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Predicting Drinking Behavior and Alcohol-Related Problems Among Fraternity and Sorority Members: Examining the Role of Descriptive and Injunctive Norms

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Abstract

The authors examined the relation between Greek students' perceptions of alcohol consumption in their pledge classes (descriptive norms) and acceptability of drinking (injunctive norms) and the ability of these normative influences to predict drinking behavior, alcohol-related negative consequences, and symptoms of alcohol dependence concurrently and prospectively over 1 year. Participants were 279 men and 303 women recruited from incoming pledge classes of 12 fraternities and 6 sororities, who completed measures of descriptive and injunctive norms, alcohol use, and consequences. Results revealed that descriptive norms significantly predicted concurrent drinking. After controlling for baseline drinking, injunctive norms significantly predicted drinking 1 year later and predicted alcohol-related consequences and dependency symptoms at baseline and follow-up. The potential to incorporate injunctive norms into preventive interventions is discussed.

Excessive use of alcohol is a significant public health threat, with a disproportionate impact on morbidity and mortality of adolescents and young adults in the United States (Grant, 1997; Grant et al., 1994; National Institute on Alcohol Abuse and Alcoholism, 1997). Among individuals ages 18 to 24, approximately 11% meet *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 1994) diagnostic criteria for alcohol dependence (Grant, 1997). In addition, excessive use of alcohol is related to substantial harm among this age group, including accidents & injuries (National Institute on Alcohol Abuse and Alcoholism, 1997); unsafe or unwanted sexual experiences (Abbey, McAuslan, & Ross, 1998; Larimer, Lydum, Anderson, & Turner, 1999); academic failure (Presley, Meilman, & Cashin, 1996; Wechsler, Dowdall, Maenner, Gledhill-Hoyt, & Lee, 1998); and potential exacerbation of comorbid mental health conditions, such as depression, eating disorders, and anxiety disorders (Dunn, Larimer, & Neighbors, 2002; Geisner et al., 2004). Research indicates that college student populations are at particular risk for heavy episodic drinking and alcohol-related harm (Johnston, O'Malley, & Bachman, 1999; Schulenberg & Maggs, 2000; Wechsler, Molnar, Davenport, & Baer, 1999), with members

of Greek letter organizations (fraternities and sororities) at even greater risk (Alva, 1998; Borsari & Carey, 1999; Cashin, Presley, & Meilman, 1998; Meilman, Leichter, & Presley, 1999; Wechsler, Kuh, & Davenport, 1996). It is interesting that the correlation between drinking quantity and frequency and alcohol-related negative consequences in this population rarely exceeds .6, suggesting that substantial variance in the experience of alcohol problems on college campuses cannot be explained by drinking behavior alone (Larimer et al., 2001; Turner, Larimer, & Sarason, 2000).

Paradoxically, despite the higher overall rates of drinking and alcohol-related problems among college populations, research consistently indicates that most college students drink moderately or not at all most of the time (Meilman, Presley, & Cashin, 1997). Nonetheless, the majority of research (see Wechsler & Kuo, 2000, for an exception) also indicates that most college students misperceive the rates at which their peers drink, leading to a consistent overestimation of the amount and frequency of drinking on college campuses (Baer & Carney, 1993; Baer, Stacy, & Larimer, 1991; Borsari & Carey, 2001, 2003; Fabiano, McKinney, Bates, Trimble, & Pearson, 1993, 1996; Prentice & Miller, 1993; Wood, Nagoshi, & Dennis, 1992). This misperception of the *descriptive norm* (i.e., misperceiving the actual behavior of others) has been shown to be related to one's own drinking behavior (Baer et al., 1991; Perkins, Meilman, Leichter, Cashin, & Presley, 1999; Reis & Riley, 2000) and has been suggested to be predictive of one's future drinking behavior (Sher, Bartholow, & Nanda, 2001), although little research has evaluated the role of normative perceptions using longitudinal data. Theoretical support for the position that perceived and misperceived descriptive norms are important determinants of individual behavior can be found in social learning theory (Bandura, 1986) as well as social comparison theory (Festinger, 1954) and problem behavior theory (Donovan, Jessor, & Jessor, 1983). These theories suggest that an individual's behavior is influenced by both observation and perception of the behavior of others in their social group or network. Thus, there is considerable support for the contention that descriptive norms, and perception or misperception of these norms, might have an important influence on the drinking behavior of college students.

