How Behaviors are Influenced by Perceived Norms: A Test of the Theory of Normative Social Behavior
Rajiv N. Rimal and Kevin Real
Communication Research 2005; 32; 389
DOI: 10.1177/0093650205275385

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How Behaviors are Influenced by Perceived Norms

A Test of the Theory of Normative Social Behavior

Normative restructuring strategies currently under way to combat alcohol-related problems among U.S. college students are based on the idea that students harbor inflated perceptions about the prevalence of drinking on campus and that if these misperceptions can be corrected, then alcohol consumption will decrease. Evidence for the effectiveness of these strategies is lacking, and there is little discussion in the literature about how or why people’s normative beliefs exert influence on their behaviors. The theory of normative social behavior that is proposed in this article includes three mechanisms— injunctive norms, outcome expectations, and group identity—that are hypothesized to moderate the influence of descriptive norms on behavior. This theory is tested through a survey (N = 1,352) conducted among incoming college students. Although all normative mechanisms predicted behavioral intention, four of the six variables also interacted with descriptive norms to influence intention, with relatively smaller effects. Overall, the model was able to predict 63% of the variance in intention to consume alcohol. Implications for health campaigns are discussed.

Keywords: descriptive norms; injunctive norms; outcome expectations; group identity; alcohol consumption

Excessive alcohol consumption by college students is a significant national problem (Baer, Stacy, & Larimer, 1991; Wechsler, Molnar, Davenport, & Baer, 1999; West, Moskal, Dziuban, & Rumbough, 1996), and universities have undertaken a number of campaigns to reduce problem drinking (Haines &
One such approach is based on the view that because norms influence behavior, if students' normative beliefs can be changed, behavioral change will ensue (Perkins & Berkowitz, 1986). Researchers use multiple terms to describe this underlying idea, some of which include subjective norms (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), social norms (Perkins & Berkowitz, 1986; Perkins, Meilman, Leichliter, Cashin, & Presley, 1999) or normative influences (Cialdini, Reno, & Kallgren, 1990; Deutsch & Gerard, 1955).

Use of these multiple terms in the literature highlights the conceptual ambiguity surrounding two distinct ideas—descriptive and injunctive norms—articulated by Cialdini et al. (1990). Descriptive norms refer to individuals' beliefs about the prevalence of a behavior. Research has shown that students tend to harbor exaggerated perceptions about the prevalence of drinking in their midst (Perkins & Berkowitz, 1986) and that the greater the prevalence perceived by students, the more likely they are to construe their own consumption patterns as being normative (i.e., within the prevailing norms of conduct; Perkins, 1986; Perkins et al., 1999). Injunctive norms, on the other hand, refer to the extent to which individuals perceive that influential others expect them to behave in a certain way, and by implication, social sanctions will be incurred if they do not. Hence, it is possible for individuals to believe that many others engage in a behavior and simultaneously believe that others would disapprove of their enacting the behavior. For example, college students may perceive that most others consume alcohol but that some of their important social referents (parents, peers) would disapprove if they consumed alcohol. It is quite often the case that descriptive and injunctive norms are mutually congruent; after all, by observing what most people do in a given social setting, individuals perceive, often correctly, that they are required to do the same. For example, members of Greek organizations in colleges may believe that alcohol consumption is rampant (high descriptive norms) and that they themselves ought to drink (strong injunctive norms) to maintain friendships. Although the larger norms literature (Cialdini et al., 1990) makes this distinction, the alcohol consumption literature does not (for an exception, see Borsari & Carey, 2001). For example, the social norms-based interventions currently under way in many U.S. campuses are concerned with descriptive norms, as they seek to reduce students' exaggerated perceptions about the prevalence of consumption. Ajzen and Fishbein's (1980) theory of reasoned action—a commonly used theory to address normative influences—however, addresses injunctive norms as it conceptualizes norms as coercive social influences with which individuals feel motivated to comply. In this article, we conceptualize perceived norms—either individuals' understanding about the prevalence of a behavior or the social approval
for the behavior from important referents—as comprising two distinct ideas, namely, descriptive norms and injunctive norms, respectively.

Despite the influence of normative beliefs on alcohol behavior (Peeler, Far, Miller, & Brigham, 2000; Schroeder & Prentice, 1998; Steffian, 1999), the literature provides little guidance in understanding how or why normative influences occur. Given the absence of a sound underlying theoretical perspective, it is not surprising norms-based interventions on U.S. colleges have not succeeded in reducing alcohol consumption. A recent evaluation of norms-based interventions failed to find a significant decline in alcohol consumption (across seven measures) in 37 colleges that used this approach, compared to 61 that did not (Wechsler et al., 2003). If we are to invest considerable resources in health communication campaigns aimed at behavior change through the use of normative restructuring strategies, as has been advocated by some researchers (Haines, 1996; Perkins et al., 1999), it is important that we develop and test specific hypotheses about the mechanisms underlying the relation between normative perceptions and behavior change. This is the primary purpose of the research reported in this article.

Based on our prior work (Rimal & Real, 2003), in this article, we propose the theory of normative social behavior (TNSB) that accomplishes two tasks. First, it differentiates descriptive from injunctive norms; and, second, it attempts to explain the underlying cognitive mechanisms that moderate the relation between descriptive norms and behavioral intentions. As shown in Figure 1, the TNSB is based on the premise that descriptive norms (people’s perceptions about the prevalence of a behavior) affect individuals’ own behaviors through interactions with three normative mechanisms: injunctive norms, outcome expectations, and group identity. Although these normative mechanisms may exert a direct influence on behaviors, their primary use in a norms-based approach is the extent to which they heighten the influence of descriptive norms on behaviors. That is, these normative mechanisms are hypothesized to act as moderators in the descriptive norms-behavior relation.

