

Examining the Unique Influence of Interpersonal and Intrapersonal Drinking Perceptions on Alcohol Consumption Among College Students*

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ABSTRACT. Objective: Interventions for college student drinking often incorporate *interpersonal* factors such as descriptive and/or injunctive norms to correct misperceptions about campus drinking (e.g., BASICS [Brief Alcohol Screening and Intervention for College Students] and social-norms campaigns). Some interventions also focus on *intra*-personal factors of alcohol consumption, which can be considered as one's own perception of drinking, one's attitude toward drinking, and one's intended outcome related to drinking. The current study sought to extend previous work by examining relationships between both inter- and intrapersonal perceptions of drinking and reported drinking behavior. **Method:** College students ($N = 303$) completed questionnaires assessing drinking behaviors, perceptions of other students' attitudes

toward drinking (i.e., injunctive norms), their perception of the quantity and frequency of student/friend drinking (i.e., descriptive norms), and their attitudes and perceptions toward their own alcohol consumption (i.e., intrapersonal factors). **Results:** Multiple regressions were used to analyze the unique influence between inter- and intrapersonal drinking perceptions and drinking behavior. **Conclusions:** Among the interpersonal perceptions of drinking, only closest friend's drinking significantly predicted alcohol consumption, whereas all three intrapersonal factors significantly predicted alcohol consumption. Suggestions for enhancing college student drinking interventions are discussed. (*J. Stud. Alcohol Drugs* 70: 178-185, 2009)

DESPITE CONTINUED INTERVENTION EFFORTS, many college students continue to drink heavily and in a high-risk manner (O'Malley and Johnston, 2002). Unfortunately, this type of drinking behavior often leads to unwanted consequences that vary in type and severity and results in physical, emotional, legal, academic, and/or sexual problems (Abbey et al., 1998; Larimer et al., 1999; National Institute on Alcohol Abuse and Alcoholism Task Force on College Drinking, 2007; Perkins, 2002b; Presley et al., 1996; Wechsler et al., 1998). In response to this public health problem, substantial efforts have been made by researchers and college administrators to provide prevention and intervention efforts to curb this risky and dangerous behavior (Larimer and Cronce, 2002, 2007).

Interventions aimed at reducing college student drinking vary dramatically regarding content, delivery style, and effects on drinking behavior. Normative education

interventions, which focus on *interpersonal* perceptions of drinking by correcting individuals' inaccurate perceptions of descriptive norms (the amount of alcohol other students consume) and/or injunctive norms (the amount of alcohol other students believe it is acceptable to consume), have received a significant amount of attention in the research literature (Borsari and Carey, 2001; Lewis and Neighbors, 2006; McNally and Palfai, 2003; Neighbors et al., 2004, 2006; Walters et al., 2007). Such interventions are based on the premise that students believe other students drink more than they actually do. The goal is to correct this misperception by presenting students with the average number of drinks consumed by the targeted reference group (e.g., students in general) with the hope that individuals who receive the information will decrease their own consumption.

Interventions incorporating interpersonal perceptions of drinking can vary as to what normative perceptions they are targeting. For example, studies that examined the relationship between descriptive norms and drinking have focused on a variety of referents such as students in general (Neighbors et al., 2004; Perkins, 2002a; Perkins et al., 1999), students of the same gender (Lewis and Neighbors, 2004, 2007), fraternity/sorority members (Baer et al., 1991; Carter and Kahnweiler, 2000; Larimer et al., 2001, 2004), student athletes (Martens et al., 2006; Thombs, 2000), and/or close friends' drinking (Baer and Carney, 1993; Thombs et al., 1997). Research has been mixed regarding the impact of these interventions on college drinking in that social marketing campaigns have demonstrated less consistent

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findings than have interventions incorporating personalized normative feedback (Carey et al., 2007; Larimer and Crouce, 2002, 2007). Personalized normative feedback interventions have demonstrated efficacy in reducing alcohol consumption (e.g., Lewis and Neighbors, 2006; McNally and Palfai, 2003; Neighbors et al., 2004), as well as alcohol-related consequences (e.g., Walters et al., 2007), among college students. Studies have also shown that the closer the normative-referent group, the higher the impact of the intervention; however, students may be accurate when describing friends' drinking, therefore nullifying the impact of the intervention (Borsari and Carey, 2001; Lewis and Neighbors, 2006).