On the basis of this research, several prevention programs using normative feedback and correction and emphasizing the accuracy of descriptive norms have evolved. This *social norms* approach has been used as a stand-alone prevention technique using mass media (Haines, 1996; Johannessen, Collins, Mils-Novoa, & Glider, 1999; Perkins, 1997) as well as in individual and small-group interventions, either alone or in combination with other prevention strategies (Barnett, Far, Mauss, & Miller, 1996; Borsari & Carey, 2000; Larimer et al., 2001; Marlatt et al., 1998; Marlatt, Baer, & Larimer, 1995; Peeler, Far, Miller, & Brigham, 2000). The available literature suggests that correcting misperceptions of the descriptive norm is associated with significant decreases in drinking on college campuses (Agostinelli, Brown, & Miller, 1995; Borsari & Carey, 2000; Haines, 1996; Johannessen et al., 1999; Schroeder & Prentice, 1998; Steffian, 1999). Other studies, however, have shown little or no effect of this approach (Carter & Kahnweiler, 2000; Wechsler et al., 2003; Werch et al., 2000), and there is no consensus as to the efficacy of the approach on the broad scale (Keeling, 1999; Wechsler et al., 2003).

In particular, critics have argued that this approach is not suited to high-risk subpopulations such as the Greek system, for at least three reasons. First, research has indicated that, in some of the heaviest drinking fraternities, members in fact accurately estimate the normative drinking patterns of their fellow members and thus there is no misperception to correct (Larimer, Irvine, Kilmer, & Marlatt, 1997). Next, it has been argued that even when there is a misperception of the descriptive norm, the actual normative drinking behavior is nonetheless extremely risky, and thus no "healthy" norm exists toward which to re-educate

the students (Carter & Kahnweiler, 2000). Finally, it has been argued that using campus-wide or general norms (which are indeed healthier) is unlikely to influence the behavior of Greek members, who already view themselves as different from the general campus population (Carter & Kahnweiler, 2000). Indeed, Greek members have been found to be less responsive to these types of interventions in at least two studies (Barnett et al., 1996; Carter & Kahnweiler, 2000).

These studies appear to support the critics of the social norms approach, at least in regard to Greek system alcohol prevention; however, it is possible that the limited impact of these interventions is not due to the lack of potential efficacy of social norms approaches but rather that these efforts have tended to focus on descriptive norms while ignoring or underemphasizing other important types of normative influences on college campuses. Specifically, *injunctive* norms (the behaviors and attitudes that are judged to be acceptable, expected, or correct within a social system; Cialdini, Reno, & Kallgren, 1990) also have been shown to have an important relationship to drinking and other health behaviors of individuals (Berkowitz, 1997; Berkowitz & Perkins, 1986; Perkins & Berkowitz, 1986; Perkins & Wechsler, 1996; Trockel, Williams, & Reis, 2003; see Borsari & Carey, 2001, 2003, for reviews), and many of these have been shown to be subject to the same types of misperceptions encountered with descriptive norms (Berkowitz, 1997; Borsari & Carey, 2003; Larimer et al., 1997; Perkins, 2002; Perkins & Wechsler, 1996).

Injunctive norms are an important component of the *theory of planned behavior* (Ajzen, 1991) and are presumed to combine with attitude and perceived behavioral control to predict behavioral intention and, ultimately, behavior. Injunctive norms have been suggested to be most influential within close social networks with high group identity (Trafimow & Finlay, 1996), characteristics common to Greek organizations (Arnold & Kuh, 1992). In such settings, social approval is particularly important for maintaining group membership and cohesion, and thus individuals may be strongly motivated to adhere to injunctive norms. Specific to alcohol use in Greek organizations, prior research indicates that members of heavier drinking Greek organizations perceive alcohol use and heavy drinking to be more acceptable than do members of lighter drinking organizations (Goodwin, 1989; Larimer et al., 1997), and they view alcohol use as more important to their house social reputation and popularity than do members of lighter drinking populations (Larimer et al., 1997). Even within these organizations, however, the *perceived* injunctive norm (what students think other members of their organization believe to be acceptable) is more permissive than the actual personal beliefs (*true* injunctive norm) of organization members (Larimer et al., 1997). These findings suggest that both descriptive and injunctive norms may be important in predicting drinking among Greek members.

Despite the body of research addressing both descriptive norms and injunctive norms in the college drinking literature, surprisingly little research has directly evaluated both descriptive and injunctive norms in relation to drinking behavior. There is, however, considerable theoretical and empirical support within other areas of health and social behavior to justify such research. For example, although some researchers have hypothesized that both descriptive and injunctive norms tap the same underlying construct of peer pressure (Fishbein, 1993), a growing body of research suggests that these two types of normative perceptions often independently predict behavior (Cialdini et al., 1990; Conner, Martin, Silverdale, & Grogan, 1996; Conner & McMillan, 1999; Grube, Morgan, & McGree, 1986; Larimer & Neighbors, 2003; Reno, Cialdini, & Kallgren, 1993; Trockel et al., 2003). In addition, research has suggested that, depending on the behavior in question and the circumstances under which the norm is evoked, either injunctive or descriptive norms may be more influential in predicting behavior. For example, several researchers (e.g., Godin & Kok, 1996) have suggested that injunctive norms are relatively weak predictors of socially

sanctioned behaviors (e.g., alcohol use) compared with descriptive norms. In contrast, Cialdini and his colleagues (Cialdini et al., 1990; Reno et al., 1993) have suggested that when relevant norms are made salient through focusing attention on the norm injunctive norms have a much broader and more enduring range of effects on behavior than do descriptive norms. This may make injunctive norms particularly influential within fraternity and sorority environments, given the strong focus on unity and identification with the house (Arnold & Kuh, 1992; Larimer et al., 1997), which may lead to increased salience of injunctive norms as a means of maintaining social approval (Terry & Hogg, 1996; Trafimow & Finlay, 1996).

