Social Distance, Perceived Drinking by Peers, and Alcohol Use by College Students

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Many colleges in the United States are employing social norms marketing campaigns with the goal of reducing college students' alcohol use by correcting misperceptions about their peers' alcohol use. Although the typical message used in these campaigns describes the quantity and frequency of alcohol use by the average student on campus, many students may find such a vague comparison to others to be socially irrelevant. This study compares the relative weight of perceptions about alcohol use by distant versus proximate peers in the prediction of college students' personal drinking behavior. The results of analyzing data collected from a sample of college students at a large public northeastern university ($N=276$) show that, as hypothesized, perceived alcohol use by proximate peers (best friends and friends) was a stronger predictor of students' personal alcohol use than perceived alcohol use by more distant peers (such as students in general), controlling for other strong predictors of alcohol use by college students (age, gender, race, off-campus residency, and sensation-seeking tendencies). The implications of these findings for the design of more effective social norms messages are discussed.

One well documented phenomenon in the college drinking literature is that misperceptions about alcohol use by peers tend to increase with increasing social distance (e.g., Baer, Stacy, & Larimer, 1991; Carter & Kahnweiler, 2000; Thombs, Wolcott, & Farkash, 1997). Thus, most students perceive that their friends drink more than they do, students living in their dormitory drink more than their friends, and students in general drink more than students living in their dormitory. This consistent finding invites a closer scrutiny of the typical message strategy used in norms-based interventions to reduce alcohol consumption among college students that seeks to correct students' misperceptions about alcohol use by the average student on campus (for a recent review, see Perkins, 2003). Specifically, it raises a question about which group of peers matters when it comes to perceptions of drinking norms and the relative weight of these perceptions in the prediction of personal alcohol use by college students (see Keeling, 2000). Thus, the primary goal of this study was to compare the relative weight of perceptions about alcohol use by distant and proximate peers in the prediction of college students' personal drinking behavior.

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fact, they think and behave similarly (see D. T. Miller & McFarland, 1987; Prentice & Miller, 1993). It follows that by informing the majority of students (through social norms marketing campaigns) that their alcohol-related attitudes, beliefs, and behaviors are more normative than they perceive them to be, the perceived social pressure on these students to engage in high-risk or dangerous drinking (Lederman, Stewart, Goodhart, & Laitman, 2003) will be significantly reduced, thus leading to more moderate patterns of alcohol use by students at this university.

**Effect of Social Identity on Social Comparisons: Ingroup and Outgroup Biases**

One notable weakness of the social norms approach as applied to college drinking is that it fails to recognize that social comparisons to peers occur at different levels. In fact, the term *peer group* may refer to four types of groups that are nested within each other (M. A. Miller, Alberts, Hecht, Trost, & Krizek, 2000): the peer cohort (individuals who are the same age as the student), the reference group (the group of students in the cohort with whom the student identifies most), the peer cluster (a small and cohesive group of close friends who tend to share similar values, beliefs, attitudes, and behaviors) and, finally, the dyad (best friend pairs). Therefore, it is not clear to which group (or groups) of peers students refer for the purposes of valid social comparisons. This conceptual and empirical confusion is most clearly illustrated by the fact that misperceptions about alcohol use by peers tend to increase with increasing social distance (e.g., Baer et al., 1991; Carter & Kahnweiler, 2000; Thombs et al., 1997). Thus, although research generally supports the proposition that personal level of drinking increases with increased drinking norms misperceptions (Baer et al., 1991; Clapp & McDonnell, 2000; Perkins, 2002; Perkins & Berkowitz, 1986; Prentice & Miller, 1993; Sher, Bartholow, & Nanda, 2001), one important factor that may influence the magnitude of misperceptions is the nature of the comparison—other used by students to evaluate their own drinking behavior. In other words, it may be that misperceptions of drinking norms influence personal drinking behavior to the extent that the object of social comparisons is considered by the student to be socially relevant.

Theories of social identity provide the basic rationale for this line of argument. According to social identity theory (Tajfel, 1982) and its relatives, such as self-categorization theory (Turner, 1991), people view themselves and others as group members with a common or shared social identity. Because social or group identity has important self-evaluative consequences (Festinger, 1954), group members tend to make intergroup comparisons that favor the ingroup. Several studies (e.g., Duck & Mullin, 1995; MacKie & Smith, 1998; Tyler & Cook, 1984) demonstrated that the stronger the social identification, the more pronounced the tendencies toward perceptions of similarity between self and ingroup members (ingroup assimilation) and toward perceptions of difference between ingroup and outgroup members (intergroup contrast). Perceived social distance, in turn, is likely to affect information processing (Duck, Hogg, & Terry, 2000; Turner, 1991): When social identity is salient, the validity of persuasive information (such as that disseminated through social norms marketing campaigns) is established by ingroup norms.