Normative education has also been used as a stand-alone intervention or as a component of comprehensive alcohol interventions. Some interventions focus solely on interpersonal information by trying to correct misperceptions about descriptive norms (Nye et al., 1999), whereas others also incorporate *intrapersonal* perceptions of alcohol consumption (e.g., BASICS [Brief Alcohol Screening and Intervention for College Students]: Carey et al., 2006; Dimeff et al., 1999). Examples of intrapersonal perceptions of alcohol consumption include factors such as how much alcohol an individual thinks he or she can consume before becoming intoxicated (Mallett et al., 2006; Turrisi and Wiersma, 1999), an individual's attitude toward drinking (Turrisi et al., 2000), and intentions about drinking (e.g., some individuals may intend to drink lightly, whereas others may intentionally drink to the point of intoxication; Borsari et al., 2007). These intrapersonal perceptions may consequently perpetuate a continued cycle of risky drinking. A multicomponent intervention such as BASICS includes sections that relate to intrapersonal perceptions of intoxication. For example, perceptions of intoxication are relevant to the section that discusses blood alcohol concentration (BAC) in relation to legal intoxication and physical consequences (e.g., blackouts, dizziness). In addition, the BASICS intervention also addresses beliefs about alcohol use as well as protective behaviors individuals can use to avoid high BAC levels and negative consequences. For example, if individuals intend to get drunk when they drink, they are less likely to use protective factors such as pacing their drinks. Although BASICS includes some intrapersonal factors, the unique effect of these variables on alcohol outcomes has not been systematically tested. Furthermore, there is the potential to enhance the intervention by incorporating additional intrapersonal variables that significantly affect drinking.

Although numerous studies have examined the relationship between interpersonal perceptions and alcohol use (Baer et al., 1991; Baer and Carney, 1993; Kuther and Higgins-D'Alessandro, 2003; Larimer et al., 2004; Lewis and Neighbors, 2004; Martens et al., 2006; Perkins et al., 2005), few have systematically examined the unique influence of both inter- and intrapersonal perceptions on drinking behavior. Recently, Neighbors and colleagues (2007) examined the unique contribution of a variety of predictors

often used in interventions (e.g., descriptive and injunctive norms, drinking motives and expectancies, and high-risk demographic variables) in relation to drinking. The study found that social norms, both descriptive and injunctive, were the best predictor of drinking as measured by typical weekly consumption. However, although norms were shown to be a significant predictor of drinking, it is unclear which norms are the best predictor of drinking. Neighbors et al. (2007) used only typical students of unspecified gender as the reference group when examining descriptive norms and focused only on typical weekly drinking patterns. It is plausible that individuals may be influenced by inter- and intrapersonal perceptions differently depending on the drinking situation (e.g., weekend nights, peak drinking occasions, or typical weekly occasions).

Although a variety of inter- and intrapersonal factors has been shown to be predictive of drinking on their own, it is important to consider that college students use a variety of information to make real-life decisions. When making a choice about how much alcohol to consume, both inter- and intrapersonal sources of information are simultaneously taken into account by individuals and may be weighed differently; however, little research has evaluated how components of existing interventions map onto a variety of drinking behaviors. The current study attempts to add to the literature by examining the unique influence of a variety of interpersonal perceptions of drinking norms, both descriptive and injunctive, and intrapersonal perceptions (perceptions of drunkenness, attitude toward drinking, and intentions about drinking) under different types of drinking situations such as typical, peak, and weekend occasions.

Method

Participants

The sample consisted of 303 (66% women) college students recruited from introductory psychology courses at a large, public West Coast university. The ethnic distribution of the sample was 48% whites, 43% Asian/Asian Americans, 1% each identifying as Hispanics/Latinos and blacks, and 7% "other." The majority of participants resided in residence halls (48%), 17.5% lived in a fraternity or sorority house, 16.5% resided in off-campus housing, and 18% reported living with parents. Participants' average (SD) age was 18.7 (1.4). Ninety percent of participants reported lifetime use of alcohol, and 63% of participants reported consuming one or more drinks on a typical weekend evening during the past month.

Procedure

Students enrolled in introductory psychology courses—both drinkers and nondrinkers—were recruited to the study.

