

A GENDER-SPECIFIC PERSONALIZED NORMATIVE FEEDBACK
APPROACH TO DECREASING ALCOHOL USE
AMONG COLLEGE STUDENTS

by

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ABSTRACT

A GENDER-SPECIFIC PERSONALIZED NORMATIVE FEEDBACK APPROACH TO DECREASING ALCOHOL USE AMONG COLLEGE STUDENTS

Renee Ann Lojewski

Feedback based on social normative information may be useful to decrease the misperceptions college students generally make about peer alcohol use. Gender-specific personalized normative feedback was used in the current study to determine if personalizing the normative feedback by gender would be more effective at decreasing the overestimations of other college students' drinking and self-reported drinking than feedback for the typical student for whom the gender is not specified. It was hypothesized that the participants who reported to drink 2-4 times a month or more and received gender-specific feedback would have larger decreases in perceptions of others' drinking and self-reported drinking than the nonspecific feedback and control groups. Analysis revealed that gender-specific feedback created a larger decrease in misperceptions than the control group but did not differ significantly from the nonspecific gender feedback group. Secondary analysis discusses the impact on the participants' stage of change in the Transtheoretical Stages of Change Model over time and the positive correlations between number of drinks per episode and issues such as depression, anxiety,

unplanned/unprotected sexual activity and engaging in other illegal activities. Strengths and limitations of the current research and suggestions for future harm reduction interventions are also addressed.

INTRODUCTION

It is reported in the literature that anywhere from 80 to 90% of college students drink at least some alcohol (Graham, Tatterson, Roberts, & Johnston, 2004; Wechsler et al., 2003). According to a 2002 report by the National Institute on Alcohol Abuse and Alcoholism (NIAAA), binge or excessive drinking of alcohol among college students was identified as a major health problem. Binge drinking is commonly defined as consuming 5 standard drinks at one sitting for men and 4 standard drinks at one sitting for women (Wechsler et al.). A standard drink is defined as 4 ounces of wine, a 10 ounce wine cooler, 12 ounces of beer (8 ounces of Canadian, malt liquor, or “ice beers,” or 10 ounces of a microbrew), or 1 cocktail with 1 ounce of 100-proof liquor or 1.25 ounces of 80-proof liquor (Lewis & Neighbors, 2004). Binge drinking most often occurs among individuals between the ages of 18 and 25 years old, which is a common time in one’s life to attend college (Tapert, Tate, & Brown, 2001) and seek out new experiences. In fact, approximately 40% of college students who do drink alcohol engage in binge drinking (Haines & Spear, 1996; Kypri & Langley, 2003; Wechsler et al.).

Because of the excessive drinking occurring at many colleges, college administrators and researchers are devoting increased time and funding to address this pervasive health issue. One approach is the use of social normative information in interventions and other programs at college campuses nationwide. In particular, the use of descriptive norms are commonly used in normative interventions. Descriptive norms

involve thoughts and beliefs about the most commonly exhibited behavior in a group (Perkins, 2002). For example, Lewis and Neighbors (2004) found that students overestimated the number of drinks the typical student has per week, the frequency of consumption and the typical consumption per occasion.

Social normative information has been utilized in an attempt to change students' perceptions of others' drinking behaviors with the goal of decreasing individual drinking behavior. Interventions involving social normative feedback are based on the common finding that college students consistently perceive their peers as holding more permissive attitudes toward drinking and perceive them as drinking more often than the actual norm (Mattern & Neighbors, 2004). A primary assumption here is that heavy drinking students will learn the actual norm and modify their behavior to be more congruent with this reality (Kypri & Langley, 2003).

Kypri and Langley (2003) found that students' perceptions of social norms were more strongly associated with actual use when using socially proximal groups. These researchers looked at the importance of using three different reference groups to predict individual drinking levels. They asked students to predict the use of alcohol among other people their age and gender, other college students and their close friends and also asked the students about their own drinking habits. They found that the students' predictions for their friends were more strongly associated with individual drinking levels than the predictions they made for people their same age. Students' predictions for people their same age and gender were more strongly associated with individual drinking levels when compared to predictions made for the typical student. Although the most socially proximal group for these students was found to be the participants' friends, it is difficult

to use that information in a preventive plan to decrease binge drinking among groups of heavy drinking students. This information may, however, be beneficial when working with an individual because it is the individual's most likely point of reference for forming their perceptions of others' alcohol use.

