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The Malleability of Injunctive Norms Among College Students

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Abstract

Alcohol use among college students has been associated with injunctive norms, which refer to the perceived acceptability of excessive drinking, and descriptive norms, which refer to perceptions of actual drinking. The purpose of this study was to examine the effect of a brief injunctive norms manipulation on both injunctive and descriptive norms about drinking alcohol and to explore differences in the malleability of norms across referent groups, sex, and gender role. Participants were 265 undergraduates (43% male, 70% freshmen) who completed a web-based survey for course credit. A randomly selected half were exposed to a page of information-based feedback about typical student injunctive norms. Relative to the control condition, the manipulation produced lower injunctive and descriptive norms related to typical students' drinking but no change in either type of norm related to close friends. Femininity was associated with less permissive normative beliefs about the acceptability of excessive drinking whereas masculinity was associated with elevated perceptions of peer drinking, but neither sex nor gender role moderated the manipulation effect. We conclude that perceptions of peer approval of drinking are malleable with a very brief information-based manipulation.

Keywords

Injunctive Norms; Alcohol Use; College; gender

1. Introduction

Excessive alcohol use is common on college campuses. Approximately 40% of college students can be classified as heavy drinkers (O'Malley & Johnston, 2002). Immoderate use of alcohol results in consequences that are damaging to the self, damaging to other people, and costly for institutions (Perkins, 2002b). Common consequences include academic impairment, blackouts, personal injuries, sexual coercion, property damage, fights, and legal costs (Perkins, 2002b). Although perceived as normative, heavy drinking on college campuses compromises the health and welfare of emerging adults.

Perceived social norms regarding alcohol use influence college students' drinking behaviors (Perkins, 2002a; Rimal & Real, 2005). The majority of students overestimate both the amount

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their peers are drinking (descriptive norms) and the acceptability of excessive drinking (injunctive norms) (Borsari & Carey, 2003). On average, students believe that their own privately held beliefs about excessive drinking are more conservative than those held by their peers, a concept called pluralistic ignorance (Prentice & Miller, 1993). Both general norms theory (Cialdini, Reno, & Kallgren, 1990) and empirical studies specific to college alcohol use support the independent predictive value of descriptive and injunctive norms (e.g., Larimer, Turner, Mallett, & Geisner, 2004; Lee, Geisner, Lewis, Neighbors, & Larimer, 2007; Real & Rimal, 2007).

Social influence processes may contribute to students' misperceptions about their peers' approval of alcohol use. Behavior associated with excessive alcohol consumption is both highly visible and often discussed, which creates the appearance of acceptance (Real & Rimal, 2007; Suls & Green, 2003). Drinking attitudes are inferred from the most salient observable drinking behaviors and conversations about alcohol with peers; such inferred attitudes may be simultaneously hard to disprove and also divergent from reality. From a social comparison theory perspective, injunctive norms may motivate drinking because of anticipated consequences of conforming or not conforming to the norm: students believe that their peers will reward them for drinking a lot and/or chastise them for drinking little or not at all (Wood, Christensen, Hebl, & Rothgerber, 1997).

The strong association between exaggerated norms and alcohol consumption has led to the development of norms-based interventions. Although both descriptive and injunctive norms influence drinking behaviors in college students, most interventions focus on correcting exaggerated descriptive norms (for reviews see: Lewis & Neighbors, 2006; Walters & Neighbors, 2005). Descriptive norms feedback may consist of presenting participants with levels of alcohol consumption reported by their peers juxtaposed with their own perceptions of their peers' alcohol consumption (e.g., Carey et al., 2009). In contrast, injunctive norms feedback would prompt one to compare personally held beliefs about others' approval of excessive drinking behavior with actual evidence of peer approval (Wenzel, 2001a,b).

Few studies have provided feedback that addresses students' misperceptions about how much others approve of excessive drinking. Only two studies were found (Barnett, Far, Mauss, & Miller, 1996; Schroeder & Prentice, 1998) and both employed facilitator-led group discussion. Findings were mixed with regard to changes in injunctive norms as a function of the manipulation. Barnett and colleagues (1996) demonstrated reductions in injunctive and descriptive norms immediately after group discussions that involved feedback about both descriptive and injunctive norms. Schroeder and Prentice (1998) examined the differential effect of a peer-oriented discussion about pluralistic ignorance compared to an individual-oriented discussion about responsible decision making. At follow-ups four to six months after the discussion groups, only male students reported changes in perceived norms, but they were unrelated to condition. Methodological limitations and high attrition at follow-ups prevented strong conclusions about the efficacy of the interventions. Given the limitations of the available literature a more direct approach to changing injunctive norms in college drinkers is warranted.