Interested students were informed they would be completing a survey that asked a range of questions about their beliefs and experiences related to drinking. Participants were offered a variety of available session times to complete a 45-minute paper-based survey. Participants completed informed consent forms and the survey and then were given extra credit in exchange for their time. All procedures used in the study were approved by the university's human subjects review board.

Measures

Drinking outcomes. Drinking patterns were evaluated in three ways: typical weekly consumption, typical weekend consumption, and peak drinking occasion.

Typical weekly consumption was assessed using the Daily Drinking Questionnaire (DDQ; Collins et al., 1985). Participants answered the DDQ by filling in seven boxes with the number of drinks they typically consume on each day of the week and seven boxes with the corresponding number of hours spent drinking on each day of the week, both averaged over the last 3 months. Typical weekly consumption was a sum of the 7 days.

Typical weekend consumption was also assessed using the DDQ. This variable consisted of summing the number of drinks participants reported consuming on Friday and Saturday of a typical week.

Peak drinking occasion (single greatest amount of alcohol consumption) during the past month was assessed using the Quantity-Frequency Index (Dimeff et al., 1999). Response options range from 0 to 25 or more drinks.

Interpersonal perceptions. Perceived descriptive norms for quantity and frequency of alcohol use were assessed using the Drinking Norms Rating Form (DNRF; Baer et al., 1991). The DNRF has the same format as the DDQ and obtains individuals' estimates of the typical drinking patterns of various reference groups. Responses to items regarding participants' estimates of the typical number of drinks consumed each day of the week by the typical same-sex student and closest friend were summed to create a weekly drinking total. This total reflected participants' belief of how much alcohol a typical college student of the same sex and their closest friend consumes in 1 week.

Perceived injunctive norms were assessed using an item from the Core Norms survey (Presley et al., 1998), which asks, "Which statement about drinking alcoholic beverages do you feel best represents the most common attitude among students in general here?" Response options ranged on a 5-point scale from "Drinking is never a good thing to do" to "Frequently getting drunk is okay if that's what the individual wants to do."

Intrapersonal perceptions. Perceptions of drunkenness were examined using an item selected from the "perceptions of intoxication" measure (Mallett et al., 2006). Participants were given a scenario that asked: "Suppose it is a weekend

evening and you are at a party where alcohol is being served. You decide to stay at the location for a period of 4 hours. How many drinks would you have to consume in order to get drunk?" Individuals provided an estimate for the number of drinks from 26 individual response options that ranged from 0 to 25 or more drinks. The perceptions of drunkenness item demonstrated good discriminant validity (not significantly correlated with measures of social desirability; $r = .067, p = .245$).

Attitude toward drinking was assessed using an item from the CORE NORMS survey (Presley et al., 1998), which asks, "Which statement about drinking alcoholic beverages do you feel best represents your own attitude?" Response options ranged on a 5-point scale from "Drinking is never a good thing to do" to "Frequently getting drunk is okay if that's what the individual wants to do."

Drinking intentions were assessed by asking participants to rate the following statement: "In general, when I drink, I intend to get drunk." Participants responded to each item on a 7-point Likert scale ranging from "strongly disagree" to "strongly agree." The drinking-intention item demonstrated good test-retest reliability ($r = .81$) at 4-week follow-up, and discriminant validity in that the item was not significantly correlated with measures of social desirability ($r = .007, p = .926$).

Demographic information. Demographic information included age, gender, ethnicity, year in school, and place of current residence (e.g., fraternity/sorority house).

Results

Descriptives

Sixty-five percent ($n = 196$) of the sample reported consuming alcohol at least one time in the 3 months before taking the survey. The average number of drinks consumed (not including abstainers) is as follows: typical weekly drinking of 10.5 (10.3) drinks, weekend drinking of 7.3 (5.88) drinks, and a peak amount of 8.38 (5.87) drinks. Both drinkers and nondrinkers were included in the analyses.