Only two studies in the published literature that combined injunctive and descriptive norms in predicting drinking were conducted in a Greek population. Both studies operationalized injunctive and descriptive norms idiosyncratically, which limits the ability to directly compare findings. Larimer et al. (1997) described differences in perceived descriptive and injunctive norms between Greek organizations with reputations for light, moderate, and heavy alcohol use in a cross-sectional study but did not evaluate the predictive relationship of these two normative constructs on alcohol use behavior or consequences. Sher et al. (2001) evaluated prospectively both injunctive and descriptive norms in a Greek sample and found that both were related to drinking behavior. However, descriptive and injunctive norms were not completely disentangled in the measures used in the study, as the injunctive norm measure included a descriptive norms item.

In addition to the paucity of research on the relative or combined influence of descriptive and injunctive norms on behavior, particularly in fraternity and sorority populations, relatively little research has evaluated whether alcohol-related normative perceptions (either descriptive or injunctive) might have a broader influence on behaviors beyond drinking per se. Specifically, very few published studies have evaluated the relationship between normative perceptions (either descriptive or injunctive) and alcohol-related negative consequences among college students above and beyond the influence of drinking behavior alone (Clapp & McDonnell, 2000; Wood et al., 1992; Wood, Read, Palfai, & Stevenson, 2001). Clapp and McDonnell (2000) used a cross-sectional design and included only drinking frequency and a single descriptive norm item as predictors of concurrent alcohol problems. Wood et al. (1992) used more comprehensive measures of both alcohol use and alcohol problems but evaluated only injunctive norms as predictors of concurrent negative consequences. More recently, Wood et al. (2001) extended this research to include both descriptive and injunctive norms, again using a cross-sectional design, and found that injunctive norms were related to both alcohol use and to alcohol problems controlling for use, whereas descriptive norms were related to use but not to problems (consistent with Cialdini et al.'s [1990] work demonstrating the broader behavioral impact of salient injunctive norms). It is unfortunate that in this research the injunctive-norms measure (which although labeled as a *social modeling* construct primarily included items regarding what others would view as appropriate behavior) also incorporated a descriptive-norms item (friend's alcohol use), again not allowing for the complete disentangling of these constructs. These findings highlight both the importance of evaluating these constructs independently and some of the confusion in terminology, operational definitions, and assessment that have hampered the field in moving forward in this important area (Borsari & Carey, 2003).

In the research reported in this article we attempted to address some of these gaps in the literature by evaluating fraternity and sorority members' perceptions of the quantity and frequency of alcohol consumption in their houses (descriptive norms) and at the same time their perceptions of the acceptability of drinking and heavy drinking (injunctive norms). We examined concurrently and prospectively, over the course of 1 year, the contribution of descriptive norms and the additional simultaneous but unique contribution of injunctive

norms in the prediction of problem drinking behavior, alcohol-related consequences, and symptoms of physical dependence.

Method

Participants

Participants were recruited from the incoming pledge classes of 28 fraternities and 17 sororities at a large West coast university as part of a larger study investigating the effectiveness of alcohol-based intervention programs in Greek letter organizations described elsewhere (Larimer et al., 2001). Presidents of each house received written and phone requests to participate in a 5-year study evaluating the effectiveness of an alcohol education program. Twenty-one fraternities and 8 sororities (65% of the total) expressed an interest in the study. During the first year, 12 fraternities and 6 sororities were randomly selected to participate. During the second year, 2 additional sororities were recruited, to increase sample size.

Individual pledge class (first-year) members were enrolled in the study using a staggered baseline procedure. During Year 1, pledge members were recruited by posters, personal letters, and announcements made during house dinners and meetings. During Year 2, a new cohort of pledge class members was recruited from the same fraternities and sororities using similar forms of solicitation.

Both years of study enrollment were combined into a single baseline reflecting the first year of participation for each student. Out of 836 potential pledge class members, 279 men and 303 women (69.6% combined) chose to participate at baseline. The resulting baseline sample of 582 participants reported a mean age of 18.57 ($SD = 0.79$) years. The sample was 84.9% Caucasian, 10.2% Asian/Pacific Islander, 1.7% Hispanic, 0.9% Native American, and 0.3% African American. The remaining 2.1% of participants did not identify an ethnicity. This demographic distribution was representative of the Greek population on the campus.

