Evaluating Level of Specificity of Normative Referents in Relation to Personal Drinking Behavior*

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ABSTRACT. Objective: Research has found perceived descriptive norms to be one of the strongest predictors of college student drinking, and several intervention approaches have incorporated normative feedback to correct misperceptions of peer drinking behavior. Little research has focused on the role of the reference group in normative perceptions. The current study sought to examine whether normative perceptions vary based on specificity of the reference group and whether perceived norms for more specific reference-group norms are related to individual drinking behavior. **Method:** Participants were first-year undergraduates ($n = 1,276$, 58% female) randomly selected from a university list of incoming students. Participants reported personal drinking behavior and perceived descriptive norms for eight reference groups, including typical

student; same gender, ethnicity, or residence; and combinations of those reference groups (e.g., same gender and residence). **Results:** Findings indicated that participants distinguished among different reference groups in estimating descriptive drinking norms. Moreover, results indicated misperceptions in drinking norms were evident at all levels of specificity of the reference group. Additionally, findings showed perceived norms for more specific groups were uniquely related to participants' own drinking. **Conclusions:** These results suggest that providing normative feedback targeting at least one level of specificity to the participant (i.e., beyond what the "typical" student does) may be an important tool in normative feedback interventions. (*J. Stud. Alcohol Drugs*, Supplement No. 16: 115-121, 2009)

CONSIDERABLE RESEARCH HAS EVALUATED factors influencing excessive drinking among college students. Perceived descriptive norms (perceived behavior of others) regarding peer drinking are among the strongest influences on students' personal drinking behavior compared with the influence of parents, resident advisors, and faculty (Perkins, 2002) and compared with other relevant factors, such as drinking motives and alcohol-related expectancies and evaluations (Neighbors et al., 2007). The distinction between actual (actual typical behavior of others) and perceived norms is of crucial importance given that (1) perceived rather than actual norms directly influence behavior (Rimal and Real, 2003, 2005) and (2) discrepancies between perceived and actual norms are consistently associated with alcohol use, with larger discrepancies related to higher rates of alcohol use (Baer et al., 1991; Borsari and Carey, 2001; Larimer et al., 2004; Lewis and Neighbors, 2004; Reis and Riley, 2000).

Correcting misperceptions of drinking norms has been a prominent or the sole focus of many intervention stud-

ies aimed to reduce college student drinking (Carey et al., 2007; Larimer and Cronce, 2007; Walters and Neighbors, 2005). Interventions that correct normative misperceptions have been generally effective in reducing alcohol use and consequences (Lewis and Neighbors, 2007; Lewis et al., 2007; Mattern and Neighbors, 2004; Neighbors et al., 2004, 2006b), and evidence suggests that norms-based interventions are successful to the extent they effectively reduce the discrepancy between perceived and actual descriptive norms (e.g., Borsari and Carey, 2000; Mattern and Neighbors, 2004; Neighbors et al., 2004).

Normative salience/relevance

The appropriate reference group for normative feedback has been largely ignored in the research literature, despite being a common topic in the campus prevention community. Theories of social comparison (Festinger, 1954), social identity (Tajfel, 1982), and self-categorization (Turner et al., 1987) suggest that socially proximal reference groups are more relevant and have greater influence than more distal reference groups. However, normative misperceptions have primarily been documented based on "typical-student" norms as opposed to smaller subgroup norms, and thus the majority of normative feedback interventions have used a typical-student reference group. Although actual norms for friendship networks would be more socially proximal and more relevant than typical-student norms, actual norms for

*Data collection and manuscript preparation were supported by National Institute on Alcohol Abuse and Alcoholism grant U01AA014742. Manuscript preparation was also supported by National Institute on Alcohol Abuse and Alcoholism grants T32AA007455 and K01AA016966.

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friendship networks are more difficult to obtain than general campus norms and less amenable to correction because of the smaller magnitude of misperception (Borsari and Carey, 2003).

Group-specific norms (e.g., gender, ethnicity, residence) may be a reasonable compromise between general campus norms and norms derived from each student's unique social network. Group-specific norms would present a more socially proximal normative referent than general campus norms and, thus, potentially increase relevance of feedback based on these groups without markedly increasing the burden to obtain the normative information. Further, normative misperceptions for group-specific normative referent groups may be present in greater magnitude than those for friendship networks.