The primary purpose of this study is to assess the malleability of injunctive norms regarding alcohol use. To do this we designed a brief information-based feedback intervention for college students. We modeled the brief intervention after a series of studies conducted by Wenzel (2001 a,b) that manipulated the perceptions of Australian tax payers regarding the acceptability of dishonesty regarding taxpaying. Providing written injunctive norms feedback increased both behavioral intention to be honest in paying taxes (Wenzel, 2001a) as well as actual behavior (Wenzel, 2001b). The adapted intervention alerts students to the common phenomenon of overestimating peer approval for drinking and provides institution-specific feedback regarding disapproval of harmful effects of drinking. The primary study hypothesis is that those who

receive injunctive norms feedback will believe that others are less accepting of excessive drinking than those who do not get feedback.

The strength of association between norms and behavior depends on the proximity of the normative referent group to the individual. According to Borsari and Carey (2003), descriptive norms for proximal referent groups (e.g., close friends) are more strongly associated with actual drinking than distal referent groups (e.g., the typical student). However, students tend to overestimate the drinking of more distal referent groups to a greater extent than that of closer referent groups (Carey, Borsari, Carey, & Maisto, 2006). Additional research suggests that norms-based interventions vary in efficacy according to the nature of the normative referent group used (Lewis & Neighbors, 2007; Neighbors, O'Connor, Lewis, Chawla, & Lee, 2008). For example, Lewis and Neighbors (2007) demonstrated that use of gender-matched descriptive norms (vs. gender-neutral norms) optimizes efficacy for college women. However, the research regarding the relationship between referent group proximity, injunctive norms, and alcohol consumption is inconsistent (Neighbors et al., 2008). Thus, this study will explore the effect of injunctive norms feedback on perceived norms for two related referent groups: (a) students at Syracuse University and (b) close friends.

A secondary aim of the study is to explore the effect of injunctive norms feedback on descriptive norms. Both injunctive and descriptive norms must be inferred from indirect sources of data including anecdotes and observed behavior. Further, basic research confirms that knowledge of personal traits influence predictions of future behavior (Newman, 1996). Thus, it is possible that students will assume consistency between beliefs and behavior of their peers (i.e., the correspondence bias; Gilbert & Malone, 1995). As injunctive and descriptive norms derive from similar sources and are theoretically related (Cialdini et al., 1990), it is possible that feedback aimed at correcting misperceptions of injunctive norms will also alter descriptive norms. However, although descriptive norms and injunctive norms are related, they can also be discriminated. Cialdini and colleagues (1990) explain that while descriptive norms motivate behavior through a need for conformity, injunctive norms motivate behavior through a desire to avoid sanctions. Furthermore, previous empirical findings demonstrate the statistical independence (Real & Rimal, 2007) and unique predictive power (Larimer et al., 2004) of the two types of norms. Testing the generalizability of an intervention addressing peer approval of excessive alcohol use to perceptions of peer drinking behavior remains exploratory.

A third aim of the study relates to the relationships of sex and gender role with alcohol use and perceived norms. Sex differences in alcohol consumption are pervasive; male students consistently report higher levels of drinking compared to their female peers (e.g., O'Malley & Johnston, 2002). Furthermore, the degree of pluralistic ignorance in college samples differs by sex, with women overestimating their peers' acceptance of drinking to a larger degree than men (Prentice & Miller, 1993). In contrast to biological sex, gender role can be thought of as one's identification with appropriate behavior and personality characteristics for each sex (Holt & Ellis, 1998).

Traditional masculine gender role predicts health risk behaviors, including alcohol use (Courtenay, 2003). Masculine traits such as acting as a leader and taking risks are correlated with beer drinking and getting drunk (Landrine, Bardwell, & Dean, 1988). Moreover, while alcohol use and one's ability to tolerate alcohol is associated with masculinity, lighter drinking is associated with femininity and weakness (Peralta, 2007). Thus, those who identify with masculine stereotypes may feel more social pressure to drink and to drink excessively compared to those who identify with feminine stereotypes. Among women, those with high masculinity exhibit more social drinking and problems (Kleinke & Hinrichs, 1983). Thus, stereotypical masculinity appears to be a risk factor for excessive drinking and stereotypical femininity appears to be a protective factor. It remains unclear to what extent gender role

influences perceptions of drinking norms. Sex and gender role may moderate responses to injunctive norms feedback because both biological sex and identification with gender-specific attributes can influence beliefs about normative drinking behavior. This study seeks to explore whether the effectiveness of injunctive norms feedback varies by sex or by strength of gender role identification (i.e., masculinity and femininity scores).