Lewis and Neighbors (2004) found that students overestimated the amount of alcohol use on campus overall. They manipulated whether participants were asked questions about the same gender, the opposite gender, or no specific gender. They found that males and females made more accurate predictions of others' drinking for their same gender peers, and that females were more accurate than males. These findings support the idea that gender-specific norms may be more representative and valuable to use when presenting personalized normative feedback.

Prior research demonstrates that there have been several approaches to using social normative information, including marketing strategies, personalized feedback during motivational interviewing, and personalized feedback given via the Internet or by mail. Each way of presenting the norms involves different levels of personalization and involvement, ranging from the impersonal mass media marketing approach that requires no active involvement from the participant, to the personalized feedback provided through intense involvement in motivational interviewing or feedback through mail or via the Internet.

Researchers have provided normative information through social marketing campaigns which typically convey messages about campus norms through mass media and several other announcement techniques (Wechsler et al., 1996). For example, Clapp, Lange, Russel, Shillington and Voas (2003) found that a 6-week social marketing

campaign reduced misperceptions but not drinking behaviors among college students. In addition, Wechsler et al. (2003) studied the data from colleges that used social norm marketing campaigns and those that did not and found that these campaigns were not associated with any significant decreases in the seven standard measures of alcohol consumption (annual and 30 day use, frequency, usual quantity and volume consumed, heavy episodic use, and drunkenness) when compared to the colleges that did not use social norm marketing campaigns. There may be several reasons as to why social norm marketing campaigns do not typically work. For example, there are some college students who do not binge drink, and there is little research on how nondrinking college students react to social normative information, especially if they drink below the norm or abstain from alcohol. In addition, marketing techniques and the mediums used to disseminate the message may impact the drinking related outcomes (Wechsler et al., 2003). Therefore, social norm information may be more effective in reducing misperceptions and excessive drinking episodes if it is personalized rather than presented through mass media or presented over a long period of time. The difference may be related to how relevant the information is to the individual.

Recently, interventions aimed at combating excessive drinking or alcohol misuse on college campuses have been influenced by the harm reduction model. The basic goal of any harm reduction model is to educate students about how to minimize alcohol related negative consequences (Marlatt et al., 1998). An example of this approach is The Brief Alcohol Screening and Intervention for College Students (BASICS), which was developed for heavy drinking college students who may have already experienced negative consequences from drinking or are considered at high-risk for negative

consequences. BASICS is comprised of two 50-minute sessions with a trained counselor familiar with the motivational interviewing approach which is defined as a therapeutic approach that aims to direct clients “past ambivalence toward positive behavior change” (Miller & Rollnick, 2002, p. 38). The first session is for data collection and assessment, and the second session, which occurs about 2 weeks later, is for feedback (Dimeff, Baer, Kivlahan, & Marlatt, 1999).

Part of the feedback that each student receives is normative feedback. The two main goals of providing the personalized normative feedback are to provide a basis for comparison and to raise students’ awareness of what actually is a typical pattern of drinking for students at their college (Dimeff et al., 1999). The normative feedback given to each participant during BASICS is personalized in that it takes each student’s drinking behavior and compares it to the student’s perceived norm for other students’ drinking and the actual norm for the typical student at the same school. The feedback is not personalized by gender, however, which may be more relevant because men typically drink more than women (Marlatt et al., 1998).

Research using principles from BASICS is promising. Marlatt et al. (1998) provided high risk drinkers with individual feedback about their drinking patterns and their beliefs about alcohol related problems through a combination of brief motivational interviewing and mailed personalized feedback. Self-reported drinking rates were compared to college averages, but were not personalized by gender. Those who received feedback reported drinking less at 6 month, 1 year, and 2 year followups, than those who did not receive the feedback.

Furthermore, Bosari and Carey (2000) provided a brief intervention adapted from BASICS (Dimeff et al., 1999). The intervention included review of personal alcohol use, perceptions the participants had of others' drinking behaviors, and feedback comparing each participant's drinking to the campus and national norms. Findings indicated feedback resulted in greater reductions in the frequency of alcohol consumption and in the number of heavy drinking episodes for both men and women than the control group, and that changes in perceived norms was a mediating variable in the drinking reductions.

