Baer et al., 1991; Berkowitz & Perkins, 1986; Collins et al., 1985). The findings of this study, as well as those of others (e.g., Baer, 1994) indicate that Greeks are consistently more inclined than non-Greeks to believe that higher levels of alcohol use are normative and that their peers are more supportive of heavy drinking practices such as binge drinking. However, once Greek members leave the campus they are presumably no longer immersed in a social environment that supports heavy drinking, and in turn their alcohol involvement appears to decrease. Further evidence for the importance of peer norms is provided by our examination of potential third variables. Peer norms not only were significantly related to Greek membership, but they also largely accounted for the Greek–heavy drinking relation, particularly at Years 1 and 4.

The current findings also speak to the larger issue of the influence of the social context on college student drinking. We argue that fraternity and sorority houses are social environments that encourage heavy drinking. Another important question is whether other social environments have a similar effect on heavy drinking, regardless of students' Greek status. In one interesting study addressing this question, Smeaton, Josiam, and Dietrich (1998) surveyed 783 college students on spring break and asked about their alcohol use. According to the authors, over the last 40 years, spring break has developed into a ritual for American college students that typically involves normative heavy drinking. As such, students likely perceive that the social context in which spring break activities take place is associated with elevated drinking norms. The spring break drinking data reported by Smeaton et al. indicate that alcohol use was extremely high among the students in their sample (e.g., men averaged 18 drinks per day, women averaged 10 drinks per day) but that fraternity/sorority membership was not significantly associated with higher levels of consumption. In addition, students who reported being motivated to visit the particular destination because of beliefs about its "party" reputation reported more drinking than did other students. These findings support our argument by demonstrating that a social context in which drinking norms are very high leads to increased alcohol use among college students; that is, college students, when immersed in an environment that supports or encourages heavy drinking—such as a spring break location or a fraternity house—are likely to drink more heavily than they might otherwise. Once removed from such a situation, however, drinking levels appear likely to decrease, particularly as young adults adopt more traditional post-collegiate roles, such as full-time employment and marriage (Jessor, Donovan, & Costa, 1991).

This study produced several other important findings for the literature linking college student alcohol involvement and affilia-

tion with fraternities and sororities. First, our data suggest that heavy drinking patterns may differ for Greek men and women across the college years and that controlling for autoregressivity was especially important for accurately specifying sex differences. The simple bivariate correlations presented in Table 1 suggest that Greek status was related to heavy drinking among women but not among men at Years 1 and 7. However, controlling for baseline drinking eliminated the effects of Greek status on Year 7 alcohol use for both men and women and revealed that Greek status was possibly more predictive of alcohol use for men than for women during the college years. More generally, our findings demonstrated that Greek membership remained an important correlate of college alcohol involvement even when the effects of prior alcohol use were controlled. This finding represents an advance for the literature in that prior studies have not specifically tested the Greek–alcohol use relation while modeling autoregressivity in alcohol data. Controlling for autoregressivity provides a more conservative estimate of the effects of Greek membership as well as a more complete account of the influences on college student drinking.

In addition, the longitudinal nature of our study design provided us with a unique opportunity to examine prospectively the influence of Greek membership on alcohol use. Even when controlling for baseline levels of alcohol use Greek status significantly predicted heavy drinking prospectively, particularly in Years 2 and 4. However, it is important to note that the prospective relation involving Year 3 heavy drinking was reduced relative to the cross-sectional relation, suggesting that this effect is a function of an earlier (Year 1) association between Greek membership and alcohol use. Nevertheless, that Greek membership was significantly associated with future heavy drinking even when controlling for prior drinking is rather impressive.

Evidence for a selection effect—that students with a history of heavy drinking prior to college may self-select into the Greek system—was not apparent in our data, although a suggestive trend was evident. In our sample, students who were not Greeks during Year 1 but subsequently became Greeks later in college exhibited somewhat elevated levels of Year 1 heavy drinking compared to those who remained non-Greeks throughout college. As mentioned previously, we believe that our test was less than optimal given our lack of precollege drinking data and low power to detect this effect (only 66 participants became Greeks after Year 1). Evidence for a selection effect also could be suggested if certain background or temperament variables could be shown to account for the Greek–alcohol use relation during Year 1. None of the Year 1 background variables (TPQ-NS, EPQ-E, and academic ability) emerged as significant confounders of the Greek–alcohol use relation, however. As such, the weight of the evidence in this study suggests that Greek membership is a likely cause of heavy alcohol use among college students and that neither temperament nor prior academic ability significantly account for this relation. Future research should be directed at assessing the alcohol use patterns of students in high school and relating these prospectively with Greek affiliation and alcohol use during college.

