

Social Norms and Expectancy Violation Theories: Assessing the Effectiveness of Health Communication Campaigns

Shelly Campo, Kenzie A. Cameron, Dominique Brossard & M. Somjen Frazer

College students' processing of alcohol, smoking, and exercise social norms messages, and related effects on judgments, attitudes toward one's own behaviors, and attitudes toward undergraduates' behaviors were examined using social norms marketing and Expectancy Violation Theory (EVT) (N = 393). Receiving statistical social norms messages led to an expectancy violation of the perceived social norm (i.e., a discrepancy between the expected and actual statistic conveyed with a message). Consistent with Boster et al. (2000), the effect of the message discrepancy on attitudes was mediated by judgments. In accordance with social norms, when participants were provided with a statistic, the majority moved their judgments (but not their attitudes) toward the provided statistic, a result only consistent with EVT in the case of positive violations. The results have multiple implications: (1) social norms messages may work to change judgments, but do not result in consistent attitude change; (2) the process of judgment change functions

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similarly across message topics, as well as message types (i.e., attitudinal versus behavioral); (3) judgment change does not appear to be the main cause for attitude change upon receipt of a social norms message; and (4) a message-based expectancy violation does not function in the same way as a violated behavioral expectation.

Keywords: Social Norms; Expectancy Violation; Health Communication

Health-related campaigns abound on college campuses, both to discourage unhealthy behaviors and to encourage healthy ones. By far, the issue receiving the most attention is alcohol use and abuse. Media attention, as well as administrative attention, on college campuses regarding the use and misuse of alcohol increased following an article published in 1994 by Wechsler, Davenport, Dowdall, Moeykens, and Castillo. These Harvard researchers reported that, based on a sample of 17,492 students at 140 college campuses, 44% of college students were binge drinkers. In response, many universities sought approaches that would enable them to curtail further increases in binge drinking.

Social Norms Marketing

One popular approach to dissuade unhealthy behaviors is harm reduction, which promotes moderation in addition to abstinence. As part of harm reduction, universities are choosing to incorporate social norms marketing. These campaigns are predicated on pluralistic ignorance (Allport, 1924; Fields & Schuman, 1976; Prentice & Miller, 1993), which is the idea that individuals are unable to accurately judge the social norm. Social norms marketing assumes that once you correct the perceived norm so that it matches the actual norm, individuals will alter their behavior accordingly (Perkins & Berkowitz, 1986). Social norms campaigns are considered to be useful for targeting those who overestimate the true norm of use (Wechsler & Kuo, 2000). However, in any campaign, there will be some who overestimate ("overestimators"), some who underestimate ("underestimators"), and a small number who accurately perceive the norm. For example, a study by Perkins and Berkowitz showed that college students had inaccurate perceptions regarding student alcohol consumption, most being overestimators and believing that other students consumed more than they actually did. When exposed to a message containing the correct statistic, most would experience a discrepancy of their perception versus reality. Perkins and Berkowitz believed that correcting the misperception by reducing or eliminating the discrepancy would lead to a corresponding behavior change. When Northern Illinois University used such a campaign, they saw a 44% reduction in heavy alcohol consumption over a decade; a reduction they attributed to the success of social norms marketing (Frauenfelder, 2001). Similarly, the University of Arizona saw a 29.2% decline over several years during which they implemented social norms campaigns along with other harm reduction approaches (Johannessen, Collins, Mills-Novoa, & Glider, 1999).

College administrators and college health prevention experts are considering social norms campaigns as a possible design for targeting other health behaviors such as smoking and condom use. However, despite their widespread popularity among college health educators, particularly related to alcohol abuse issues, the efficacy of social norms campaigns is still in question. In nearly all cases reporting decreases in the unhealthy behavior, additional interventions have been used simultaneously. At the University of Arizona, policy changes, such as requiring bartenders to check IDs at campus and Greek social events, implementing crackdowns on underage drinking on and off campus, and building coalitions with the media, student groups, parents, and others were used in conjunction with social norms marketing (Johannessen et al., 1999). Lederman, Stewart, Barr, Powell, Laitman, and Goodhart (2001) and Stewart et al. (2002) have suggested that social norms campaigns have been effective at Rutgers University. However, the campaigns used at Rutgers involved an extensive amount of interpersonal approaches in the form of peer education based on their Socially Situated Experiential Learning Model, in addition to traditional media-based social norms campaigns. Wechsler, Kelley, Weitzman, Giovanni, and Seibring (2000) found in a study of 734 college presidents that the greater the perceived alcohol use, the more resources put toward educational efforts, campaigns, counseling services and task forces, which suggest social norms efficacy needs to be examined independently of other interventions. Studies using control groups often have found that misperceptions were corrected through social norms campaigns, but drinking behavior was not affected (e.g., Barnett, Farr, Mauss, & Miller, 1996; Steffian, 1999; Werch, Pappas, Carlson, DiClemente, Chally, & Sinder, 2000). Moreover, Wechsler, Nelson, Lee, Seibring, Lewis, and Keeling (2003) found that in examining data from the College Alcohol Study from 1997, 1999, and 2001, colleges employing social norms campaigns ($n = 37$) did not differ from those that had not ($n = 61$) in alcohol use over time.

Perkins and Weschler (1996), in a study surveying students at 140 colleges, found that social norms do predict personal alcohol use even when controlling for personal attributes. In contrast, Baer and Carney (1993) found that estimates of misperceptions of drinking problems were *not* related to personal alcohol consumption. Real and Rimal (2001), in a survey of 353 undergraduates, found that perceived prevalence of alcohol use was not predictive of alcohol consumption when other normative mechanisms were included and when controlling for demographics, social and peer communication patterns. Similarly, Campo, Brossard, Frazer, Marchell, Lewis, and Talbot (2003) found that neither the size nor the direction (underestimate or overestimate) of the misperception of the social norm predicts behavior. Rather, it is the perception of the norm of one's *friends'* behaviors that predicts individual behavior.

Many commonly cited studies that argue for the effectiveness of social norms campaigns do not actually contain empirical support for the effects on behavior (e.g., Perkins & Berkowitz, 1986; Perkins, Meilman, Leichler, Cashin, & Presley, 1999; Pollard et al., 2000). Many find evidence of students misperceiving the norm, but fail to find any relationship between correcting misperceptions and behavior change.

Keeling (1999, 2000), in a series of editorials, condemned social norms marketing for poor measurement and called for more rigorous testing. Despite this call, current trends show an increase in use of social norms marketing on college campuses (Frauenfelder, 2001), yet there remains a lack of theoretical explanation for effects or lack of effects of these messages. Also, campuses are beginning to use messages based upon attitudes as well as behaviors; nonetheless, attitude-based messages have yet to be tested and compared to behavioral-based messages. With the exception of the Perkins et al. (1999) study regarding tobacco and other drugs, in which they found there was more overestimation of tobacco use than of other drugs including alcohol, empirical testing has been solely based on alcohol consumption. In other words, the effectiveness of the social norm approach has not been tested with other unhealthy addictive behaviors such as smoking, as well as with healthy behaviors such as exercise. The implicit assumption with lack of such testing is that these distinct types of messages are expected to cause similar effects; however, we do not know whether or not that is the case.