This study will focus on manipulation-induced group differences on four dependent variables, namely injunctive norms for close friends, injunctive norms for students at Syracuse University, descriptive norms for close friends, and descriptive norms for students at Syracuse University. The feedback and control groups will be compared using brief baseline measures of norms to determine initial group equivalence. Then, to assess the malleability of injunctive and descriptive norms, the groups will be compared after the injunctive norms feedback is presented using a different set of psychometrically sound norms measures. Malleability will be established if baseline norms do not vary by condition and follow-up norms vary systematically.

2. Materials and Method

2.1 Participants

Undergraduate students age 18 or older were recruited from introductory psychology courses held at Syracuse University in the Spring of 2009. Study participation was compensated with course credit, which was used to fulfill the course research requirement. The 265 participants averaged 19 years of age ($SD = 1.04$), and 43% were male. Most were freshmen (70%) or sophomores (19%). They identified themselves as White (61%), Asian or Asian-American (29%), or African-American (8%); 8% of the sample also identified as Latino/Hispanic. The sample was representative (i.e., within a couple of percentage points) of the both the 2007 and 2008 first-year classes with regard to sex, and ethnicity, with the exception of Asians/Asian Americans, who were overrepresented in the current sample.

2.2 Measures

2.2.1 Alcohol Use Patterns—Typical number of drinks consumed during a typical week over the last 30 days were obtained from a modified version of the Daily Drinking Questionnaire (R. L. Collins, Parks, & Marlatt, 1985). A single item assessed the number of heavy drinking episodes in the past month, defined as 5 or more drinks for men and 4 or more drinks for women (Wechsler, Davenport, Dowdall, Moeykens, & Rimm, 1995).

2.2.2 Social Desirability—The Marlowe-Crowne Social Desirability Short Form (MCSDSF; Reynolds, 1982) was included to assess participants' levels of social desirability bias, or need for approval, which may influence responses on self-report measures (Fishman, 1965). This 13-item short form correlates highly with the 33-item long form ($r = .93$) (Reynolds, 1982) and is a practical substitution for the full Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1960). Cronbach's alpha in current sample = .79.

2.2.3 Gender role—The Bem Sex Role Inventory (BSRI, Bem, 1974) is a widely used and validated assessment of gender role (Holt & Ellis, 1998; Choi, Fuqua, & Newmann, 2008) where participants rate themselves on 60 adjectives using a scale from 1 (never or almost never true) to 7 (always or almost always true). Separate masculine and feminine scores are calculated by summing responses to masculine items and feminine items.

2.2.4 Drinking Norms Baseline—Descriptive and injunctive norms were assessed twice, once briefly before the manipulation (baseline) and once in a more extended fashion after the manipulation (follow-up). The baseline descriptive norms assessment consisted of four items

that assessed perceptions of the quantity and frequency of both their “close friends” and “typical students at SU” alcohol use (Cronbach’s alpha in current sample = .65). The baseline injunctive norms assessment consisted of 4 items that assessed each participant’s perception of the approval of “drinking alcohol” and “getting drunk” held by both their “close friends” and “students at SU” (Cronbach’s alpha in current sample = .82). Baseline assessments were kept short to limit sensitization to normative information.

2.2.5 Drinking Norms Follow-up—Following the manipulation, more comprehensive assessments of descriptive and injunctive norms were collected. The extended descriptive norms assessment collected the number of drinks consumed by participant’s “close friends” and “average SU students” on each day of the week over the last month, on two 7-day grids (Baer, Stacy, & Larimer, 1991); summing the daily estimates yielded average weekly drinks for the participant’s close friends, and for the typical student at Syracuse University. The extended injunctive norms assessment consisted of a modified version of the item set used by Larimer and colleagues (Larimer et al., 2001). It consists of 10 items following the stem “How would your close friends respond if they knew ...”; such as “You drank alcohol every weekend,” and “You drank alcohol enough to pass out.” Response options range from 1 (strong disapproval) to 7 (strong approval). A parallel set of ten items using the referent group “students at SU” in place of “close friends” was also administered. Two summary scores were created by averaging items separately for SU student and close friends (Cronbach’s alphas in current sample = .89 and .80, respectively).

2.3 Procedure

Surveys were administered in campus computer labs, in small group sessions (approximately 10 students per session) lasting between 25 and 45 minutes. After providing written informed consent, participants were asked to list the initials and sex of up to ten close friends on a paper titled the Close Friends List. The Close Friends List preceded the survey to create a reference group of close friends that students would refer to throughout the survey, and would contrast with another referent group (i.e., students at Syracuse University) in multiple subsequent assessments. Individual participants were then randomly assigned to either the injunctive norms feedback condition or the control condition. Then they completed a computerized battery of measures, which differed only by the presence or absence of the injunctive norms feedback. The feedback appeared two-thirds of the way through the survey. Those in the control condition filled out the same battery of questionnaires in the same order as the feedback group; however, they were not exposed to the page of injunctive norms feedback.