**Injunctive Norms**

Injunctive norms refer to people’s perceptions that their important referents expect them to comply with a behavior. Injunctive norms are analogous to the concept of subjective norms in the theory of reasoned action (TRA; Ajzen & Fishbein, 1980), which is defined as people’s perceptions about the importance of others’ beliefs as well as their motivation to comply with those beliefs. Although both concepts share the common element of pressures that individuals experience to conform, the difference between them lies in roles...
that social sanctions are thought to play in the normative influence process. Bendor and Swistak (2001) note, for example, that it is meaningless to talk about normative influences without also acknowledging that defiance of norms incurs some sort of social sanction. Thus, to the extent that injunctive norms are based on individuals’ perceptions about social approval, an underlying assumption in the influence of injunctive norms is that behaviors are guided, in part, by a desire to do the appropriate thing. As conceptualized in the TRA, the threat of social sanction, however, is not thought to be a necessary element for subjective norms to exert their influence. In the TRA, subjective norms are thought to exert their influence because individuals look to important referents to guide his or her behaviors (Ajzen & Fishbein, 1980). Thus, from a social norms perspective, individuals can enact a behavior because they believe that people important to them expect them to do so (subjective norms) or because failure to do so will result in social sanctions (injunctive norms). The common element underlying both types of influences, however, is that behavior is guided by expectations of others’ beliefs.

Individuals often have direct knowledge about what others expect them to do, and thus they can develop perceptions about injunctive norms through experiences with others’ reactions to their behaviors. There are instances, however, when individuals have to rely on cues other than direct experience.
to develop perceptions about injunctive norms. Information about the prevalence of the behavior (i.e., a descriptive norm) can serve this function. Social comparison theory (Festinger, 1954) suggests that we make assessments about appropriate modes of conduct by comparing ourselves with others in our social midst. When we are unsure about how to behave in a new or unfamiliar situation, we look to the behaviors of others. When others engage in a behavior, they provide us with social approval cues and we “view a behavior as correct in a given situation to the degree that we see others performing it” (Cialdini, 2001, p. 100). Hence, peer norms for alcohol consumption could signal that drinking is an approved and sanctioned behavior.

However, descriptive norms about peer alcohol consumption are not likely to be a strong indicator of injunctive norms. Students may perceive strong disapproval cues from authority figures and society in general. Many universities are currently running punitively based antialcohol campaigns. In some cases, they are based on parental notification policies that threaten to notify parents of minors who are found in violation of drug and alcohol rules. Researchers report that by January 2000, about 44% of surveyed institutions had parental notification policies in place, an additional 15% stated that they notified parents even in the absence of a written policy, and another 25% stated they were planning to have such policies in place in the future (Palmer, Lohman, Gehring, Carlson, & Garrett, 2001). Given their strong message of disapproval, these policies could offset the perception that drinking is an approved behavior, and we believe that they could moderate the influence of prevailing norms among students on alcohol consumption.

Hypothesis 1: Descriptive norms about alcohol consumption are positively related to behavioral intentions, but the magnitude of this association will become greater as prodrinking injunctive norms become greater.

Outcome Expectations

We believe that three outcome expectations should moderate the relationship between descriptive norms and behavioral intentions. First, according to social cognitive theory (Bandura, 1977, 1986), human behavior is governed by, among other things, individuals' outcome expectations—beliefs that his or her actions will lead to benefits. This is also the prediction of the subjective utility theory (Sutton, 1982) and the health belief model (Rosenstock, 1974, 1990), both of which postulate that individuals will engage in behaviors they perceive to be beneficial. Students perceive that drinking alcohol is beneficial and that it can lead to mood enhancement, stress reduction, feelings of happiness, increased affective expression, and greater social interaction (Baum-
Baicker, 1985; Dufour, 1996; Monahan & Lannutti, 2000; Peele & Brodsky, 2000). To the extent that students perceive that these outcomes will result from consuming alcohol, they should be more inclined to drink.

However, the behavioral intentions of college students may be influenced by a second set of expectations: their perceptions that benefits accrue to their peers who drink. By not engaging in a desirable behavior, individuals may become fearful that they will be denied important outcomes that others who engage in the behavior are able to attain. Research indicates that the threat of a potential loss looms large in people’s minds. Kahneman and Tversky (1984) and Kahneman, Knetsch, and Thaler (1991) have shown, for example, that the threat of losing something is a greater motivator of action than is the potential for gaining something of equal value. Although we are unable to find studies that have investigated this idea in the context of students’ alcohol consumption motivations, we assume that one of the reasons why students consume alcohol is their reluctance to deprive themselves of benefits that they perceive others derive from this behavior. To the extent that this is a reasonable assumption, we expect the influence of alcohol-related descriptive norms on students’ own behaviors to be positively correlated with beliefs that others are deriving significant benefits from alcohol consumption.

A final set of outcome expectations results from the belief by college students that alcohol is a social lubricant (Borsari & Carey, 1999). As students prepare to enter college, they formulate strategies about how they intend to develop and blend into new social circles. Alcohol consumption has been found to be an important social activity among college students (Dorsey, Sherer, & Real, 1999), and belief in alcohol’s socializing role is widely shared among adolescents (Borsari & Carey, 1999). Even as early as third grade, children have been found to associate alcohol with positive social benefits (Austin & Knaus, 2000). Baum-Baicker (1985) reported that conviviality is associated with low and moderate levels of drinking, and it is likely that this sociability is part of drinking alcohol in social contexts. To the extent that students construe alcohol consumption as a social lubricant and an activity that allows them to develop friendships and form bonds with their peers (Borsari & Carey, 1999; Hopkins & Emler, 1990), they are likely to intend to drink.