One purpose of this study is to test the extension of social norms marketing into addictive unhealthy behaviors as well as varied healthy behaviors. We therefore offer the following hypothesis based on the assumption of pluralistic ignorance made by social norms marketing:

H1: Students will have an inaccurate perception of the normative statistic, regardless of health topic.

Inherent to the success of social norms campaigns is the assumption that the discrepancy between the expected statistic and the statistic provided in the message will create a change in judgment toward the statistic provided in the message. Thus,

H2: Exposure to a message containing a discrepant statistic will result in a change in judgment toward the provided normative statistic.

The ultimate goal of social norms campaigns is to motivate behavior change toward enactment of healthy behavior. Thus, the implicit assumption is that the change in judgment caused by the receipt of a discrepant message will eventually result in behavior change. Numerous persuasion models, most notably the Theory of Planned Behavior, indicate that, in most cases of noncoercive persuasion, behavior change is preceded by attitude change (cf., Ajzen, 1985, 1991; Kim & Hunter, 1993). Therefore, if behavior change is expected, we would expect first to see attitude change occurring as a result of receiving a discrepant message. However, as the social norms approach does not state this occurrence explicitly, we offer the following as a research question:

RQ1: In a social norms campaign, does presenting a message containing a statistic that is discrepant from one's expectations lead to a change in attitude?

Moreover, although the social norms approach would predict that, overall, judgments should move toward the "correct" statistic (i.e., the statistic provided in

the message) and attitudes also should move in a healthier direction, not everyone who is exposed to the message is likely to adjust in a healthy direction. Therefore,

RQ2: What proportion of participants report (a) more positive, (b) no change in, or (c) more negative judgments and attitudes toward the health topic following receipt of message containing a discrepant statistic?

Statistical Evidence and Persuasion

Studies using statistical evidence in messages have demonstrated the persuasive efficacy of this approach (e.g., Allen et al., 2000; Boster et al., 2000; Slater & Rouner, 1996). Boster et al. (2000) employ causal modeling when studying the effect of statistical evidence on attitude change. Specifically, they hypothesize that judgment change mediates the relationship. In their study, judgment is a belief and is operationalized as the percentage of persons enacting a particular behavior. Basing their argument on the mathematics of causal analysis, they posit that the correlation between the first and third variables in the causal string will be the product of the correlation between (1) the first and second and (2) the second and the third variables. Their data were consistent with their hypothesis. Applying this mediational model to social norms messages could be helpful in examining whether or not message discrepancy leads to judgment change and to a corresponding change in attitudes. Thus,

H3: Judgment change mediates the relationship between message discrepancy and attitude change.

Expectancy Violation Theory

Social norms marketing is based on the idea that target audiences will experience a violation of their expectation of the actual behavioral norm when receiving a message containing a statistic that is discrepant from their perception of this norm. Research in the field of communication regarding expectancies has led to exploring both language and message development (Burgoon, 1995; Burgoon & Miller, 1985) and to examining the role of nonverbal expectations (cf., Burgoon & Hale, 1988) through the lens of expectancies. M. Burgoon and Miller offer a framework named Language Expectancy Theory, which suggests that, when expectations are violated (either positively or negatively), a corresponding shift in attitudes, or lack of movement in the case of negative violations, will be observed. An alternate route by which to explore expectations and their links to communicative events was taken by J. Burgoon and colleagues (Burgoon, 1978; Burgoon & Hale, 1988; Burgoon, Newton, Walther, & Baesler, 1989). This route focused on expectancies as they related to nonverbal behaviors. The proposed theoretical framework, labeled Expectancy Violation Theory (EVT), suggests that persons have expectations about others' nonverbal behaviors, and that violations of these held expectations result in an

increase in arousal, which is then identified as either a positive or negative violation by the receiver (Burgoon & Hale, 1988).

Recently, there have been calls to consider the application of EVT to situations beyond nonverbal behavior and to examine message effects. Burgoon, Dunbar, and Segrin (2002) noted that marketing and sales research and practice has consistently urged the practice of setting expectations low so that goods and services would result in positive expectancy violations and therefore lead to more positive evaluations of the products and greater likelihood of purchasing items. Siegel and Burgoon (2002) suggest expanding beyond traditional sales arenas into health messages. They posit that by violating a receiver's expectations in a message, an orienting response will be created. This response will lead to increased focus on the message content. Once receivers focus on the message, they will be forced to evaluate it. In their view, this should amplify the effectiveness of health campaigns.

The present study included items to assess a normative violation (e.g., a violation in the percentage of students you think believe that drinking to get drunk is not cool). Messages used in social norms campaigns typically present a percentage of those engaging in healthy behavior. EVT would suggest that prior to reading the message, individuals have in mind their perception of the normative statistic, and that some would underestimate and some would overestimate the actual normative statistic. Those overestimating the percentage of students performing a *healthy* behavior ("overestimators") would experience a negative expectancy violation, while those underestimating the correct percentage ("underestimators") would experience a positive expectancy violation.

EVT predicts that positive and negative violations lead to different ends (behaviors): If a positive violation occurs (e.g., the message indicates that more people than expected think drinking to get drunk is *not* cool), then receivers should move in the direction advocated by the source/the message. This result is in accordance with the predictions of social norms. However, if a negative violation occurs (e.g., the message indicates that fewer people than expected think drinking to get drunk is *not* cool), receivers should experience either no change or change in the direction opposite of that advocated by the source, a result in discord with predictions of social norms. Such a labeling of positive and negative violations implies that people would see a healthier attitude and/or behavior (e.g., drinking in moderation as opposed to binge drinking) as desirable. Based on the implicit assumptions within social norms marketing (e.g., Hypotheses 1 and 2), as well as the mediational model discussed above (Hypothesis 3), one would expect these EVT predictions to hold for all judgments and attitudes measured. An EVT perspective would advance the following hypotheses (see Table 1):

H4: If a message creates a positive violation: (a) participants' judgments will move toward the statistic provided in the message, (b) participants' attitudes toward own behavior will move in the direction advocated by message, and (c) participants' attitudes toward undergraduates' behaviors will move in the direction advocated by the message.

Table 1. Social Norms and Expectancy Violation Predictions

	Social norms predictions	Expectancy violation predictions
Overestimators (negative violations)	Move toward "true" statistic	No change or opposite advocated message
Underestimators (positive violations)	Move toward "true" statistic	Move toward "true" statistic

H5: If a message creates a negative violation: (a) participants will experience either no judgment change or change away from the statistic provided in the message, (b) participants will experience either no attitude change toward their own behavior or change away from the statistic provided in the message, and (c) participants will experience either no attitude change toward undergraduates' behavior or change away from the statistic provided in the message,

Methods

Participants

Participants were 393 college students, drawn from university populations at two separate universities, one in the southeast ($n = 168$) and one in the northeast ($n = 225$). Subjects were students in introductory public speaking courses, which contain a cross-section of majors from around the universities, as well as upper level communication courses. Communication majors represented 26% of the sample. Fifty-three percent of the participants were female and 47% male. The age of the participants ranged from 18 to 31 ($M = 20.16$, $SD = 1.61$). In addition, 6.6% of the sample were African American/Black, 80.8% white, 6.4% Asian/Asian American, 0.5% American Indian/Native American, 1.8% biracial, 2.6% Chicano/Hispanic, and 1.3% other racial backgrounds.