2.3.1 Injunctive Norms Feedback—The structure of the injunctive norms feedback was adopted from Wenzel (2001a,b), and the content was informed by survey responses provided by Syracuse University students in previous studies (e.g., Carey, Henson, Carey & Maisto, 2010). The injunctive norms feedback consisted of instructions to “please read the following passage carefully,” and a statement that “we will be interested in your reaction at the end.” After reading these instructions participants were presented the following text:

Surveys conducted at Syracuse University, with students like you, reveal a discrepancy between individuals' own attitudes toward excessive drinking and the attitudes they believe are held by other students about excessive drinking.

Repeatedly, individual students at Syracuse University have reported that they found drinking to excess highly unacceptable.

Specifically, drinking so much that one got sick, drinking so much that one could not remember part of the previous evening, or getting into sexual situations that may be regretted later as a result of drinking were all rated highly unacceptable by the

majority of individual students at SU. In contrast, most students overestimated their friends' and other SU students' approval of these same drinking behaviors.

In other words, the vast majority of students at SU reported being less comfortable with regard to levels of drinking that result in consequences than their peers were.

Hence, these results reveal an interesting paradox. The average of all surveyed students' views indicates that what most students actually think about heavy drinking contrasts sharply with what they think most other students think about heavy drinking.

Most students at SU actually agree that drinking to excess is unacceptable.

These results indicate that while students at Syracuse University tend to think most other students are comfortable with excessive drinking behaviors, the truth is that most students find excessive drinking unacceptable.

Following this text participants were asked two multiple-choice questions to prompt processing of the passage and to serve as a manipulation check: "how much of this information is new to you?" (rated: all, some or none), and "How likely is it that you would share some of this information with your friends?" (rated: very likely, somewhat likely, or unlikely). Following completion of the survey, students were debriefed, given course credit and excused.

2.4 Statistical Analysis Plan

One-way ANOVAs and chi-square tests were used to compare the control and feedback groups and sexes on measures completed before the injunctive norms feedback in order to establish equivalence between study groups. These analyses included: demographic variables, alcohol use variables, social desirability, brief descriptive norms, and brief injunctive norms. Cronbach's alphas in current sample were calculated for each measure to assess internal consistency reliability of each instrument.

Next, Pearson's product moment correlations were run to examine the association between injunctive and descriptive norms. Four hierarchical linear regressions were run to examine hypothesized post-manipulation condition differences on perceived norms. The four outcome variables consisted of summary statistics for the extended versions of both descriptive (total drinks per week) and injunctive norms (mean approval score) measures for each referent group (i.e. close friends, students at SU). We included the brief measures of injunctive and descriptive norms baseline as control variables. The primary predictor variable was feedback condition coded 1 (control) and 2 (feedback). Sex was also included as a categorical predictor variable coded 0 (male) and 1 (female), and the masculine and feminine subscales derived from the BSRI were included as continuous predictor variables.

To test the effect of feedback condition on students' perceptions of injunctive norms (Aim 1), we entered feedback condition and the baseline norms assessment corresponding to the outcome variable on step one. On step two, we entered sex, and the masculine and feminine subscales, and the Condition by sex, Condition by Masculine subscale, and Condition by Feminine subscale interaction terms were entered on a final step (Aim 3). All continuous predictor variables were mean-centered prior to forming the product terms used in these models. Parallel models were built to test the effects of the injunctive norms feedback on descriptive norms (Aim 2).

3. Results

3.1 Participant Characteristics

The control and feedback groups were equivalent on baseline characteristics including demographic variables (i.e. sex, age, ethnicity, year in school), social desirability, masculinity and femininity scores, drinking variables (i.e. drinks per typical week, heavy drinking frequency), and the baseline injunctive or descriptive norms (all $ps > .05$) (see Table 1).

3.1.1 Social Desirability—Social desirability was significantly and negatively correlated with injunctive and descriptive norms for close friends at baseline (Injunctive norms: $r = -.22$, $p < .01$; Descriptive norms: $r = -.18$, $p < .01$) and post-feedback (Injunctive norms: $r = -.16$, $p < .01$; Descriptive norms: $r = -.13$, $p = .03$); however, social desirability was not correlated with either type of norm for typical students at either baseline or post-feedback ($ps > .05$). Social desirability was included as a covariate in analyses testing study hypotheses, but because it did not change the pattern of results analyses are reported without controlling for social desirability for ease of interpretation.