There are also other examples of the use of effective feedback through computers, mail, or via the Internet. Neighbors, Larimer and Lewis (2004) used a computer program to collect and present normative data modeled after the normative feedback component of the BASICS intervention. Presenting the feedback over the computer made the task nonconfrontational and efficient and produced results that were more promising than marketing campaigns. The experimenters provided half of their participants with personalized normative feedback about their perceptions of others' drinking and their own drinking behaviors to determine if social norm information could decrease misperceptions about others' alcohol use and decrease individual alcohol use. The feedback included a summary of the participant's self-reported drinking behavior and compared it to his or her perceived drinking norms and the actual norms for the typical student at the same college; however, it was not personalized by gender. The other half received no feedback at all, serving as a control group. Results show that the personalized normative feedback decreased misperceptions of others' drinking and decreased actual drinking by the participants at 3- and 6-month follow-up periods.

In addition, personalized feedback has been given to college students and non-student samples through the mail, via the Internet, and with a computer program (e.g. Collins, Carey, & Sliwinski, 2002; Cunningham, Humphreys & Koski-Jannes, 2000; Neighbors, Larimer, & Lewis, 2004). Collins and associates presented heavy drinkers with information about their drinking (both frequency and heavy drinking episodes) and other alcohol related issues through the mail. These norms were specified by gender and were based on students at the same college. Followup done at 6 weeks and 6 months revealed that those receiving the mailed feedback reported fewer heavy drinking episodes than those in the control group. Collins, et al. did not, however, compare the use of gender personalized normative feedback with feedback that was not personalized by gender within the same sample. Agostinelli, Brown, and Miller (1995) and Walters (2000) reported similar results with mailed feedback, finding decreases in alcohol related measures such as decreased alcohol consumption, lower blood alcohol levels, less frequent drinking, and less quantity per episode.

Finally, Cunningham et al. (2000) provided personalized normative feedback to participants (not specifically college students) over the Internet. Each participant answered questions about the frequency of their drinking and the number of drinks consumed per drinking occasion. The norms were based on national statistics (either United States or Canada, depending upon the citizen status of the participant) and were gender and age specific. Over half of the respondents found the feedback very helpful and informative, and a third were surprised about how much more they drank than the norm. No measure of how the information impacted behavior was collected.

The amount of time required to present the normative information or the amount of exposure to the normative information may also be an important factor. Clapp et al. (2003) exposed students to a social norms marketing campaign for 6 weeks. Neighbors et al. (2004) shared the normative information directly after the participants filled out a short battery of questionnaires. So, the question arises, what is an adequate amount of exposure? Williams, Thomas, Buboltz, and McKinney (2002) found that a brief, 15-minute intervention given during a college class can decrease misperceptions about others' alcohol use. They found that the more participants drank, the more they thought that most freshmen drank, that drinkers and non-drinkers received similar GPAs, and the less they agreed on the definition of binge drinking. The researchers then took these predictors (freshman statistics, GPAs of drinkers and non-drinkers, and the definition of binge drinking) and several others and presented the statistical norms for the campus, the local area, and the nation, although they were not personalized by gender. Through the presentation of the normative information, the researchers were able to change the self-reported attitudes of the students in reference to the prevalence of drinking among college freshmen, the average GPAs among drinkers and non-drinkers, and the definition of binge drinking. A limitation of this study is that the researchers did not do any further assessment with the students to measure any impact on actual drinking behavior.

In addition, Baer et al. (1992) found that a single session of motivational interviewing, which includes feedback and advice about avoiding the risks of heavy drinking, significantly reduced the frequency and the number of drinks per occasion among student participants as much as 6 weeks of a classroom skills training program. Schroeder and Prentice (1998) utilized normative information with college students in a 1

hour presentation. Those who received the peer presented normative information reported a significant decrease in drinking when compared to a group that received values clarification. There was, however, no increase in the accuracy of the normative perceptions.

According to Perkins (2002), there are costs and benefits of incorporating social norm information into campaigns to decrease binge drinking among college students. Social norm campaigns can be cost-effective, simple, and efficacious. Also, there are many methods of disseminating information to the target audience. On the other hand, according to Perkins, some professionals do not believe that the behavioral changes that come about due to social norm campaigning are substantial enough to warrant further investigation. Therefore, it may be beneficial to determine which students are most affected by social normative information as well as the amount of time necessary to decrease the misperceptions about others' drinking habits.