Gender and normative relevance

Gender may be one aspect of individual identity relevant to the influence of perceived norms on behavior. Gender differences in drinking behavior have been well documented (McCabe, 2002; O'Malley and Johnston, 2002), and research suggests that normative perceptions may function differently for men and women (Lewis and Neighbors, 2004, 2006; Suls and Green, 2003), which may affect the efficacy of personalized normative feedback interventions (Lewis and Neighbors, 2007). For example, Lewis and Neighbors (2007) evaluated specificity of the normative referent by comparing personalized normative feedback that presented gender-neutral normative comparisons versus feedback that was gender specific. Their findings indicated that gender-specific personalized normative feedback was effective in reducing drinking, especially for women who more strongly identified with their gender.

Residence and normative relevance

Campus residence may be another factor that influences perceived drinking norms. Considerable evidence indicates that members of fraternity/sorority organizations, particularly men, are at increased risk for alcohol abuse compared with nonfraternity/nonsorority peers (Baer, 2002; Larimer et al., 1997, 2004). Research suggests that perceived norms for drinking moderate the relationship between fraternity affiliation and heavy drinking for college men (Bartholow et al., 2003). Importantly, despite objectively higher norms for drinking in these organizations, research suggests that members do misperceive the normative nature of drinking in these organizations, except for individuals in the heaviest drinking chapters, who accurately perceive the heavy drinking norm (Larimer et al., 1997). Furthermore, perceived descriptive norms have been shown to predict drinking prospectively among fraternity/sorority members (Larimer et al., 2004). Thus, further research is needed to evaluate the normative

reference group's specificity in influencing drinking behavior among fraternity/sorority men and women.

Ethnicity and normative relevance

Research is also needed to explore the role of ethnicity in norm relevance. Evidence suggests that drinking norms of specific ethnic groups may be important in understanding the relationship of perceived drinking norms to drinking behavior among ethnic minority individuals, as drinking patterns may develop based on those norms as well as norms of the dominant culture (Caetano, 1987). Although little research has evaluated ethnic differences in perceptions of descriptive drinking norms, research has evaluated other aspects of social norms, specifically injunctive norms (i.e., perceptions of the acceptability or approval of drinking behavior; Cialdini et al., 1990). For example, Caetano and Clark (1999) found ethnic groups with "liberal" injunctive norms and attitudes were more likely to be current and frequent heavy drinkers than those with "conservative" viewpoints. Additional research is needed to evaluate the extent to which ethnicity-specific normative perceptions are related to drinking behavior for ethnic minority and ethnic majority students.

Summary and hypotheses

There is considerable empirical and theoretical support for the influence of descriptive norms on drinking behavior, and evidence supports the efficacy of interventions incorporating normative feedback to correct misperceptions of descriptive drinking norms (Carey et al., 2007; Larimer and Cronce, 2007; Walters and Neighbors, 2005). Questions remain, however, regarding the extent to which normative perceptions vary based on specificity of the reference group and the extent to which perceived norms for more specific reference-group norms are related to individual drinking behavior for important subgroups of students. These are not minor issues, given the diversity of college student populations and emerging data suggesting that efficacy of normative feedback interventions is moderated both by student characteristics and by identification with normative reference groups (Lewis and Neighbors, 2007; Reed et al., 2007). The current research is designed to address these gaps in the literature to provide a basis for strengthening normative feedback interventions.

In the current study, we assessed self-reported drinking and perceived descriptive drinking norms for students at increasing levels of similarity to the respondents, based on a generic referent (typical student) or similarity at one level (gender, residence, or ethnicity), two levels (gender and residence, gender and ethnicity, or ethnicity and residence), and all three levels (perceptions of students who match the respondent on gender, ethnicity, and residence). We hypothesized that participants would distinguish among reference groups at increasing levels of similarity to themselves, and

thus perceived descriptive norms would vary based on level of specificity of the reference group (Hypothesis 1). We further hypothesized that perceived norms at each increasing level of specificity (i.e., typical students vs one, two, or all three levels of similarity to the respondent) would increase the prediction of each participant's own drinking behavior (Hypothesis 2).

Method

Participants

A sample of 1,276 first-year undergraduate students at a large, northwestern university participated in a Web-based survey assessing alcohol use, alcohol-related social norms, and other psychosocial measures. Participants were, on average (SD), 18.49 (0.63) years old (range: 17-24), 58% ($n = 743$) were female, and 97% identified as heterosexual ($n = 1,230$). The majority (54.3%) self-identified as white, followed by Asian/Asian American (31.0%), multiracial (7.8%), Native Hawaiian/Pacific Islander (1.8%), Native American/Alaskan Native (1.0%), and other or unknown (4.0%). Across all ethnicities, 5.7% identified as Hispanic/Latino/a. The majority of students lived in residence halls or in off-campus housing ($n = 953$, 74.7%), although sizable numbers reported living with their parents ($n = 178$, 13.9%) or in fraternity/sorority housing ($n = 133$, 10.4%). Demographics available from the registrar (note that response categories differ between registrar's database and the study survey) indicated the invited sample included 51% female, 52.0% white, 29.4% Asian, 5.1% Hispanic, 3.7% foreign, 2.8% black, 0.5% Hawaiian/Pacific Islander, 1.1% American Indian, and 5.4% not-identified participants. Thus, respondents were generally representative of the invited sample.