**Effect of Perceived Drinking Norms on Personal Drinking**

In general, then, misperceptions about alcohol use by ingroup members should be the smallest in magnitude (due to ingroup bias) but the strongest in terms of their effect on personal drinking (because they serve as a basis for more relevant social comparisons). In contrast, misperceptions about alcohol use by outgroup members should be the greatest in magnitude (due to outgroup bias) but the weakest in terms of their effect on personal drinking (because they involve less relevant social comparisons). It is also clear that any comparison to peers is bound to be context-specific (or behavior-specific, in this case) for the student to draw the most relevant social information from this comparison (Festinger, 1954; Turner, 1991). That is, the effect of drinking norms misperceptions on personal behavior depends on salient group memberships related to the use of alcohol. To the extent that alcohol use is personally important to the student and is also a central characteristic of this student's ingroup, the size of misperceptions about alcohol use by ingroup members will be an even stronger predictor of personal drinking behavior as perceived pressure to drink is relatively strong. Conversely, the size of misperceptions about alcohol use by ingroup members will be less strongly associated with personal drinking behavior if alcohol use is not personally important to the student or to members of his or her ingroup.

Existing research suggests that students are likely to consider friends and best friends to be ingroup members: individuals with whom they interact frequently, turn to for advice and emotional support, and trust the most compared to other peers (Donohew, Clayton, Skinner, & Colon, 1999; Kandel & Davies, 1991). Friends may (or may not) encourage adoption and ongoing use of alcohol, furnish knowledge about the consequences of alcohol use, and make alcohol available to the student (Oetting & Donnemeyer, 1998). Not surprisingly, then, friends' and best friends' drinking behavior seems to have the greatest impact on college students' alcohol use (Baer, 2002). Thus, although students' misperceptions about alcohol use by friends and best friends are likely to be smaller in magnitude compared to misperceptions of drinking norms by other (generalized) peers, they should have a stronger influence on personal drinking as they constitute more relevant social comparisons. In addition, the effect of perceived alcohol use by friends and best friends on personal drinking will likely intensify if alcohol use is a salient
feature of social interactions with friends and best friends, such as those taking place among members of fraternities or sororities (Carter & Kahnweiler, 2000; Wechsler, Lee, Kuo, & Lee, 2000).

H1: All else being equal, perceptions about alcohol use by friends and best friends will be stronger predictors of college students’ personal alcohol use than perceptions about alcohol use by other (generalized) students.

H2: All else being equal, perceptions about alcohol use by friends and best friends will be stronger predictors of personal alcohol use among college students who associate frequently with alcohol-using peers than among those who associate less frequently with alcohol-using peers.

METHOD

Data

The study utilized data collected from a sample of undergraduate students (N = 276) enrolled in a large public northeastern university. Students attending a large university-wide introductory class that primarily enrolls freshmen and sophomores, groups who are most susceptible to dangerous drinking (see Wechsler et al., 2000), were invited to voluntarily complete an anonymous survey measuring their alcohol-related behavior, perceptions about alcohol use by peers, frequency of association with alcohol-using peers, and other variables (e.g., demographic characteristics, sensation-seeking tendencies, and residence on or off campus) known to be related to alcohol use by college students (see Baer, 2002). Seventy-seven percent of the students enrolled in this class signed a consent form and completed the survey. No data were collected on the characteristics of nonrespondents. Sixty-two percent of the respondents were women, and 60% were White (12% African Americans, 9% Hispanics, and 19% Asian Americans) with a median age of 19. Sixty-three percent of the students lived on campus (in residence halls or other on-campus housing).

Variables and Measures

The primary dependent variable in this study was a student’s level of drinking. Students were asked to report on the number of alcoholic beverages they typically consume when they drink at parties, bars, or other social gatherings. The average number of drinks consumed by the students in the sample was 2.95 drinks in a sitting (SD = 1.3). The primary independent variable, a student’s perceived drinking norm, was measured through a battery of items that asked respondents to estimate the number of drinks (none, 1–2 drinks, 3–4 drinks, 5–6 drinks, 7 or more drinks) typically consumed at parties, bars, or other social gatherings by different peers (best friends, friends, students on campus, students at other universities, fraternity members, and intercollegiate athletes).