3.1.2 Sex and Gender Role—Males reported drinking more drinks in a typical week (Males: $M = 14.07$, $SD = 18.26$ vs. Females: $M = 7.64$, $SD = 7.87$, $p < .05$), and reported higher baseline descriptive norms for their close friends compared to females (Males: $M = 9.37$, $SD = 4.71$ vs. Females: $M = 7.82$, $SD = 3.18$, $p < .05$). None of the other drinking variables or brief norms measures presented in Table 1 varied by sex ($ps > .05$). Overlap between sex and gender role scores varied. While both males and females were most likely to score above the median on gender-matched subscales of the BSRI (i.e., 55% of males scored high on the masculine subscale and 55% of females scored high on the feminine subscale), both males and females also commonly received high scores on gender-mismatched subscales (i.e., 31% of males scored high on the feminine subscale and 45% of females scored high on the masculine subscale) and scores below the median on gender matched subscales (i.e., 34% of males scored low on the masculine subscale and 45% of females scored low on the feminine subscale).

3.2 Correlation Analyses

A correlation matrix examining the association between injunctive norms and descriptive norms is presented in Table 2. In general, correlations among and between injunctive and descriptive norms were positive and significantly greater than zero regardless of referent group. An exception to this pattern was seen as baseline injunctive norms for close friends, baseline descriptive norms for close friends, and follow-up descriptive norms for students at Syracuse University were not correlated with follow-up injunctive norms for Syracuse University.

3.3 Hierarchical Regression Analyses

Table 3 contains post-feedback means on injunctive and descriptive norms for both referent groups. We tested the study hypotheses using a series of 4 hierarchical regressions predicting post-feedback injunctive norms for students at SU and for close friends, and post-feedback descriptive norms for the same referent groups. All 4 models demonstrated good overall model fit and the predictor variables explained a significant amount of the variance in the outcome variables in each hierarchical regression analysis (Tables 4 & 5).

3.3.1 Injunctive Norms—Table 4 summarizes the hierarchical regression analysis predicting the post-feedback injunctive norms for students at SU. The zero-order correlation between the short baseline injunctive norms measure and the longer follow-up injunctive norms measure for students at SU was .29. On step 1, the partial regression coefficient relating baseline and post-feedback injunctive norms for students at SU was statistically significant, such that those who had higher baseline injunctive norms reported higher post-feedback injunctive

norms for students at SU. Also on step 1, the partial regression coefficient relating feedback condition and post-feedback injunctive norms was statistically significant, such that those who received the injunctive norms feedback reported lower post-feedback injunctive norms for students at SU than the control group who did not receive the feedback.

On step two, neither sex nor the masculine subscale of the BSRI were significantly associated with post-feedback injunctive norms for students at SU indicating that levels of post-feedback injunctive norms for students at SU were the same regardless of biological sex or degree of identification with masculine stereotypes. However, the feminine subscale of the BSRI was significantly and negatively associated with post-feedback injunctive norms for students at SU, such that those with higher levels of identification with feminine stereotypes reported lower post-feedback injunctive norms for students at SU. None of the interaction terms were statistically significant, so the final model predicting post-feedback injunctive norms for students at SU included main effects only.

Table 4 also summarizes the hierarchical regression analysis predicting the post-feedback injunctive norms for close friends. The zero-order correlation between the short baseline injunctive norms measure and the longer follow-up injunctive norms measure for close friends was .58. As expected, the partial regression coefficient relating baseline and post-feedback injunctive norms for close friends was statistically significant, such that higher baseline injunctive norms predicted higher post-feedback injunctive norms for close friends in step one. However, in this model exposure to feedback did not predict levels of post-feedback injunctive norms for close friends.

On step two, males reported higher post-feedback injunctive norms for close friends than females. The masculine subscale of the BSRI was not a significant predictor, indicating that levels of post-feedback injunctive norms for close friends was the same regardless of the degree of identification with masculine stereotypes. In contrast, the feminine subscale of the BSRI was significantly and negatively associated with post-feedback injunctive norms for close friends, such that those with higher identification with feminine stereotypes had lower post-feedback injunctive norms for close friends. None of the interaction terms were statistically significant, so the final model predicting post-feedback injunctive norms for close friends consisted of main effects only.

3.3.2 Descriptive Norms—Table 5 presents the results of the hierarchical regression analysis predicting the post-feedback descriptive norms for students at SU. The zero-order correlation between the short baseline descriptive norms measure and the longer follow-up descriptive norms measure for students at SU was .65. Again, higher baseline descriptive norms predicted higher post-feedback descriptive norms for students at SU. Also on step one, the partial regression coefficient relating feedback condition and post-feedback descriptive norms was statistically significant, such that those who received the injunctive norms feedback reported lower post-feedback descriptive norms for students at SU than the control group who did not receive the injunctive norms feedback.