Procedure

Names and contact information for a random sample ($N = 3,008$) of first-year undergraduates ages 17-25 were obtained from the university registrar's office. Students 17 years of age were eligible unless their parents declined participation after receiving a letter and information statement detailing the study (four parents declined). All eligible students ($n = 3,004$) were mailed and emailed invitations to participate in an online survey as part of a larger study examining the efficacy of different alcohol interventions. The survey assessed alcohol use and consequences, perceived descriptive norms, and other psychosocial measures. Interested students received an online information statement that covered all elements of informed consent, and those who chose to participate were directed to the main study survey. A total of 1,326 students (44%) agreed to participate, and 1,276 (43%) completed the survey. Participants received \$10 for survey completion. All procedures were reviewed and approved by

the university's institutional review board, and the project was issued a federal Certificate of Confidentiality.

Measures

Participants' gender, ethnic and racial background, and residence were assessed. For the purpose of the present study, gender was coded as 0 = male and 1 = female, ethnicity was coded as 0 = white and 1 = nonwhite, and living status was coded as 0 = nonfraternity/nonsorority housing and 1 = fraternity/sorority housing.

Alcohol consumption (actual) was assessed using the Daily Drinking Questionnaire (DDQ; Collins et al., 1985), which assesses quantity of alcohol consumed on each day of a typical week during the past 3 months. The DDQ has been effective in documenting reductions in alcohol use in previous studies with college student drinkers (Baer, 1993; Kivlahan et al., 1990; Marlatt et al., 1995). Recent research also indicates that the DDQ has high 2-month test-retest reliability ($r = .87$) for weekly drinking quantity (Neighbors et al., 2006a). Weekly drinking was measured by summing the participants' responses for reported drinking each day of the week. Previous research has suggested that quantity measures of alcohol consumption, such as typical weekly consumption, account for the most variance in the prediction of alcohol-related problems (Borsari et al., 2001). Thus, we used this measure as our primary drinking outcome.

Alcohol problems were assessed with the Rutgers Alcohol Problem Index (White and Labouvie, 1989), which asks participants to rate the occurrence of 23 items assessing alcohol consequences in the past 3 months. Past research demonstrates that this scale has high internal reliability (.92; White and Labouvie, 1989). Two questions regarding drinking and driving were added. The scale can be scored to reflect both the number of problems as well as severity of problems experienced (Martens et al., 2007). For the current study we used a summed score of the severity of consequences experienced.

Perceived descriptive norms (perceived peer drinking) were assessed using a modified version of the Drinking Norms Rating Form (Baer et al., 1991). This measure has been used to demonstrate extremity biases in ratings of group norms with respect to a variety of reference groups (Baer et al., 1991; Larimer et al., 1997). The Drinking Norms Rating Form has good 2-month test-retest reliability ($r = .70$) for perceived quantity norms (Neighbors et al., 2006a).

For the current study, participants estimated the typical number of drinks consumed on each day of the week by eight different reference groups at their school, representing increasing degrees of demographic similarity. Reference groups were described as a "typical [insert reference group] at your college" and included the typical (1) student; (2) student of the participant's same gender; (3) student of the participant's same ethnic background; (4) student with

the same residence type; (5) same gender, same ethnicity; (6) same gender, same residence; (7) same ethnicity, same residence; and (8) same gender, same ethnicity, and same residence. For example, an Asian-American woman residing in a residence hall was asked her perception of the behavior of a typical student; a typical female student; a typical Asian-American student; a typical student living in a residence hall; a typical Asian-American female student; a typical female student living in a residence hall; a typical Asian-American residence-hall student; and a typical female, Asian-American, residence-hall student. Each item was presented with the reference group in boldface and highlighted in color to draw each participant's attention to the distinctions. Perceived weekly drinking norms for the eight reference groups were measured by summing the participants' responses for reported drinking of the reference group on each day of the week.

Results

Data screening

Data were examined for compliance with assumptions of multivariate analysis of variance according to guidelines provided by Tabachnick and Fidell (2001). Univariate skewness and kurtosis and Mardia's coefficient for multivariate normality were examined to ensure that the univariate and multivariate distributions were normally distributed (West et al., 1995). As is typical with alcohol data, alcohol measures were significantly skewed and analyses were conducted using both log transformed data and the nontransformed data. Results were the same; thus, for ease of interpretation, only results using nontransformed data are presented.

