Spring 5-1-2009

Drinking Motives and Self-Other Differences of College Norms of Alcohol-Related Consequences and Protective Behavioral Strategies

Kristyn Lao

Drinking Motives and Self-Other Differences of College Norms of Alcohol-Related Consequences and Protective Behavioral Strategies

A Capstone Project Submitted in Partial Fulfillment of the Requirements of the Renée Crown University Honors Program at Syracuse University

Kristyn Lao

Candidate for B.A. Degree
and Renée Crown University Honors

May 2009

Honors Capstone Project in Psychology

Capstone Project Advisor: _____
Dr. Kate B. Carey

Honors Reader: _____
Dr. Leonard Newman

Honors Director:_____
Samuel Gorovitz

Date:_____

Abstract

Heavy alcohol use and related consequences among college students have prompted an increase in research on determinants of excessive drinking, including perceived drinking norms. A distinction can be made between descriptive norms (what others do) and injunctive norms (what others approve of). Research reveals consistent self-other differences (SOD) for both descriptive and injunctive norms (Borsari & Carey, 2003), such that students tend to endorse more conservative behaviors and attitudes for themselves than they ascribe to their peers. The purpose of this study is to extend understanding of injunctive norms by evaluating SOD on (a) global comfort with drinking of students on campus, (b) acceptability of drinking-related consequences, and (c) acceptability of protective behavioral strategies (PBS). Exploratory analyses examined drinking motives and first-year status as factors in self-other ratings.

Participants were 324 undergraduates (61% female, 70% freshmen, 67% White), who completed an anonymous, online survey. Questions included demographics and alcohol use histories, and ratings of overall comfort with student drinking habits for "self," "friends," and "average student" on 11-point scales (0=not at all to 10=very) adapted from Schroeder and Prentice (1998). Participants then also rated two sets of items on acceptability to self and to others: (a) negative consequences, items adapted from the Brief Young Adult Alcohol Consequences Questionnaire (Kahler et al., 2005) and (b) items adapted from the Protective Behavioral Strategies Scale (Martens et al., 2005). Self and other acceptability ratings used 6-point scales (1=least acceptable; 6=most acceptable).

T- tests were used to compare self and other acceptability ratings. Comfort with drinking habits at the university was higher for friends (M=8.22, SD=2.11) than for self (M=7.35, SD=2.60), $t(323)$=-7.31, p<0.001. However, the comfort levels of self and average student did not differ (M=7.38, SD=1.91), $t(323)$=1.91, ns. With regard to drinking consequences, participants rated others as more accepting (M=2.42, SD=.04) than they were themselves (M=1.90, SD=.033), $t(323)$=11.50, p<0.001. Conversely, participants rated others as less accepting (M=4.09, SD=.067) of PBS than they were (M=4.60, SD=.059), $t(323)$=-8.75, p<0.01. Motives significantly correlated with both self-approval ratings of negative consequences and PBS. When compared on the perceived approval of others, first-year students and upperclassmen differed significantly on negative consequences (t=2.1, p<0.05) and PBS (t=-3.3, p<0.01). Unexpectedly, more experience in college was associated with greater acceptability of negative consequences and less acceptability of PBS.

Participants expressed less approval of consequences and more approval of PBS than they expected of other students at their university. Thus, the injunctive norms held by college students reflect a perceived social

environment that is more accepting of negative consequences (e.g., hangovers) and less accepting of strategies designed to protect the drinker from inebriation (e.g., spacing out drinks). Perceptions of a permissive social environment can facilitate excessive drinking, despite the more conservative attitudes held by individual students.

Table of Contents

The prevalence of excessive alcohol use among college students represents a public health concern in the United States (e.g., Hingson, Heeren, Winter, & Wechsler, 2005; Wechsler et al., 2002; O'Malley & Johnston, 2002) because of its role in motor vehicle fatalities, risky sexual activity, unintentional injuries, and poor academic performance (Wood, Sher, Erickson, & DeBord, 1997). Approximately four in five college students drink alcohol and two in five report engaging in heavy episodic drinking (or binge drinking as defined as having five or more drinks for men in a single occasion and four or more drinks for women in a single occasion) at least once every two weeks (O'Malley & Johnston, 2002; Wechsler et al., 2002). Further, research indicates that young adults in college engage in heavy episodic drinking at much higher rates than their same-age peers who do not attend college (O'Malley & Johnston, 2002). Recent epidemiological research indicates that drinking among college students is implicated in approximately 1,700 deaths (all causes including alcohol poisoning, drunk driving accidents, etc.), 500,000 unintentional injuries, and 600,000 assaults each year (Hingson et al., 2005). These studies flag an important area for psychological research as public health officials, university administrators, and parents call for more effective methods of preventing negative alcohol-related consequences.

Determinants of heavy alcohol use by young adults include active social pressure, social modeling (Collins, Parks, & Marlatt, 1985), stress (Wills, 1986), and the misperception of drinking norms (e.g., Borsari & Carey, 2001, 2003; Perkins, 1997, 2002, 2003; Sher, Batholow, & Nanda,

2001). Surveys indicate that young adults tend to overestimate the level of alcohol consumption and illicit drug use among their peers (e.g., Baer, Stacy, & Larimer, 1991). Understanding the underlying mechanisms of drinking norms may elucidate possible intervention methods and help in the prevention of negative alcohol-related consequences.

Norms are defined as "self-instructions to do what is perceived to be correct by members of a culture" (Solomon & Harford, 1984, p. 460). Two types of norms assessed frequently in college samples are "descriptive norms" (what others do) and "injunctive norms" (what others approve of). In relation to alcohol consumption, "descriptive norms" are the estimates of how much and how often others use alcohol (Borsari & Carey, 2001), and are largely based on selective observations of their peers (Kahneman & Tversky, 1973). Heavy drinkers appear to justify their own alcohol use by, often incorrectly, viewing others' drinking as heavier or riskier than their own (Baer, Stacy, & Larimer, 1991). This misperception of descriptive norms has been shown to be related to one's own drinking behavior (Larimer, Turner, Mallett, & Geisner, 2004; Perkins, Meilmann, Leichliter, Cashin, & Presley, 1999) and has been suggested to be predictive of one's future drinking behavior (Larimer et al., 2004; Sher et al., 2001). The overestimation bias is an area of concern because researchers have identified the perceived alcohol use of peers as one of the most consistent predictors of adolescent alcohol use (Sher et al., 2001).

The estimation of the frequency and prevalence of alcohol use should be distinguished from the estimation of others' approval of alcohol use. In

relation to alcohol consumption, the estimations of others' approval of alcohol use and moral values toward alcohol consumption may be considered "injunctive norms" (Borsari & Carey, 2001). Injunctive norms help determine the overall acceptability and unacceptability of social behaviors (Cialdini, Kallgren, & Reno, 1991). Injunctive norms influence drinking behavior because students may feel that not conforming to them may bring on social disapproval.

Like descriptive norms, surveys show that students tend to overestimate injunctive norms (Carey, Borsari, Carey, & Maisto, 2006; Borsari & Carey, 2003; Prentice & Miller, 1993; Perkins & Berkowitz, 1986). This generalized overestimation for the entire system is labeled pluralistic ignorance (Schroeder & Prentice, 1998). Prentice and Miller (1993) demonstrated pluralistic ignorance in a study which found that students estimated both their friends and the average student to be more comfortable with the level of alcohol consumption on campus than they reported for themselves. Further, they found that in male but not female students, attitudes shifted over time in the direction of what they mistakenly perceived to be the norm. Although correlational in nature, their results still suggest that over time, male students may adjust their attitudes and behaviors to bring them closer to the perceived norm.