On step two, neither sex nor the feminine subscale of the BSRI was significantly associated with post-feedback descriptive norms for students at SU. However, the masculine subscale of the BSRI was significantly associated with post-feedback descriptive norms for students at SU, such that those with higher levels of identification with masculine stereotypes estimated higher drinking levels for students at SU, independent of the effects of baseline estimates and feedback condition. On step three, none of the interaction terms were statistically significant thus only main effect variables were included in the final model.

In the last hierarchical regression analysis predicting the post-feedback descriptive norms for close friends, higher baseline descriptive norms for close friends predicted higher post-feedback descriptive norms for close friends on step one. The zero-order correlation between the short baseline descriptive norms measure and the longer follow-up descriptive norms measure for close friends was .79. However, post-feedback descriptive norms for close friends did not differ by feedback condition.

On step two, neither sex nor the feminine subscale was significantly related to post-feedback descriptive norms for close friends. The masculine subscale of the BSRI significantly predicted post-feedback descriptive norms for close friends, such that those with higher identification with masculine stereotypes reported higher levels of post-feedback descriptive norms for close friends. None of the interaction terms were statistically significant so only main effect variables were included in the final model.

4. Discussion

This study was designed to examine the malleability of injunctive and descriptive norms after a brief injunctive norms based feedback, and to explore differences in the malleability of injunctive norms across referent groups, by sex, and by gender role identification. We highlight four novel findings. First, beliefs held by college students about how much student peers approved of heavy alcohol use and its consequences differed in those who received brief injunctive norms based feedback compared to those who did not. This feedback intervention consisted of a single page of information embedded in a longer survey, and thus was not only brief but also may not have been perceived as a formal “intervention.” Advantages to this approach include ease of use, portability, and the decreased likelihood of generating resistance. Our findings reveal that at least short-term reductions in perceived approval can be achieved after exposure to very brief written feedback and do not require extensive facilitator-led discussion (e.g., Barnett et al., 1996).

Second, the effect of the injunctive norms feedback generalized to estimates of descriptive norms for student peers. That is, informational feedback that alerted students to the risk of overestimating peer approval for excessive drinking not only reduced estimated peer approval ratings but also reduced estimates of peer drinking. This finding underscores the interrelationship of students’ injunctive and descriptive normative beliefs, and suggests that the information used to make one judgment also informs the other. Two potential explanations can be offered for this observation. One may be the tendency to use stable dispositions to explain the behavior of an actor (Gilbert & Malone, 1995). Consistent with the notion of correspondence bias, it is possible that change in perceptions of injunctive norms led to change in descriptive norms through the assumption of belief-behavior consistency. When asked to estimate the typical drinking patterns of peers at their school (a task likely to invoke a sense of uncertainty), experimental participants may have generalized from the information they received regarding disapproval of excessive drinking, resulting in a downward shift for descriptive norms relative to the control participants. Alternatively, we know that enhancing the saliency of one type of norm or the other will prompt individuals to behave in accordance with the more salient norm (Cialdini et al., 1990). The manipulation could have enhanced the saliency of a more conservative injunctive norm, leading to more conservative estimates of peer drinking. If manipulations of one type of norm influence the other, then research designed to identify mediating variables for norms-based interventions should establish the specificity of hypothesized normative mechanisms (Kazdin, 2007).

Third, the brief injunctive norms feedback had no effect on the injunctive and descriptive norms held by college students about their close friends. Several hypotheses can be offered to explain the failure of the feedback to generalize to the close friend reference group. Most likely is that

the intervention was too specific; the feedback referred to data about students at Syracuse University and did not include any personalized feedback regarding individuals' close friends. Thus the feedback intervention did not directly address potential misperceptions of friends' drinking and attitudes. Furthermore, it is likely that students have more direct information about what close friends think and do (cf. Rimal & Real, 2007), and so these judgments are harder to change with a brief information sheet. Alternatively, the significant correlations between social desirability and perceptions of friends' behavior and approval suggest that they may already be suppressed relative to those of students in general.