Normative misperceptions of alcohol consumption

Our first hypothesis was that participants would distinguish among reference groups and that descriptive norms would vary among levels of specificity of the reference group. To evaluate the pattern of differences in means, a one-way repeated measures analysis of variance (ANOVA) was conducted evaluating differences among nine means: (1) participants' own drinking and perceived number of drinks for the following: (2) a typical student; (3) a same-gender student; (4) a same-ethnicity student; (5) a same-residence student; (6) a same-gender and same-ethnicity student; (7) a same-gender and same-residence student; (8) a same-ethnicity and same-residence student; and (9) a same-gender, same-ethnicity, and same-residence student. For ANOVA results, partial eta squared (η_p^2) describes the proportion of total variability of the dependent variable attributable to an effect, with values of .01 for a small effect, .06 for a medium-sized effect, and .14 for a large effect (Cohen, 1988). Table 1 presents estimated marginal means and standard errors of personal behavior and perceived behavior.

TABLE 1. Estimated marginal means and standard errors of personal behavior and perceived behavior

Variable	Mean (SE)
Total weekly drinks	3.346 (0.182)
Estimated typical student's drinks	14.827 (0.260)
Estimated drinks by gender	13.798 (0.274)
Estimated drinks by ethnicity	13.417 (0.259)
Estimated drinks by residence	12.100 (0.278)
Estimated Drinks by Gender $\times$ Ethnicity	11.450 (0.252)
Estimated Drinks by Gender $\times$ Residence	10.901 (0.268)
Estimated Drinks by Ethnicity $\times$ Residence	11.284 (0.268)
Estimated Drinks by Gender $\times$ Ethnicity $\times$ Residence	10.641 (0.292)

Supporting Hypothesis 1, findings indicated overall mean differences among students' own drinking and their perceptions of other students' drinking at the eight differing levels of specificity ($F = 440.43$, 8/9,480 df, $p < .001$; $\eta_p^2 = .27$). We conducted pairwise post hoc comparisons, with Bonferroni correction for multiple comparisons. A Bonferroni correction was chosen because of the number of comparisons being conducted and to guard against Type I error, although this does slightly increase the risk of Type II error. Based on the post hoc comparisons, actual self-reported alcohol use differed from all levels of specificity of perceived consumption. Thus, regardless of referent, participants overestimated the drinking of other students. The perceived norm for typical-student consumption was significantly higher than the perceived consumption for more specific normative referents. Among other levels of specificity, each differed from all others ($p < .05$) with the exceptions that gender by ethnicity did not differ significantly from ethnicity by residence, and gender by residence did not differ significantly from gender by ethnicity by residence perceptions. Thus, perceptions of other students were most discrepant when students were defined generally (e.g., the typical student) and less discrepant when students were defined most similarly to the participants (e.g., same gender, same ethnicity, and same residence).

Relationship of normative perceptions to drinking behavior and consequences

Hierarchical multiple regression analyses were conducted to determine the extent to which normative perceptions of alcohol consumption at increasing levels of specificity of the referent group were uniquely related to one's own alcohol consumption (Hypothesis 2). Demographic information (i.e., participants' gender, ethnicity, and residence) was entered at Step 1. Perceived typical-student drinking was entered at Step 2. At Step 3, perceptions of drinking for normative referents with one level of specificity were entered (i.e., perceptions of behavior for same-gender, same-residence, and same-ethnicity students). At Step 4, perceptions of behavior for normative referents with two levels of specificity were entered (i.e., same gender and residence, same gender and

ethnicity, and same ethnicity and residence). Finally, we entered perceptions of drinking for the normative referent with all three levels of specificity at Step 5.

Step 1 (demographics), Step 2 (perceived typical-student drinking), Step 3 (perceptions at one level of specificity), and Step 5 (perceptions at three levels of specificity) all added significantly to the prediction of personal alcohol consumption (Table 2). Step 4 (gender/ethnicity, gender/residence, residence/ethnicity) did not significantly add to the prediction of the model. In the final model, ethnicity, perceived typical-student drinks, residence-specific perceptions, and gender-/ethnicity-/residence-specific misperceptions predicted typical consumption ($R^2 = .21$; $F = 28.12$, 11/1,185 df, $p < .001$).