Message Creation

Two messages were created for each of the three health topics under study. One message provided the normative statistic regarding undergraduate attitudes toward a health behavior (i.e., attitudinal message), whereas the second message provided the normative statistic regarding reports of undergraduate participation in these unhealthy/healthy behaviors (i.e., behavioral message) (see Appendix for messages). The presented statistics were obtained from previous university-based self-reported survey data regarding each of the health topics. Messages mimicked the content of social norms campaigns currently being used at multiple universities. Messages were short passages attributed to a credible source (National Institutes of Health, Harvard School of Public Health, and Centers for Disease Control) that presented the normative statistic regarding attitudes or behaviors of other undergraduates at the university. For ethical purposes, all of the messages were framed such that healthier

behaviors were presented (e.g., the majority of college students drink in moderation, do not smoke, and exercise regularly). The messages indicated the data were from a sample size of approximately 1,500 students, and noted a margin of error of $\pm 4\%$. The statistics presented were attributed in the message to a previous study conducted at the target university.

Procedure

Participants received either extra credit or course credit for their participation in this study. They were administered the study in groups. Participants arrived at the classroom and were instructed that researchers were interested in learning their responses to a series of health-related messages under consideration for use at their university. They were advised that the questionnaire would take approximately 30 minutes to complete and were given one of six versions of the questionnaire. Following completion of the questionnaire, participants were debriefed and provided the researchers' contact information should they have any questions or concerns.

Questionnaire

Multiple questionnaires were developed such that each student read and responded to two messages. Questionnaires were randomized based on both message topic (i.e., alcohol, smoking, exercise) and message type (i.e., attitudinal, behavioral). Each student was exposed to one attitudinal and one behavioral message regarding two of the three health topics (e.g., alcohol attitude, smoking behavior) such that no participant received an attitudinal and behavioral message on the same health topic. The first portion of the questionnaire included measures of the participants' own behaviors related to alcohol use, smoking, and/or exercise; measures of the participants' expectation of other undergraduates' behaviors; a scale assessing their attitudes toward their own health behaviors as well as a scale assessing their attitudes toward other undergraduates' behaviors. After completion of this portion of the questionnaire, participants read the message. Following the message, the students again provided answers regarding their judgments of and attitudes toward their own and other students' behaviors regarding the health topic. The questionnaire concluded with demographic questions.

Health behaviors

Prior to receiving the related message, all participants were asked to provide estimates of their behaviors regarding the three health topics. Alcohol behaviors were measured by a two-item scale measuring situational drinking behavior ("On average, how many alcoholic drinks do you consume when you socialize in a setting with alcohol?" and "Within the last two weeks, how many times have you had five or more alcoholic drinks in a sitting?" Cronbach's $\alpha = .78$), as well as a one-item measure assessing the total number of alcoholic drinks the student reported consum-

ing per week. Smoking behaviors were measured with two items, one querying the number of cigarettes/cigars the participant smoked per month, the other asking the participant to provide the number of days in the last month they had smoked. Exercise behaviors were measured with two items, one asking the number of days per week the participant exercised, the other asking the participant to provide an estimate of the number of minutes per session they exercised.

Expectancy violation measures

Expectancy violations were calculated such that there were a total of 12 separate violations (four for each of the three health topics: two regarding attitudinal violations, two regarding behavioral violations). For those participants receiving an alcohol attitude message, prior to reading the message, they had indicated their judgment as to what percentage of undergraduate students at the university think it is important to avoid drinking to get drunk. Those participants receiving an alcohol behavior message indicated their judgment as to what percentage of undergraduate students at the university drink less than five alcohol drinks a week. Those participants receiving a smoking attitude message indicated their judgment as to what percentage of undergraduate students believe it is a good idea not to smoke. Those participants receiving a smoking behavior message indicated their judgment as to what percentage of undergraduate students smoke less than three cigarettes a month. Those participants receiving an exercise attitude message indicated their judgment as to what percentage of undergraduate students think exercising regularly is a good practice. Finally, those participants receiving an exercise behavior message indicated their judgment as to what percentage of undergraduate students at the university exercise at least twice per week. Following identification of each of these judgments, the statistic provided in the message was subtracted from each judgment to obtain the corresponding expectancy violations. If the resulting number was positive, the participant was labeled as an overestimator, having a healthier perception than the actual norm; if negative, the participant was labeled as an underestimator, having a less healthy perception than the actual norm suggests.

Judgment change measures

As both social norms marketing and EVT focus on changes of individual perceptions of judgments, a change variable was created for each judgment in question. The change scores were calculated by subtracting the expressed judgment of the participants following their reading of the message from the expressed judgment provided prior to reading the experimental message. As there were two messages for each of the three health topics, one related to undergraduate attitudes at the university and one related to undergraduate behaviors at the university, there were a total of six change scores used in analyses. These six judgment change scores included: participants' judgments of the norm of undergraduates' attitudes toward drinking to get drunk, judgments of the norm of

undergraduates' drinking behavior, judgments of the norm of undergraduates' attitudes regarding smoking, judgments of the norm of undergraduates' smoking behavior, judgments of the norm of undergraduates' attitudes toward exercising, and judgments of the norm of undergraduates' exercise behaviors.

Attitude change measures

Change scores were also computed for the attitudinal measures used in this study. These change scores were calculated as were the judgment change scores: the expressed attitude of the participants following their reading of the message was subtracted from the expressed attitude provided prior to reading the experimental message. The attitude variables were multi-item variables. As reliabilities cannot be provided for change scores, we have provided the premessage and postmessage reliabilities for each of the attitude scales.

To measure one's own attitude toward drinking, participants were asked to indicate on a 5-point scale the extent of their agreement to three items ("I don't have to get drunk to have a good time," "I think drinking to get drunk is a bad idea," and "I feel better when I do not drink"). These three items fit a single factor (premessage reliability = .60; postmessage reliability = .62). Three items were intended to measure one's perception of undergraduate drinking. However, upon analysis, the three items failed to fit a single factor. As a result, one item was selected for use ("XXX university undergraduates think that drinking to get drunk is a bad idea").

To measure one's own attitude toward smoking, participants were asked to indicate on a 5-point scale the extent of their agreement to three items ("I believe that I should avoid smoking," "I believe that it is important for me to avoid smoking," "I need to avoid smoking to maintain good health"). These three items fit a single factor (premessage reliability = .89; postmessage reliability = .91). Four items were used to measure one's attitude toward undergraduate smoking behaviors (e.g., "Avoiding smoking is a good practice for XXX university undergraduates"). These items fit a single factor (premessage reliability = .88; postmessage reliability = .94).

To measure one's own attitude toward exercising, participants were asked to indicate on a 5-point scale the extent of their agreement to four items (e.g., "I believe that I should exercise regularly"). These four items fit a single factor (premessage reliability = .89; postmessage reliability = .92). Four items were used to measure one's attitude toward undergraduate exercising behaviors (e.g., "XXX university undergraduates need to exercise to maintain good health"). These items fit a single factor (premessage reliability = .90; postmessage reliability = .93).