Other variables included in all analyses as controls were age, gender, race, on- or off-campus residency, sensation seeking, and frequency of association with alcohol-using peers. Sensation seeking was estimated through a brief sensation-seeking scale (Hoyle, Stephenson, Palmgren, Puzzles Lorch, & Donohew, 2002) that typically consists of 8 items measuring thrill and adventure seeking, experience seeking, disinhibition, and boredom susceptibility. To reduce the expected burden on respondents, this study used only 4 of these items (see Hornik et al., 2001). Specifically, respondents were asked to indicate their agreement on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree) with the following statements: “I would like to explore strange places,” “I like to do frightening things,” “I like new and exciting experiences, even if I have to break the rules,” and “I prefer friends who are exciting and unpredictable.” Responses to these 4 items (that had an internal consistency of $\alpha = .75$) were then summed and averaged into a single measure ranging from 1 to 5 with a mean sensation-seeking score of 3.34 (SD = .81). Finally, a measure of a student’s frequency of association with alcohol-using peers was generated by adding and averaging responses to 4 items that inquired about the number of times (none, 1–2 times, 3–4 times, 5–6 times, and every day) in a typical week during the semester in which the data were collected that the student got together with friends who (a) drink alcohol once or twice on weekdays, (b) drink alcohol only on weekends, (c) drink alcohol only at parties or other social gatherings, and (d) drink alcohol every day. The resulting index had an acceptable level of internal consistency ($\alpha = .79$) and contained values ranging from 1 (no association) to 5 (highest frequency of association) with a mean of 2.57 (SD = .97), which is equivalent to 3.5 times per week.

RESULTS

Table 1 compares the size of perceived self-other differences, held by college students in the sample regarding peers’ alcohol use across different categories of peers. On average, the students in the sample reported typically consuming about 3 drinks per sitting but estimated that their peers drink at a higher rate. These self–other differences were tested through a series of paired-samples $t$ tests and in all cases were found to be statistically significant. Consistent with findings of similar studies (Baer et al., 1991; Carter & Kahnweiler, 2000; Thombs et al., 1997), estimates of peers’ alcohol use tended to increase with increasing social distance from peers. Thus, the students in the sample estimated that their best friends typically drink more than they do in social settings, that their friends drink more than their best friends, and that other students on campus drink more than their friends.
Nonetheless, the finding that students tended to underestimate alcohol use by peers at other universities compared to peers at the same university seems to be inconsistent with this general pattern. This finding may suggest that social identities in the context of alcohol use are not only a function of similarity to and familiarity with different categories of peers but also a function of identification with peers. In this case, it seems that the students in the sample perceive that their own typical drinking behavior is more comparable with that of students at other universities than with the typical drinking behavior of students at this particular university.

The argument that perceived social distance from peers in the context of alcohol use is influenced by the student's degree of identification with these peers seems to be supported by additional evidence. In general, the literature on college drinking highlights the prevalence of high-risk drinking within two distinct groups of students: fraternity members and intercollegiate athletes (Wechsler et al., 2000). In fact, one of the social norms approach's key assumptions is that the easily noticed extravagant drinking behavior of fraternity members and athletes leads the majority of students to overestimate the prevalence of alcohol use (and high-risk drinking in particular) among peers (Perkins, 2002). Not surprisingly, then, the findings in Table 1 show that the average perceived self--other difference in drinking behavior was the greatest with regard to fraternity members. At the same time, not all students may consider the drinking behavior of fraternity members to be an appropriate benchmark against which to compare their own drinking behavior. In fact, the majority of them are likely to reject this behavior and further distance themselves from fraternity members, which may explain the large size of perceived self--other difference in this case. The pattern of dispersion around the average estimate of alcohol use by different groups of peers (captured by the standard deviation of the mean estimate with regard to each group) seems to be consistent with this argument. Estimates of alcohol use by self and proximate peers (i.e., friends and best friends) tend to be more heterogeneous (with standard deviations greater than 1) than estimates of alcohol use by distant peers (students on campus and students in general), which tend to be more homogeneous (with standard deviations smaller than 1). Homogeneous estimates of peers' behavior are often an expression of a strong outgroup bias (MacKie & Smith, 1998). It seems, then, that alcohol use by the group of fraternity members is stigmatized by the majority of students and, thus, should have very little influence on most students' personal drinking compared to the behavior of other peers (a proposition that is tested next). Interestingly, average estimates of alcohol use by athletes were much closer to estimates of personal alcohol use than estimates of alcohol use by fraternity members. In fact, they were lower than estimates of alcohol use by friends and best friends provided by the students in the sample. This suggests that within this particular group of students, athletes' drinking behavior is viewed more positively than on other campuses and that athletes may be considered an integral element of students' reference groups.