Since students have limited knowledge of the actual attitudes and behaviors of their peers, their personal perception of heavy drinking patterns and attitudes may be based on examples they see in their collegiate social

setting. One factor that may help explain the general overestimation would be a phenomenon called the "availability heuristic;" in which people base their prediction of the frequency of an event on how easily an example can be brought to mind. Students will recall drunken individuals and incidents more quickly than responsible or sober behaviors because more extreme or unusual behaviors usually stand out in their memories. In addition, the overestimates of the frequency and normality of drunken events may be reinforced because drunken behaviors and events tend to be discussed in social encounters more than responsible or sober behaviors. Further, students may also be influenced by the cultural stereotype reinforced in films and popular culture that portray the typical college student as a heavy drinker comfortable with endorsing risky behaviors. Lastly, as excessive drinking may be highly visible at bars and campus parties, students may assume that excessive use is representative of personal disposition (the "fundamental attribution error"). Thus, students who observe excessive drinking may assume that the general student is also accepting of such "typical" behaviors. Due to these exaggerated norms, students tend to endorse more conservative attitudes and behaviors for themselves than they ascribe to their peers. This consistent discrepancy between personal behaviors and beliefs and perceived norms is labeled the self-other difference (SOD) (Carey et al., 2006; Borsari & Carey, 2003).

Research conducted by social norm theorists show that exaggerated estimates of the drinking norms can contribute to a permissive environment that may promote heavier drinking patterns by light/moderate drinkers and/or

buffer heavier drinking students from the realization of their extreme use (Perkins, 2002). Available literature suggests that the correction of descriptive drinking norms misperceptions is associated with significant decreases in alcohol consumption on college campuses (e.g., Neighbors, Larimer, & Lewis, 2004; Borsari & Carey, 2000). Some evidence suggests that challenging the uniformity of injunctive norms may also result in reductions in drinking (Schroeder & Prentice, 1998).

While there is substantial literature assessing both descriptive and injunctive norms in and around college drinking, injunctive norms have only been assessed with regard to general drinking patterns thus so far. We propose to extend current findings by assessing the acceptability or unacceptability of two sets of specific alcohol-related behaviors: negative consequences and protective behavioral strategies (PBS). Although numerous factors are associated with a decreased risk of heavy drinking, many of them, such as one's ethnicity, upbringing and family history, and biochemical makeup, are difficult or impossible to change in an intervention or social awareness campaign. PBS are specific cognitive-behavioral strategies that can be used to help reduce an individual's risky alcohol use and any related negative consequences and have the potential to be taught or modified in alcohol-related clinical and educational intervention efforts (Benton et al., 2004; Delva et al., 2004; Martens et al., 2004, 2005, 2007). Negative consequences and PBS are novel targets for the assessment of SOD in injunctive norms. They also differ in their social desirability, thereby offering an opportunity to

separate a response bias (e.g., others are always more extreme than the respondent) from a belief that others are more permissive of risky behaviors.

The purpose of the present study is threefold. First, we plan to replicate previous research on the global comfort level of campus drinking patterns. Then, we aim to extend these finding to approval levels of negative consequences and protective behavioral strategies. Specifically, we aim to explore SOD in the acceptability of negative consequences and protective behavioral strategies. Based on previous research, we propose the following hypotheses: (1) students will be less comfortable with drinking habits on campus than they perceive their peers to be; (2) students will be less accepting of negative consequences than they perceive their peers to be; and (3) students will be more accepting of PBS than they perceive their peers to be. As so far, research on PBS norms have focused on descriptive norms, showing that college students underestimate the frequency of other students' PBS usage (Benton et al., 2008). We extend research on PBS norms by assessing SOD of PBS injunctive norms.

Our second aim is to explore the relationship between motivation and both negative consequences and PBS. Drinking motives are an important component in understanding why individuals choose to use alcohol and have a positive correlation with the amount of alcohol consumed (e.g., Carey & Correia, 1997; Martens, Cox, Beck, & Heppner, 2003; Martens, Rocha, Martin, & Serrao, 2008). Thus, assessing drinking motives may also help researchers understand personal approval for negative consequences and PBS.

Students with greater personal motivation to drink may project a similar motivation onto their peers to help explain their peers' excessive alcohol use and to feel less of a discrepancy between their personal attitudes and behaviors and those of their peers. With this assumption in mind, exploratory analyses might show motive scores to be predictive of personal ratings of acceptability of consequences and PBS. Specifically, we propose that (4) stronger motives will be predictive of higher levels of acceptability of negative consequences (positive correlations) and (5) weaker motives will be predictive of higher levels of acceptability of protective behavioral strategies (negative correlations).

Third, we extend our research to explore any significant difference between the perceived injunctive norms of first-year students and upperclassmen. First-year students may be at a particularly higher risk for alcohol abuse and negative consequences due to the transition from high school to college (Baer, Kivlahan, & Marlatt, 1995; Turrisi, Padilla, & Wiermsa, 2000; Thompson, Leinfelt, & Smyth, 2006). Schulenberg and Maggs (2002) found that drinking tends to increase during transitions related to increased independence and decreased parental support. Research indicates that first-year students consume larger amounts of alcohol than upperclassmen (Turrisi, Padilla, & Wiermsa, 2000) and are also more likely to be arrested for alcohol-related offenses (Thompson, Leinfelt, & Smyth, 2006). Thus, it may be inferred that first-year students perceive a more permissive drinking environment than do upperclassmen because of their elevated drinking

behaviors. We hypothesize that relative to upperclassmen: (6) first-year students will perceive others as more accepting of negative consequences, and that (7) first-year students will perceive others as less accepting of protective behavioral strategies. These comparisons may help elucidate how the collegiate social setting affects student norms. This may also prove useful in establishing a baseline for drinking norms held by students upon college entry.

Method

Participants

Participants were 324 undergraduates (61% female) attending a large private university in the northeastern United States. The sample was recruited from introductory psychology courses in the fall semester of 2008. Participants were mostly freshmen (70%) or sophomores (19.2%); most were White (67%), with others identifying as Asian (13.6%), Hispanic (8%), Black or African American (7.1%), Native American or Native Alaskan (1.2%), Native Hawaiian or Pacific Islander (.6%) and other (2.5%); most lived in main campus housing (71%).

Measures

Measures were assembled into an online survey and assessed demographics, personal drinking patterns, levels of comfort with student drinking habits, self and other attitudes towards drinking consequences, self

and other attitudes towards protective behavior strategies, and drinking motives.

Demographics. Participants provided information regarding gender, age, year in school, grade point average, race and/or ethnicity, and residence.

Drinking patterns. The following variables related to alcohol use in the past 30 days were assessed: average number of drinks consumed on each day of the week, frequency of alcohol consumption per week, frequency of heavy drinking (defined as having five or more drinks for men in a single occasion and four or more drinks for women in a single occasion), average number of drinks consumed on a typical drinking day, typical amount of hours spent drinking, the number of drinks consumed on the heaviest drinking day, and the amount of time elapsing from the first to last drink. Participants were also asked to rate how often they intended to get drunk when consuming alcohol.

For this and all subsequent assessments, a "standard drink" was defined and conceptualized as a 10-12 oz. (.30-.35 L) can or bottle of 4%-5%-alcohol beer, a 4 oz. (.12 L) glass of 12%-alcohol table wine, a 12 oz. (.35 L) bottle or can of wine cooler, or a 1.25 oz. (.04 L) shot of 80-proof liquor either straight or in a mixed drink.