Perhaps the propensity to change due to new information is affected by how prepared one is to modify a problem behavior or acquire a new healthy behavior. Prochaska et al. (2004) are credited with developing a Transtheoretical Model known as the Stages of Change Model, a dynamic model which describes the emotional, cognitive and behavioral process of intentional behavior or attitude change. In the Transtheoretical Model, an individual progresses through a series of five stages by making decisions about changing his or her attitude and/or behavior (Velicer, Prochaska, Fava, Norman & Redding, 1998). The first stage of the model is *Precontemplation*. The individual in this stage may look unmotivated or may be misinformed. Basically they resist modifying a problem or do not recognize the problem to begin with (Prochaska, DiClemente, &

Norcross, 1992). Nonetheless, the individual in this stage has no plans to change drinking behaviors during the next 6 months. The next stage is *Contemplation*, where the benefits of changing a problem behavior are evident yet the costs are still not motivating enough to propel one to action or to prepare to act. This is commonly referred to as behavioral procrastination or ambivalence. In the *Preparation* stage, an individual may be most receptive to an intervention like social norms. Velicer et al. (1998) argue that individuals in the *Preparation* stage should be sought out for interventions. Individuals in this stage have reached behavioral criteria for change (i.e., some reduction or change in the maladaptive behavior) and also have intentions to change but have not yet reached criteria for the *Action* stage. Individuals in the *Action* stage have already made behavior changes and may not show much improvement on measures of drinking because they may have already decreased their drinking, possibly below binge levels. To reach the *Maintenance* stage, a person must continue to avoid the undesirable behavior for 6 months. Some may consider the *Maintenance* stage a life-long commitment, consistently being able to replace an undesirable behavior with a new, more adaptive behavior. *Maintenance* also involves a decrease in cravings, and these individuals are less likely to relapse or regress than those in the preceding stages (Velicer et al.). Those considered to be in this stage may abstain from alcohol and will also show little change from one measure to another. According to Prochaska et al. (1992), it is common for individuals to cycle through the stages several times before the undesirable behavior is terminated and healthier behaviors are maintained.

Researchers use different measures developed from the framework of the Transtheoretical Model of Change, such as the Stages of Change Readiness and

Treatment Eagerness Scale (SOCRATES). Vik, Culberson, and Sellers (2000) administered the SOCRATES to several hundred undergraduate students identified as heavy drinkers. They found that over half (66.9%) of the heavy drinkers were in the *Precontemplation* stage, whereas 19.8% and 13.3% were in the *Contemplative* and *Preparation* (what the authors called *Action* but was defined as a recognized need to reduce drinking) stages, respectively. Identification with a particular stage in the Stages of Change Model did not differ by gender, age, or ethnicity. In their study, surprisingly those in the *Contemplation* stage reported drinking on twice as many days in the last 3 months than the participants in the *Precontemplation* and *Action* stages. Those in the *Contemplation* group also engaged in more heavy drinking episodes than *Precontemplators* and those in the *Action* group during the prior 3 months.

The Transtheoretical Model can illustrate whether an individual is cognitively ready to move to a higher stage of awareness in the model, or if the individual has shown a decrease in awareness or motivation to change his or her behavior. According to Prochaska et al. (1992), it has been found that the stage participants in smoking cessation programs were in prior to treatment was directly related to success after treatment. The participants in the *Preparation* and *Action* stages had a higher percentage of abstinent (from smoking) days than the participants in the *Contemplation* and *Precontemplation* stages, regardless of the treatment. Similar results have been found in weight loss programs where individuals in the *Preparation* stage at the beginning of treatment were more likely to progress to the *Action* stage by the end of treatment and were more successful in losing weight than those in the *Precontemplation* and *Contemplation* stages.

More research involving this dynamic model and alcohol use is warranted, especially its association with social normative interventions.