Fourth, our results extend previous work by examining the associations of sex and gender role with normative beliefs. As expected, males drink the most alcohol and believe that their peers drink more alcohol compared to females. Moreover, regardless of sex, identification with traditionally masculine qualities is related to perceptions that student peers drink more alcohol (elevated descriptive norms), and identification with traditional feminine qualities is associated with perceptions of lower peer approval of excessive drinking (less permissive injunctive norms). In this study, these are not categorical states, but rather two dimensions that covary within an individual. These findings broaden the scope of previous work, which has showed that masculinity is associated with heavier alcohol use, by demonstrating that persons fitting the masculine stereotype (high masculinity, low femininity) are likely to hold the most permissive drinking norms. Thus, the heavier drinking of those embracing the traditional masculine social role may be explained in part by elevated perceptions of both peer alcohol consumption and approval of drinking. Moreover, the finding that femininity is associated with less permissive attitudes about excessive drinking helps to explain previous work that has shown that femininity is a protective factor against excessive drinking; if peers are seen to disapprove of excessive drinking, then more feminine individuals might drink less in order to avoid social disapproval (Cialdini et al., 1990). In the multivariate models, biological sex did not predict levels of either injunctive or descriptive norms, indicating that socially-defined gender role may be a more important factor in understanding social norms than sex. One implication of these findings is that gender role identification may lead individuals to attend to different social information, and that the saliency of masculinity or femininity dimensions of a person may determine the influence of each type of norm.

Neither sex nor gender role measures interacted with the norms manipulation. Thus, masculinity and femininity does not differentially predict response to this norms-based intervention. In light of the main effects observed for gender role on perceived norms, it is encouraging that the injunctive norms feedback was equally effective across the full range of masculine and feminine orientations. This suggests that the effectiveness of normative feedback does not differ by strength of gender role identification.

4.1 Limitations and Future Directions

The limitations of the study reveal opportunities for future research. First, the corrective feedback regarding the student body did not generalize to the close friend group, and research has shown that norms for this referent group are most associated with one's drinking (e.g., Borsari & Carey, 2003). It may be desirable to design a manipulation to specifically address the accuracy of perceptions of injunctive norms for close friends. Research might examine the malleability of social norms in intact friend groups by collecting data from groups of friends and providing personalized and group-based feedback to groups of friends on college campuses. Second, differences in social norms were only measured post-manipulation, which did not allow for a test of the lasting effect of the injunctive norms feedback. Third, this study did not assess the effect of observed changes in social norms on intentions to drink alcohol or actual drinking behavior. The cross-sectional design of this study did not allow for an examination of the lasting effect of this feedback, nor did it allow for a test of mediation through

the examination of the outcome measures simultaneously. Longitudinal research is needed to examine the durability of these effects as well as to assess whether a brief injunctive norms feedback is sufficient to change drinking behavior in college samples, as well as possible mediation effects of each type of norm on the other. Moreover, research with more diverse samples would help to determine whether response to normative feedback varies by ethnicity.

Finally, we did not find evidence that sex or gender role moderated the response to the injunctive norms manipulation. However, our findings did reveal specific relationships between gender role dimensions and injunctive versus descriptive drinking norms. It might be informative to differentiate between sex and gender role in future research to test their relationships to injunctive and descriptive norms and to responsiveness to feedback interventions. Previous research using descriptive norms feedback indicates that gender-specific norms have greater effect on reducing the drinking of female students (Lewis & Neighbors, 2007). Future intervention studies might consider the impact of gender-matching of injunctive norms feedback.

4.2 Conclusions

The results of this study have implications for the development of more efficacious norms-based interventions. Our findings are consistent with literature addressing other problem behaviors that show that injunctive norms can be manipulated (e.g., Mahler et al., 2008; Wenzel, 2001 a,b). A limited number of investigations have explored manipulation of injunctive norms and descriptive norms separately and in combination; their findings suggest that the combined manipulation produces more change in sun protection (Mahler et al., 2008) and energy use (Schultz et al., 2007) than either alone. For example, Mahler and colleagues (2008) developed both injunctive norms and descriptive norms feedback with the purpose of increasing sun protection behaviors (e.g., sunscreen use). The combination of both types of norms resulted in increased use of sun protection in the subsequent month compared to a control condition, and the combination was more effective than only one type of normative feedback. This study suggests an additive feedback effect due to the presentation of both types of normative information. Thus, an alcohol-focused intervention that includes both injunctive and descriptive norms based feedback may enhance the efficacy of empirically supported descriptive norms feedback interventions (e.g., Walters & Neighbors, 2005).

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Table 1

Baseline alcohol use, initial norms ratings, and social desirability among college students by condition