Procedure

During Year 1, individual pledge class participants of Greek study houses completed a baseline packet of questionnaires that included an assessment of current drinking rates, perceived drinking norms for pledge class members, and perceptions of the house-wide acceptability of drinking and drinking consequences. During Year 2, new pledge members of the same Greek houses and of two newly recruited sororities also completed the baseline packet.

All study participants were asked to fill out a 1-year follow-up assessment packet that included questionnaires addressing the typical frequency and quantity of alcohol use, the prevalence of alcohol-related consequences, and symptoms of alcohol dependence. Pledge class members from houses recruited during Year 1 completed the follow-up at Year 2. Participants recruited during Year 2 completed the follow-up at Year 3. Participants received \$20 at each assessment. All measures and procedures were reviewed and approved by the institutional human subjects review board.

Measures

Measures in the baseline assessment packet included the following instruments.

Daily Drinking Questionnaire (DDQ)—The DDQ (Collins, Parks, & Marlatt, 1985) measures the quantity and frequency of alcohol use by asking students to estimate the typical number of drinks consumed on each day of the week, averaged over the previous 3

months. Average total drinks per week (baseline drinking) was calculated as the sum of the total number of drinks reported. Previous research has demonstrated that this scale is highly correlated with other measures of self-reported alcohol consumption (Kivlahan, Marlatt, Fromme, Coppel, & Williams, 1990).

Drinking Norms Rating Form—The Drinking Norms Rating Form (Baer et al., 1991) evaluates individual perceived norms of alcohol use. Students are asked to estimate the typical number of drinks consumed on each day of the week, averaged over the previous 3 months, for other members of their pledge class. Similar to the DDQ, an aggregate score reflecting the total number of drinks reported was created. The Drinking Norms Rating Form has been used to highlight extremity biases in ratings of group norms and to demonstrate that perceptions of drinking are related to personal drinking patterns (Baer, Stacy, & Marlatt, 1988; Baer et al., 1991).

House Acceptability Questionnaire—The House Acceptability Questionnaire (Larimer, 1992) measures perceptions of the acceptability within one's fraternity or sorority of engaging in a variety of behaviors, including alcohol use, high-risk alcohol use, sexual activity, and high-risk sexual activity. Students were asked to rate the acceptability of 10 behaviors using a Likert-type scale ranging from 1 (*not acceptable*) to 7 (*very acceptable*). For the purposes of this study, responses the four drinking-related items: "Becoming intoxicated at a party," "Missing a class because you are intoxicated or hung over," "Deciding not to drink," and "Becoming intoxicated on a weeknight" were averaged to create a drinking acceptability total score (with the third question reverse scored). Items regarding acceptability of alcohol use have demonstrated construct validity by virtue of their correlation with self-reported drinking rates in previously reported studies (Goodwin, 1989; Larimer et al., 1997). Internal consistency in the current sample is acceptable ($\alpha = .75$).

Measures included in the follow-up assessment packet included the following.

The DDQ was again administered at the follow-up to determine average total drinks per week (follow-up drinking).

Rutgers Alcohol Problem Index—The Rutgers Alcohol Problem Index (White & Labouvie, 1989) evaluates the frequency and severity of alcohol-related problems. Students were asked to indicate the occurrence of 23 items representing alcohol's role in personal, social, and academic functioning over the past year using a 5-point Likert-type scale ranging from 0 (*never*) to 4 (*more than ten times*). A summary score reflecting the total number of different problems endorsed was created for each student. This scale has been shown to discriminate between clinical and normal samples of adolescent drinkers (White & Labouvie, 1989).

Alcohol Dependence Scale—The Alcohol Dependence Scale (Skinner & Horn, 1984) assesses symptoms of physical dependence on alcohol. Students were asked to indicate the occurrence of 29 dependence-related items. This scale has been noted for its ability to identify people exhibiting lower levels of dependency (Skinner & Allen, 1982). The Alcohol Dependence Scale (ADS) had demonstrated validity (Ross, Gavin, & Skinner, 1990) and high internal consistency ($\alpha = .90$) in our sample.

Results

Baseline Drinking Rates, Comparability of Cohorts, and Follow-Up Attrition

At baseline, pledge class members reported consuming an average of 12.14 ($SD = 11.21$) drinks in a typical week. No significant differences in baseline drinking were observed

between the cohorts recruited in Years 1 and 2. Out of the combined sample of 582 fraternity and sorority members (279 men and 303 women), a total of 406 (69.8%) completed 1-year follow-up assessments (204 men and 202 women). An analysis of variance comparing students who completed the follow-up assessment with those who did not revealed no significant differences in typical drinks per week at baseline.