In summary, prior research has shown that a presentation of normative information is adequate to decrease misperceptions about others' drinking (Baer et al., 1992; Neighbors et al., 2004; Williams et al., 2002), and that students' perceptions of social norms are more strongly associated with actual use when the reference group used is socially proximal (Kypri & Langley, 2003). In addition, alcohol consumption was more accurately predicted by a student of the same gender, especially for women (Lewis & Neighbors, 2004). Finally, results show that personalized normative feedback reduced misperceptions about others' drinking and decreased drinking among college students (Neighbors et al.).

It is still unclear if gender personalization in normative feedback is more effective than generic feedback, as researchers have not compared gender-specific feedback to the typical normative feedback method used in most studies. Thus, the purpose of this study was to determine if interventions utilizing normative information could benefit from gender personalization. Gender differences have been found among college students on variables such as perceptions of others' alcohol use (Lewis & Neighbors, 2004), episodic drinking, and the frequency of drinking per week (Chen, Dufour, & Yi, 2004/2005).

Also, little is known about how normative feedback impacts Stages of Change in regard to alcohol use among college students. For instance, a secondary aim of the current study was to determine if gender-specific and nonspecific personalized normative feedback can move one from *Precontemplation* to *Contemplation*, *Preparation*, *Action*, or *Maintenance*.

It is hypothesized that the present normative intervention will decrease misperceptions of others' alcohol use and decrease drinking behaviors among heavy drinking college students, compared to a control group at follow-up. Heavy drinking college students were defined as drinking between 2-4 times a month or more. Specifically, it is hypothesized that the gender-specific personalized group will have more dramatic decreases in misperceptions and individual drinking behavior (frequency and quantity) than the nonspecific gender personalized group. In other words, it is hypothesized that gender-specific personalized normative feedback will increase the congruency between the participants' perceptions of others' drinking and actual norms of the campus.

For the purpose of secondary analysis, it was predicted that a majority of the sample of collegiate drinkers will be in the *Precontemplation* Stage, consistent with prior research (Vik et al., 2000). It was hypothesized that the presentation of normative information to those participants claiming to drink 2-4 times a month or more and were in the *Precontemplation* stage at the pretest would be associated with movement to the next stage (*Contemplation*) or a stage beyond *Contemplation*, which is associated with a greater awareness of the problem (i.e., *Preparation, Action*, etc.). Specifically, it was predicted that a higher percentage of those "heavy drinkers" receiving the gender personalized normative information would progress to at least the *Contemplation* stage than those receiving nonspecific personalized normative feedback or the control group.

Also for the purpose of secondary analysis, the College Alcohol Problems Scale-Revised (CAPS-r) was given to each participant. Of interest was the relationship between alcohol related problems and drinking behavior (number of drinks per occasion) for all

participants reporting to drink at pretest and posttest. It was also determined if there were any differences between the normative feedback groups and any changes in alcohol related problems over time. A formal hypothesis was not developed in this regard.

CHAPTER II

METHOD

Participants

Three hundred and forty-six students enrolled at a mid-sized public university in the Southeast participated in the study. They were given extra credit and a chance to win prizes at follow-up as an incentive to participate in the two phases of the study. One student who did not wish to participate in the study was able to do so without a penalty. All participants were treated according to the guidelines set forth by the American Psychological Association (APA). In addition, the Institutional Review Board (IRB) at the university where the research was being conducted reviewed and approved the study.

As can be seen in Table 1, the sample consisted of 65% ($n = 161$) female and 35% ($n = 85$) male participants, with an average age of 21.3 years ($SD = 5.5$). The ages of the participants ranged from 18-50 years, with 56% of the sample being under the age of 21 years old. Most of the participants were freshmen (48%), and the other half of the sample were sophomores, juniors, seniors, and other (2.4%, 19%, 29%, 1.6%, respectively). One hundred and twenty participants were recruited from introductory Freshman Year Experience classes (48.8%), and 126 participants were enrolled in upper level psychology courses (52.2%). Most of the participants were White (82%), followed by Black (7%), Hispanic (5%), Asian (3.3%), and other (3.3%).

Of the 246 completers, 7% were employed on campus, 55% off campus, and 2% reported having both on and off campus jobs. Thirty-six percent of the completers were not employed. Of those who were employed, the average work week was 15.5 hours. Finally, 95% of the completers were full-time students at the university.