	Control Condition (N = 132) M (SD)	Feedback Condition (N = 133) M (SD)	Total Sample (N = 265) M (SD)	Sample Range
Current Number of Drinks/Typical Week	11.47 (16.52)	9.43 (10.39)	10.43 (13.75)	0 – 114
Number of Heavy Drinking Episodes in the Past Month	3.83 (4.67)	3.49 (3.95)	3.66 (4.32)	0 – 23
Brief Injunctive Norms for Students at SU	4.80 (1.08)	4.77 (1.02)	4.78 (1.05)	1 – 6
Brief Injunctive Norms for Close Friends	4.56 (1.36)	4.63 (1.40)	4.59 (1.38)	1 – 6
Brief Descriptive Norms for Students at SU	9.25 (2.93)	9.36 (3.00)	9.30 (2.96)	1 – 25
Brief Descriptive Norms for Close Friends	8.13 (3.92)	8.86 (4.02)	8.49 (3.98)	1 – 29
BSRI Masculine Subscale	96.74 (16.04)	100.27 (13.97)	98.47 (15.13)	55 – 136
BSRI Masculine Subscale	96.63 (13.35)	97.46 (14.74)	97.04 (14.04)	60 – 131
Social Desirability	7.85 (3.78)	7.77 (3.71)	7.81 (3.74)	0 – 23

Note: All $ps > .05$. SU = Syracuse University. BSRI = Bem Sex Role Inventory.

Table 2

Correlations Between Base-line and Follow-up Injunctive and Descriptive Norms by Referent Group

	1.	2.	3.	4.	5.	6.	7.
1. BL IN For Close Friends							
2. BL IN For Students at SU	.47**						
3. FU IN For Close Friends	.58**	.16**					
4. FU IN For Students at SU	-.02	.29**	.30**				
5. BL DN For Close Friends	.57**	.13*	.54**	-.06			
6. BL DN For Students at SU	.29**	.34**	.19**	.15*	.47**		
7. FU DN For Close Friends	.53**	.16*	.56**	-.07	.79**	.38**	
8. FU DN For Students at SU	.18**	.37**	.21**	.41**	.35**	.65**	.40**

Note: BL = Baseline, FU = Follow-up, IN = Injunctive Norms, DN = Descriptive Norms, SU = Syracuse University

**
p < .01*
p < .05

Table 3

Follow-up Injunctive and Descriptive Norms by Condition and Referent Group

	Condition			Partial η^2
	(range)	Control (N = 132) M (SD)	Feedback (N = 133) M (SD)	
Injunctive Norms				
Close Friends	1 – 7	2.53 (0.82)	2.49 (0.79)	0.00
Students at Syracuse University *	1 - 7	3.10 (0.92)	2.54 (0.89)	0.09
Descriptive Norms				
Close Friends	0 - ?	14.48 (13.42)	15.84 (11.48)	0.03
Students at Syracuse University +	0 - ?	18.09 (10.52)	15.72 (8.93)	0.02

Note. Injunctive norms were assessed on a scale from 1 (strongly disapprove of excessive drinking) to 7 (strongly approve of excessive drinking).

Descriptive norms were assessed as estimated drinks per week consumed by each of the targets. Partial η^2 describes the proportion of variance in the norms attributable to condition.

*
 $p \leq .05$,

+
 $p = .056$

Table 4

Unstandardized regression coefficients for hierarchical regression analyses predicting post feedback injunctive norms by referent group

	Students at Syracuse University		Close Friends	
	Step 1 $R^2 = .20^*$	Step 2 $R^2 = .24^*$	Step 1 $R^2 = .32^*$	Step 2 $R^2 = .41^*$
	b (s.e.)	b (s.e.)	b (s.e.)	b (s.e.)
Baseline Injunctive Norms	.33* (.06)	.35* (.06)	.32* (.03)	.30* (.03)
Condition	-.50* (.12)	-.50* (.11)	.01 (.09)	-.01 (.08)
Sex		-.18 (.13)		-.24* (.10)
Masculine Subscale Total		.00 (.01)		.00 (.00)
Feminine Subscale Total		-.01* (.01)		-.01* (.00)

Note:

* $p < .05$. Condition coded 1 = control condition and 2 = feedback condition. Sex coded 0 = male and 1 = female.

Table 5

Standardized regression coefficients for hierarchical regression analyses predicting post feedback descriptive norms by referent group

	Students at Syracuse University		Close Friends	
	Step 1 $R^2 = .46^*$	Step 2 $R^2 = .48^*$	Step 1 $R^2 = .65^*$	Step 2 $R^2 = .66^*$
	b (s.e.)	b (s.e.)	b (s.e.)	b (s.e.)
Baseline Descriptive Norms	2.22 [*] (.17)	2.21 [*] (.17)	2.52 [*] (.12)	2.41 [*] (.13)
Condition	-2.88 [*] (1.00)	-3.22 [*] (1.00)	-.99 (1.00)	-1.30 (.99)
Sex		.22 (1.16)		-.07 (1.15)
Masculine Subscale Total		.09 [*] (.04)		.11 [*] (.04)
Feminine Subscale Total		-.05 (.04)		-.08 (.04)

Note:

* $p < .05$. Condition coded 1 = control condition and 2 = feedback condition. Sex coded 0 = male and 1 = female.