Drinking norms. Participants rated overall comfort with self and other SU students' drinking habits on 11-point scales (0=not at all comfortable; 10=very comfortable) adapted from Schroeder and Prentice (1998). They provided three separate ratings, worded as follows: (a) "How comfortable are you with the alcohol drinking habits of the students here at Syracuse

University?," (b) "How comfortable would you say your friends and close acquaintances on campus are with the alcohol drinking habits of the students here at Syracuse University?," and (c) "How comfortable would you say the average Syracuse undergraduate is with the alcohol drinking habits of the students at Syracuse University?."

Participants also rated two sets of items on acceptability to self and to peers. Self and other acceptability ratings used 6-point scales (1=least acceptable; 6=most acceptable). The first set (n = 22 items) assessed the acceptability of negative consequences with items adapted from the Brief Young Adult Alcohol Consequences Questionnaire (Kahler et al., 2005). The second set (n = 13 items) assessed the acceptability of protective behavioral strategies, with items adapted from the Protective Behavioral Strategies Scale (Martens et al., 2005). Similar items were consolidated to shorten the length of the survey and reduce redundancy among items. Positive foils were added to reduce order bias but not included in final analyses. Thus, the 22 items referring to negative consequences were rated twice, once for self-ratings of acceptability and again for perceptions of acceptability to others; the 13 PBS items were also rated twice to obtain acceptability ratings first for self, and then for others.

Drinking motives. Motives were assessed using measures adapted from the Drinking Motives Measure (DMM) (Cooper, 1994). Students were asked to indicate how well each motive described their reasoning for drinking on a 6-point scale (1=almost never/never; 6=almost always/always). Motives were

then classified into one of four categories of the DMM: social, enhancement, coping, or conformity. There were four items in each of the social, enhancement, and coping subscales, and five items for the conformity subscale. Again, similar measure items were consolidated to shorten the length of the survey and reduce redundancy among measure items.

Procedure

All measures and procedures were reviewed and approved by the institutional human subjects review board. Students enrolled in introductory psychology courses were recruited through the online SONA system to participate in a college alcohol use survey. All provided written informed consent prior to completing the surveys. Survey measures were administered in small groups ranging from 9-18 students that met in a computer cluster located on-campus. Research staff provided instructions for login and paper consent forms. Each survey carried a unique user identification number, and consent forms were collected separately to ensure anonymity and confidentiality. The survey took approximately 20-25 minutes to complete. After the completion of each survey, participants were asked to log-off their computer to clear any and all personal data. Survey results were saved on a secure server. As compensation, participants received course credit rounded up to the nearest half-hour toward their research experience requirement.

Results

Descriptive Statistics

Tables 1and 2 show the self-reported drinking profile of the participant pool. Overall, participants reported a mean of 3.93 drinks per typical drinking day (*SD*=3.68), a mean of 4.16 heavy episodic drinking episodes in the past 30 days for men (*SD*=4.19), and a mean of 3.32 heavy episodic drinking episodes in the past 30 days for women (*SD*=3.96). The majority of participants labeled themselves as moderate (40.5%) or light drinkers (31.78%), however nearly 50% of participants reported drinking 2-3 times per week. As shown in Table 3, the strongest motives in this sample were social and enhancement motives, both reflecting positive reinforcement reasons for drinking.

Hypothesis 1: Students will be less comfortable with drinking habits on campus than they perceive their peers to be. Table 4 illustrates the mean and standard deviations of comfort levels obtained in this sample. Paired t-tests were used to compare self and other (friends, average student) acceptability ratings. The estimated level of comfort with drinking habits at the university was significantly higher for friends (*M*=8.22, *SD*=2.11) than for self (*M*=7.35, *SD*=2.60), $t(323)=-7.31$, $p<0.001$, but the comfort levels of self and average student did not differ, $t(323)=1.91$, ns.

Hypothesis 2: Students will be less accepting of negative consequences than they perceive their peers to be. In general, ratings for negative consequences fell on the unacceptable side of the scale. Table 5 summarizes means representing the acceptability of each item from self-ratings and perceived other-ratings. Again, paired t-tests were used to compare

self and other acceptability ratings. All items for negative consequences showed significant difference. As predicted, participants rated others as more accepting of negative consequences (M=2.43, SD=0.86) than they were themselves (M=1.90, SD=0.59), t(323)=11.50, p<0.001

Participants reported the least acceptable consequences to be: "neglecting obligations to family, work, or school," "needing a drink upon wakening," and "driving knowing one is too intoxicated to drive safely." As shown in Table 5, the greatest difference between self-mean and other-mean for drinking consequences emerged with the item, "getting into sexual encounters later regretted." The smallest difference between self-mean and other-mean was reported for "gaining weight." Despite apparent differences in magnitude of SOD, all were significantly greater than zero.

Hypothesis 3: Students will be more accepting of PBS than they perceive their peers to be. As opposed to negative consequences, ratings for PBS generally fell on the acceptable side. Table 6 summarizes means representing the acceptability of each item from the self-ratings and perceived other-ratings Again, paired t-tests were used to compare self and other acceptability ratings. All items for PBS showed significant difference. As predicted, participants rated others as less accepting (M=4.09, SD=1.20) of PBS than they were (M=4.60, SD=1.07), t(323)=-8.75, p<0.001

As for PBS, the most acceptable strategies were "use a designated driver," "know where your drink has been at all times," and "eating before or while drinking." As shown in Table 6, the greatest difference between self-

mean and other-mean for PBS was reported for "avoid trying to 'keep up' or 'out drink' others." The smallest difference was found with "use a designated driver."

Hypotheses 4 & 5: Stronger motives will be predictive of higher levels of personal acceptability of negative consequences and weaker motives will be predictive of greater personal acceptability of protective behavioral strategies. Table 7 contains a correlation matrix testing the correlations among individual motive categories, personal acceptability of negative drinking consequences, and personal acceptability of PBS. Motives were strongly and positively correlated with each other (range=.19 -.81). All hypothesized correlations were significant and as predicted, motives were positively correlated with personal acceptability of negative consequences and negatively correlated with the personal acceptability of PBS. The strongest correlation for negative consequences emerged with enhancement motives (r=0.42, p<0.001). The strongest correlations for PBS emerged equally with enhancement motives (r=-0.21, p<0.001) and coping motives (r=-0.21, p<0.001). Attitudes towards negative consequences and PBS also showed a significant correlation with each other (r=-0.32, p<0.001).

Hypotheses 6 & 7: Relative to upperclassmen, first-year students will perceive others as more accepting of negative consequences, and first-year students will perceive others as less accepting of protective behavioral strategies. Table 8 contains means and standard deviations of perceptions of others' approval provided by first-year students and upperclassmen for

negative consequences. Table 9 contains the same for PBS. These ratings reflect perceptions of injunctive norms held by two groups of students defined by year-in-school. Two-sample t-tests were used to compare others' approval of negative consequences and PBS by first-year students and upperclassmen. Comparing the total means, injunctive norms of first-year students were more conservative than upperclassmen.

For negative consequences, the greatest differences emerged with "getting into sexual situations later regretted," "having the quality of work suffer," and "waking up with a hangover." In each case, first-year students perceived more peer disapproval for these negative events than did upperclassmen. Similar results were reported for PBS in that first-year students viewed others' approval as greater than upperclassmen did. The greatest differences for PBS emerged for the following measures: "know where your drink has been at all times," "stop drinking at a predetermined time," and "leave the party at predetermined time." In each case, first-year students perceived more peer approval for that strategy than did the older students.

Discussion

This study was designed to document the self-other difference of norms for negative drinking consequences and protective behavioral strategies and to explore motives and year-in-school as explanatory factors. Overall,

most of the study hypotheses were supported and the findings provide extensions of existing knowledge about injunctive norms.