Gender Differences on Study Variables

Greek college students differed significantly by gender on several study variables. Standard deviations are in parentheses. Male students reported a higher average number of drinks per week at baseline, 16.42 (12.72) versus 8.25 (7.84), $F(1, 590) = 87.81, p < .001$; and at the 1-year follow-up, 16.05 (14.18) versus 7.52 (9.45), $F(1, 404) = 50.29, p < .001$; higher descriptive norms at baseline (perceptions of perceived pledge class drinking rates), 22.36 (11.38) versus 14.47 (7.05), $F(1, 576) = 102.15, p < .001$; more alcohol-related consequences at baseline, 6.83 (5.22) versus 4.66 (4.74), $F(1, 580) = 27.46, p < .001$; and at the 1-year follow-up, 5.95 (5.45) versus 4.92 (4.82), $F(1, 403) = 4.06, p < .05$; and more symptoms of alcohol dependence at baseline, 8.56 (5.49) versus 6.55 (4.98), $F(1, 566) = 21.07, p < .001$; and at the 1-year follow-up, 8.30 (5.84) versus 6.27 (5.06), $F(1, 401) = 13.83, p < .001$. Greek students did not differ on injunctive norms (perceptions of house acceptability of drinking) at baseline.

Correlations Among Variables

Pearson correlations among all dependent and independent variables are presented in Table 1. Injunctive and descriptive norm scales correlate significantly but modestly, suggesting the measures reflect related but distinct constructs. Both correlate positively with all measures of alcohol use and problems.

Primary Analyses

Our primary focus was to examine the relationship of descriptive (perceived pledge class drinking) and injunctive (house acceptability of drinking) normative influences to alcohol use and problems during concurrent and prospective time periods. We conducted a total of six hierarchical multiple regression analyses to achieve this goal. The first analysis explored the relationship between baseline normative influences and concurrent drinking. The next two examined concurrent alcohol-related consequences and symptoms of physical dependence as outcome measures. Three additional analyses explored the relationship between normative influences and 1-year follow-up rates of drinking, alcohol-related consequences, and symptoms of physical dependence. Several main effects variables, including intervention status and gender, were entered first in the equation to control for their influence (Cohen & Cohen, 1983). We controlled for the influence of baseline drinking in our analyses of concurrent and prospective negative consequences, concurrent and prospective physical dependence, and prospective drinking. Descriptive and injunctive norms were entered individually on successive steps. This order of entry not only provided us with estimates of the unique variance predicted by each variable but also provided a highly conservative test of injunctive norms, so that we could evaluate whether adding injunctive norms would improve our ability to predict and (potentially) intervene with adverse drinking outcomes. Two-way interactions were entered after all main effects to examine the potential moderating effects of gender in these analyses. Differences between male and female students in the relationship between baseline drinking, injunctive norms, descriptive norms and each of the outcome measures were explored. The gender variable was dummy coded. All nondichotomous independent variables were centered to facilitate interpretation of interaction effects (Aiken & West, 1991). Individual predictors were considered significant only if they demonstrated a significant association with outcome

variables (beta values) and explained additional variance in the multivariate model (significant incremental variance for their associated step).

Perceived Norms and Concurrent Drinking, Alcohol-Related Consequences, and Symptoms of Physical Dependence

Greek students' perceptions of descriptive norms significantly predicted concurrent drinking at baseline. Descriptive norms accounted for 14% of the variance, $F_{\text{change}}(1, 567) = 106.85$, $p < .001$ (see Table 2). Participants' perceptions of injunctive norms significantly predicted concurrent alcohol-related consequences, accounting for 2% of the variance after controlling for intervention status, gender, baseline drinking, and descriptive norms, $F_{\text{change}}(1, 565) = 15.96$, $p < .001$ (see Table 3). Greek students' perceptions of injunctive norms also significantly predicted concurrent symptoms of physical dependency, accounting for 5% of the variance with identical control variables, $F_{\text{change}}(1, 552) = 40.30$, $p < .001$ (see Table 3). In both instances, Greek students' perceptions of the acceptability of drinking predicted concurrent use-related consequences and symptoms of physical dependency above and beyond the influence of actual reported drinking. Greek students' perceptions of descriptive norms (perceived pledge class drinking) did not significantly predict either concurrent outcome.

Several concurrent interaction effects were also significant. The Gender \times Baseline Drinking interaction significantly predicted concurrent alcohol-related consequences, $F_{\text{change}}(1, 564) = 5.50$, $p < .05$. To explore the form of this interaction, we constructed separate regression equations for each gender representing the relationship between baseline drinking and concurrent alcohol-related consequences. The relationship was slightly stronger (i.e., the regression line was steeper) for female students ($\beta = .44$ vs. $\beta = .39$). A second interaction was also significant. The Gender \times Perceived Pledge Class Drinking interaction significantly predicted concurrent symptoms of physical dependence, $F_{\text{change}}(1, 550) = 5.32$, $p < .05$. We again constructed separate regression equations for each gender representing the relationship between perceived pledge class drinking and concurrent symptoms of physical dependence. The relationship was stronger for male students ($\beta = .34$ vs. $\beta = .12$). Additional analyses in which we included only those baseline participants who completed follow-up surveys produced substantively identical results, which are not reported here.