Our analysis suggests that the three aforementioned expectations should be positively related to behavioral intentions to consume alcohol. Furthermore, we believe that they should moderate the relationship between descriptive norms and behavioral intentions. Prior research indicates that enactment of behaviors is affected by perceptions of volitional control (Ajzen & Fishbein, 1980; Petty & Cacioppo, 1981) and beliefs that one possesses the requisite skills (Bandura, 1977). Social cognitive theory (Bandura, 1986) posits that observing others, especially others similar to oneself, enacting a
behavior can strengthen one’s own perceptions of control and ability to enact the same behavior. However, it is also necessary that one believe that the behavior will produce positive outcomes. Hence, individuals should be most likely to consume alcohol when they gain self efficacy from believing that peers engage in the action and believe that the action will have positive consequences. Hence, when predicting behavioral intentions, there should be an ordinal interaction between descriptive beliefs and outcome expectations. We posit the following hypotheses:

Hypothesis 2a: Outcome expectations regarding alcohol consumption will be positively associated with behavioral intention.

Hypothesis 2b: The magnitude of the relationship between descriptive norms and behavioral intention will become greater as outcome expectations become stronger.

Group Identity

Numerous studies have documented the role that individuals’ social networks play in initiating and reinforcing both positive (Hibbard, 1985; House, Landis, & Umberson, 1988; Valente, 1994) and negative behaviors (Donohew et al., 1999; Dorsey, Sherer, & Real, 1999; Fraser & Hawkins, 1984; Kandel, 1973; Seeman, Seeman, & Sayles, 1985). Although not explicitly stated, the underlying assumptions—in the notion that group identity influences individual behavior—are that the individual feels affinity and desires connection with the reference group. We construe group identity in terms of individuals’ aspirations to emulate referent others and the extent to which they perceive similarity between themselves and those referents. According to social cognitive theory (Bandura, 1977), we are influenced by the actions of models whom we aspire to become. Quigley and Collins (1999) found that modeling had a significant effect on various measures of consumption, including amount consumed and blood alcohol concentration. Research has shown that we are influenced not only by the behaviors of others but even more so by behaviors of similar others (Phillips, 1980; Phillips & Cartensen, 1986) and that when we conform with in-group members, we experience positive emotions (Christensen, Rothgerber, Wood, & Matz, 2004). Hence, to the extent that college students find themselves in an ambiguous social environment (as is the case, for example, when they first join college and look to establish social networks), we can expect them to rely on social cues they receive from others that they perceive to be similar to themselves.

In the absence of this form of identification, there is no reason to expect group identity to affect individuals’ behavioral choices. Rather, as people’s identity with members of their reference group grows stronger, there is an
implicit understanding that their compliance with the group behavior will be observable to other group members and that group members will have access to information about their expression of group solidarity, which can be expressed through compliant behavior. Thus, the correlation between group members’ identification with their referent group and their own intentions to engage in a behavior should be strengthened by the belief that referent group members are also engaging in the same behaviors. Hence, we predict an ordinal interaction between descriptive beliefs and group identity.

**Hypothesis 3:** The magnitude of the relationship between descriptive beliefs and behavioral intention will become greater as group identity becomes stronger.

To the extent that injunctive norms, outcome expectation, and group identity interact with descriptive norms to predict behavior, we also sought to determine whether and to what extent the three moderators overlap in their predictive ability. Hence, the research question we pose is

**Research Question 1:** To what extent do the normative mechanisms independently predict alcohol consumption?

**Method**

To test our hypotheses, we conducted a study focused on alcohol consumption by incoming college students. We believe that this is an appropriate context in which to test our hypotheses. For many students, going away to college is their first experience in a new and unfamiliar social environment, which means they have to learn new rituals and modes of conduct. Hence, college-bound students experience a great deal of ambiguity as they cannot rely on many of the habitual behaviors familiar to them in prior years. The literature suggests that presence of ambiguity enhances normative influences (Cialdini, 2001). Furthermore, college life is the beginning of friendships for many students as they are socialized into a new environment, and one of the most influential socializing behaviors on campus is alcohol use, which occurs predominantly in social settings (Haemmerlie, Montgomery, & Saling, 1994).

**Sample**

Participants \( N = 1,352 \) were incoming students attending the university-sponsored new student orientation workshop at the University of Texas (UT) in Austin. Seven workshops were administered during the months of June.
and July. On the 1st day of each workshop, researchers handed out a three-page survey to students who were either waiting in line, waiting for their friends, or were on their way to making inquiries pertaining to academic requirements. Most students filled out the survey at tables placed in various locations in the waiting lounge. To maintain anonymity, no personally identifiable questions were included in the survey instrument, and participants were asked to return the completed survey by placing it in a box that was kept at a distance from the researchers. The entire survey took approximately 10 to 15 minutes to complete.

Of the 2,000 surveys handed out, 1,352 (67.6%) were returned. According to data released by the university, there were 7,208 1st-year students in the incoming cohort, of which 52% were female students, and 17% joined Greek organizations. This means that through our convenience sampling procedures, we captured approximately 19% of the total 1st-year population. The proportions of female students (53.5%) and those joining Greek organizations (14.5%) in our sample were fairly representative of the new student population in the university.

Control Variables

To test our hypotheses, we first controlled for known predictors of alcohol consumption. In the literature, students’ social networks (Baer et al., 1991; Downs, 1987; Goodwin, 1989; Perkins, 1986) and their peer communication patterns (Dorsey et al., 1999) have been found to be correlated with consumption. Members of Greek organizations typically consume more alcohol than nonmembers (Cashin, Presley, & Meilman, 1998; Goodwin, 1989; Grenier, Gorskey, & Folsome, 1998; Wechsler, Dowdall, Davenport, & Castillo, 1995), as do off-campus, compared to on-campus residents (Gliksman, Newton-Taylor, Adlaf, & Giesbrecht, 1997; Grenier et al., 1998; Prendergast, 1994). In addition, we also expected legal drinking age status to predict alcohol use (Engs, Diebold, & Hanson, 1996). Finally, given the strong relationship reported in the literature between self-efficacy and health behaviors (Bandura, 1977, 1986), we also expected individual’s perceived ability to refrain from alcohol consumption to be predictive of their consumption. Hence, we used these variables as controls in the tests of our hypotheses.