The first hypothesis provided a replication of previous work and was partially supported. When comparing personal and perceived comfort levels of campus drinking habits, there was significant difference when self was compared to close friends, but no significant difference when self was compared to average student. Thus, students view themselves much like the average student but perceive their close friends to be more extreme and approving of drinking habits on campus. These findings are similar to what Prentice and Miller (1993) found on another campus, providing a partial replication. Their study found students estimated both their friends and the average student to be more comfortable with the level of consumption on campus than they reported for themselves. This discrepancy indicates that students may feel greater social pressure from friends to drink at levels not in their comfort range.

Strong support was found for the predicted SODs with regard to negative consequences and PBS. Participants expressed less approval of negative consequences and more approval of PBS than they perceived their peers to have. The predicted SODs were observed on every item, suggesting that discrepancies generalize across many negative consequences and over several PBS. Previous research on injunctive norms found similar results demonstrating SODs and pluralistic ignorance in college populations (e.g., Carey, Borsari, Carey, Maisto, 2006; Borsari & Carey, 2003; Baer, Stacy, &

Larimer, 1991; Prentice & Miller, 1993; Martens et al., 2006). Thus, the injunctive norms held by college students reflect a perceived social environment that is more accepting of negative consequences (e.g., hangovers) and less accepting of strategies designed to protect the drinker from inebriation (e.g., spacing out drinks). Perceptions of a permissive social environment can facilitate excessive drinking, despite the more conservative attitudes held by individual students.

With regard to hypotheses 4 and 5 pertaining to drinking motives, strong correlations were found between drinking motives and self-ratings for the acceptability of both negative consequences and PBS. Thus, support was found for predictions that motives for drinking influence personal attitudes about drinking. While causation can't be proved, the strong correlations suggest that these relationships warrant further investigation.

The comparison between the perception of first-year students and upperclassmen yielded unexpected results. We hypothesized that the injunctive norms regarding negative consequences of first-year students would be more permissive than those of upperclassmen, because of the collegiate drinking atmosphere stereotype and the drinking expectancies first-year students may have upon college entry. Instead, we found first-year students believed that others were less accepting of negative consequences than upperclassmen. Although comparisons between groups cannot directly address developmental change within individuals, this finding implies that as students go through their collegiate career, their perception of drinking norms

becomes increasingly more permissive. This perception of a permissive environment may promote heavier drinking patterns by light/moderate drinkers (Perkins, 2002) and an upward trend may raise drinking levels all around. While these results were unexpected, they are consistent with the findings of Fisher, Fried, and Anushko (2007), who reported that from the time of entry into college to the end of the first year, the expectation of drinking harms held by first-year students decreased. First-year students also reported a decrease in the value of institutional responsibilities (e.g., coursework) and an increase in their expectations that drinking is a college norm.

All together, these results provide support for creating, modifying, or expanding interventions with a social norms-based component or focus. A number of intervention strategies have incorporated some form of normative education because of the relationship between perceived norms and drinking behavior (e.g., Carey et al., 2007; Schroeder & Prentice, 1998). Interventionists may focus on individual items that held the greatest SODs or items that students found most/least acceptable for any social-norms campaign or individualize interventions. By incorporating normative education into interventions, interventionists can raise awareness among students on the discrepancies between self and others norms and bring student perception of alcohol attitudes and behaviors closer to the actual attitudes and behaviors of the general student population. A perceived permissive environment may promote heavier drinking patterns by light/moderate drinkers and/or buffer

heavier drinking students from the realization of their extreme use (Perkins, 2002). By correcting injunctive norms, the social pressure to participate in risky drinking patterns is minimized and thereby reducing potential negative consequences. While evidence for the efficacy of normative education exists, other researchers have reported disappointing findings for education-based interventions (e.g., Carey et al., 2007; Larimer & Cronce, 2007). In a recent study that looked into the efficiency of an online-based alcohol educational program, results indicated that alcohol knowledge alone was insufficient to mitigate alcohol-related high-risk behaviors (Croom et al., 2009). On the other hand, a recent campaign that gradually introduced accurate norms to the student body reported significant decreases in the odds of students suffering serious consequences associated with alcohol use over a six-year period. Overall, students exposed to the campaign reported a 57% decrease in experiencing negative consequences; 22% for first-year students (Turner, Perkins, & Bauerle, 2008).

However, certain groups of people might not benefit from a broad social-norms campaign if they identify with only a small group of heavy-drinking friends. For example, Larimer et al. (2004) conducted a study that assessed descriptive and injunctive norms from incoming pledge classes of 18 Greek houses on another campus and found injunctive norms significantly predicted drinking one year later. Further, Capone et al. (2004) found that affiliation with heavier drinkers in the Greek community led to a mutually reinforcing system in which initially higher levels of alcohol use and problems

were reinforced by the increased affiliation with heavier drinking peers. While Greek-affiliated members may not respond as well to social-norms campaigns because of their immediate reference group, our results suggest that since first-year students hold more conservative injunctive norms than upperclassmen, targeted interventions for first-year students may be beneficial as a preventative tactic before they establish smaller reference groups that may reinforce risky drinking habits. As previous research indicated, first-year students are at particular high-risk for alcohol abuse and negative alcohol-related consequences (e.g., Baer, Kivlahan, & Marlatt, 1995) because of elevated drinking rates (Turrisi et al., 2000). Perhaps by correcting misperceived norms early on, interventionists can reduce students' risk for negative consequences and dependency in the long run.

The findings of this study should be considered in light of its limitations. First, since our results were based on self-reported data, many sources of error need to be addressed. Participants who intentionally or unintentionally distorted responses for any reason may cause reporting bias. We addressed this concern by assuring anonymity and confidentiality. Further, literature reveals that self-report drinking data is generally reliable and valid (e.g., Gruenewald & Johnson, 2006). Second, since our measures were modified from previously established measures, the slight adjustments and word choice made by researchers may have affected the results. These adaptations preclude direct comparison of means with other studies using these measures. Third, the study did not use a random sample, as students

were recruited from introductory psychology classes for course credit and voluntarily chose to participate in the survey. However, since our results are consistent with current literature and prior studies regarding social norms, we are confident that they can be generalized to college students' perceptions of drinking. Finally, the sample consisted primarily of white first-year students. The small number of minority students prevented us from testing whether or not we could generalize these findings across racial/ethnic groupings.

Despite these limitations, the results of this study add to the existing body of literature through the evaluation of injunctive norms of negative alcohol-related consequences and protective behavioral strategies. They also contribute to the existing body of knowledge of social norms through evaluation of drinking motives as a correlate to acceptability levels and the comparison of others' approval for negative alcohol-related consequences and protective behavioral strategies by year-in-school. The results may have implications for the design and implementation of preventative measures. A better understanding of the effect of the self-other difference on the social norms of college students and its correlates can aid in multiple intervention methods and in predicting and preventing future risky drinking behaviors.

References

Baer, J.S., Kivlahan, D.R., & Marlatt, G.A. (1995). High-risk drinking across the transition from high school to college, *Alcoholism, Clinical and Experimental Research, 19,* 54-61.

Baer, J.S., Stacy, A., & Larimer, M. (1991). Biases in the perception of drinking norms among college students. *Journal of Studies on Alcohol and Drugs, 52,* 580-596.

Benton, S.L., Schmidt, J.L., Newton, F.B., Shin,. K., Benton, S.A., & Newton, D.W. (2004). College student protective strategies and drinking consequences. *Journal of Studies on Alcohol, 65*, 115-121.