Materials

All questions concerning alcohol consumption will be based on standardized drinks as defined in Lewis and Neighbors (2004). One standard drink consists of 4 ounces of wine, a 10-ounce wine cooler, 12 ounces of beer (8 ounces of Canadian, malt liquor, or “ice beers,” or 10 ounces of a microbrew), or 1 cocktail with 1 ounce of 100-proof liquor or 1.25 ounce of 80-proof liquor. The current study also included clarification of the definition of a standard drink not typically found in other research. The researcher consulted several bartenders in the region of the country where the study was being conducted and obtained information on a typical “specialty drink” (e.g., a martini, Long Island Iced Tea, Absolut Stress, Rum and Coke, Whiskey and Coke) and determined that these drinks typically consist of at least three standard shots of 80-proof liquor per drink. Participants in the current research were instructed to consider specialty drinks when reporting their thoughts about others’ drinking and their own drinking behaviors.

Table 1

Demographics of All Completers, Percentages (n = 246).

| | % |
|--------------------------|------|
| Sex | |
| Male | 35.0 |
| Female | 65.0 |
| Race/Ethnicity | |
| White | 82.0 |
| Black | 7.0 |
| Hispanic | 5.0 |
| Asian | 3.3 |
| Other | 3.3 |
| Year in School | |
| Freshmen/Sophomores | 50.4 |
| Juniors/Seniors/Other | 49.6 |
| Class Type | |
| Freshmen Year Experience | 48.8 |
| Upper Level Psychology | 52.2 |
| Employment | |
| On Campus | 7.0 |
| Off Campus | 55.0 |
| Both | 2.0 |
| Not Employed | 36.0 |

Table 1 (*continued*)

Demographics of All Completers, Percentages (n = 246).

| | % |
|----------------|------|
| Student Status | |
| Full-time | 95.0 |
| Part time | 5.0 |

The measures used in the current study included a consent form, demographic information form, the Drinking Norms Rating Form (D NRF), the Alcohol Use and Disorders Identification Test (AUDIT), Alcohol: Stages of Change (Short Form) and the CAPS-r (See Appendixes A, B, C, D, E, & F, respectively).

The Drinking Norms Rating Form (D NRF)

The D NRF evaluates individual perceived norms of alcohol use. The modified version used in this study requests the perceived number of drinks per occasion for each participant's best friend and a typical student for each day of the week, and an additional question assessing the participants' perceptions about the number of drinks per occasion for a same-gendered student at the same school for each day of the week. The participant was able to enter any number in a blank space for each day of the week. A question about how often per month each participant thinks the typical student at his or her school consumes alcohol was also included. Each participant was able to choose an answer ranging from never to every day. The final question inquires about each participant's

perception of the number of drinks consumed on a given occasion for the typical student, which provided the first dependent variable: perceptions of how many drinks the typical student at the same campus drinks per occasion. Answers for this question ranged between 0-25 or more drinks. In addition, the current study added a question asking about the perception of the number of drinks consumed on a given occasion for a same-gendered student at the same school. Answers for this question also ranged between 0-25 or more drinks.

The original version of the DRNF can be found in the BASICS manual (Dimeff, Baer, Kivlahan & Marlatt, 1999). According to Larimer, Turner, Mallet and Geisner (2004), the DNRF highlights how students' perceptions of other students' drinking behaviors are related to their own drinking behaviors. Lewis and Neighbors (2004) have found an internal reliability (Chronbach's alpha) of .76 for the nonspecific gender version used in their study, and .80 for the gender-specific version.

The Alcohol Use and Disorders Identification Test (AUDIT)

The AUDIT (Babor, de la Fuente, Saunders, & Grant, 2001) is a screening instrument developed by the World Health Organization and is used to identify individuals who have harmful drinking habits (Plake, Impara, & Spies, 2003). It consists of 10 questions, 3 of which involve quantitative alcohol consumption, 3 about general drinking behavior, 2 about adverse reactions, and 2 involving alcohol related problems. Of primary interest in this study were the questions about quantitative alcohol consumption and the frequency of alcohol consumption. For example, "How many drinks containing alcohol do you have on a typical day when you are drinking?" and

“How often do you have a drink containing alcohol?” These questions provided the information for the second and third dependent variables: the frequency of personal drinking (how often), and the typical number of drinks consumed per drinking episode.