Measures

The survey instrument notified participants that researchers were interested in studying alcohol consumption on campus and that the survey itself was anonymous.
Descriptive norms. Participants’ perception about the prevalence of alcohol consumption on campus was measured through four questions. Three questions asked participants to estimate how many drinks a typical student consumes when he or she “goes to a bar,” “has friends over to his or her apartment for drinks,” and “goes to a party.” Another question asked participants to estimate how many drinks a typical student consumes “during the weekend—Friday evening to Saturday evening.” All responses were recorded on a 5-point scale, ranging from zero drinks to more than six drinks. Participants were asked to consider one drink being equivalent to a 12-ounce can of beer, a 4-ounce glass of wine, or a 1.5-ounce glass of liquor. Descriptive norms was calculated as the average of the four responses (α = .84).

Normative mechanisms. The three normative mechanisms were injunctive norms, outcome expectation, and group identity. We conceptualized injunctive norms as perceived social approval—students’ perceptions about the social acceptability of consumption (explained subsequently). Outcome expectations were conceptualized as comprising three dimensions: benefits to oneself, benefits to others, and anticipatory socialization. Group identity was conceptualized as aspiration and perceived similarity. A total of 25 questions comprised the three normative mechanisms.

Four questions (“It is appropriate for students to drink every weekend,” “Society in general considers this activity appropriate,” “The University of Texas administration considers it appropriate,” and “Most people in general consider it appropriate”) measured social approval. Four questions (drinking alcohol with friends is rewarding, pleasurable, enjoyable, and fun) measured benefits to oneself. Four questions (“For most others” drinking alcohol with friends is rewarding, pleasurable, enjoyable, and fun) measured benefits to others. And, five questions (drinking alcohol is part of a college experience, college students are expected to drink alcohol, it is an important social life, freshmen look forward to being able to drink, and it allows students to make friends) measured anticipatory socialization. Four questions (the extent to which participants believed UT students were respectable, believed UT students were inspiring, looked up to most UT students, and thought highly of UT students) measured aspiration. Four questions (how similar do you think most UT students are to you intellectually, in the way they think, in their values, and in their behaviors) measured perceived similarity.

Conceptualizing each of the six factors as latent constructs, a confirmatory factor analysis was also conducted with the 25 measures. One variable, a measure of social approval (the extent to which drinking alcohol every week-
end was perceived to be appropriate) was associated with large error terms, and it was dropped from the model. With the remaining 24 variables, the data were consistent with the proposed six-factor model, in which internal consistency and parallelism yielded small errors.

Each normative mechanism was then calculated as the average value of the constituent variables. Reliability coefficients were as follows: injunctive norms, operationalized as social approval ($\alpha = .78$); outcome expectations, operationalized as benefits to oneself ($\alpha = .95$), benefits to others ($\alpha = .93$), and anticipatory socialization ($\alpha = .84$); and group identity, operationalized as aspiration ($\alpha = .89$) and perceived similarity ($\alpha = .81$).

**Alcohol consumption.** Participants, who were incoming students, were asked three questions about their intention to consume alcohol: how often they thought they would; how often they would like to; and how often they intended to go out drinking alcohol with friends. Responses were scored on a 9-point scale, ranging from *never* to *four or more times a week*. Responses to these three questions (coded such that greater values represented intention to consume more alcohol) were averaged into an index ($\alpha = .98$).

**Control variables.** Age of first alcohol consumption was measured on an 8-point scale ranging from *11 years or younger* to *never*, such that greater values represented an older age of first consumption. Membership in Greek organizations was measured by asking participants whether they intended to join Greek organizations, responses to which were *yes* (coded as 2), *don’t know* (1), and *no* (0). Efficacy to resist consumption was measured by first describing a vignette in which the participant’s best friend urged the participant to go out drinking despite a looming quiz the next day and then asking four questions about the participant’s ability to not go out drinking and still maintain friendship with his or her best friend. Responses to the four questions (measured on a 7-point scale ranging from *not at all confident* to *extremely confident*) were averaged into an index ($\alpha = .74$).

The distribution of variables used in this study is shown in Table 1. Overall, compared to females, males perceived lower resistance efficacy in resisting temptations to consume alcohol, they associated drinking with more personal benefits, they believed more strongly that society approved students’ alcohol consumption, they believed more strongly that drinking was a vehicle for socialization on campus, and they intended to consume more alcohol. Compared to non-Greeks, students who anticipated joining Greek organizations were associated with more proalcohol attitudes, normative perceptions,
Table 1
Description of the Samplea

<table>
<thead>
<tr>
<th>Variable</th>
<th>Gender</th>
<th></th>
<th>Greek Membership</th>
<th></th>
<th>Overall</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td></td>
<td>Male</td>
<td></td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Age of first drinkb</td>
<td>3.44</td>
<td>1.40</td>
<td>3.38</td>
<td>1.55</td>
<td>3.40</td>
<td>1.22</td>
</tr>
<tr>
<td>Resistance efficacyc</td>
<td>5.75</td>
<td>1.07</td>
<td>5.42</td>
<td>1.20</td>
<td>5.66</td>
<td>1.06</td>
</tr>
<tr>
<td>Descriptive normsd</td>
<td>3.71</td>
<td>0.78</td>
<td>3.75</td>
<td>0.86</td>
<td>3.88</td>
<td>0.74</td>
</tr>
<tr>
<td>Social approvale</td>
<td>2.84</td>
<td>1.21</td>
<td>3.16</td>
<td>1.29</td>
<td>3.18</td>
<td>1.32</td>
</tr>
<tr>
<td>Benefits to onesele</td>
<td>3.08</td>
<td>1.64</td>
<td>3.73</td>
<td>1.80</td>
<td>4.17</td>
<td>1.63</td>
</tr>
<tr>
<td>Benefits to othersf</td>
<td>4.45</td>
<td>1.28</td>
<td>4.56</td>
<td>1.30</td>
<td>4.71</td>
<td>1.14</td>
</tr>
<tr>
<td>Anticipatory socializationg</td>
<td>2.86</td>
<td>1.31</td>
<td>3.49</td>
<td>1.42</td>
<td>3.54</td>
<td>1.39</td>
</tr>
<tr>
<td>Aspirationh</td>
<td>4.47</td>
<td>1.16</td>
<td>4.38</td>
<td>1.11</td>
<td>4.64</td>
<td>1.12</td>
</tr>
<tr>
<td>Perceived similarityi</td>
<td>3.97</td>
<td>0.97</td>
<td>3.92</td>
<td>1.02</td>
<td>4.06</td>
<td>0.98</td>
</tr>
<tr>
<td>Alcohol consumptionf</td>
<td>3.73</td>
<td>2.29</td>
<td>4.20</td>
<td>2.50</td>
<td>5.53</td>
<td>2.26</td>
</tr>
</tbody>
</table>