Borsari, B., & Carey, K.B. (2000). Effects of a brief motivational intervention with college student drinkers. *Journal of Consulting and Clinical Psychology, 68*, 728-733.

Borsari, B., & Carey, K.B. (2001). Peer influences in college drinking: A review of the research. *Journal of Substance Abuse, 13*, 391- 424.

Borsari, B., & Carey, K.B. (2003). Descriptive and injunctive norms in college drinking: A meta-analytic integration. *Journal of Studies on Alcohol, 54*, 331- 341.

Capone, C., Wood, M., Borsari, B., & Laird, R. (2007). Fraternity and sorority involvement, social influences, and alcohol use among college students: A prospective examination. *Psychology of Addictive Behaviors, 21*, 316-327.

Carey, K.B., Borsari, B., Carey, M.P., & Maisto, S.A. (2006). Patterns and importance of self-other differences in college drinking norms. *Psychology of Addictive Behaviors*, 20, 385-393.

Carey, K.B., & Correia, C.J. (1997). Drinking motives predict alcohol-related problems in college students. *Journal of Studies on Alcohol and Drugs, 85,* 100-105.

Carey, K.B., Scott-Sheldon, L.A., Carey, M.P., & DeMartini, K.S. (2007). Individual-level interventions to reduce college student drinking: A meta-analytic review. *Addictive Behaviors*, *32*, 2469-2494.

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology, 58,* 1015-1026.

Cooper, M. L. (1994). Motivations for alcohol use among adolescents: Development and validation of a four-factor model. *Psychological Assessment, 6,* 117–128.

Collins, R. L., Parks, G. A., & Marlatt, G. A. (1985). Social determinants of alcohol consumption: The effects of social interaction and model status on the self-administration of alcohol. *Journal of Consulting and Clinical Psychology, 53,* 189-200.

Croom, K., Lewis, D., Marchell, T., Lesser, M., Reyna, V., Kubicki-Bedford, L., Feffer, M., & Staiano-Coico, L. (2009). Impact of an online alcohol education course on behavior and harm for incoming first-year college

students: Short-term evaluation of a randomized trial. *Journal of American College Health, 57*, 445-54.

Delva, J., Smith, M.P., Howell, R.L., Harrison, D.F., Wilke, D., & Jackson, D.L. (2004). A study of the relationship between protective behaviors and drinking consequences among undergraduate college students. *Journal of American College Health, 53,* 19-26.

Fisher, C.B., Fried, A.L., & Anushko, A. (2007). Development and validation of the College Drinking Influences Survey. *Journal of American College Health, 53*, 217-230.

Gruenewald, P.J., & Johnson, F.W. (2006). The stability and reliability of self-reported drinking measures. *Journal of Studies on Alcohol and Drugs, 67,* 738-745.

Hingson, R., Heeren, T., Winter, M., & Wechsler, H. (2005). Magnitude of alcohol-related mortality and morbidity among U.S. college students ages 18–24: Changes from 1998–2001. *Annual Review of Public Health, 26,* 259–279.

Hines, D., Saris, R.N., & Throckmorton-Belzer, L. (2002). Pluralistic ignorance and health risk behaviors: Do college students misperceive social approval for risky behaviors on campus and in media? *Journal of Applied Social Psychology, 32*, 2621-2640.

Kahler, C.S., Strong, D.R., & Read, J.P. (2005). Toward efficient and comprehensive measurement of the alcohol problems continuum in

college students: The Brief Young Adult Alcohol Consequences Questionnaire. *Alcoholism: Clinical & Experimental Research, 29,* 1180-1189.

Kahneman, D., & Tversky, A. (1973). On the psychology of prediction. *Psychological Review, 80,* 237-257.

Kuntsche, E., Knibbe, R., Gmel, G., & Engels, R. (2005). Why do young people drink? A review of drinking motives. *Clinical Psychology Review*, *25*, 841–861.

Larimer, M.E., & Cronce, J.M. (2007). Identification, prevention, and treatment revisited: Individual-focused college drinking prevention strategies 1999-2006. *Addictive Behaviors, 32*, 2439-2468.

Larimer, M.E., Turner, A.P., Mallett, K.A., & Geisner, I.M. (2004). Predicting drinking behavior and alcohol-related problems among fraternity and sorority members: Examining the role of descriptive and injunctive norms. *Psychology of Addictive Behaviors, 18*, 203-212.

Mallett, K.A., Bachrach, R.L., & Turrisi, R. (2009). Examining the unique influence of interpersonal and intrapersonal drinking perceptions on alcohol consumption among college students. *Journal of Studies on Alcohol and Drugs, 70*, 178-185.

Martens, M.P., Cox, R.H., Beck, N.C., & Heppner, P.P. (2003). Measuring motivations for intercollegiate athlete alcohol use: A confirmatory factor analysis of the Drinking Motives Measure. *Psychological Assessment, 15,* 235-239.

Martens, M.P., Ferrier, A.G., Sheeny, M.J., Corbett, K., Anderson, D.A., & Simmons, A. (2005). Development of the Protective Behavioral Strategies Scale. *Journal of Studies on Alcohol, 66,* 698-705.

Martens, M.P., Page, J.C., Mowry, E.S., Damann, K.M., Taylor, K.K., & Cimini, M.D. (2006). Differences between actual and perceived student norms: An examination of alcohol use, drug use, and sexual behaviors. *Journal of American College Health, 54,* 295-300.

Martens, M.P., Pederson, E.R., LaBrie, J.W., Ferrier, A.G. & Cimini, M.D. (2007). Measuring alcohol-related protective behavioral strategies among college students: Further examination of the protective behavioral strategies scale. *Psychology of Addictive Behaviors, 21*, 307-315.

Martens, M.P., Rocha, T.L., Martin, J.L., & Serrao, H.F. (2008). Drinking motives and college students: Further examination of a four-factor model. *Journal of Counseling Psychology*, *55*, 289-295.

Martens, M.P., Taylor, K.K., Damann, K.M., Page, J.C., Mowry, E.S., & Cimini, M.D. (2004). Protective factors when drinking alcohol and their relationship to negative alcohol-related consequences. *Psychology of Addictive Behaviors, 18*, 390-393.

Miller, D.T., & Prentice, D.A. (1994). Collective errors and errors about the collective. *Personality and Social Psychology Bulletin, 20,* 541-550.

Neighbors, C., Larimer, M.E., & Lewis, M.A. (2004). Targeting misperceptions of descriptive drinking norms: Efficacy of a computer-

delivered personalized normative feedback intervention. *Journal of Consulting and Clinical Psychology, 72*, 434-447.

O'Malley, P.M., & Johnston, L.D. (2002). Epidemiology of alcohol and other drug use among American college students. *Journal of Studies on Alcohol: Supplement, 14*, 91-100.

Perkins, H. W. (1997). College student misperceptions of alcohol and other drug norms among peers: Exploring causes, consequences and implications for prevention programs. In *Designing alcohol and other drug prevention programs in higher education: Bringing theory into practice.* Boston, MA: The Higher Education Center for Alcohol and Other Drug Prevention, U.S. Department of Education, 177-206, 1997.

Perkins, H.W. (2002). Social norms and the prevention of alcohol misuse in collegiate contexts. *Journal of Studies on Alcohol and Drugs, 14,* 164-172.

Perkins H.W. (2003). *The social norms approach to preventing school and college age substance abuse.* San Francisco: Jossey-Bass.

Perkins, H.W., & Berkowitz, A.D. (1986). Using student alcohol surveys: Notes on clinical and educational program applications. *Journal of Alcohol and Drug Education, 31*, 44-51.