Perceived Norms and Follow-Up Drinking, Alcohol-Related Consequences, and Symptoms of Physical Dependence

After controlling for baseline drinking, Greek students' perceptions of injunctive norms significantly predicted drinking at the 1-year follow-up, accounting for 2% of the variance, $F_{\text{change}}(1, 392) = 7.04$, $p < .01$ (see Table 3). Descriptive norms did not predict drinking at follow-up. Similar to baseline analyses, Greek students' perceptions of injunctive norms did significantly predict both alcohol-related consequences and symptoms of dependence, accounting for 2%, $F_{\text{change}}(1, 394) = 9.55$, $p < .01$, and 2%, $F_{\text{change}}(1, 392) = 9.86$, $p < .01$, respectively, of the variance at follow-up, after controlling for intervention status, gender, baseline drinking, and descriptive norms. In both cases, Greek students' perceptions of the acceptability of heavy drinking (injunctive norms) predicted use-related consequences and symptoms of physical dependency at follow-up above and beyond the influence of actual reported drinking. Greek students' perceptions of descriptive norms did not significantly predict either follow-up outcome.

Results from interaction analyses conducted on 1-year follow-up variables also mirrored those found at baseline. The Gender \times Baseline Drinking interaction significantly predicted alcohol-related consequences, but this time at follow-up, $F_{\text{change}}(1, 393) = 10.10$, $p < .01$. Again, the relationship was stronger for female students ($\beta = .49$ vs. $\beta = .32$). Finally, the

Gender \times Perceived Pledge Class Drinking interaction significantly predicted symptoms of physical dependence at follow-up, $F_{\text{change}}(1, 390) = 4.31, p < .05$. The relationship continued to be stronger for male students ($\beta = .24$ vs. $\beta = .06$).

Discussion

This study was designed to evaluate the overall and relative influence of descriptive and injunctive norms on alcohol use and alcohol problems among Greek-affiliated university students. This information has important implications for the design and implementation of preventive interventions based on the social norms model within Greek organizations as well as implications for refining theories of drinking behavior based on normative influences. We examined whether both injunctive and descriptive norms would be related to concurrent alcohol use and whether these normative influences would predict current and future alcohol-related negative consequences and symptoms of physical dependence above and beyond the influence of current drinking behavior.

The results suggest that both descriptive and injunctive norms are potentially important predictors of drinking behavior, with injunctive norms assuming greater importance as an added risk factor for current and future alcohol-related problems in this sample. When viewing initial zero-order correlations between study variables, we noted that perceptions of the typical drinking of pledge class members (a descriptive norm) was significantly correlated with both current and 1-year self-reported drinks per week as well as with current and 1-year short-term negative consequences and dependence symptoms. This is consistent with prior research indicating that perceived descriptive norms are related to self-reported drinking concurrently, and it replicates also the prior studies identified in the literature on the relationship between descriptive norms and alcohol-related consequences (Clapp & McDonnell, 2000; Sher et al., 2001; Wood et al., 2001). Similarly, perceived house acceptability of heavy drinking (an injunctive norm) was correlated with both concurrent and prospective drinking and short- and long-term consequences, replicating and extending the few prior studies that have evaluated the relationship of injunctive norms to alcohol use in this population (Goodwin, 1989; Larimer et al., 1997; Sher et al., 2001; Wood et al., 1992; Wood et al., 2001).

Multiple regression equations with both descriptive and injunctive norms predicting outcomes produced a highly consistent picture. In the first equation, which examined concurrent drinking, descriptive norms were a significant predictor, and injunctive norms were not. The remaining five equations examined the potential role of descriptive and injunctive norms in predicting follow-up drinking as well as both concurrent and follow-up alcohol consequences and symptoms of physical dependence after controlling for baseline drinking. In all instances, injunctive norms were a significant predictor, and descriptive norms were not. Results indicate that descriptive norms are strongly linked with concurrent drinking rates, suggesting that perceptions of normative drinking rates in the moment may influence drinking at that time, at least in the current sample of college students who are members of Greek letter organizations. However, it also appears that perceptions of others' drinking may be based primarily on one's own current drinking behavior, leading to false consensus effects (Marks, 1992) wherein heavy drinkers assume others are similar to them.

Injunctive norms, on the other hand, provide additional explanation of drinking behavior and its consequences above and beyond current use. Although the magnitude of the effect is relatively small (ranging between 2% and 5% of the variance explained), the fact that the inclusion of injunctive norms predicted variance in future drinking, concurrent and future negative consequences, and concurrent and future symptoms of physical dependence above and beyond that explained by drinking behavior and descriptive norms is important. These

findings are consistent with Cialdini et al.'s (1990) research suggesting that, in situations where injunctive norms are made salient, they may have a broader range of behavioral impacts than do descriptive norms. It has been suggested that this is because injunctive norms are more enduring than are descriptive norms and are less likely to be influenced by one's own current behavior, or that because injunctive norms are particularly influential in maintaining group identity and cohesion, such norms would be expected to be particularly salient and have a broad range of impacts in situations where group cohesion is valued. As injunctive norms represent the behavior that is deemed worthy of social approval, in settings such as the Greek system, in which such approval is highly valued, these norms would be expected to influence a broad range of behaviors (Cialdini et al., 1990; Trafimow & Finlay, 1996; Terry & Hogg, 1996).