Results

There were no order effects based upon the order of the message health topic, nor on the order of message type. In addition, there were no statistical differences in

responses to the dependent variables based upon university affiliation. Thus, the samples were collapsed for data analysis.

Health Behaviors

Alcohol

The two universities had very similar alcohol use patterns. The means on the drinking scale measuring situational drinking behavior were virtually identical (Northeast University $M = 3.01$, $Mdn = 2.5$, $SD = 2.43$; Southeast University $M = 3.07$, $Mdn = 2.5$, $SD = 2.71$; $t = .07$, $p = ns$). The number of drinks per week was slightly higher at the Southeast university ($M = 9.30$, $Mdn = 5$, $SD = 10.30$; Northeast University $M = 8.30$, $Mdn = 5.75$, $SD = 11.38$) but nonsignificant ($t = .82$, $p = ns$).

Smoking

Smoking use patterns at the two universities differed. The mean number of days per month that students used cigarettes (Northeast University $M = 2.82$, $Mdn = 0$, $SD = 7.12$; Southeast University $M = 6.52$, $Mdn = 0$, $SD = 10.66$; $t = 16.54$, $p < .001$) and the mean number of cigarettes per month (Northeast University $M = 14.18$, $Mdn = 0$, $SD = 64.1$; Southeast University $M = 45.42$, $Mdn = 0$, $SD = 112.35$; $t = 12.12$, $p < .001$) were both significantly higher at the Southeast University. However, the medians and modes for these measures at both universities were zero.

Exercise

The mean number of days per week that students exercised (Northeast University $M = 3.47$, $Mdn = 3$, $SD = 1.93$; Southeast University $M = 3.02$, $Mdn = 3$, $SD = 1.80$) were significantly different ($t = 2.55$, $p < .02$). The number of minutes per session that students exercised (Northeast University $M = 58.41$, $Mdn = 60$, $SD = 33.22$; Southeast University $M = 56.41$, $Mdn = 60$, $SD = 33.21$) were not statistically different across campuses ($t = .35$, $p = ns$). The medians were identical for both behavioral measures.

Social Norms Marketing Predictions

Few will know the correct statistic

Hypothesis 1 predicted that few participants would accurately perceive the norm. Recognizing that to consider only those who provided the exact percentage (norm) as being "correct" was overly restrictive, those participants whose perception of the norm was within $\pm 5\%$ of the actual norm were coded as accurately perceiving the norm. In all cases, five or fewer people accurately perceived the norm, which is less than 4% of the entire sample. In other words, 92.6% , $P(93.94\% \leq \mu \leq 98.46\%) = .95$, had inaccurate perceptions of the norm. Thus, the data were consistent with this hypothesis across all topics and message conditions. In most cases, the participants' estimates were unhealthy estimates of the correct statistic.

Message exposure and judgment change

Hypothesis 2 predicted that exposure to the normative message would result in a change in judgment regarding the normative statistic. These data were consistent with this hypothesis. The absolute value of the mean judgment changes were: for the alcohol attitude condition $M = 16.20$, $P(14.8 \leq \mu \leq 17.6) = .95$; alcohol behavior $M = 12.93$, $P(11.69 \leq \mu \leq 14.17) = .95$; smoking attitude $M = 11.69$, $P(10.50 \leq \mu \leq 12.88) = .95$; smoking behavior $M = 20.42$, $P(18.52 \leq \mu \leq 22.32) = .95$; exercise attitude $M = 12.34$, $P(11.12 \leq \mu \leq 13.56) = .95$; and exercise behavior $M = 16.16$, $P(14.72 \leq \mu \leq 17.60) = .95$.

Message exposure and attitude change

Research question 1 asked if exposure to the normative statistic would result in a change in attitudes toward personal behavior (e.g., drinking) and a change in attitude toward undergraduates' behavior (e.g., undergraduates' drinking). The data were consistent with the hypothesis. The absolute value of the attitude change for the attitude regarding personal behavior was: for the alcohol condition $M = 1.27$, $P(1.21 \leq \mu \leq 1.33) = .95$; for the smoking condition $M = .15$, $P(.13 \leq \mu \leq .17) = .95$; and for the exercise condition $M = .18$, $P(.16 \leq \mu \leq .20) = .95$. The absolute value of the attitude change regarding undergraduates' behaviors was: for the alcohol condition $M = .86$, $P(.80 \leq \mu \leq .92) = .95$; for the smoking condition $M = .15$, $P(.13 \leq \mu \leq .17) = .95$; and for the exercise condition $M = .24$, $P(.22 \leq \mu \leq .26) = .95$.

Proportion of those making healthier, unhealthier, and no changes

Research question 2 asked what proportion of those exposed to the message reported healthier, unhealthier, and no change in judgments and attitudes. In all cases, there were respondents who experienced no change, a healthy change and an unhealthy change in judgments and behaviors. The proportion in each varied by topic and by message type (see Table 2). What is most important to note is that in some cases, one-quarter or more of the respondents experienced unhealthy change.

Judgment Mediation Model

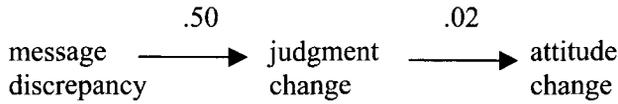
Hypothesis 3 predicted that the relationship between message discrepancy and attitude change was mediated by changes in judgment. As we had three message topics (alcohol, smoking, exercise), two types of messages (attitudinal, behavioral), and two possible attitudinal dependent variables (attitudes toward personal behavior, attitudes toward undergraduates' behaviors), there were 12 path models to test. We tested the fit of all 12, and all fit well. For presentation purposes, we calculated the average correlations within each message topic and tested the path models based on these average correlations. The models are presented in Figure 1, and the correlations among the three variables in each model are presented in Table 3. The Ordinary Least Squares (OLS) estimate of the path coefficient linking message discrepancy and judgment change is the correlation of these two variables.

Table 2. Percentage Reporting Healthier, Unhealthier, and No Judgment and Attitude Change Across Conditions

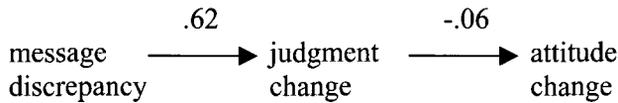
	Percentage reporting healthier judgments and attitudes	Percentage reporting no change	Percentage reporting unhealthier judgments and attitudes
<i>Alcohol messages</i>			
(AA) In your best estimate, what percentage of XXX students think it is important to avoid drinking to get drunk? (judgment) ($n = 131$)	57.3	24.4	18.3
(AB) In your best estimate, what percentage of XXX students drink less than 5 alcoholic drinks a week? (judgment) ($n = 132$)	46.2	29.6	24.2
(A) Attitudes toward undergraduates' drinking behaviors ($n = 260$)	47.7	45.4	6.9
(A) Own attitude toward drinking ($n = 263$)	61.6	7.6	30.8
<i>Smoking messages</i>			
(SA) In your best estimate, what percentage of XXX undergraduates believe it is a good idea not to smoke? (judgment) ($n = 130$)	23.1	30.0	46.9
(SB) In your best estimate, what percentage of CCC undergraduate students smoke less than 3 cigarettes a month? (judgment) ($n = 129$)	69.8	23.3	6.0
(S) Attitudes toward undergraduates' smoking behaviors ($n = 260$)	15.8	71.2	13.0
(S) Own attitude toward smoking ($n = 259$)	10.0	79.2	10.8
<i>Exercise messages</i>			
(EA) In your best estimate, what percentage of XXX undergraduates believe exercising regularly is important? (judgment) ($n = 129$)	43.4	26.4	30.2
(EB) In your best estimate, what percentage of XXX undergraduates exercise at least twice per week? (judgment) ($n = 131$)	64.9	23.7	11.4
(E) Attitudes toward undergraduates' exercising behaviors ($n = 260$)	22.3	57.7	20.0
(E) Own attitude toward exercising ($n = 256$)	14.1	64.1	21.8