Perkins, H. W., Meilman, P., Leichtliter, J., Cashin, J., & Presley, C. (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

Prentice, D.A. (2008). Mobilizing and weakening peer influence as mechanisms for changing behavior: implications for alcohol intervention programs. In Prinstein, M.J. & Dodge, K.A. (Eds.), *Peer influence processes in youth.* New York: Guilford.

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.

Rimal, R.N., & Real, K. (2003). Understanding the influence of perceived norms on behaviors. *Communication Theory, 13*, 184-203.

Schroeder, C.M., & Prentice, D.A. (1998). Exposing pluralistic ignorance to reduce alcohol use among college students. *Journal of Applied Social Psychology 28*, 2150-2180.

Schulenberg, J.E., & Maggs, J.L. (2002). A developmental perspective on alcohol use and heavy drinking during adolescence and the transition to young adulthood, *Journal of Studies on Alcohol. Supplement, 14,* 54–70.

Sher, K.J., Bartholow, B.D., & Nanda, S. (2001). Short- and long- term effects of fraternity and sorority membership on heavy drinking: A social norms perspective. *Psychology of Addictive Behaviors, 15,* 42-51.

Solomon S. D., & Harford, T.C. (1984). Drinking norms versus drinking behaviors. *Alcoholism: Clinical and Experimental Research, 8*, 460-466.

Suls, J., & Green, P. (2003). Pluralistic ignorance and college student perceptions of gender-specific alcohol norms. *Health Psychology, 22*, 479-486.

Thombs, D.L., Wolcott, B.J., & Farkash, L.G.E. (1997). Social context, perceived norms, and drinking behavior in young people. *Journal of Substance Abuse, 9*, 257-267.

Thompson, K.M., Leinfelt, F., & Smyth, J.M. (2006). Self-reported official trouble and official arrest: Validating a piece of the Core Alcohol and Drug Survey. *Journal of Substance Use, 11,* 23–26.

Turner, J., Perkins, J.W., & Bauerle, J. (2008). Declining negative consequences related to alcohol misuse among students exposed to a social norms marketing intervention on a college campus. *Journal of American College Health, 57*, 85-93.

Turrisi, R., Padilla, K.K., & Wiermsa, K.A. (2000). College student drinking: An examination of theoretical models of drinking tendencies in freshmen and upperclassmen. *Journal of Studies on Alcohol, 61,* 598–602.

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., Molnar, B.E., Davenport, A.E., & Baer, J.S. (1999). A full or empty glass? *Journal of American College Health, 47*, 247-252.

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. *Journal of American College Health, 50,* 203–217.

Wills, T. A. (1986). Stress and coping in early adolescence: Relationships to substance use in urban school samples. *Health Psychology, 5,* 503-529.

Wood, P., Sher, K., Erickson, D., & DeBord, K. (1997). Predicting academic problems in college from freshman alcohol involvement. *Journal of Studies on Alcohol, 58,* 200-210.

Appendices

Table 1
Descriptive information – Categorical drinking variables

	n	%
Drinks per week		
Never	41	12.69
Less than once a year	24	7.43
Less than once a week	38	11.76
Once a week	44	13.62
2-3 times per week	156	48.30
4-5 times per week	15	4.64
6-7 times per week	5	1.55
Current self-label		
Abstainer	65	20.25
Light drinker	102	31.78
Moderate drinker	130	40.50
Heavy drinker	22	6.85
Very heavy drinker	2	0.62
How often do you intend to get drunk		
Abstainer	36	11.15
Never	38	11.76
Rarely	41	12.69
Sometimes	69	21.36
Usually	103	31.89
Always	36	11.15

Table 2
Descriptive information – Continuous drinking variables

	Mean	**SD**	**Range**
Average number of drinks (by day)			
Sunday	0.20	0.84	0-7
Monday	0.04	0.32	0-3
Tuesday	0.47	1.89	0-20
Wednesday	0.16	0.78	0-8
Thursday	1.89	2.92	0-20
Friday	3.72	3.66	0-20
Saturday	4.1	3.82	0-25
Number of heavy drinking episodes			
Male (5 or more drinks)	4.16	4.19	0-17
Female (4 or more drinks)	3.32	3.96	0-20
Number of drinks (typical day)	3.93	3.68	0-26
Hours spent drinking (typical day)	3.08	1.98	0-9
Number of drinks (heaviest day)	6.24	4.86	0-25
Hours spent drinking (heaviest day)	3.32	2.523	0-18

Note: All refer to the past 30 days.

Table 3
Motive scores

	Mean	**SD**	**Range**
Social	16.77	5.86	4-24
Enhancement	14.08	5.84	4-24
Coping	9.67	5.43	4-24
Conformity	8.6	5.06	5-28

Note: *n*=324, conformity score is out of 30; all other scores are out of 24

Table 4
Comfort levels of the alcohol drinking habits of the students on campus

	Mean	**SD**
You	7.35	2.6
Your friends and close acquaintances on campus	8.22	2.11
Average undergraduate on campus	7.38	1.91

Note: *n*=324

Table 5
Ratings of acceptability of negative consequences

	Self		Other		
	Mean	**SD**	**Mean**	**SD**	**t(323)**
Waking up with a hangover	2.9	1.28	3.13	1.4	3.16**
Not being able to remember large stretches of time	2.02	1.13	2.76	1.33	9.0***
Having the quality of work suffer	1.3	0.61	1.96	1.06	11.86**
Having less energy or feeling tired	2.3	1.12	2.71	1.31	5.58***
Getting into sexual situations later regretted	1.79	1.05	2.65	1.36	11.35**
Drinking on unplanned nights	3.11	1.22	3.61	1.46	6.18***
Having one's physical appearance harmed	1.63	0.82	1.96	0.98	5.63***
Saying or doing embarrassing things	2.67	1.24	3.15	1.4	5.97***
Feeling very sick or throwing up	2.17	1.07	2.74	1.29	8.03***
Having done impulsive things later regretted	2.02	1	2.64	1.28	9.13***
Gaining weight	2.01	0.98	2.13	1.03	2.04*
Waking up in an unexpected place	1.66	1.01	2.38	1.29	9.55***
Spending too much time drinking	1.85	1.01	2.66	1.4	9.81***
Losing self-esteem	1.5	0.76	1.81	0.87	6.40***
Creating problems with partners/parents/close relatives	1.57	0.79	1.99	1.08	7.37***
Needing a drink upon waking	1.24	0.68	1.61	1.01	7.62***
Driving knowing one is too intoxicated to drive safely	1.17	0.65	1.62	0.98	8.28***
Neglecting obligations to family, work, or school	1.29	0.67	1.75	0.91	8.70***
Not being able to keep a limit for how much to drink	1.72	0.98	2.53	1.27	10.91**
Passing out	1.83	0.97	2.55	1.37	9.54***
Becoming rude, obnoxious, or insulting	1.78	0.89	2.36	1.2	8.51***
Needing larger amounts of alcohol to feel effect	2.22	1.18	2.74	1.51	5.89***
Total Mean	1.90	0.59	2.43	0.86	11.50**