a. Cell entries are from two-tailed t tests between males and females and between Greek members and nonmembers. Entries sharing the same subscript are not different at $p < .05$.
b. 1 = younger than 11 years, 2 = between 11 and 12 years, . . . 8 = never.
c. Ability to resist drinking, 7-point scale.
d. Estimate of others’ consumption: 1 = 0 drinks and 5 = more than 6 drinks.
e. 7-point scale.
f. Anticipated alcohol consumption: 1 = never and 9 = 4 or more times a week.
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and intentions. Thus, as has been reported elsewhere (Wechsler et al., 1995), we, too, found that propensity to consume alcohol on campus was greater for males than for females and for Greeks than for non-Greeks.

Statistical Analyses

To test our hypotheses, we conducted hierarchical regression analyses with intention to consume alcohol as the dependent variable; control variables were age of first drink, gender, Greek membership (3-level variable coded as 0 = intention not to join, 1 = intention to join unknown, and 2 = intention to join), and resistance efficacy to resist alcohol consumption. After introducing the control variables in the first block of the regression model, we added descriptive norms in the second block. In the first test of the third block, we added one normative mechanism, followed by the normative mechanism × descriptive norms interaction term. The latter two variables were then removed before adding another normative mechanism and its interaction with descriptive norms as the second test of the third block. This procedure was repeated until the effects of all normative mechanisms were tested. Hypothesis testing was done by evaluating the significance of the increment in explained variance. Following Aiken and West's (1991) recommendations, variables were centered on their mean and nonstandardized beta coefficients were used in interpreting the outcomes.

To answer the research question about the relative strength of each normative mechanism, we conducted regression equations in which, after first introducing the control variables, we included descriptive norms, all normative mechanisms, and the descriptive norms × mechanism interaction terms as the predictors.

Results

Analyses Common to All Hypotheses

All hypotheses were tested by including control variables—age of first drink, biological sex, Greek membership, and resistance efficacy—in the first block of a regression equation that used behavioral intention as the dependent variable. As shown in Table 2, these four variables collectively explained 19.7% of the variance. Each of the control variables was significantly associated with intention to consume alcohol: Those who consumed their first drink at a younger age, male, those who intended to join Greek organizations, and those with lower resistance efficacy were associated with greater behavioral intentions.
In the second block of the regression equation, we introduced descriptive norms (centered on the variable’s mean) that explained an additional 6% of the variance ($\Delta R^2 = .25$; $p < .001$). Total variance explained was 25.7%. Tests of each hypothesis were conducted by determining whether the addition of the normative mechanism and the normative mechanism $\times$ by descriptive norms interaction term resulted in a significant increment in explained variance, beyond the 25.7% explained by the control variables and the descriptive norms. Each normative mechanism (and the associated interaction term) was removed from the model in testing the effects of another normative mechanism. Given the large sample size, we set 1% increment in explained variance as the criterion with which to test the significance of the effects of the interaction terms on the dependent variable.

### Table 2

**Normative Predictors of Intention to Consume Alcohol (Each Normative Mechanism Tested Individually)**

<table>
<thead>
<tr>
<th>Block</th>
<th>$r^a$</th>
<th>Beta $^b$</th>
<th>$\Delta R^2(%)$</th>
<th>Total $R^2(%)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1: Controls</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age of first drink</td>
<td>-.32***</td>
<td>-.22***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>.10***</td>
<td>.17***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greek</td>
<td>.24***</td>
<td>.36***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resistance efficacy</td>
<td>-.17***</td>
<td>-.13***</td>
<td>19.7***</td>
<td>19.7</td>
</tr>
<tr>
<td>Block 2: DN</td>
<td></td>
<td></td>
<td></td>
<td>25.7</td>
</tr>
<tr>
<td>Block 3: Mechanisms$^c$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3Ai. SA</td>
<td>.23***</td>
<td>.15***</td>
<td>2.2***</td>
<td>27.9</td>
</tr>
<tr>
<td>3Aii. SA $\times$ DN interaction</td>
<td>.03</td>
<td>.03</td>
<td>0.1</td>
<td>28.0</td>
</tr>
<tr>
<td>3Bi. B</td>
<td>.76***</td>
<td>.68***</td>
<td>36.0***</td>
<td>61.6</td>
</tr>
<tr>
<td>3Bii. B $\times$ DN interaction</td>
<td>.11***</td>
<td>.05*</td>
<td>0.3*</td>
<td>61.9</td>
</tr>
<tr>
<td>3Ci. BO</td>
<td>.25***</td>
<td>.14***</td>
<td>1.7***</td>
<td>27.4</td>
</tr>
<tr>
<td>3Cii. BO $\times$ DN interaction</td>
<td>-.03</td>
<td>.01</td>
<td>0.0</td>
<td>27.4</td>
</tr>
<tr>
<td>3Di. AS</td>
<td>.49***</td>
<td>.36***</td>
<td>10.5***</td>
<td>36.2</td>
</tr>
<tr>
<td>3Dii. AS $\times$ DN interaction</td>
<td>.07*</td>
<td>.05*</td>
<td>0.3*</td>
<td>36.5</td>
</tr>
<tr>
<td>3Ei. A</td>
<td>.15***</td>
<td>.16***</td>
<td>2.6***</td>
<td>28.3</td>
</tr>
<tr>
<td>3Eii. A $\times$ DN interaction</td>
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<td>.07**</td>
<td>0.6**</td>
<td>28.9</td>
</tr>
<tr>
<td>3Fi. S</td>
<td>.16***</td>
<td>.16***</td>
<td>2.4***</td>
<td>28.1</td>
</tr>
<tr>
<td>3Fii. S $\times$ DN interaction</td>
<td>.11***</td>
<td>.07**</td>
<td>0.5**</td>
<td>28.6</td>
</tr>
</tbody>
</table>