Statistical analysis

Multiple regression analyses were used to identify unique variance accounted for in the relationship between intrapersonal drinking items (e.g., perceptions of drunkenness, drinking intentions, and attitudes toward drinking) and interpersonal drinking norms (descriptive and injunctive) with actual drinking patterns (i.e., typical weekly drinking, typical weekend drinking, and peak drinking occasion). Correlations between all variables used in the analyses are shown in Table 1. Before running the multiple regressions, single-predictor regressions were conducted to determine the relationship of each individual predictor variable with

TABLE 1. Correlation matrix between predictors and alcohol consumption variables

	1	2	3	4	5	6	7	8	9
1. Close friend's drinking	1.00								
2. Typical student drinking	.48†	1.00							
3. Perceived campus attitudes	.03	.22†	1.00						
4. Attitude toward drinking	.52†	.21†	.21†	1.00					
5. Perception of drunkenness	.42†	.19†	-.01	.35†	1.00				
6. Drinking intentions	.36†	.23†	.06	.44†	.14*	1.00			
7. Weekly drinking	.76†	.39†	.01	.54†	.50†	.50†	1.00		
8. Weekend drinking	.68†	.37†	.01	.57†	.48†	.53†	.89†	1.00	
9. Peak drinking	.63†	.31†	.06	.59†	.53†	.49†	.79†	.77†	1.00

* $p < .05$; † $p < .01$.

drinking consumption. All predictors were significantly related to drinking outcomes when examined independently, except for the perceived injunctive norm (participants' perception of attitudes toward drinking alcohol among students in general).

After completing preliminary analyses, regressions were conducted using AMOS 7.0 (Arbuckle, 2006) because of nonnormal distributions on our measures. Significance was established by examining the bootstrapped 95% confidence intervals (CIs) around the regression coefficient of the predictor variables. Significance at the $p < .05$ level was based on the CIs not containing the value of zero. Assessment of significance based on bootstrapped CIs tends to be more conservative against erroneous effects relative to traditional linear regression, which makes assumptions underlying the sampling distributions. These bootstrapped CIs were computed using 2000 bootstrap samples in AMOS. If the CI around the regression coefficient contained the value of zero, then the relationship between the predictor and outcome variables was deemed nonsignificant. All regression coefficients are shown in Table 2.

Weekly consumption

Regarding weekly drinking, three of the variables uniquely predicted drinking patterns. These included the interpersonal perception of closest friend's drinking ($b = 0.43$, 95%

CI: 0.32-0.54), and the intrapersonal items of perceptions of drunkenness ($b = 0.54$, 95% CI: 0.26-0.80) and one's own drinking intentions ($b = 1.11$, 95% CI: 0.73-1.44). The interpersonal descriptive norm of same-sex students' drinking and the injunctive norm of perceived attitude of others were not significant when included in the model. The intrapersonal perception of personal attitude toward drinking approached significance ($p = .053$).

Weekend consumption

Regarding weekend drinking, five of the variables significantly predicted drinking patterns. These included the interpersonal perception of closest friend's drinking ($b = 0.18$, 95% CI: 0.12-0.25) and perceived attitudes of others ($b = -0.47$, 95% CI: -0.88 - -0.06). It should be noted that the relationship between perceived attitudes of others and typical weekend consumption was negative in nature. The more individuals believed other students on campus approved of drinking, the less alcohol they reported consuming on weekends. All of the intrapersonal items significantly predicted weekend drinking as well: one's own attitude toward drinking ($b = 1.29$, 95% CI: 0.67-1.94), perceptions of drunkenness ($b = 0.35$, 95% CI: 0.18-0.51), and one's own drinking intentions ($b = 0.78$, 95% CI: 0.54-1.01). The interpersonal perception of same-sex students' drinking was not significant.

TABLE 2. Regression results for inter- and intrapersonal perceptions and alcohol use

Predictor	Drinking occasion								
	Weekly drinking			Weekend drinking			Peak drinking		
	<i>B</i>	β	<i>sr</i>	<i>B</i>	β	<i>sr</i>	<i>B</i>	β	<i>sr</i>
Interpersonal norms									
Close friend's drinking	0.43†	.52	.56	0.18†	.37	.40	0.16†	.30	.32
Typical student drinking	0.04	.04	.06	0.04	.06	.09	0.01	.01	.02
Perceived campus attitudes	-0.51	-.05	-.08	-0.47*	-.07	-.11	-0.11	-.02	-.03
Intrapersonal norms									
Attitude toward drinking	1.08	.10	.13	1.29†	.19	.23	1.63†	.23	.27
Perception of drunkenness	0.54†	.20	.30	0.35†	.21	.30	0.49†	.29	.37
Drinking intentions	1.11†	.24	.35	0.78†	.28	.37	0.68†	.23	.30

Notes: β = Standardized regression coefficient; *sr* = semipartial correlations.