Discussion

The current study was designed to evaluate the extent to which college students' perceptions of descriptive drinking norms would vary based on increasing specificity of the reference group along three dimensions—gender, ethnicity, and type of residence. The study further evaluated whether increasing levels of specificity of the reference group added to the prediction of the participants' own drinking. Results indicated that participants did distinguish among different reference groups in estimating descriptive drinking norms. Results further indicated that misperceptions were evident at all levels of specificity of the reference group. Thus, even for very similar others, students believe the typical drinking of their reference group is higher than their own drinking and higher than the actual mean for that reference group.

Findings also demonstrated that perceived norms for more specific groups were uniquely related to participants' own drinking. Specifically, perceived norms at one level of specificity and perceived norms at all three levels of specific-

ity significantly added to the prediction of participants' own drinking, even after participants' individual characteristics and perceived norms for the typical student were included.

These findings are consistent with theories of social comparison (Festinger, 1954), social identity (Tajfel, 1982), and self-categorization (Turner et al., 1987), which suggest that behavior is more closely influenced by and modeled on more socially proximal reference groups. The results indicate, however, that misperceptions do exist even with relatively proximal reference groups, as perceived norms even for the most proximal reference group were considerably higher than the self-reported drinking of participants.

Normative feedback interventions have traditionally used the "typical student" for correcting misperceptions of drinking norms. These results suggest that tailoring normative feedback to at least one level of similarity may be beneficial for intervention approaches. Research has shown that providing gender-based norms for women influences drinking outcomes (Lewis and Neighbors, 2007). Future research is needed to test the impact of group-based norms in an intervention setting for ethnic minority participants and members of fraternity/sorority social organizations and to determine the extent to which increasingly specific reference-group norms improve the efficacy of interventions incorporating normative feedback.

Recent research by LaBrie and colleagues indicates real-time normative feedback provided to group members using in-person interactive polling is associated with reduced group-specific normative misperceptions and subsequent drinking among fraternity/sorority members in addition to services-group members (LaBrie et al., 2008) and athletes (LaBrie et al., 2009). Future research could evaluate the extent to which effects of group-specific feedback are maintained over time or in different implementation formats (i.e., Web, mailed).

TABLE 2. Sequential regression analyses of normative perceptions of alcohol consumption as predictors of personal alcohol consumption

Step and variables	<i>B</i> (SE)	β	R^2	ΔR^2
Step 1: Demographics			.10	.10 [‡]
Gender	-1.24 (0.35)	-.10 [†]		
Ethnicity	-0.49 (0.35)	-.04		
Housing	5.89 (0.57)	.30 [†]		
Step 2: Typical student			.13	.03 [‡]
Estimated typical student drinking	0.13 (0.02)	.19 [†]		
Step 3: One level of specificity			.20	.07 [‡]
Estimated drinks by gender	0.05 (0.04)	.07		
Estimated drinks by ethnicity	0.06 (0.03)	.09		
Estimated drinks by housing	0.21 (0.03)	.33 [†]		
Step 4: Two levels of specificity			.21	.005
Estimated drinks by gender and ethnicity	0.03 (0.04)	.04		
Estimated drinks by gender and housing	0.01 (0.05)	.02		
Estimated drinks by ethnicity and housing	0.08 (0.05)	.12		
Step 5: Three levels of specificity				
Estimated drinks by gender, ethnicity, and housing	0.07 (0.03)	.11*	.21	.003*

* $p < .05$; [†] $p < .01$; [‡] $p < .001$.

These are the first published data of which we are aware indicating that perceived norms vary based on ethnic specificity of the reference group. These findings suggest that interventions for different ethnic groups may benefit from providing ethnicity-specific feedback. More research is needed to determine the role of ethnicity-specific feedback in an intervention setting and for whom ethnicity-specific feedback may be most beneficial.

Limitations

One limitation of the current study was the relatively low rate of recruitment, which, despite the demographic representativeness of the obtained sample, could raise concerns regarding the generalizability of the findings. The study was also limited by a cross-sectional design and reliance on self-report to determine drinking behaviors. Further, normative-perceptions items were presented in the same order to all participants in this study; thus, it is possible that results were influenced by order effects. Although prior research (Baer et al., 1991) has not found order effects related to perceived norms for multiple reference groups, future research should counterbalance these items to control for this possibility (Borsari and Carey, 2001).

Additionally, this study did not address moderators (such as gender and ethnicity) of the relation between reference-group specificity and participants' own drinking and assessed norms at the same time point as drinking. Future research would benefit from exploring these factors in a longitudinal design, with a larger sample of participants.

Implications

Despite these limitations, this study suggests that providing normative feedback targeting at least one level—and potentially multiple levels—of specificity to the participant may be an important tool in normative feedback interventions. These findings provide a basis for continuing this research in longitudinal studies to evaluate its impact on drinking behavior in diverse populations of college students.

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