*Note:* DN = descriptive norms; SA = social approval; B = benefits to oneself; BO = benefits to others; AS = anticipatory socialization; A = aspiration; S = similarity.

a. Zero-order Pearson correlation between predictor and intention to consume alcohol.

b. Unstandardized beta from regression equations.

c. All equations in Block 3 (3A through 3F) included variables in Blocks 1 and 2, in addition to one normative mechanism and one interaction term between the normative mechanism and descriptive norms. Thus, Block 3Ai included the control variables, descriptive norms, and the social approval main effect; Block 3Aii included all variables in Block 3Ai plus the social approval multiplied by descriptive norms interaction term. Block 3Bi did not include the social approval main effect or the social approval multiplied by descriptive norms interaction term.

* $p < .05$. ** $p < .01$. *** $p < .001$. 

In the second block of the regression equation, we introduced descriptive norms (centered on the variable’s mean) that explained an additional 6% of the variance ($\Delta R^2 = .25$; $p < .001$). Total variance explained was 25.7%. Tests of each hypothesis were conducted by determining whether the addition of the normative mechanism and the normative mechanism $\times$ by descriptive norms interaction term resulted in a significant increment in explained variance, beyond the 25.7% explained by the control variables and the descriptive norms. Each normative mechanism (and the associated interaction term) was removed from the model in testing the effects of another normative mechanism. Given the large sample size, we set 1% increment in explained variance as the criterion with which to test the significance of the effects of the interaction terms on the dependent variable.
Effects of Injunctive Norms

Social approval. The main effect of social approval, tested in Step 3Ai, was significant ($\beta = .15; p > .001; \Delta R^2 = 2.2\%$). The social approval multiplied by descriptive norms interaction term, tested in Step 3Aii, was not significantly related with behavioral intention ($\beta = .03; p > .05$). Thus, Hypothesis 1 was not supported.

Effects of Outcome Expectations

Benefits to oneself. The main effect of benefits to oneself, tested in Step 3Bi, was significant ($\beta = .68; p < .001; \Delta R^2 = 36.0\%$), as was the benefits to oneself $\times$ descriptive norms interaction term ($\beta = .05; p < .05; \Delta R^2 = .3\%$). According to the criterion set forth to test the significance of the interaction term (a minimal of 1% increment in explained variance), its association with intention to consume alcohol was judged to be nonsignificant. Hence, Hypothesis 2A received strong support, whereas Hypothesis 2B was not supported.

Benefits to others. As part of the second test of our second hypothesis, the main effect of benefits to others was significant ($\beta = .14; p < .001; \Delta R^2 = 1.7\%$), but the benefits to others $\times$ descriptive norms interaction term was not significant ($\Delta = .01; p > .05$). Hence, the second test of Hypothesis 2A, but not Hypothesis 2B, was supported.

Anticipatory socialization. The third test of our second hypothesis revealed that the anticipatory socialization main effect was significant ($\beta = .36; p < .001; \Delta R^2 = 10.5\%$), as was its interaction with descriptive norms ($\beta = .05; p < .05; \Delta R^2 = .3\%$). Here, too, the primary effect of anticipatory socialization on behavioral intention appears to be because of the main effect and not the interaction effect.

Effects of Group Identity

Aspiration. The first test of our third hypothesis was conducted by adding aspiration into the regression equation, followed by the aspiration $\times$ descriptive norms interaction term. The main effect of aspiration was significant ($\beta = .16; p < .001; \Delta R^2 = 2.6\%$). The strength of the interaction with descriptive norms ($\beta = .07; p < .01; \Delta R^2 = .6\%$) was judged to be nonsignificant as it did not explain more than 1% of the variance.
Similarity. Tests of the effects of similarity showed that the main effect was significant ($\beta = .16; p < .001; \Delta R^2 = 2.4\%$). The strength of the similarity $\times$ descriptive norms interaction term ($\beta = .07; p < .01; \Delta R^2 = .5\%$) was judged not to be significant as it explained less than 1% of the variance.

Relative Strength of Normative Mechanisms

Our research question was concerned with understanding the relative strength of the normative mechanisms in explaining intention to consume alcohol. Table 3 shows the results of the regression equations conducted to answer this question. The four control variables (age of first drink, gender, Greek membership, and resistance efficacy), descriptive norms, and the normative mechanisms were included in the model in the first step. All four control variables, descriptive norms, and all but two (social approval and aspiration) of the normative mechanisms were significant, and they explained 62.7% of the variance. Two unexpected results were found in this analysis. First, with other variables in the model, being female was associated with greater intention to consume alcohol; and second, perception about benefits to others was negatively associated with behavioral intention. These findings are discussed subsequently.

Next, we introduced six interaction terms (between the normative mechanisms and descriptive norms). To avoid multicollinearity (because descriptive norms was common in all interaction terms), this portion of the regression test was conducted in a stepwise fashion. In the second block, the similarity $\times$ by descriptive norms interaction term was significant ($\beta = .05; p < .01; \Delta R^2 = .3\%$), and in the third block, the benefits to oneself $\times$ descriptive norms interaction term was significant ($\beta = .04; p < .05; \Delta R^2 = .2\%$). Overall, our model was able to explain 63.2% of the variance in behavioral intention.