In the next step of the analysis, students in the sample were assigned to one of three groups of alcohol users based on their self-reported use of alcohol: abstainers and infrequent drinkers (0-2 drinks per sitting), moderate drinkers (3-4 drinks per sitting), or heavy drinkers (5 or more drinks per sitting). As expected, and consistent with findings reported in national studies of college drinking (see Perkins, 2002; Wechsler et al., 2000), the three groups varied radically on key variables related both to drinking and perceptions about alcohol use by peers. Thus, women and non-Whites were overrepresented within the group of abstainers and infrequent drinkers (38.5% and 52.7%, respectively) and underrepresented among heavy drinkers (27% and 23%, respectively). Similarly, the average sensation-seeking score among heavy drinkers (M = 3.4, SD = .80) was greater than that among moderate drinkers (M = 3.1, SD = .63) and abstainers and infrequent drinkers (M = 3.05, SD = .86), and heavy drinkers were more likely than moderate and infrequent drinkers and abstainers to report greater frequency of social interactions with alcohol-using peers (M = 2.93, SD = .92; M = 2.6, SD = .87; and M = 2.1, SD = .84, respectively).

Table 2 compares the average size of perceived self--other differences on alcohol use across the three drinking-level groups (abstainers and infrequent drinkers, moderate drinkers, and heavy drinkers) for different categories of peers. In all cases, the average size of perceived self--other differences was the greatest among abstainers and infrequent drinkers. Following the study's rationale, the combination of two elements, low personal relevance and low group relevance, may explain this finding. Due to a unique combination of personal and social characteristics such as gender, race, and level of
sensation seeking, abstainers and infrequent drinkers have low personal involvement with alcohol. They are also less likely than moderate and heavy drinkers to have social interactions with peers that are primarily or exclusively alcohol related. Thus, they tend to perceive general drinking norms as less relevant to their behavior. This tendency, in turn, increases their proneness to outgroup bias wherein increased perceived distance from peers acts to reinforce perceived ingroup norms and personal uniqueness.

An opposite tendency is observed in Table 2 for heavy drinkers. With one exception (the comparison to athletes) heavy drinkers were the most likely to perceive the drinking behavior of other peers (particularly, friends and best friends) to be similar to their own (excessive) drinking behavior. At the same time, they tended to perceive their own rate of drinking to be higher than most other peers, excluding fraternity members. Put differently, heavy drinkers seem to believe that most of their peers drink heavily but that they themselves drink more heavily than other peers. Thus, it seems that heavy drinkers' judgments about alcohol use by peers are guided by two competing defensive motivations. On the one hand, given their heightened personal interest in alcohol use, they are motivated to perceive their level of drinking as normative (i.e., one that is considered to be normative by the majority of other peers) to justify their own drinking behavior. On the other hand, alcohol use (particularly, high-risk drinking) is also an important characteristic of heavy drinkers' ingroup members (which consists of individuals who frequently socially interact with peers in the context of alcohol use). This group of peers may have a strong interest in maintaining and strengthening ingroup identity by differentiating members' drinking behavior from the drinking behavior of outgroup members. Thus, unlike abstainers and infrequent drinkers who have a strong tendency toward outgroup bias, heavy drinkers have a strong tendency toward ingroup bias that maintains the perception that ingroup members' rate of alcohol use is "superior" to that of other peers.