Consistent with previous research on gender differences in normative influences (Berkowitz, 1997; Caudill & Marlatt, 1975; Prentice & Miller, 1993; Schroeder & Prentice, 1998), gender moderated the relationship between perceived descriptive norms and long-term negative consequences of alcohol use. Specifically, the relationship between perceived pledge class drinking behavior and alcohol dependence scores was significantly stronger for men than for women, both concurrently and prospectively, even after controlling for drinking behavior at baseline. This suggests that information about the descriptive norm may be more important in influencing men's than women's alcohol-related negative consequences. This may in part explain the greater impact of interventions incorporating normative feedback for fraternity men as compared to sorority women (O'Leary et al., 2002), as these interventions have typically focused exclusively on descriptive norms. Also consistent with past research (Harrington, Brigham, & Clayton, 1997; Turner et al., 2000), the relationship between alcohol use and current and future alcohol-related negative consequences and dependence symptoms was stronger for women than for men.

Taken together, these results provide support for modifying or expanding social norms-based alcohol interventions targeting Greek organizations to focus on injunctive norms regarding alcohol consumption in addition to descriptive norms. One benefit of a focus on injunctive norms is that it has fewer ethical and pragmatic difficulties than a focus on descriptive norms in this population, as it does not require marketing a norm that is by definition excessive alcohol consumption in order to achieve a majority. For example, prior research suggests that many fraternity members actually do drink more than 5 drinks when they party, but most do not believe it is okay to miss class because of drinking, and most do believe it is okay not to drink sometimes, even though they mistakenly believe others are more in favor of high-risk alcohol use than they themselves are (Larimer et al., 1997). Thus, with a bit of creativity, it may be possible to identify and market a healthier injunctive norm than that perceived by the majority of Greek members. In addition, several measures of injunctive norms already exist and are in use on a variety of college campuses, including the Center for Alcohol and Other Drug Studies norms survey (Presley, Meilman, & Lyerla, 1994); thus, much of the data needed to devise an intervention incorporating injunctive norms likely are already in place.

Although this research supports the consideration of injunctive norms in addressing excessive alcohol use and related harm in Greek letter organizations, and further provides support for the role of injunctive norms in predicting alcohol use and consequences in Greek social organizations, it is important to note its limitations. First, all data were collected via self-report, which can be subject to bias. Steps to improve accuracy of self-report included assurances of confidentiality, asking participants to identify a collateral who could verify their self-report (this served as a *bogus pipeline* procedure), and supervising data collection to avoid participant cross-talk. Prior research suggests that under these conditions self-report of drinking behavior is generally accurate (Babor, Stephens, & Marlatt, 1987). A second

limitation is that items assessing personal alcohol use and perceived pledge class alcohol use for the descriptive norm were not counterbalanced, thus it is possible that order effects could have influenced reporting of the perceived descriptive norm. However, prior research using counterbalancing failed to find significant order effects on this measure (Baer et al., 1991). Third, participants were members of 12 fraternities and 8 sororities on one campus and were recruited as intact residential groups. Thus, there may be important house-to-house differences influencing individual members' responses to the measures, which may not be accurately reflected in the overall analysis of normative effects on drinking and problems. Although this does not negate the findings, it may be that using house-specific norms and targeting individual houses rather than the system as a whole might be in order. Additional research on more diverse samples, and including both Greek and non-Greek students, is also important for determining the generalizability of these findings to the general college student population. In addition, in this research we assessed only *perceived* injunctive norms (rather than both perceived and actual injunctive norms); thus, it is not possible to evaluate the degree to which the perceived norms represent an overestimation of the actual norms in this sample. However, prior research using the same instrument in a similar sample (Larimer et al., 1997) found that there were significant overestimation biases in perceived injunctive norms. Fourth, loss to follow-up attrition may institute bias into the longitudinal sample, although it is encouraging that there were no differences in baseline drinking among completers and noncompleters and that current baseline analyses were substantively similar for both all participants and for only the participants who completed the follow-up assessment. Fifth, although the reference group for descriptive norms was a participant's pledge class, the reference group for injunctive norms was the house as a whole, making it more difficult to provide a direct comparison between the two types of norms. Finally, the injunctive-norms measure (the House Acceptability Questionnaire) includes items such as perceived acceptability of missing class because of drinking, which may be more similar to items assessing negative consequences than are the descriptive norms items tapping drinking behavior alone. Consequently, the relationship between descriptive norms and drinking, and between injunctive norms and consequences, may be partly due to method variance. Future research assessing perceptions of frequency of these behaviors (descriptive norms) in parallel to the injunctive-norms measure is needed. It is notable, however, that injunctive norms also predicted drinking behavior a year later, whereas descriptive norms did not, something that cannot be explained by measurement bias.