* $p < .05$; † $p < .01$.

Peak drinking occasion

Four of the variables significantly predicted peak drinking within the past month. These included the interpersonal norm of closest friend's drinking ($b = 0.16$, 95% CI: 0.09-0.29) and all three intrapersonal items: one's own attitude toward drinking ($b = 1.63$, 95% CI: 0.98-2.32), perceptions of drunkenness ($b = 0.49$, 95% CI: 0.29-0.71), and one's own drinking intentions ($b = 0.68$, 95% CI: 0.41-0.94). The interpersonal descriptive norm of same-sex students' drinking was not significant.

Covariate and additional analyses

Additional regression analyses were run using ethnicity, gender, and weight as covariates in the model to address issues related to generalizability to the college student population. Although there was a high proportion of Asian/Asian-American students in the sample, ethnicity did not significantly affect the findings. Moreover, gender and weight did not alter the findings either.

Another set of multiple regression analyses, which included an item from the Rutgers Alcohol Problem Index (White and Labouvie, 1989) that assessed tolerance (i.e., "Felt that you needed more alcohol than you used to in order to get the same effect"), was conducted to ensure the findings were not confounded by tolerance, and the perceptions of drunkenness item was not simply assessing tolerance. As expected, tolerance was significant in the model; however, all other variables were also significant, and the relationships did not change. Consistent with prior work (Mallett et al., 2006), this finding provides evidence that the perceptions of drunkenness item assessed a unique construct independent of tolerance.

Finally, regression analyses were conducted including only drinkers in the model. No differences across findings were observed when nondrinkers were excluded from the analyses.

Discussion

The current study examined the relationship between inter- and intrapersonal perceptions of drinking in relation to a variety of drinking outcomes. Among the interpersonal perceptions of drinking, closest friend's drinking was the only variable significantly related to all drinking outcomes. Overall, these results are consistent with past research that has found a close friend's perceived drinking behavior is more highly correlated to one's own drinking consumption than the perceived typical college student's drinking (Baer et al., 1991; Thombs et al., 1997). The results also emphasized the importance of intrapersonal perceptions in relation to drinking outcomes. Drinking intentions and perceptions of drunkenness were significantly related to alcohol consump-

tion across all drinking occasions. In addition, individuals' attitudes toward drinking were significantly related to typical weekend drinking and peak drinking, which constitute higher risk drinking occasions. The study also assessed three types of drinking outcomes (weekly, weekend, and peak drinking occasions) that ranged from average- to high-risk occasions in relation to inter- and intrapersonal influences. The findings revealed that certain variables (e.g., attitude toward drinking) differentially predicted drinking outcomes and may affect higher risk drinking situations more than average-risk drinking occasions in that individuals appear to make decisions to engage in high- versus average-risk drinking behavior by weighing variables differently.

Many interventions aimed at college drinking have used a normative referent group that does not have as strong of an influence on drinking behavior as others might (i.e., close friend's use). When examining external influences as well as internal influences (such as individuals' perceptions of drunkenness, their attitudes, and their drinking intentions), it seems that what typical students on campus "generally" do does not have the most significant impact on how much a person decides to drink. Interventions aimed at college students (e.g., BASICS or social-norms campaigns) often ask participants to quantify how much they think the "typical college student on their campus drinks on a weekly basis" and then participants' answers are compared with the actual campus drinking norms. Correcting participants' misperceptions about other students' drinking is thought to result in a reduction in participants' alcohol consumption. However, the present study found participants' perceptions of "typical" college students' drinking rates were not significantly related to drinking outcomes when closest friend's drinking was included in the model.