The current study modified the AUDIT to better conform to the time frame of a college semester. The AUDIT also provided inclusion and exclusion criteria for the current study. Participants who indicated that they “never” drink, or drink “monthly or less” were excluded from the main analyses due to the focus of the intervention, which was to assess the changes that occurred among college students who reported more significant use of alcohol, sometimes excessively.

Because of the extensive use of the AUDIT, much research is available about the reliability and validity of the measure. Researchers have found satisfactory test-retest reliability and internal consistency (Fleming, Barry, & MacDonald, 1991) and significant convergent validity ($r = .88$ for women and men) with the Michigan Alcohol Screening Test (MAST), another test commonly used to assess alcohol abuse (Bohn, Babor, & Kranzler, 1995).

Alcohol: Stages of Change (Short Form)

The Alcohol: Stages of Change (Short Form) is a measure of the Transtheoretical Stages of Change Model created for alcohol use (R. Laforge, personal communication, April 8, 2005). Each participant answered “yes” or “no” to the question “In the last month, have you had 5 or more drinks in a row (4 in a row for females),” and his or her intentions to change that amount in the next 6 months. The time reference was modified for the posttest to read: “Since the beginning of the semester, have you had 5 or more

drinks in a row (4 or more in a row for females)?” This modification was done to better estimate the participant’s drinking since the pretest. This question was used to determine each participant’s stage of change in the *Transtheoretical Stages of Change Model*.

Donovan, Jones, Holman and Corti (1998) found a relatively high level of consistency across the *Precontemplation*, *Preparation* and *Action* stages (89.3, 80.0 and 81.3%, respectively), but not for the *Contemplation* stage (62.5%) when asking about each participant’s desire to change his or her drinking behaviors. The high level of congruence means that the participants answered consistently across two items asking the same question (about reducing alcohol consumption) during the same testing period. This agreement means that the short form of the Alcohol: Stages of Change is an adequate measure of what stage each participant is in at the time.

In addition, R. Laforge (personal communication, April 8, 2005) found support for the construct validity of the stage measure with drinking behaviors such as number of days in a typical week when alcohol is consumed, average number of drinks per occasion, and highest number of drinks in one occasion during the last month. They also used measures for alcohol screening such as the Brief Michigan Alcohol Screening Test (BMAST) and alcohol related problems such as the Short Inventory of Problems (SIP-2R) and the CAGE Questionnaire. He and his colleagues found that each stage created separate yet meaningful categories of drinkers. For example, those in the *Precontemplation* stage drank more and had more alcohol related problems than those in the other stages. There was also evidence for divergent and convergent validity. For the current study, the Stages of Change form assessed the participants’ movements in their degree of readiness to change between the pretest and follow-up, as well as the

relationship between participants' responsiveness to interventions and the stage in the Transtheoretical Stages of Change Model.

College Alcohol Problem Scale-revised (CAPS-r)

O'Hare (1997) developed the College Alcohol Problem Scale (CAPS) to assess alcohol related problems among college students. Later, Maddock, Laforge, Rossi, and O'Hare (2001) refined the CAPS into the CAPS-r, an 8 item scale focusing on the personal and social problems of college students resulting from alcohol use. More specifically, the CAPS-r includes questions about the frequency of depressed or anxious feelings, self-esteem problems, appetite and sleeping problems, having unprotected or unplanned sexual activity, risk taking and other illegal activities. With the refinement, it was found that the CAPS-r had concurrent validity with the Young Adult Alcohol Problem Screening Test (YYAPST), $r = .78$. External validity was also found for variables such as gender, Greek membership, temptations to drink, self-reported alcohol consumption and other alcohol related variables (Maddock et al.).

With the inclusion of the CAPS-r and the AUDIT, which measures quantity and frequency of drinking alcohol, a great deal of information was collected on how much and how often the participants were drinking as well as alcohol related problems experienced in the past. The format of the CAPS-r was also modified in the current study to correspond with a college semester.

Procedure

Random assignment to each of the three different feedback groups, the gender-specific, nonspecific gender, and control groups, was completed for each class because of the group presentation of the normative feedback. Each participant received a pretest questionnaire packet with two copies of the consent form and measures of demographic variables, the DNRf, the AUDIT, the Alcohol: Stages of Change (Short Form), and the CAPS-r. Demographic information collected included gender, age, race/ethnicity, enrollment status (full-time student or part-time student), and employment status (on-campus and/or off-campus hours worked). On the demographic information collection form, each participant created an alphanumeric code to allow matching of the pretest and posttest and to facilitate collection of follow-up data.