Discussion

Given the widespread acceptance in the literature of the relation between normative perceptions and health behaviors, the primary purpose of this article was to introduce and explain three mechanisms that moderate the relationship between descriptive norms and behavioral intentions, injunctive norms, outcome expectations, and group identity. Each mechanism was a significant predictor of intention to consume alcohol, even after controlling for traditional predictors of consumption and descriptive norms. It thus appears that the widely reported finding in the literature—that college students’ alcohol consumption is determined by their normative beliefs (Perkins
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comprehensive regression model tests for the influence of benefits to others by taking into account the effect of benefits to oneself, the model with individual normative mechanisms considers only the former. This leads us to conclude that although perceptions about benefits that others derive from consumption are associated with students’ own behavioral intention, this effect is better tested by considering the relative benefits (to oneself vs. others) of consumption. When we controlled for the effects of benefits to oneself, those who believed that others derived few benefits from consumption had stronger intentions about drinking. This suggests that perhaps students who intend to consume alcohol believe that the benefits they derive from this activity is not shared by others and that they have a special access to benefits unknown to others. The literature on optimistic bias (Weinstein, 1989; Weinstein & Klein, 1995) proposes, for example, that, across a variety of health domains, individuals’ risk perceptions for themselves diverge from risk perceptions they attribute to others. Specifically, individuals have the propensity to view themselves, relative to others, as being less vulnerable. We speculate that in line with this reasoning, students perceive that the detrimental effects of alcohol, although they apply to the students’ peers, are not applicable to themselves and that students believe they are able to cope with alcohol-related problems better than their peers. If so, it would be logical for students to believe that others suffer from alcohol-related harm but they themselves not only are immune to such harm but in fact derive substantial benefits unknown to others.

We also found that contrary to expectations, intention to consume alcohol was stronger among female students than among male students when normative mechanisms were taken into account. Further analyses revealed that the inclusion of one normative mechanism in particular—benefits to oneself—reversed the relationship between biological sex and intention to consume alcohol (males showed stronger intentions without this mechanism in the model, whereas females showed stronger intentions with this mechanism in the model). Furthermore, males perceived greater benefits from consumption than did females. Path analyses, using perceived benefits as the mediator in the relationship between being male and intention to consume alcohol, revealed that the regression coefficient between being male and perceived benefits was .37 (p < .001), that between perceived benefits and intention to consume alcohol was .77 (p < .001). The relation however, between being male and intention to consume alcohol, controlling for the effects of perceived benefits, was –.10 (p < .01). Thus, it appears that perception about the positive benefits of consumption is key: Males are likely to consume more alcohol than females because they perceive more benefits from consumption.
Implications for Health Campaigns

Reliance on normative restructuring strategies is a rapidly growing movement across American campuses as health educators try to curtail the prevalence of drinking by young adults. There is now even what is colloquially called the Social Norming Conference (National Conference on the Social Norms Model). This conference brings together educators and researchers from across the country to share norms-based strategies in their fight against alcohol. Because strategies to combat alcohol problems on campus conceptualize normative perceptions (solely) in terms of descriptive norms, anti-alcohol campaigns are rightfully concerned with changing these misperceptions. At the university where this study was conducted, for example, health educators have undertaken an intensive campaign, entitled 7 out of 10, to show that roughly 70% of students consume only zero to three drinks in one sitting.

To what extent are these efforts likely to bear fruit? Although we do not currently have rigorous evaluations of normative restructuring campaigns, available evidence (Wechsler et al., 2003) indicates that these campaigns have not been successful in curtailing consumption. Wechsler et al. (2003) further found that total volume of consumption actually increased in colleges that had experimented with normative restructuring campaigns. This most likely reflects selection biases—that colleges with more serious alcohol problems would be more likely to implement interventions to begin with—but clearly more studies need to investigate this further.

Findings reported in this article suggest, however, that the effectiveness of these norms-based campaigns can be improved significantly if we conceptualize norms in terms of perceived prevalence and simultaneously consider the underlying mechanisms. By taking into account these normative mechanisms, for example, we were able to increase the predictive power of our models significantly—from 27% to 63% of explained variance. From a practical perspective, the question then becomes “How can health promotion efforts incorporate findings from this article to enhance their effectiveness?” Based on our findings, we propose a number of strategies.

First, our results indicate that the most influential normative mechanism is students’ perceptions about alcohol-related outcomes. Not only were students who perceived more (compared to fewer) benefits more likely to have stronger intentions about drinking, but this effect was moderately enhanced if students also believed that most of their peers engaged in drinking. Hence, it appears that antialcohol campaigns should focus not only on rectifying misperceptions about the prevalence of consumption (the prevailing practice), but they should also concentrate on restructuring students’ perceptions
about consumption-related benefits. At this point in the research, we do not know the extent to which these perceptions about benefits correspond with actual benefits that students derive from drinking. Similar to recent research about the misperceptions associated with the prevalence of drinking, it is perhaps time to begin conducting research that seeks to determine whether and to what extent perceived benefits mirror actual benefits. It may well be that students also harbor exaggerated perceptions about alcohol-related benefits. If so, antialcohol campaigns could disseminate messages that counter misperceptions about consumption-related benefits. Alternatively, they could develop messages that portray benefits relative to significant costs associated with alcohol consumption. The challenge, of course, is to present these messages in a credible fashion.

Given the strong relation between perceived benefits and consumption reported in this article, it is possible that messages that do not acknowledge students’ extant perceptions about benefits (by only focusing on the costs associated with drinking) will engender strong counterarguments. Perhaps focusing on the benefits to be derived from not consuming alcohol is a viable strategy. In other words, if campaigns can disseminate a dual message—that most students do not drink excessively and that most of them derive significant benefits from responsible drinking—we may be able to use the link between benefits and consumption in a positive way. Furthermore, as suggested earlier, if students believe that most others suffer from alcohol-related harm, but they themselves remain immune to it and in fact derive benefits from it, then health promotion efforts could concentrate on correcting this mismatch between ascribed harm to others and benefits to oneself. The challenge, it seems, is to be able to accomplish this task in a credible and persuasive manner.