Individuals who have favorable attitudes toward drinking, intend to drink to the point of intoxication, and estimate they can drink large amounts of alcohol before becoming drunk may socialize with individuals who engage in similar drinking patterns and share the same intrapersonal perceptions. Studies have shown that direct influences of peers (e.g., modeling, drink offers) are powerful predictors of drinking and related problems (Wood et al., 2001) and may counteract normative re-education efforts referencing distal peer groups. Theoretically, these individuals may be the most difficult to change regarding their drinking, yet they are in the most need of an efficacious intervention. Norm-changing interventions may reduce alcohol consumption among these individuals (Neighbors et al., 2004), but long-term effects are questionable because of a lack of long-term follow-up studies. If these high-risk drinkers continue to socialize exclusively with other high-risk drinkers, they may be at risk of falling back into heavy-drinking patterns. Students who socialize with a variety of social groups or who socialize with light-drinking peers may be more likely to respond to a wider range of normative interventions because they relate

to a variety of peers. Interventions targeting heavy-drinking individuals may be enhanced by also incorporating more variables that are closely related to drinking outcomes, such as intrapersonal influences and interpersonal perceptions of friends' drinking, in addition to commonly used descriptive norms. The heaviest drinking college students may also benefit from interventions that are motivational in nature and target their attitudes toward alcohol use (e.g., weighing pros and cons of excessive drinking), perceptions of drunkenness (BAC training and information regarding the effects of alcohol tolerance), as well as exploring barriers and goals that may affect their drinking intentions.

Borsari and Carey (2001) suggested that future research was necessary to elucidate the relationship between peer drinking and one's own alcohol consumption. The current findings concerning the importance of closest friend's drinking addresses this gap in the literature while also confirming and extending past research (Neighbors et al., 2007; Wood et al., 2001) on social influences of college student drinking. For example, Neighbors and colleagues (2007) concluded that perception of campus drinking was one of the better predictors of alcohol consumption. They also found that perceived friends' approval of drinking had a significant (yet smaller effect size) relationship with one's own drinking. Wood et al. (2001) found that social modeling (i.e., friends' drinking behaviors and attitudes toward drinking) predicted one's own alcohol use better than perceived social norms (i.e., how much a typical same-sex student drinks). It seems that when taking into account friends' drinking habits, these are more predictive of one's own drinking habits than the perceived drinking habits of a typical same-sex student. Moreover, this finding is consistent across different types of alcohol consumption patterns. In the present study, we assessed typical weekly, weekend, and peak drinking over the past month. Other studies (Neighbors et al., 2007; Wood et al., 2001) have found similar patterns in relation to friends' drinking while using different definitions of alcohol use (e.g., heavy episodic drinking or amount of alcohol consumed in the past year).

One unanticipated finding that emerged was the negative relationship between injunctive norms and one's own drinking consumption. To see if there was a suppressor effect, we assessed the relationship between "perceived attitudes of others" and drinking outcomes outside the model. Correlations between the injunctive norm and the drinking outcome variables were not significant both in the whole sample and in the sample containing drinkers only. Therefore, we examined the item and its wording more closely. One potential hypothesis for this anomalous finding is the wording of the item's response options. The responses are worded in terms of drinking *and* academic responsibility/consequences. For example, the response items are as follows: "Drinking is never a good thing to do"; "Drinking is all right but a person should not get drunk"; "Occasionally getting drunk is

okay as long as it doesn't interfere with academics or other responsibilities"; "Occasionally getting drunk is okay even if it does interfere with academics or responsibilities"; and "Frequently getting drunk is okay if that's what the individual wants to do." The combination of academic consequences and drinking in the response options (instead of focusing on drinking alone) may be the reason for the unanticipated finding. Recently, research has found that college students do not necessarily view experiencing hangovers and other types of consequences as a negative experience. However, academic consequences were one of the few consequences that were consistently seen as negative (Mallett et al., 2008). The majority of our sample (56%) endorsed the response "Occasionally getting drunk is okay as long as it doesn't interfere with academics or other responsibilities," which is consistent with our prior research showing most college students find academic consequences aversive and unacceptable. Future studies would benefit from parsing out drinking behavior and consequences when assessing injunctive norms.

There are some additional limitations to the current study that should be addressed. Different reference groups for the descriptive versus injunctive norms variables were used in the analyses, making it difficult to compare effects directly. The injunctive norm item used in the analyses was chosen from the CORE NORMS survey and was selected because of its wide use in college student research. Unfortunately, the injunctive norm item is limited in that it references typical students instead of a variety of reference groups. The descriptive norms used in the study (typical student of the same gender and closest friend) are part of the DNRFB and have several reference groups—including typical student. We chose to use the "typical student of the same sex" based on research stating it is a better predictor of drinking behavior (Lewis and Neighbors, 2006) as well as "closest friend" because of the importance of peer influences on behavior. To evaluate whether the results of the analyses would change if we used the descriptive norm "typical student," we conducted additional analyses using this descriptive norm in place of "typical student of the same sex" in the model and found the same pattern of findings.