In contrast to nondrinkers and heavy drinkers, students who drink in the midrange seem to form perceptions of alcohol use by peers that are quite accurate. This is evident in their tendency to report relatively moderate and fairly homogeneous perceptions of self–other differences in drinking behavior. Thus, they perceive no difference in rate of drinking between them and their best friends and a similar difference between their drinking and that of more distant peers including friends. Moreover, their perceived difference between their own drinking behavior and that of the group of students with the most extreme drinking behavior, fraternity members, was not as extreme as that reported by abstainers and infrequent drinkers (who exaggerated this difference) and heavy drinkers (who underestimated this difference). Given their moderate personal interest in alcohol use and their moderate frequency of social interactions with alcohol-using peers, this group of students is the least susceptible to ingroup and outgroup biases and the most likely to be motivated by the desire to hold an accurate view of social reality (see Kunda, 1990). Because this type of motivation often leads to a greater dependence on social information collected from peers (Deutsch & Gerard, 1955) and to a more objective processing of social information (Kunda, 1990; Petty & Cacioppo, 1986), moderate drinkers are probably the most likely to be affected by perceptions of alcohol use by peers that are shaped through social interactions with peers as well as through exposure to the messages of social norms marketing campaigns.

The pattern of results thus far suggests that personal drinking does not simply increase with the size of perceptions (and, therefore, misperceptions) about alcohol use by peers, as the social norms approach postulates, but rather that the relationship of drinking norms misperceptions on personal drinking is contingent on perceived social distance from peers. The study’s hypotheses propose that (a) perceived alcohol use by best friends and friends will be stronger predictors of personal alcohol use than perceptions of alco-

<table>
<thead>
<tr>
<th>Category</th>
<th>Abstainers/Infrequent Drinkers&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Moderate Drinkers&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Heavy Drinkers&lt;sup&gt;c&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M&lt;sup&gt;d&lt;/sup&gt;</td>
<td>SD</td>
<td>Self–Other Difference&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td>Self</td>
<td>1.45</td>
<td>.50</td>
<td>3</td>
</tr>
<tr>
<td>Best friends</td>
<td>2.31</td>
<td>1.1</td>
<td>.86**</td>
</tr>
<tr>
<td>Friends</td>
<td>2.59</td>
<td>.93</td>
<td>1.14**</td>
</tr>
<tr>
<td>Students on campus</td>
<td>3.58</td>
<td>.82</td>
<td>2.13**</td>
</tr>
<tr>
<td>Students in general</td>
<td>3.40</td>
<td>.75</td>
<td>1.95**</td>
</tr>
<tr>
<td>Fraternity members</td>
<td>4.18</td>
<td>.90</td>
<td>2.73**</td>
</tr>
<tr>
<td>Student athletes</td>
<td>3.07</td>
<td>1.01</td>
<td>1.62**</td>
</tr>
</tbody>
</table>

Note. The statistical significance of mean differences was determined through a paired-sample t test.
<sup>a</sup><sub>n = 97</sub>, <sup>b</sup><sub>n = 75</sub>, <sup>c</sub><sub>n = 104</sub>. <sup>d</sup>Values are average self-reported estimates of the number of drinks typically consumed in a single sitting. <sup>e</sup>Mean difference between self-reported drinking behavior and that attributed to peers in each category.

<sup>*p < .05</sup>, <sup>**p < .001</sup>.
hol use by other groups of peers and (b) the effect of perceived alcohol use by friends and best friends on personal drinking will be more pronounced among students who associate frequently with alcohol-using peers (as a measure of the importance placed on alcohol use by this group) than among students who associate more infrequently with similar peers. Thus, although perceived self–other differences in drinking are the smallest with regard to best friends and friends, these differences are expected to have the most impact on behavior.

These propositions were tested through a series of hierarchical linear regression models predicting personal alcohol use from perceived alcohol use by peers and control variables. Control variables were introduced in the first step of all regression analyses. These included the student’s age, gender (dummy for men), race (dummy for White), residence on or off campus (dummy for on-campus residence), and sensation-seeking tendencies score. As previously noted, these variables have been consistently shown to be strong predictors of alcohol use by college students (Baer, 2002) and are also likely to be important dimensions of a student’s social identity in the context of alcohol use. Of these control variables, only gender and sensation-seeking tendencies were also likely to be important dimensions of a student’s social identity in the context of alcohol use. Thus, the results of this analysis are consistent with the argument that the size of misperceptions about alcohol use by peers will strongly influence behavior only to the extent that the comparison peers are perceived by the student to be socially equivalent (such as best friends and friends, in this case).