The present results suggest that perceptions of heavy drinking norms in the Greek system are largely responsible for the prevalence of heavy drinking among fraternity and sorority members. College alcohol use intervention policies might profit from a focus on peer norms re-education, particularly among fraternity and sorority members. Greek students perceive their peers to be highly supportive of a heavy drinking lifestyle and appear to drink more heavily as a result of this perception (also see Baer, 1994). Fortunately for members of the Greek community, the present findings indicate that persistent heavy drinking in college does not generally lead to increased alcohol use later in life. The decrease to more moderate drinking levels in the years after college is likely a result of moving away from a social environment in which heavy drinking is perceived to be normative and encouraged. It is important to point out that considerable variability exists across Greek organizations in terms of their social activities and focus. As such, our simple classification of participants as either Greek or non-Greek may mask some important differences within the Greek system. Future research would benefit from a more fine-grained analysis of individual fraternity and sorority organizations.

References

Alva, S. A. (1998). Self-reported alcohol use of college fraternity and sorority members. *Journal of College Student Development, 39*, 3–10.

Andreason, D. (1992). *Breaking the tradition on college campuses: Reducing drug and alcohol misuse.* Fairfax, VA: George Mason University, Center for Health Promotion.

Baer, J. (1994). Effects of college residence on perceived norms for alcohol consumption: An examination of the first year of college. *Psychology of Addictive Behaviors, 8*, 43–50.

Baer, J. S., Kivlahan, D. R., & Marlatt, G. A. (1995). High-risk drinking across the transition from high school to college. *Alcoholism: Clinical and Experimental Research, 19*, 54–61.

Baer, J. S., Stacy, A., & Larimer, M. (1991). Biases in the perception of drinking norms among college students. *Journal of Studies on Alcohol, 52*, 580–586.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173–1182.

Berkowitz, A. D., & Perkins, H. W. (1986). Problem drinking among college students: A review of recent research. *Journal of American College Health, 35*, 21–28.

Cashin, J. R., Presley, C. A., & Meilman, P. W. (1998). Alcohol use in the Greek system: Follow the leader? *Journal of Studies on Alcohol, 59*, 63–70.

Chassin, L., Presson, C. C., & Sherman, S. J. (1995). Social psychological antecedents and consequences of adolescent tobacco use. In J. L. Wallander & L. J. Seigel (Eds.), *Adolescent health problems: Behavioral perspectives: Advances in pediatric psychology* (pp. 141–159). New York: Guilford Press.

Cloninger, C. R. (1987). *Tridimensional Personality Questionnaire, Version 4.* Unpublished manuscript.

Collins, R. L., Parks, G. A., & Marlatt, G. A. (1985). Social determinants of alcohol consumption: The effects of social interaction and model status on the self-administration of alcohol. *Journal of Consulting and Clinical Psychology, 53*, 189–200.

Crews, T. M., & Sher, K. J. (1992). Using adapted short MASTs for assessing parental alcoholism: Reliability and validity. *Alcoholism: Clinical and Experimental Research, 16*, 576–584.

Endicott, J., Andreason, N., & Spitzer, R. L. (1978). *Family History–Research Diagnostic Criteria (FH–RDC).* Washington, DC: National Institute of Mental Health.

Engs, R. C., Diebold, B. A., & Hanson, D. J. (1996). The drinking patterns and problems of a national sample of college students, 1994. *Journal of Alcohol and Drug Education, 41*, 13–33.

Eysenck, H. J., & Eysenck, S. B. G. (1975). *Manual of the Eysenck*

Personality Questionnaire. San Diego, CA: Educational and Industrial Testing Services.

Haworth-Hoeppner, S., Globetti, G., Stem, J., & Morasco, F. (1989). The quantity and frequency of drinking among undergraduates at a southern university. *International Journal of the Addictions, 24*, 829–857.

Jessor, R., Donovan, J. E., & Costa, F. M. (1991). *Beyond adolescence*. New York: Cambridge University Press.

Kilbey, M. M., Downey, K., & Breslau, N. (1998). Predicting the emergence and persistence of alcohol dependence in young adults: The role of expectancy and other risk factors. *Experimental and Clinical Psychopharmacology, 6*, 149–156.

Kuh, G. D., & Arnold, J. C. (1993). Liquid bonding: A cultural analysis of the role of alcohol in fraternity pledgeship. *Journal of College Student Development, 34*, 327–334.

Larimer, M. E., Irvine, D. L., Kilmer, J. R., & Marlatt, A. G. (1997). College drinking and the Greek system: Examining the role of perceived norms for high-risk behavior. *Journal of College Student Development, 38*, 587–598.

Lo, C. C., & Globetti, G. (1993). A partial analysis of the campus influence on drinking behavior: Students who enter college as nondrinkers. *Journal of Drug Issues, 23*, 715–725.