The study also did not use a random sample, as students were recruited from introductory psychology classes for extra credit. However, our results closely map onto the prior studies mentioned with regard to interpersonal social norms and therefore seem to generalize to college students' perceptions of drinking. Moreover, the current sample had a substantial proportion of Asian/Asian-American students. However, our findings revealed that ethnicity did not significantly affect outcomes and, therefore, can be considered quite robust and generalizable to the college student population. Although white students may consume higher quantities of alcohol (O'Malley and Johnston, 2002), the relationship between inter- and intrapersonal perceptions and drinking are similar across ethnicity. It is also important to note that

individuals may not weigh all of the inter- and intrapersonal factors the same way they are weighted in the regression equations. Individuals may make decisions differently, based on a variety of factors such as the situation they are in, the people they are with, and so forth. Last, the present study is not longitudinal; therefore, the results must be interpreted as correlational and less predictive in nature. It would be beneficial for future studies to assess norms perceptions and drinking habits over a long period to gauge how friends' drinking affects subsequent alcohol use.

Research has shown that students are generally accurate about assessing how much their friends drink (Baer and Carney, 1993; Lewis and Neighbors, 2006), and it is not recommended that perceived norms and actual norms be used as an intervention when friends are used as the reference group. Therefore, future intervention research that targets individuals within larger social groups should be considered because of the significant relationship between friends' drinking and alcohol consumption. Studies have assessed brief motivational interventions targeting both a college student and a close friend (O'Leary et al., 2002), fraternity/sorority organizations (Larimer et al., 2001), as well as larger interactive social groups (LaBrie et al., 2008). Although challenging to deliver, these intervention approaches have demonstrated promising findings that may be expanded in future intervention research. In addition, interventions aimed at social groups (e.g., fraternities, sororities, athletic teams) may be enhanced by incorporating and emphasizing the most relevant inter- and intrapersonal drinking perceptions. In terms of interpersonal drinking perceptions, feedback sessions (such as BASICS) could include questions that assess "babysitting behaviors" (e.g., taking care of friends who drank too much) and incorporate these concerns and experiences into the feedback. Moreover, providing tips about how to decrease drinking and still socialize with friends who drink, as well as how to talk to one's friends about decreasing their drinking, may be a helpful addition to BASICS.

Incorporating intrapersonal drinking perceptions into feedback interventions can also be developed and enhanced. For example, perceptions of drunkenness are currently used to some extent in BASICS (i.e., how to assess BAC and the physical effects associated with different BACs). Also, assessing the amount of alcohol individuals consumed the last time they experienced reported consequences would enable individuals to link drinking consequences with alcohol quantities and potentially reduce drinking to avoid experiencing similar consequences in the future. In addition, intervention facilitators would benefit from exploring which consequences are most aversive to individuals (and, therefore, which ones individuals are most motivated to avoid) and discuss them in the context of alcohol consumption. Furthermore, examining ways to present and tailor information (such as protective behaviors) that is already used in BASICS interventions may be helpful. For example, providing individuals with general

protective strategies (e.g., pacing their drinks or not drinking at all) may not be a relevant message for students who intend to get drunk when they drink. Instead, it might be helpful to understand students' intentions and motivations and to explore the pros and cons of excessive drinking before giving them suggestions to reduce their alcohol intake. Future studies should address how gaining more background about individuals (i.e., intrapersonal factors such as motives and personality, along with drinking intentions) might help frame and communicate information about alcohol that affects the overall intervention efficacy.

The present study added to the understanding of certain interpersonal and intrapersonal factors that contribute to college drinking. The results highlight the importance of examining intrapersonal perceptions in relation to alcohol use; they also demonstrate perceived friend's drinking has a stronger relationship with one's own alcohol consumption than that of the general campus atmosphere. Therefore, it may be more important to address intrapersonal perceptions and friends' drinking patterns in prevention and intervention efforts focused on reducing alcohol consumption by college students. 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. If we want to change college student drinking, we need to assess which variables are most important for prevention efforts so that future interventions will focus on the content that promotes the most change.

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