Despite these limitations, this research adds significantly to the literature on normative perceptions of college drinking, through the simultaneous evaluation of descriptive and injunctive norms, evaluation of the influence of these normative perceptions on alcohol-related negative consequences in addition to drinking behavior, and evaluation of the impact on prospective alcohol use and problems in addition to concurrent behavior. Future research assessing the impact of prevention efforts that incorporate messages in support of injunctive norms against excessive alcohol use is warranted.

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Table 1

Correlations and Descriptive Information for Study Variables

Variable	1	2	3	4	5	6	7	8	M	SD
1. DNRF (baseline)	—	.13**	.49***	.32***	.21***	.11*	.30***	.23***	18.24	10.16
2. HAQ (baseline)		—	.14***	.18***	.18***	.16***	.28***	.19***	4.08	0.95
3. Drinking (baseline)			—	.52***	.47***	.39***	.56***	.42***	12.14	11.21
4. Drinking (follow-up)				—	.35***	.45***	.42***	.62***	11.84	12.79
5. RAPI (baseline)					—	.62***	.67***	.48***	5.70	5.09
6. RAPI (follow-up)						—	.55***	.66***	5.43	5.17
7. ADS (baseline)							—	.67***	7.52	5.33
8. ADS (follow-up)								—	7.29	5.55

Note. *N*s = 580 (baseline) and 396 (follow-up). DNRF = perceived pledge class drinking norm based on the Drinking Norms Rating Form; HAQ = House Acceptability Questionnaire; Drinking = average total drinks per week in the past 3 months; RAPI = Rutgers Alcohol Problem Index; ADS = Alcohol Dependence Scale.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 2

Hierarchical Multiple Regression Predicting Baseline Drinking Episodes From Perceived Pledge Class Drinking Norms and House Attitudes

Variable	Baseline drinking		
	β	R^2_{change}	R^2_{total}
1. Group assignment	-.04	.14***	.14***
Gender (G)	-.37***		
2. Perceived pledge class drinking norm (DNRF)	.40***	.14***	.28***
3. House acceptability of drinking (HAQ)	.06	.00	.28***
4. G \times DNRF	-.01	.00	.28***
G \times HAQ	-.06	.00	.28***

Note. $N = 571$. Variables were entered in five steps in the order listed. Gender: male = 0, female = 1. Group assignment: control condition house = 0, intervention condition house = 1. β = standardized regression weights; DNRF = perceived pledge class drinking norm based on the Drinking Norms Rating Form; HAQ = House Acceptability Questionnaire.

 $p < .001$.

Table 3
Hierarchical Multiple Regression Predicting Drinking, Alcohol-Related Consequences, and Symptoms of Physical Dependency From Perceived Pledge Class Drinking Norms and House Attitudes

Variable	Alcohol-related consequences			Symptoms of physical dependency		
	β	R^2_{change}	R^2_{total}	β	R^2_{change}	R^2_{total}
Baseline						
1. Group assignment	.00	.23***	.22***	.05	.32***	.32***
Gender (G)	-.04			.03		
Baseline drinking (D)	.46***			.57***		
2. Perceived pledge class drinking norm (DNRF)	-.08	.00	.23***	.02	.00	.32***
3. House acceptability of drinking (HAQ)	.15***	.02***	.25***	.22***	.05***	.37***
4. G \times D	.11*	.01*	.26***	.11*	.00	.37***
G \times DNRF	-.05	.00	.26***	-.10*	.01*	.38***
G \times HAQ	.01	.00	.26***	-.06	.00	.38***
Drinking						
Variable	Alcohol-related consequences			Symptoms of physical dependency		
	β	R^2_{change}	R^2_{total}	β	R^2_{change}	R^2_{total}
One-year follow-up						
1. Group assignment	-.01	.29***	.29***	.05	.16***	.16***
Gender (G)	-.17***			.05		
Baseline drinking (D)	.46***			.41***		
2. Perceived pledge class drinking norm (DNRF)	.04	.00	.29***	-.09	.01	.17***
3. House acceptability of drinking (HAQ)	.11**	.02**	.31***	.15**	.02**	.19***
4. G \times D	-.01	.00	.31***	.20***	.02**	.21***
G \times DNRF	-.05	.00	.31***	-.04	.00	.21***
G \times HAQ	-.02	.00	.31***	-.08	.00	.21***

Note. $N_s = 571$ (baseline) and 396 (follow-up). Variables were entered in four steps in the order listed. Gender: male = 0, female = 1. Group assignment: control condition house = 0, intervention condition house = 1. Baseline drinking = average total drinks per week during the past 3 months. β = standardized regression weights; DNR = perceived pledge class drinking norm based on the Drinking Norms Rating Form; HAQ = House Acceptability Questionnaire.

*
 $p < .05$.

**
 $p < .01$.

 $p < .001$.