Note. (AA) indicates participants received alcohol attitude message; (AB) received alcohol behavior message; (A) received either alcohol attitude or alcohol behavior message; (SA) received smoking attitude message; (SB) received smoking behavior message; (S) received either smoking attitude or smoking behavior message; (EA) received exercise attitude message; (EB) received exercise behavior message; and (E) received either exercise attitude or exercise behavior message.

Alcohol



Smoking



Exercise

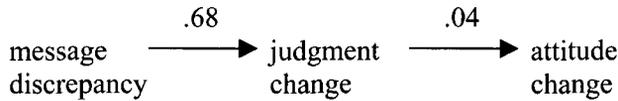


Figure 1 The Judgment Mediation Model.

The size of this correlation in all three models shows that message discrepancy is an important predictor of judgment change. In the alcohol causal model, the correlation reached $r = .50$, $P(.36 \leq \rho \leq .64) = .95$; in the smoking causal model $r = .62$, $P(.52 \leq \rho \leq .72) = .95$; in the exercise model $r = .68$, $P(.58 \leq \rho \leq .78) = .95$. The OLS estimate of the path coefficient linking judgment change and attitude change is the correlation between these two variables. Although all models fit, the correlations between these variables were small. In the alcohol causal model $r = .02$, $P(-.15 \leq \rho \leq .19) = .95$; in the smoking causal model $r = -.06$, $P(-.24 \leq \rho \leq .12) = .95$; in the exercise causal model $r = .04$, $P(-.13 \leq \rho \leq .21) = .95$.

In addition, causal analysis predicts the correlations between message discrepancy and attitude change to be the product of the two path coefficients. For alcohol, the predicted correlation is $(.50)(.02) = .01$, and the obtained correlation between these

Table 3. Correlations for Path Models

	Message discrepancy to judgment change	Judgment change to attitude change	Message discrepancy to attitude change
Alcohol messages	.50	.02	-.07
Smoking messages	.62	-.06	-.13
Exercise messages	.68	.04	-.01

two variables is $-.07$, resulting in an error in prediction of $-.08$, the magnitude of which is small and within sampling error of zero ($\chi^2 = .42, p > .05$). For smoking, the predicted correlation is $(.62)(-.06) = -.04$, and the obtained correlation between these two variables is $-.13$, resulting in an error in prediction of $-.09$, the magnitude of which is small and within sampling error of zero ($\chi^2 = .57, p > .05$). For exercise, the predicted correlation is $(.68)(.04) = .03$, and the obtained correlation between these two variables is $-.01$, resulting in an error in prediction of $-.04$, the magnitude of which is small and within sampling error of zero ($\chi^2 = .09, p > .05$). Thus, across all the message topics, the data are consistent with the judgment mediation model.

Expectancy Violation Theory Predictions

Effects of positive violation

Hypotheses 4a, b and c predicted that a positive violation (e.g., more students than expected advocated avoiding unhealthy behavior) would cause participants to adjust their judgments and attitudes toward the statistic provided in the message. Participants who had *underestimated* the normative statistic were those who experienced a positive violation. Regarding judgment change, the data are consistent with Hypothesis 4a. In all six conditions (message topic \times message type), there was a significant mean judgment change toward the statistic in the message (see column 2, Table 4). Regarding attitude change toward one's own behavior, results were mixed. In only two of the six conditions was there attitude change in the predicted direction (see column 4, Table 4). In addition, in one of these conditions, the confidence interval includes zero. Therefore the data were inconsistent with 4b. Vis-à-vis attitude change toward undergraduates' behavior, results were mixed. In four of the six conditions, there was attitude change in the expected direction (see column 3, Table 4). However, in two conditions, the mean attitude change was in the opposite direction than predicted. Therefore, the data were inconsistent with hypothesis 4c.

Effects of negative violation

Hypotheses 5 a, b, and c predicted that a negative violation (e.g., fewer students than expected advocate avoiding the unhealthy behavior) would cause participants either to report no change in their perceptions of the normative statistic or to adjust their perceptions in the opposite direction as advocated by the message. Participants who had *overestimated* the normative statistic were those who experienced a negative violation (e.g., they indicated prior to reading the message that they believed that 80% of students exercised at least twice a week, and the message indicated that 68% of students exercise at least twice a week).

Regarding judgment change, the data are not consistent with hypothesis 5a. In all six conditions, there was significant mean judgment change *toward* the statistic provided in the message (see column 2 in Table 4), a result in direct contradiction to EVT predictions. Concerning attitude change toward own behavior, the pattern was repeated in that there was either change in the direction away from the message or change that included zero in the confidence interval (see column 4 in Table 4).