To test the second study’s hypothesis, according to which perceived alcohol use by peers will be a particularly strong predictor of personal alcohol use when social comparisons to relevant peers (best friends and friends) are made in the presence of a strong ingroup drinking norm, we reestimated the set of hierarchical linear regression analyses described previously for two separate groups of students: those who fre-

| Effect of Perceived Descriptive and Prescriptive Norms Regarding Alcohol Use by Different Categories of Peers on College Students Personal Alcohol Use |
|-----------------|-------------|-------------|
| Category         | $\beta$     | Adj-$R^2$   | $\Delta R^2$ |
| Best friends     | .62**       | .62         | .30**       |
| Friends          | .60**       | .59         | .28**       |
| Students on campus | .19**      | .35         | .04**       |
| Students in general | .21**      | .35         | .04**       |
| Fraternity members | .16*        | .34         | .02*        |

Note. $N = 276$, $\beta =$ standardized regression coefficient adjusted for the effect of age, gender, race, on-campus residency, and sensation seeking on personal alcohol use; Adj-$R^2 =$ explained variance in personal drinking adjusted for the number of predictors in the regression model; $\Delta R^2 =$ independent contribution of the variable to the explained variance in personal drinking.

*p < .05, **p < .001.

The results in Table 3 show that, as hypothesized, of all the perceptions of alcohol use by peers examined, perceptions of alcohol use by friends and best friends were the strongest independent predictors of personal alcohol use, controlling for other known strong predictors of drinking among college students (age, gender, race, on-campus residency, and sensation-seeking tendencies). Perceived alcohol use by best friends had the largest main effect on personal drinking ($\beta = .62$) and accounted for about half (32%) of the variance explained in this variable by all the predictors in the model (62%). Perceived alcohol use by friends was an equally strong predictor of personal alcohol use ($\beta = .60$) and made a similar independent contribution to the variance explained in this variable (28% of 59% in total). Although the remaining perceptions of alcohol use by other groups of peers had statistically significant main effects on personal drinking, these effects were noticeably less pronounced than those of perceived alcohol use by best friends and friends. This was particularly true for perceived alcohol use by fraternity members, the perception that was the greatest in magnitude among the students in the sample, which made a marginal independent contribution (2%) to the variance in personal drinking already explained by other predictors (32%). Thus, the results of this analysis are consistent with the argument that the size of misperceptions about alcohol use by peers will strongly influence behavior only to the extent that the comparison peers are perceived by the student to be socially equivalent (such as best friends and friends, in this case).
QUANTITATIVE ANALYSIS

Based on the consistent finding that misperceptions about alcohol use by peers increase with increased social distance, this study examined the proposition that the effect of drinking norms misperceptions on college students’ drinking behavior is contingent on perceived social distance from peers. Thus, perceptions about alcohol use by proximate peers (best friends and friends in this study) were hypothesized to exert more influence on personal drinking than perceptions about alcohol use by more distant peers (such as at the same university, students in general, and members of fraternities or sororities). Overall, the results of this study provide strong support for this proposition. Perceived alcohol use by proximate peers independently explained about 30% of the variance in personal drinking (or about half of the explained variance in this variable) controlling for other strong predictors of alcohol use by college students (age, gender, race, off-campus residency, and sensation-seeking tendencies). These effects were slightly more pronounced among students who more frequently interact with alcohol-using peers. In contrast, the effects of perceptions about alcohol use by more distant peers on personal drinking, although statistically significant, were marginal at best (accounting for as much as 4% of the explained variance in this variable). Thus, it seems that the typical message used by social norms marketing campaigns, which discusses alcohol use by the typical student on campus (for a review, see Perkins, 2003), may not be relevant for all groups of students. Specifically, it may be effective on relatively homogeneous college campuses (where social identities related to alcohol use and, subsequently, perceptions about alcohol use by proximate and distant peers are likely to be homogeneous) but less effective on heterogeneous college campuses, such as the one studied here.

TABLE 4

<table>
<thead>
<tr>
<th>Category</th>
<th>Students With Infrequent Alcohol-Related Peer Interactions</th>
<th>Students With Frequent Alcohol-Related Peer Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \beta )</td>
<td>( \text{Adj-}R^2 )</td>
</tr>
<tr>
<td>Best friends</td>
<td>.64**</td>
<td>.60</td>
</tr>
<tr>
<td>Friends</td>
<td>.62**</td>
<td>.55</td>
</tr>
<tr>
<td>Students on campus</td>
<td>.13</td>
<td>.22</td>
</tr>
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<td>Students in general</td>
<td>.22*</td>
<td>.25</td>
</tr>
<tr>
<td>Fraternity males</td>
<td>.12</td>
<td>.11</td>
</tr>
</tbody>
</table>

Note. \( \beta \) = standardized regression coefficient adjusted for the effect of age, gender, race, on-campus residency, and sensation seeking on personal alcohol use; \( \text{Adj-}R^2 \) = explained variance in personal drinking adjusted for the number of predictors in the regression model; \( \Delta R^2 \) = the independent contribution of the variable to the explained variance in personal drinking.