Second, we observed that descriptive norms and similarity to others also jointly affected students’ intention to consume alcohol, although this relation was relatively weaker than the main effects. It appears that the effectiveness of extant public health efforts to rectify normative misperceptions can be enhanced if students are persuaded to draw similarities between themselves and other nondrinking peers. If campaigns are successful in convincing students that most of their peers are responsible consumers of alcohol, then students who see similarities between themselves and most other students may curtail their own consumption patterns.

We also observed significant main effects as well as a weak interaction effect of descriptive norms and anticipatory socialization on students’ intention to consume alcohol. Perhaps the most striking aspect of this finding has to do with the fact that participants in our study were not yet university students—we conducted the survey among high school graduates who were
preparing to come to the university for the first time. Even among this population, perception about alcohol’s function as a social lubricant was significantly correlated with intention to consume alcohol. Thus, high school graduates, before they set foot in college, have already learned to associate alcohol consumption with significant social benefits—that it “is a part of college experience” or that “drinking alcohol is an important social life.” These perceptions are likely based on their own prior experience. If so, it appears that colleges that seek to reduce alcohol consumption by their students need to consider interventions that target students before they come to college, perhaps by forming coalitions with high schools.

Limitations

One of the primary limitations of this study concerns our dependent variable intention to consume alcohol. We do not know the extent to which the intentions reported by students in our sample are under- or overreported. Neither do we know how well these intentions correlate with actual consumption. There is empirical support, however, that intentions are reasonable proxies for actual behavior. Kim and Hunter (1993) found, for example, that intentions explained 67% of the variance in behavior. Given that students in our sample were legally underage, we opted to measure intention (as opposed to actual consumption) to not put students in an awkward situation where they would be asked to admit to engaging in an illegal activity. Despite this limitation, we nevertheless believe that it is important to understand the behavioral intentions with which students enter a university for the first time.

The second limitation of this study was its design. We did not manipulate any of the variables, and so, as with any correlational study, the implied causal link between norms and behaviors is speculative. It may well be the case, for example, that students who harbor strong intentions to drink alcohol subsequently justify these intentions by construing that most others also drink. If so, we need to ask questions about where those initial intentions originate to tackle the problem at the source. Success from norms-based strategies (Peeler et al., 2000; Steffian, 1999) seems to suggest, however, that focusing on normative perceptions is likely to bear fruit.

Conclusion

To more fully understand the influence of normative perceptions on human behavior, Cialdini et al. (1990) made a distinction between descriptive norms and injunctive norms. Descriptive norms, in their conceptualization, describe the environment (i.e., they tell us what is), whereas injunctive norms impose
behavioral guidelines (they tell us what to do). Cialdini et al. proposed that the cognitive processes that govern the influences of these two types of norms on behavior are likely different. Whereas behavior changes resulting from injunctive norms are likely because of social pressures brought to bear by the presence of others (peer pressure, for example), behavior changes resulting from informational norms are likely because of changes in individuals' internal frames. Hence, whereas external supervision is required for injunctive norms to influence behavior, informational norms can influence behaviors in the absence of such supervision. This is in line with Kelman’s (1961) distinction between persuasion brought about through compliance, which is associated with coercion, and internalization, which is not.

Although we found that injunctive norms exercised a direct influence on behavioral intention, they did not interact with descriptive norms. Hence, evidence from this study indicates that these two processes operate independent of each other. This is incongruous with our prior study (Rimal & Real, 2003), conducted among college students with the use of identical measures, in which the interaction between injunctive and descriptive norms was significantly associated with consumption. We suspect that we did not find the interaction effect in this study for two reasons. First, participants had not yet lived with members of their social network, as they were incoming students. In our prior study, participants were students who had already spent more than a year on campus. It could be that injunctive and descriptive norms jointly affect consumption only after social networks have been more firmly established—when sanctions become meaningful. Second, questions used in this study asked about perceptions of approval from authority figures (university administrators, parents, etc.); it is likely that the influence of injunctive norms are greater when approval cues emanate from members of students' social circles. These are issues for further testing and confirmation.

It is likely, however, that an understanding of this distinction between descriptive and injunctive norms and incorporating it into our health promotion campaigns can enhance their effectiveness. Current norms-based campaigns to reduce alcohol consumption are concerned mainly with descriptive norms. They have been conducted under the assumption that, by changing individuals' perceptions about the prevalence of a behavior—that is by correcting misperceptions about descriptive norms, behavior change will follow. The TNSB proposed and tested in this article points out, however, that research that seeks to understand how norms influence behaviors must make the distinction between descriptive and injunctive norms and take into account the role of outcome expectations and group identity.
Notes

1. Rajiv N. Rimal, Ph.D. (Stanford University, 1995) is an assistant professor in the Department of Health Policy and Management at the Bloomberg School of Public Health, Johns Hopkins University. Kevin Real, Ph.D. (Texas A & M University, 2002) is an assistant professor in the Department of Communication at the University of Kentucky. This research was conducted during the first author’s tenure at the University of Texas. Authors thank Frances Hamm for her contribution to this research, the anonymous reviewers who provided much feedback, and the coeditor, Dr. Roloff, whose input was invaluable. Please address all correspondence to rrimal@jhsph.edu.

2. Aiken and West (1991) recommend that interaction tests should be conducted by (a) centering the predictors around their mean, (b) standardizing the predictors and the criterion variable, and (c) interpreting the unstandardized regression coefficients. In our analyses, we adopted these procedures for testing the effects of the normative mechanisms and the effects of the normative mechanism multiplied by descriptive norms interaction terms.

3. This is consistent with prior research, which has found that by seventh grade, almost 90% of the students had formed normative perceptions of collegiate drinking (Thombs, Olds, & Ray-Tomasek, 2001).

References