Table 4. Judgment Regarding Attitudes and Behaviors

	<i>M (SD)</i> of judgment change	<i>M (SD)</i> of attitude change toward general undergraduate attitudes	<i>M (SD)</i> of attitude change toward own behavior
<i>Alcohol attitude message</i>			
Underestimators (n = 121) +	- 12.58 (19.57) $P(-14.36 \leq \mu \leq -10.80) = .95$	- 0.59 (1.37) $P(-.71 \leq \mu \leq -.47) = .95$	- 0.62 (1.49) $P(-.76 \leq \mu \leq -.48) = .95$
Overestimators (n = 9) -	9.44 (12.03) $P(5.35 \leq \mu \leq 13.53) = .95$	- 0.44 (1.74) $P(-.10 \leq \mu \leq .14) = .95$	- 0.39 (1.42) $P(-.86 \leq \mu \leq .08) = .95$
<i>Alcohol behavior message</i>			
Underestimators (n = 105) +	- 10.39 (17.67) $P(-12.11 \leq \mu \leq -8.67) = .95$	- 0.53 (1.04) $P(-.63 \leq \mu \leq -.43) = .95$	- 0.57 (1.43) $P(-.71 \leq \mu \leq -.43) = .95$
Overestimators (n = 25) -	9.06 (9.10) $P(7.24 \leq \mu \leq -10.88) = .95$	- 0.72 (0.94) $P(-.91 \leq \mu \leq -.53) = .95$	- 1.23 (1.55) $P(-1.54 \leq \mu \leq -.92) = .95$
<i>Smoking attitude message</i>			
Underestimators (n = 46) +	- 9.49 (18.33) $P(-12.19 \leq \mu \leq -6.79) = .95$	0.12 (0.53) $P(.04 \leq \mu \leq .20) = .95$	0.09 (0.41) $P(.03 \leq \mu \leq .15) = .95$
Overestimators (n = 82) -	11.02 (12.06) $P(9.67 \leq \mu \leq 12.33) = .95$	0.00 (0.26) $P(-.03 \leq \mu \leq .03) = .95$	- 0.04 (0.30) $P(-.07 \leq \mu \leq -.01) = .95$
<i>Smoking behavior message</i>			
Overestimators (n = 7) -	- 19.81 (23.30) $P(-21.93 \leq \mu \leq -17.67) = .95$	- 0.04 (0.37) $P(-.07 \leq \mu \leq -.01) = .95$	0.03 (0.45) $P(-.01 \leq \mu \leq .07) = .95$
Underestimators (n = 121) +	1.57 (2.70) $P(0.55 \leq \mu \leq 2.59) = .95$	0.00 (0.14) $P(-.05 \leq \mu \leq .05) = .95$	- 0.10 (0.25) $P(-.19 \leq \mu \leq -.01) = .95$
<i>Exercise attitude message</i>			
Overestimators (n = 37) -	- 10.24 (17.63) $P(-11.62 \leq \mu \leq -8.86) = .95$	0.08 (0.54) $P(.02 \leq \mu \leq .14) = .95$	0.06 (0.43) $P(.02 \leq \mu \leq .10) = .95$
Underestimators (n = 92) +	7.24 (10.74) $P(5.47 \leq \mu \leq 9.01) = .95$	- 0.05 (0.33) $P(-.14 \leq \mu \leq .04) = .95$	0.06 (0.44) $P(-.01 \leq \mu \leq .13) = .95$
<i>Exercise behavior message</i>			
Overestimators (n = 17) -	- 15.95 (17.19) $P(-17.60 \leq \mu \leq -14.3) = .95$	- 0.05 (0.44) $P(-.09 \leq \mu \leq -.01) = .95$	0.05 (0.34) $P(.02 \leq \mu \leq .08) = .95$
Underestimators (n = 109) +	9.24 (19.72) $P(4.46 \leq \mu \leq -14.02) = .95$	- 0.16 (0.43) $P(-.26 \leq \mu \leq -.06) = .95$	0.03 (0.17) $P(-.01 \leq \mu \leq .07) = .95$

Note. + or - denotes a positive or negative violation, respectively. For underestimators, a negative judgment or attitude change indicates movement toward the statistic provided in the message. For overestimators, a positive judgment or attitude change indicates movement toward the statistic provided in the message.

In the case of attitude change toward undergraduates' behavior, all six conditions either saw change in the direction away from the statistic provided in the message or saw no change, as the confidence intervals of four conditions included zero (see column 3 in Table 4). Therefore, Hypothesis 5a was inconsistent with the EVT, but Hypotheses 5b and 5c were consistent with EVT.

Discussion

This study examined the effects of normative statistical messages on judgments and attitudes across healthy and unhealthy behaviors (addictive and nonaddictive). In addition, both behavioral and attitudinal messages were used, and effects on multiple types of attitudes were examined for both underestimators and overestimators of a normative statistic provided in a message during the course of the study. Messages were tested at two universities, with no significant differences in the persuasive process being found between locations. This result was a little surprising, as one of the universities from which a sample was drawn for this study has had a recent social norms campaign related to alcohol, whereas the other university has not. The lack of difference also suggests that the results are generalizable, and the cognitive processing of the messages is similar. It also demonstrates that even following a massive, blanket social norms campaign at a university, the response of students is no different than if those messages had never been viewed. Thus, it is not that the messages are ineffective because of overexposure.

Health Behaviors

The health behaviors of students at both universities were nearly identical for exercise and alcohol. This result is surprising as one of the schools is considered to be a highly academic one, whereas the other has been on the short list of top "party" schools. A difference was also expected in exercise behavior, since one university has better weather, more facilities, and a culture supporting athletics. Days per week and time spent exercising had identical medians across schools (means also extremely similar). In addition, the median (and mean) was higher than the national average (of 2 days per week at both schools). Thus, during college, students seem to be following a better/healthier exercise regimen. If anything, then, we need to be developing campaigns to encourage maintenance of behavior and not behavior change in terms of exercise. The difference found in smoking behavior was expected due to cultural differences and the prominence of prosmoking advertisements at the southern university and the policy restrictions on smoking at the northern university in terms of smoke-free dorms and restaurants. However, the median was identical, suggesting that most students are not smoking.

Social Norms

Effects of social norms marketing held for judgment, in that provision of a normative statistic influences receivers to move toward that statistic. In nearly all cases and across all three health topics, participants misperceived the norm. In addition, the data were consistent with the hypothesis that a change in judgment would occur as a result of exposure to the message. Following message exposure, participants were much more likely to report a normative statistic that was closer to, or matched, that provided in the message. Clearly, the messages do affect normative

judgments. Slight attitude change was observed following the messages particularly in the case of alcohol. However, little to no attitude changes are very unlikely to lead to behavior change. More importantly, not everyone changed their attitudes in a healthy direction. In some cases, more than one-quarter actually developed more unhealthy attitudes.

Numerous persuasion models indicate that attitudes precede behavior and advocate for attitude change if the desired goal is behavior change. Yet, as only slight attitude change was observed as a result of message reception, it is unlikely that there will be later or enduring attitude change as a result of the social norms message, and even less likelihood of behavior change. Although we may be able to alter persons' judgments about the normative statistic (cf., Keeling 1999, 2000), this study demonstrates that we are not seeing consistent related attitude change. Even in the alcohol condition, the attitude change that is occurring cannot be explained by the judgment change. Although social norms advocates may rejoice that attitude change is occurring as a result of the message: (1) we do not know why it is occurring, but we do know that it is not occurring because of the judgment change; (2) we do not know that it will indeed be a lasting attitude change; and (3) we cannot be assured that the attitude change will occur across varied topics of prosocial issues (drinking in moderation, avoiding smoking, increasing exercise behavior).

While the social norms campaigns may be having small positive effects on some, they may also be having negative effects on others. For example, in the exercise conditions, more respondents developed more negative attitudes toward their own behaviors than developed more positive attitudes. It is important for future research to determine the characteristics of those individuals who exhibit more unhealthy attitudes and for the significant proportion who failed to show any change. Social norms theory fails to account for these individuals. Further research needs also to examine why certain topics are seemingly more likely to have this effect than others. Blindly accepting that social norms campaigns are effective may not be wise. Recent studies suggest that alcohol use among college students has become more polarized with more abstainers and more drinking dangerously (Wechsler, Lee, Kuo, Seibring, Nelson, & Lee, 2002). Those whose attitudes became more negative may be at increased risk for binge drinking and alcohol-related negative consequences.

Mediational Model

Data were consistent with Boster et al.'s (2000) judgment mediation model (i.e., the relationship between message discrepancy and attitude change is mediated by judgment change). However, the confidence intervals of the path coefficients between judgment change and attitude change include zero, suggesting that judgment change is not the primary variable causing attitude change. One reason for the lack of relationship between judgment change and attitude change may be the fact that, for most conditions, specifically the smoking and exercise conditions, participants reported only a slight amount of attitude change following receipt of the message.