Note: n=324 *p<.05, **p<.01, ***p<.001

Table 6
Ratings of acceptability of protective behavioral strategies

	Self		Other		
	Mean	**SD**	**Mean**	**SD**	**t(323)**
Determine in advance not to exceed set number	4.67	1.37	4.17	1.46	-6.47***
Alternate alcoholic and nonalcoholic drinks	4.42	1.56	3.97	1.60	-5.55***
Have a friend tell you when you've had enough	4.76	1.44	4.44	1.45	-4.01***
Leave the party at predetermined time	4.52	1.48	4.06	1.53	-5.75***
Stop drinking at a predetermined time	4.61	1.36	4.07	1.54	-6.42***
Eating before or while drinking	5.16	1.17	4.80	1.32	-5.31***
Pace your drinks to one or fewer per hour	4.49	1.53	3.79	1.67	-7.82***
Avoid drinking games	3.60	1.70	2.97	1.77	-7.02***
Avoid drinking shots of liquor	3.77	1.68	3.15	1.75	-6.81***
Drink slowly, rather than gulp or chug	4.29	1.56	3.63	1.67	-7.41***
Avoid trying to "keep up" or "out drink" others	4.49	1.56	3.78	1.69	-7.51***
Use a designated driver	5.65	0.98	5.36	1.10	-5.42***
Know where your drink has been at all times	5.47	1.11	5.03	1.38	-6.86***
Total Mean	4.60	1.07	4.09	1.20	-8.75***

Note: n=324. *p<.05, **p<.01, ***p<.001

Table 7
Correlation matrix for motives, negative consequences, and protective behavioral strategies

	1	2	3	4	5
Motives					
(1) Social Motives	1.00				
(2) Enhancement Motives	0.81***	1.00			
(3) Coping Motives	0.48***	0.51***	1.00		
(4) Conformity Motives	0.26***	0.19***	0.47***	1.00	
Personal Acceptability Ratings					
(5) Negative Drinking Consequences	0.39***	0.42***	0.41***	0.31***	1.00
(6) Protective Behavioral Strategies	-0.13*	-0.21***	-0.21***	-0.14*	-0.32***

Note: n=324. *p<.05, **p<.01, ***p<.001

Table 8

Others' approval of negative alcohol-related consequences: first-year students v. upperclassmen

	First-Year Students		Upperclassmen		
	Mean	**SD**	**Mean**	**SD**	**t**
Waking up with a hangover	3.00	1.37	3.40	1.40	2.64**
Not being able to remember large stretches of time	2.68	1.30	2.97	1.39	1.75
Having the quality of work suffer	1.86	0.99	2.20	1.16	2.67**
Having less energy or feeling tired	2.65	1.33	2.86	1.24	1.36
Getting into sexual situations later regretted	2.60	1.30	2.79	1.46	1.18
Drinking on unplanned nights	3.47	1.48	3.96	1.33	2.79**
Having one's physical appearance harmed	1.91	0.97	2.08	1.00	1.41
Saying or doing embarrassing things	3.13	1.43	3.23	1.33	0.61
Feeling very sick or throwing up	2.65	1.26	2.96	1.32	1.96
Having done impulsive things later regretted	2.61	1.26	2.72	1.32	0.71
Gaining weight	2.10	1.02	2.23	1.06	1.03
Waking up in an unexpected place	2.32	1.28	2.52	1.32	1.25
Spending too much time drinking	2.58	1.44	2.86	1.30	1.69
Losing self-esteem	1.82	0.89	1.80	0.84	-0.16
Creating problems with partners/parents/close relatives	1.99	1.08	2.01	1.08	0.18
Needing a drink upon waking	1.58	0.95	1.71	1.14	1.1
Driving knowing one is too intoxicated to drive safely	1.56	0.93	1.78	1.08	1.9
Neglecting obligations to family, work, or school	1.72	0.93	1.83	0.86	1
Not being able to keep a limit for how much to drink	2.48	1.28	2.67	1.24	1.25
Passing out	2.43	1.32	2.80	1.45	2.45**
Becoming rude, obnoxious, or insulting	2.33	1.21	2.42	1.21	0.6
Needing larger amounts of alcohol to feel effect	2.68	1.52	2.92	1.47	1.31
Total Mean	2.37	0.85	2.58	0.84	2.1*

Note: First-year Students n=226; Upperclassmen n=97, *p<.05, **p<.01

Table 9
Others' approval of protective behavioral strategies: first-year students v. upperclassmen

	First-Year Students		Upperclassmen		
	Mean	**SD**	**Mean**	**SD**	**t**
Determine in advance not to exceed set number	4.20	1.50	3.91	1.54	-2.06*
Alternate alcoholic and nonalcoholic drinks	4.12	1.58	3.65	1.61	-2.42*
Have a friend tell you when you've had enough	4.56	1.43	4.15	1.47	-2.31*
Leave the party at predetermined time	4.24	1.50	3.62	1.51	-3.42***
Stop drinking at a predetermined time	4.25	1.52	3.62	1.51	-3.44***
Eating before or while drinking	4.91	1.30	4.57	1.36	-2.12*
Pace your drinks to one or fewer per hour	3.92	1.69	3.49	1.60	-2.08*
Avoid drinking games	3.12	1.78	2.58	1.66	-2.55*
Avoid drinking shots of liquor	3.29	1.77	2.82	1.65	-2.12*
Drink slowly, rather than gulp or chug	3.73	1.67	3.38	1.63	-1.77
Avoid trying to "keep up" or "out drink" others	3.98	1.67	3.30	1.63	-3.39***
Use a designated driver	5.44	0.98	5.17	1.34	-2.00*
Know where your drink has been at all times	5.20	1.22	4.63	1.64	-3.49***
Total Mean	4.23	1.17	3.76	1.21	-3.3**

Note: First-year students n=226; Upperclassmen n=97, *p<.05, **p<.01, ***p<.001

Written Capstone Summary

On college campuses across the United States, excessive alcohol use and abuse is prevalent and represents an area of concern for public officials and health administrators. Approximately four in five college students drink alcohol and two in five report engaging in binge drinking (as defined as having five or more drinks for men in a single occasion and four or more drinks for women in a single occasion) at least once every two weeks (O'Malley & Johnston, 2002; Wechsler et al., 2002). While a main concern arises around the effect binge drinking may have on academic performance, the bigger concern revolves around the issue that drinking among college students is implicated in approximately 1,700 deaths (all causes including alcohol poisoning, drunk driving accidents, etc.), 500,000 unintentional injuries, and 600,000 assaults each year (Hingson et al., 2005). As alcohol use is a self-induced behavior, it is important to note that these related consequences are actually preventable with effective intervention methods and awareness campaigns.

While many factors contribute to why a person chooses to drink, one factor to consider is the misperception of drinking norms. Norms are defined as "self-instructions to do what is perceived to be correct by members of a culture" (Solomon & Harford, 1984, p. 460). Norm theory is prevalent and may be applied to almost any discipline, from gender norms to social norms to specific behavioral norms such as drinking. In college samples, two types of norms that are frequently assessed are descriptive norms (what others do) and

injunctive norms (what others approve or disapprove of). In relation to drinking, descriptive norms are the estimates of how much and how often others use alcohol, and injunctive norms are the estimates of how approving or disapproving others are with alcohol use.

Heavy drinkers appear to justify their own alcohol use by, often incorrectly, viewing others' drinking as heavier or riskier than their own (Baer, Stacy, & Larimer, 1991). On the same note, light to moderate drinkers who incorrectly misperceive drinking norms may be encouraged to take on riskier drinking behaviors in what they perceive to be a permissive environment.

Norms are largely based on outside observations of the behaviors and reactions one see or perceives among one's friends. These observations may be constructed from a number of different modes. One explanation to help explain the general overestimation is the phenomenon called the "availability heuristic," in which people base their estimations of the frequency of an event on how easily examples can be brought to mind. As drunken individuals and incidents are brought to mind more quickly over responsible or sober behaviors, students assume that these incidents happen more frequently than they actually do. Another explanation may be found in the prevalence of the college student stereotype portrayed in the media and popular culture. Along with the availability heuristic, students may enter and go through college using examples portrayed in the media as their reference base. Thus, students tend to endorse more conservative attitudes and behaviors for themselves than

they ascribe to their peers. This consistent discrepancy between personal behaviors and beliefs and perceived norms is labeled the self-other difference (SOD) (Carey et al., 2006; Borsari & Carey, 2003).