Limitations

The conclusions drawn based on the results of this study and their implications are constrained by a number of limitations. First, the measure of personal alcohol use relied on respondents’ self-reports, which were not corroborated by a known outside measure. As such, they are subject to some degree of
bias. However, there is some evidence that self-reports of alcohol use yield valid and reliable measures in most instances (Dowdall & Wechsler, 2002; Midanik, 1988). Next, the unrepresentative nature of the sample used in this study places additional constraints on the conclusions drawn here. Particularly, the results observed in this study may not provide an accurate portrayal of the relationship between perceived alcohol use by peers and personal drinking at universities with a relatively homogenous drinking culture. Still, the quite heterogeneous nature of this sample was particularly conducive for testing the study’s hypotheses that concern the nature of this perception–behavior relationship at universities with heterogeneous social identities and drinking cultures.

An additional limitation is that not all potentially important variables were examined in this study. For example, alcohol expectancies (i.e., beliefs about the possible consequences of alcohol use) were not measured in this study. In addition to their strong and direct effect on personal drinking (Baer, 2002; Moskowitz, 1989), there is evidence that alcohol expectancies may mediate much of the effect of drinking norms misperceptions on personal alcohol use (see Wood, Read, Palfal, & Stevenson, 2001). Similarly, not all potentially important normative influences by peers were considered in this study. Specifically, the study examined the effect of descriptive norms on behavior but not the effect of prescriptive (or injunctive) norms (Cialdini, 1993; Cialdini, Kallgren, & Reno, 1991). Descriptive norms refer to a person’s beliefs about the way most people behave in a given situation (i.e., beliefs about the prevalence of a certain behavior). Prescriptive norms are beliefs about referent others’ approval or disapproval of performing a certain behavior in a given situation (similar to the conceptualization of subjective norms in the theory of reasoned action; Fishbein & Ajzen, 1975). The social norms approach has been recently criticized for its exclusive focus on prescriptive norms (see Rimal & Real, 2003), which are considered to be less important in the prediction of personal behavior than prescriptive norms (Cialdini et al., 1991; Fishbein & Ajzen, 1975; Rimal & Real, 2003). However, as both alcohol expectancies and perceived prescriptive norms are shaped by key demographic, personality, and social characteristics such as age, gender, race, sensation-seeking tendencies, and social interactions with peers (Cialdini et al., 1991; Dowdall & Wechsler, 2002; Rimal & Real, 2003; Wood et al., 2001), and given that these key factors were controlled for in all analyses, there seems to be no reason to assume that the conclusions drawn here regarding the contribution of drinking norms misperceptions to alcohol use by college students are fundamentally flawed.

Finally, and perhaps most important, the cross-sectional nature of this sample does not permit sound causal inferences regarding the relationships of interest. Of particular concern in this respect is the actual causal direction between personal alcohol use and perceptions of alcohol use by peers. Perceptions of alcohol use by peers may simply reflect social projection from one’s own drinking behavior to that of proximate and distant peers (Rice, 1993), or they may be shaped in response to social information about the drinking behavior of peers that is gathered through observations of peers, diffusion of information within social networks, or mass media images (Perkins, 2002), in which case these perceptions precede personal alcohol use. This ambiguity is evident in the way data were analyzed and results were interpreted in this study. Thus, the results presented in Table 2 (which compares the size of perceptions about alcohol use by peers across three different groups of students distinguished by their personal drinking level) are discussed and interpreted based on the assumption that personal behavior influences perceptions of alcohol use by peers. On the other hand, the results of the regression analyses presented in Tables 3 and 4 predict behavior from perceptions of peers’ alcohol use and are interpreted in that way. Although the temporal ordering between these variables is better established through longitudinal studies, evidence from longitudinal studies (e.g., Donohew, Hoyle, et al., 1999; Sher et al., 2001) suggests that perceptions of peers’ alcohol use and personal drinking have a mutual effect on one another, thus making both lines of interpretation valid.