Expectancy Violation Theory

Data were consistent with EVT predictions of positive violations when measuring judgment change. In the majority of cases, there was only a slight attitude change regarding one's own behavior or undergraduate behavior as a result of receiving the message.

This limited support for EVT may arise because the violation in this study was a violation of a statistic, an inanimate object presented in a written format. In other tests of EVT, the violations have occurred as a result of *interaction* with another, causing violations of expected nonverbal behavior, or violations of expectations in the language used by the speaker. It is possible that EVT is limited in scope and cannot predict or explain violations of judgments as it does language and nonverbal behaviors.

Data were inconsistent with EVT predictions of negative violations when measuring judgment change; in all conditions, the majority of participants' judgments shifted in the direction advocated by the message. When assessing attitude change, the majority of participants reported little to no attitude change, whether reporting on their attitudes toward their own behavior or the undergraduate behavior. This result is consistent with EVT predictions. However, in the cases where attitude change occurred, the change moved many participants' attitudes in the direction advocated by the message, a result directly in opposition to EVT.

Attitudinal Versus Behavioral Messages

Messages related to both normative attitudes and normative behaviors of undergraduates were developed for this study. There appear to be some differences based upon the reception of these two message types, in that behavior messages may have a greater effect in producing more positive/healthy attitudes and less negative attitude change than attitude messages (see Table 4). Due to the miniscule amounts of attitude change in the smoking and exercise conditions, as well as the unequal cell sizes across all conditions, particularly related to the numbers of underestimators and overestimators, we did not test for significant differences. Most social norms studies use behavior messages, but in practice, attitudinal messages are also being used. Future studies may want to explore the effects of using attitude or behavior messages.

Additional Limitations

In practice, social norms campaigns provide multiple exposures to the same message. This study provided a single exposure prior to assessing judgment and attitude change. Participants in this study had forced exposure to the messages, whereas the majority of social norms campaigns allow for selective exposure. In addition, this study focused on message content, and not on design. As this study was not longitudinal, we were unable to assess delayed attitude change or future behavioral

change. Finally, all measures of attitudes were scales, with the exception of a one-item measure regarding undergraduate alcohol use. Future studies may wish to enhance this measure.

Implications

Social norms messages had limited desired effects in the case of alcohol, but when expanded into other health realms such as smoking (an unhealthy, addictive behavior) and exercise (a healthy behavior), the result was a lack of attitude change. It could be argued that attitudes toward smoking may be harder to change due to its addictive nature. Yet, such an argument fails when attempting to explain the lack of results regarding the exercise messages. Exercise is not an addictive behavior. Social norms research has not put forth the argument that individuals engaging in healthy and unhealthy behaviors should react differently to social norms messages. Therefore, although an advocate of social norms may be satisfied with explaining away the lack of effect on smoking attitudes based on the addictive nature of the behavior, this same argument will not suffice to explain the lack of effect on attitudes related to exercise. Thus, the generalizability of social norms theory remains in question.

Social norms fall short on failing to predict why and under what circumstances some individuals actually develop more unhealthy judgments, attitudes, and behaviors after viewing the campaign. EVT provided partial explanations for positive violations of judgments, but not for negative violations. Further research needs to continue to seek explanations for why differential effects may be occurring and how to prevent the opposite of what these campaigns intend, the promotion of more unhealthy attitudes and behaviors.

This research extended the study of the effects of social norms messages on healthy behaviors and tested both attitudinal and behavioral social norms messages. Key findings include: (1) social norms messages may work to change judgments, but do not result in consistent attitude change; (2) the process of judgment change functions similarly across message topics, as well as message types (i.e., attitudinal versus behavioral); (3) judgment change does not appear to be the main cause for attitude change upon receipt of a social norms message; and (4) a message-based expectancy violation (e.g., a discrepancy between perceived and actual statistics related to health behaviors) does not function in the same way as a violated behavioral expectation. Based on these findings, it is advisable to be wary of blindly accepting the statement that social norms marketing is effective in reducing high-risk attitudes and behaviors or increasing healthy attitudes and behaviors. Future research should continue to explore theoretical explanations and conditions under which statistical normative messages are effective or ineffective in altering judgments, attitudes, and behaviors as well as investigate whether or not personal characteristics have an effect on the reception of social norms messages.

References

- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior* (pp. 11–39). New York: Springer.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179–211.
- Allen, M., Bruflat, R., Fucilla, R., Kramer, M., McKellips, S., Ryan, D. J., & Spiegelhoff, M. (2000). Testing the persuasiveness of evidence and combining narrative and statistical forms. *Communication Research Reports*, 17, 331–336.
- Allport, F. H. (1924). *Social psychology*. Boston: Houghton Mifflin.
- Baer, J. S., & Carney, M. M. (1993). Biases in the perceptions of the consequences of alcohol use among college students. *Journal of Studies on Alcohol*, 54, 54–60.
- Barnett, L. A., Far, J. M., Mauss, A. L., & Miller, J. A. (1996). Changing perceptions of peer norms as a drinking reduction program for college students. *Journal of Alcohol and Drug Education*, 41, 39–62.
- Boster, F. J., Cameron, K. A., Campo, S., Liu, W. Y., Lillie, J. K., Baker, E. M., & AhYun, K. (2000). The persuasive effects of statistical evidence in the presence of exemplars. *Communication Studies*, 51, 296–306.
- Burgoon, J. K. (1978). A communication model of personal space violations: Explication and initial test. *Human Communication Research*, 4, 129–142.
- Burgoon, J. K. & Hale, J. L. (1988). Nonverbal expectancy violations: Model elaboration and application to immediacy behaviors. *Communication Monographs*, 55, 58–79.
- Burgoon, J. K., Dunbar, N. E., & Segrin, C. (2002). Nonverbal influence. In J. P. Dillard & M. Pfau (Eds.), *The persuasion handbook: Developments in theory and practice* (pp. 445–473). Thousand Oaks, CA: Sage.
- Burgoon, J. K., Newton, D. A., Walther, J. B., & Baesler, E. J. (1989). Nonverbal expectancy violations and conversational involvement. *Journal of Nonverbal Behavior*, 13, 97–119.
- Burgoon, M. (1995). Language expectancy theory: Elaboration, explication, and extension. In: C. R. Berger & M. Burgoon (Eds.). *Communication and social influence processes* (pp. 33–58). East Lansing, MI: Michigan State University Press.
- Burgoon, M., & Miller, G. R. (1985). An expectancy interpretation of language and persuasion. In H. Giles & R. St. Clair, *Recent advances in language, communication, and social psychology* (pp. 199–229). London: Erlbaum.
- Campo, S., Brossard, D., Frazer, M. S., Marchell, T., Lewis, D., & Talbot, J. (2003). Are social norms campaigns really magic bullets? Assessing the effects of students' misperceptions on drinking behavior. *Health Communication*, 15, 481–493.
- Fields, J. M., & Schuman, H. (1976). Public beliefs about the beliefs of the public. *Public Opinion Quarterly*, 40, 427–448.
- Frauenfelder, M. (2001). Social-norms marketing. *New York Times Magazine*, December 9, 100.
- Johnnassen, K., Collins, C., Mills-Novoa, B., & Glider, P. (1999). *A practical guide to alcohol abuse prevention: A campus case study in implementing social norms and environmental management approaches*. Tucson: Campus Health Services, The University of Arizona.
- Keeling, R. P. (1999). Proceed with caution: Understanding and changing norms. *Journal of American College Health*, 47, 243–246.
- Keeling, R. P. (2000). Social norms research in college health. *American Journal of College Health*, 49, 53–56.
- Kim, M. S., & Hunter, J. E. (1993). Relationships among attitudes, behavioral intentions, and behavior: A meta-analytic view of past research, part 2. *Communication Research*, 20, 331–364.
- Lederman, L., Stewart, L., Barr, S., Powell, R., Laitman, L., & Goodhart, F. (2001). RU SURE? Using communication theory to reduce dangerous drinking on a college campus. In R. E.