While a great deal of research has been conducted on the descriptive norms of college drinking behaviors, the number of studies on injunctive norms is just recently rising. Specifically, we focused on extending norm research to document the injunctive norms related to negative alcohol-related consequences and protective behavioral strategies (PBS).

The purpose of the study is to replicate and extend previous research by showing (1) students will be less comfortable with drinking habits on campus than they perceive their peers to be; (2) students will be less accepting of negative consequences than they perceive their peers to be; and (3) students will be more accepting of PBS than they perceive their peers to be. From there, we also explored motivation as a possible correlate with the SOD of negative consequences and PBS. Drinking motives are an important component in understanding why individuals choose to use alcohol and have a positive correlation with the amount of alcohol consumed (e.g., Carey & Correia, 1997; Martens, Cox, Beck, & Heppner, 2003; Martens, Rocha, Martin, & Serrao, 2008). Specifically, we predicted that (4) stronger drinking motives will be predictive of greater acceptability of negative consequences (illustrating a positive correlation) and (5) weaker motives will be predictive of greater acceptability of protective behavioral strategies (illustrating a negative correlation).

Lastly, we extended our research to explore any significant differences between the injunctive norms of first-year students and upperclassmen. First-year students may be at a particularly higher risk for alcohol abuse and negative consequences due to the transition from high school to college (Baer, Kivlahan, & Marlatt, 1995; Turrisi, Padilla, & Wiermsa, 2000; Thompson, Leinfelt, & Smyth, 2006). Schulenberg and Maggs (2002) found that drinking tends to increase during transitions related to increased independence and decreased parental support. Research indicates that first-year students consume larger amounts of alcohol than upperclassmen (Turrisi, Padilla, & Wiermsa, 2000) and are also more likely to be arrested for alcohol-related offenses (Thompson, Leinfelt, & Smyth, 2006). Thus, it may be inferred that first-year students perceive a more permissive drinking environment than do upperclassmen because of their elevated drinking behaviors. We hypothesized that (6) first-year students will perceive others as more accepting of drinking habits and negative consequences and that (7) first-year students will perceive others as less accepting of protective behavioral strategies. This comparison may help shed light on how the collegiate social setting affects student norms. This may also prove useful for establishing a baseline for drinking norms students have upon college entry.

We surveyed 324 undergraduate students using an online survey featuring measures adapted from past studies in the field. About 70% of participants were first-year students and the majority of participants identified as White and living in main campus housing. Students gathered in groups

ranging from 9-18 participants in a computer cluster on campus. All student responses were anonymous, confidential, and voluntary. Also, each student provided consent and was compensated with course credit toward their research requirements.

Overall, participants reported drinking almost 4 drinks per typical drinking day. In the past 30 days, male participants reported that they engaged in an average of 4.16 heavy drinking episodes; 3.32 for female participants. The majority of participants labeled themselves as moderate (40.5%) or light drinkers (31.78%) however nearly 50% of participants reported drinking 2-3 times per week.

When comparing personal and perceived comfort levels of campus drinking habits, there was a significant difference when self was compared to close friends and acquaintances, but no difference emerged when self was compared to the average undergraduate. These results imply that students view themselves much more like the average undergraduate but perceive their close friends and acquaintances to be more extreme and approving of drinking habits on campus.

In general, ratings for negative consequences fell on the unacceptable side of the scale and ratings for PBS fell on the acceptable side. In testing for SOD, all measure items for both negative consequences and PBS revealed significant differences. As predicted, participants rated others as more accepting of negative consequences than themselves. Also as predicted, participants rated others as less accepting of PBS than themselves.

Participants found the least acceptable consequences were neglecting obligations to family, work, or school, needing a drink upon wakening, and drunk driving. Participants reported the greatest self-other difference (difference between self-reported mean and perceived others' mean) out of the negative consequences for getting into sexual encounters later regretted. As for PBS, the most acceptable strategies were using a designated driver, knowing where your drink has been at all times, and eating before or during drinking. For PBS, the greatest self-other difference was reported for avoiding trying to "keep up" or "out drink" others.

When we compared motives to our measures, we found that all correlations were significant and as predicted, motives were positively correlated with negative drinking effects and negatively correlated with PBS. Enhancement motives correlated the strongest with negative drinking consequences. For PBS, both enhancement and coping motives were found to equally be the strongest correlates. With this test, we also saw that negative consequences and PBS significantly correlated with each other inversely. This means that as the scores for either one went closer to the extremes, the other measure also moved closer to the extreme in the opposite direction.

Finally, the tests we conducted comparing first-year students and upperclassmen showed significant difference as well, but not in the way we expected. Again, most ratings for negative consequences fell on the unacceptable side the scale and ratings of PBS fell on the acceptable side of the scale. We predicted that first-year students would perceive others as much

more extreme than upperclassmen. Instead, we found when comparing others' approval of negative consequences by first-year students and upperclassmen, results reveal that first-year students viewed others' approval of every measure item more conservatively than upperclassmen, with the exception of one item: losing self-esteem. The greatest differences between first-year students and upperclassmen emerged with getting into sexual situations later regretted, having the quality of work suffer, and waking up with a hangover. Similar results were reported for PBS in that first-year students viewed others' approval as more conservative than upperclassmen. The greatest differences for PBS emerged for the following measures: knowing where your drink has been at all times, strop drinking at a predetermined time, and leaving the party at predetermined time.

All together, these results provide support for creating, modifying, or expanding interventions with a social norms-based component or focus. A number of intervention strategies have incorporated some form of normative education because of the relationship between perceived norms and drinking behavior (e.g., Carey et al., 2007; Schroeder & Prentice, 1998). Interventionists may focus on individual items that held the greatest SODs or items that students found most/least acceptable for any social-norms campaign or individualize interventions. By incorporating normative education into interventions, interventionists can raise awareness among students on the discrepancies between self and others norms and bring student perception of alcohol attitudes and behaviors closer to the actual attitudes and behaviors of

the general student population. A perceived permissive environment may promote heavier drinking patterns by light/moderate drinkers and/or buffer heavier drinking students from the realization of their extreme use (Perkins, 2002). By correcting injunctive norms, the social pressure to participate in risky drinking patterns is minimized and thereby reducing potential negative consequences. While evidence for the efficacy of normative education exists, other researchers have reported mixed findings in education-based interventions (e.g., Carey et al., 2007; Croom et al., 2009). On the other hand, a recent campaign that gradually introduced accurate norms for the student body reported significant decreases in the odds of students suffering serious consequences associated with alcohol use over a six-year period. Overall, students exposed to the campaign reported a 57% decrease in experiencing negative consequences; 22% for first-year students (Turner, Perkins, & Bauerle, 2008).

The results of this study add to the existing body of literature through the evaluation of the injunctive norms of negative alcohol-related consequences and protective behavioral strategies. They also contribute to the existing body of knowledge of social norms through the evaluation of drinking motives as a correlate to acceptability levels and the comparison of others' approval for negative alcohol-related consequences and protective behavioral strategies for first-year students and upperclassmen. The results may have implications for the design and implementation of preventative measures. A better understanding of the effect of the self-other difference on

the social norms of college students and its correlates can aid in multiple intervention methods and in predicting and preventing future risky drinking behaviors.