Implications for Social Norms Marketing Campaigns

The study’s findings bear out the original assertion of social comparison theory (Festinger, 1954) that people tend to compare themselves only with similar others to gain more stable and accurate self-evaluative information from the comparison. It is tempting, therefore, to propose that social norms marketing campaigns should focus their messages on reducing misperceptions of alcohol use by friends and best friends. However, this approach may not be cost-effective for two obvious reasons. The first is that tailoring messages to numerous groups of students is bound to be costly. Second, such messages will most likely be dismissed by students who are more likely to trust the information they collect directly from peers either by observing their drinking behavior or discussing alcohol use with them. A better approach is to customize social norms messages to the particular drinking culture at each university (see also Berkowitz, 2000). Colleges with a fairly homogeneous demographic and cultural mix of students may find a message presenting accurate information about alcohol use by the average student on campus to be effective in correcting misperceptions and leading to behavior change, but this may be a difficult task if certain peers are considered to be more socially distant than others.

One way of overcoming this potential hurdle is to try to reduce perceived social distance from on-campus peers by increasing school-based social identity (Harris, Middleton, & Joiner, 2000). Thus, a message suggesting that students of all group affiliations (gender, race, religion, etc.) on campus drink moderately may be more effective in leading to behavior change on heterogeneous campuses. The fact that stu-
ents in this study were more likely to judge alcohol use by students on the same campus to be more distanced from their own drinking behavior than alcohol use by students at other universities is consistent with the notion that school-based social identity may be a factor contributing to misperceptions about alcohol use by peers.

An alternative approach that may work on more heterogeneous campuses is to try to reduce perceptions about peers' alcohol use through message framing (Stuart & Blanton, 2002). One way to use message framing is to provide information about alcohol use by normative peers, or peers other than friends and best friends, from whom most students on campus are likely to perceive the least social distance. In this study, for example, the group of athletes seems to be occupying this role. Thus, a message providing information about alcohol use by athletes on campus may be more effective in reducing drinking norms misperceptions and alcohol use among students than a message reporting alcohol use by the average student on campus. Both approaches require a careful investigation of alcohol-related social identities on campus prior to designing social norms messages and extensive pretesting of such messages. Both, nonetheless, seem to be promising message strategies that are worthy of further exploration in future studies.

Finally, although the focus of this study was the use of social norms messages in mass communication campaigns, it is worth noting that its conclusions are further supported by evidence demonstrating that the application of norms-based interventions in small group settings is quite successful in reducing misperceptions about alcohol use by peers and in some cases may lead to reductions in high-risk drinking (Barnett, Far, Mauss, & Miller, 1996; Peeler, Far, Miller, & Brigham, 2000). The idea that perceptions of norms are strongly linked to social interactions has been the hallmark of experiential learning approaches, including work based on the socially situated experiential learning model (Lederman, Stewart, Barr, & Perry, 2001; Stewart & Lederman, 2002). The socially situated experiential learning model is a conceptual model that assumes that the culture of college drinking is a shared reality learned through drinking-related experiences, stories shared among students, perceptions and many misperceptions of the behaviors and expectancies of one another, and that a sense that belonging and bonding are so connected with drinking that the negative consequences of alcohol use are merely the admission price to belonging to the college culture (Lederman, 1993; Workman, 2001).

The construct of socially situated experiential learning was successfully incorporated into the creation, implementation, and evaluation of a prevention campaign designed to reduce high-risk drinking by changing the perception of college drinking (Lederman & Stewart, 2005). The campaign focused on intervention into the interactional experiences that college students had on and off campus (including their interpretations of the meaning of those experiences) to influence or change their drinking behaviors over time. Similar to the work of Far and Miller (2003), Lederman and Stewart (in press) used one-on-one peer interactions and other interpersonally based strategies in conjunction with a media campaign. Thus mediated messages and campaign materials were used as the means of creating conversation. The centerpiece of the campaign were those structured conversations that took place in socially situated interactions such as drinking-related decision-making simulation games, discussions with nondrinkers and moderate drinkers regarding alcohol use, curriculum infusion approaches in which personal drinking-related choices were examined in classes, and classes in which students designed social norms messages promoting moderation in alcohol use for their peers. In all of these, opportunities were created for students (that they may not otherwise have had) to acquire first-hand knowledge about the true behavior and attitudes of their peers. Microlevel interventions such as these may prove to be particularly effective in reducing misperceptions of alcohol use by peers, regardless of perceived social distance from these peers, and may also be more effective than mass communication campaigns in leading to measurable and long-term reductions in the prevalence of high-risk drinking among college students.

REFERENCES