- Rice & C. Atkin (Eds.) *Public communication campaigns* (3rd ed.) (pp. 295–299). Thousand Oaks, CA: Sage.
- Perkins, H. W., & Berkowitz, A. D. (1986). Perceiving the community norms of alcohol use among students: Some research implications for campus alcohol education programming. *The International Journal of the Addictions, 21*, 961–976.
- Perkins, H. W., & Wechsler, H. (1996). Variation in perceived college drinking norms and its impact on alcohol abuse: A nationwide study. *Journal of Drug Issues, 26*, 961–974.
- Perkins, H. W., Meilman, P. W., Leichter, J. S., Cashin, J. R., & Presley, C. A. (1999). Misperceptions of the norms for the frequency of alcohol and other drug use on college campuses. *Journal of American College Health, 47*, 253–258.
- Pollard, J. W., Freeman, J. E., Ziegler, D. A., Hersman, M. N., & Gross, C. W. (2000). Predications of normative drug use by college students: False consensus, false uniqueness, or just plain accuracy? *Journal of College Student Psychotherapy, 14*, 5–12.
- Prentice, D. A., & Miller, D. T. (1993). Pluralistic ignorance and alcohol use on campus: Some consequences of misperceiving the social norm. *Journal of Personality and Social Psychology, 64*, 243–256.
- Real, K., & Rimal, R. N. (2001, November). *Explaining the influence of perceived norms on behaviors: Implications for campaigns against alcohol abuse by college students*. Paper presented at the annual meeting of the National Communication Association, Atlanta, GA.
- Siegal, J. T., & Burgoon, J. K. (2002). Expectancy theory approaches to prevention: Violating adolescent expectations to increase the effectiveness of public service announcements. In W. D. Crano & M. Burgoon (Eds.), *Mass media and drug prevention: Classic and contemporary theories and research* (pp. 163–186). Mahwah, NJ: Erlbaum.
- Slater, M. D., & Rouner, D. (1996). Value-affirmative and value-protective processing of alcohol education messages that include statistics or anecdotes. *Communication Research, 23*, 210–235.
- Steffian, G. (1999). Correlation of normative misperceptions: An alcohol abuse prevention program. *Journal of Drug Education, 29*, 115–138.
- Stewart, L. P., Lederman, L. C., Golubow, M., Cattafesta, J. L., Goodhart, F. W., Powell, R., & Laitman, L. (2002). Applying communication theories to prevent dangerous drinking among college students: The RU SURE campaign. *Communication Studies, 53*, 381–399.
- Wechsler, H., & Kuo, M. (2000). College students define binge drinking and estimate its prevalence: Results of a national survey. *Journal of American College Health, 49*, 57–64.
- Wechsler, H., Davenport, A., Dowdall, G., Moeykens, B., & Castillo, S. (1994). Health and behavioral consequences of binge drinking in college: A national survey of students at 140 campuses. *Journal of the American Medical Association, 272*, 1672–1677.
- Wechsler, H., Kelley, K., Weitzman, E. R., Giovanni, J. P. S., & Seibring, M. (2000). What colleges are doing about student binge drinking: A survey of college administrators. *Journal of American College Health, 48*, 219–226.
- Wechsler, H., Lee, J. E., Kuo, M., Seibring, M., Nelson, T. F., & Lee, H. (2002). Trends in college binge drinking during a period of increased prevention efforts: Findings from 4 Harvard School of Public Health college alcohol study surveys: 1993–2001. *Journal of American College Health, 50*, 203–217.
- Wechsler, H., Nelson, T. F., Lee, J. E., Seibring, M., Lewis, C., & Keeling, R. P. (2003). Perception and reality: A national evaluation of social norms marketing interventions to reduce college students' heavy alcohol use. *Journal of Studies on Alcohol, 64*, 484–494.
- Werch, C. E., Pappas, D. M., Carlson, J. M., DiClemente, C. C., Chally, P. S., & Sinder, J. A. (2000). Results of a social intervention to prevent binge drinking among first-year residential college students. *Journal of American College Health, 49*, 85–92.

Appendix: Normative Messages

Alcohol Attitude

Drinking to get drunk is not considered a cool thing to do among University of Georgia/Cornell University undergraduate students. According to a study conducted at UGA/Cornell in April 2001 by the Harvard School of Public Health, 66% of UGA/Cornell University undergraduates think that it is important to avoid drinking to get drunk. Results are based on a randomly selected representative sample of 1,499 participants (margin of error $\pm 4\%$).

Alcohol Behavior

The majority of UGA/Cornell undergraduate students do not consume a large number of alcoholic drinks per week. According to a study conducted at UGA/Cornell in April 2001 by the Harvard School of Public Health, 66% of UGA/Cornell University undergraduates drink less than 5 alcohol drinks a week. Results are based on a randomly selected representative sample of 1,499 participants (margin of error $\pm 4\%$).

Smoking Attitude

Smoking is considered an unhealthy behavior by UGA/Cornell undergraduate students. According to a study conducted at UGA/Cornell in April 2001 by 2001 by the Centers for Disease Control, 72% of UGA/Cornell University undergraduates believe it is a good idea not to smoke. Results are based on a randomly selected representative sample of 1,503 participants (margin of error $\pm 4\%$).

Smoking Behavior

Smoking is not a common practice among UGA/Cornell undergraduate students. According to a study conducted at UGA/Cornell in April 2001 by the Centers for Disease Control, 86% of UGA/Cornell University undergraduates smoke fewer than three cigarettes a month. Results are based on a randomly selected representative sample of 1,503 participants (margin of error $\pm 4\%$).

Exercise Attitude

Exercise is a practice UGA/Cornell undergraduate students appreciate. According to a study conducted at UGA/Cornell in April 2001 by the National Institutes of Health, 84% of UGA/Cornell University undergraduates think exercising regularly is a good practice. Results are based on a randomly selected representative sample of 1,507 participants (margin of error $\pm 4\%$).

Exercise Behavior

Exercise is a common practice among UGA/Cornell undergraduate students. According to a study conducted at UGA/Cornell in April 2001 by the National Institutes of Health, 68% of UGA/Cornell undergraduates exercise at least twice per week. Results are based on a randomly selected representative sample of 1,507 participants (margin of error $\pm 4\%$).

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