Lo, C. C., & Globetti, G. (1995). The facilitating and enhancing roles Greek associations play in college drinking. *International Journal of the Addictions, 30*, 1311–1322.

O'Connor, R. M., Cooper, S. E., & Thiel, W. S. (1996). Alcohol use as a predictor of potential fraternity membership. *Journal of College Student Development, 37*, 669–675.

Pascarella, E. T., Whitt, E. J., Nora, A., & Edison, M. (1996). What have we learned from the first year of the National Study on Student Learning? *Journal of College Student Development, 37*, 182–192.

Prendergast, M. L. (1994). Substance use and abuse among college students: A review of recent literature. *Journal of American College Health, 43*, 99–113.

Presley, C. A., Meilman, P. A., & Lyerla, R. (1994). Development of the Core Alcohol and Drug Survey: Initial findings and future directions. *Journal of American College Health, 42*, 248–255.

Selzer, M., Vinokur, A., & van Rooijen, L. (1975). A self-administered Short Michigan Alcoholism Screening Test (SMAST). *Journal of Studies on Alcohol, 36*, 117–126.

Sher, K. J., & Trull, T. J. (1994). Personality and disinhibitory psychopathology: Alcoholism and antisocial personality disorder. *Journal of Abnormal Psychology, 103*, 92–102.

Sher, K. J., Trull, T. J., Bartholow, B. D., & Vieth, A. (1999). Personality and alcoholism: Issues, methods, and etiological processes. In K. E. Leonard & H. T. Blane (Eds.), *Psychological theories of drinking and alcoholism* (2nd ed., pp. 54–105). New York: Guilford Press.

Sher, K. J., Walitzer, K. S., Wood, P. K., & Brent, E. E. (1991). Characteristics of children of alcoholics: Putative risk factors, substance use and abuse, and psychopathology. *Journal of Abnormal Psychology, 100*, 427–448.

Sher, K. J., & Wood, P. K. (1997). Methodological issues in conducting prospective research on alcohol-related behavior: A report from the field. In K. Bryant, K. Windle, & S. G. West (Eds.), *The science of prevention: Methodological advances from alcohol and substance abuse research* (pp. 3–41). Washington, DC: American Psychological Association.

Sher, K. J., Wood, M. D., Wood, P. K., & Raskin, G. (1996). Alcohol outcome expectancies and alcohol use: A latent variable cross-lagged panel study. *Journal of Abnormal Psychology, 105*, 561–574.

Sieber, M. F. (1981). Personality scores and licit and illicit substance use. *Personality and Individual Differences, 2*, 235–241.

Smeaton, G. L., Josiam, B. M., & Dietrich, U. C. (1998). College students' binge drinking at a beach-front destination during spring break. *Journal of American College Health, 46*, 247–254.

Terenzini, P., Pascarella, E. T., & Blimling, G. S. (1996). Students' out-of-class experiences and their influence on learning and cognitive development: A literature review. *Journal of College Student Development, 37*, 149–162.

Viswesvaran, C., & Schmidt, F. L. (1992). A meta-analytic comparison of the effectiveness of smoking cessation methods. *Journal of Applied Psychology, 77*, 554–561.

Wechsler, D. (1981). *Wechsler Adult Intelligence Scale—Revised*. New York: Psychological Corporation.

Wechsler, H., Davenport, A., Dowdall, G. W., Moeykens, B., & Castillo, S. (1994). Health and behavioral consequences of binge drinking in college: A national survey of adolescents at 140 campuses. *Journal of the American Medical Association, 272*, 1672–1677.

Wechsler, H., Dowdall, G., Davenport, A., & Castillo, S. (1995). Correlates of college student binge drinking. *American Journal of Public Health, 85*, 921–926.

Wechsler, H., & Issac, N. (1992). "Binge" drinkers at Massachusetts colleges: Prevalence, drinking styles, time trends, and associated problems. *Journal of the American Medical Association, 267*, 2929–2931.

Werner, M. J., & Greene, J. W. (1992). Problem drinking among college freshmen. *Journal of Adolescent Health, 13*, 487–492.

Wood, M. D., Nagoshi, C. T., & Dennis, D. A. (1992). Alcohol norms and expectations as predictors of alcohol use and problems in a college student sample. *American Journal of Drug and Alcohol Abuse, 18*, 461–476.

Wood, M. D., Sher, K. J., & McGowan, A. K. (2000). Collegiate alcohol involvement and role attainment in early adulthood: Findings from a prospective high-risk study. *Journal of Studies on Alcohol, 61*, 278–289.

Wood, P. K., Sher, K. J., Erickson, D. J., & DeBord, K. A. (1997). Predicting academic problems in college from freshman alcohol involvement. *Journal of Studies on Alcohol, 58*, 200–210.

Received October 20, 1999
Revision received March 6, 2000
Accepted March 6, 2000 ■