All pretest questionnaires were completed near the beginning of the Fall 2005 semester. Of the 346 participants who completed the pretest questionnaire, 242 participants completed the posttest approximately three months later. Several attempts were made to contact those participants who did not complete the posttest, resulting in four more protocols completed approximately four months after pretest. There were a total of 246 participants who completed both pretest and posttest measures (71% completion rate).

Immediately after completion of the questionnaires at the pretest, those in the experimental classes were given a form prompting each participant to indicate how many drinks they have when they go out and drink (similar to the AUDIT; Appendix G). Normative feedback, which was adapted from the BASICS program (Dimeff et al., 1999), was provided by the investigator. All alcohol related information and feedback

was derived from intracampus statistics using the American College Health Association-National College Health Assessment (ACHA-NCHA) which was collected at the same university in the Spring Semester, 2005. The feedback was either gender-specific personalized or nonspecific gender personalized normative feedback. The control group received no feedback at all. Participants in the experimental conditions received a detailed representation of college drinking norms and their misperceptions. For example, in the gender-specific personalized normative feedback group, the participants reported the average number of drinks they have when they do drink and their perceived norms for college students of the same gender at the same campus. The researcher then instructed the participants to write in the norms for the students of the same gender at the same campus. This resulted in a comparison of the participants' drinking behaviors, their thoughts about others' drinking behaviors, and the actual drinking behaviors of other college students of the same gender on the same campus.

Also modeled from part of the feedback participants can receive during BASICS (Dimeff et al., 1999), participants in the current study received their percentile rank, depending upon the number of drinks they typically have in one sitting. They were also given additional normative information about the use of alcohol among their peers (see Appendix H). The students were given no further instruction on the additional information other than they were free to view it at their leisure.

The posttest included the same measures as the pretest, although they were modified to reflect the participants' thoughts and behaviors since the beginning of the semester. The posttest also included questions assessing participation in an online tool for measuring alcohol use and any participation in activities related to a campus-wide

Alcohol Awareness Week, which focused on education and prevention of alcohol abuse. The participants were able to answer each question with a 'yes,' 'no,' or 'not sure' response (Appendix I). These questions were added to detect the presence of potential confounds in the study, given the study's intervention focus.

Design and Statistical Analyses

It is hypothesized that the present normative intervention will decrease misperceptions of others' alcohol use and decrease drinking behaviors among college students who reported drinking between 2 to 4 times or more a month. Specifically, it is hypothesized that the gender-specific personalized group will have more dramatic decreases in misperceptions and individual drinking behavior (frequency and quantity) than the nonspecific gender personalized group.

To test these hypotheses, the current study utilized a 3 x 2 x 2 repeated measures mixed design. The feedback condition was a between-subjects factor. The normative feedback was either gender specific (e.g., "Females at this university drink...") or for the nonspecific gender (e.g., "The typical student at this university drinks..."). The control group received no feedback. The sex (male or female) of each participant acted as an independent (natural) groups independent variable. Finally, the participants completed a pretest and a posttest, providing a repeated measures (within) variable.

Data was analyzed using SPSS Version 11.0. Three separate 3 x 2 (feedback type x sex) analyses of covariance (ANCOVA) were conducted to determine if exposure to the different norms caused significantly different decreases in the misperceptions or overgeneralizations participants make for others' alcohol use (as measured by specific

questions on the DNRF) and the mean drinking levels (as measured by specific questions on the AUDIT) among each group. Pretest misperceptions and drinking levels served as covariates to control for potential baseline differences. The main analyses also involved only those participants who reported drinking 2-4 times or more a month.

The current study also reported the eta squared for each variable. Eta squared is a commonly used estimate of effect size. Scores range from 0-1. Values of .2, .5, and .8 are considered small, medium, and large effect sizes, respectively (Green & Salkind, 2003).

For the purpose of secondary analysis, the percentage of all completers in each stage of change for each normative feedback group at pretest and at posttest is reported, as well as a percentage of the total sample in each stage of change. It was formally hypothesized that the presentation of normative information to those in the *Precontemplation* stage would be associated with movement to the next stage (*Contemplation*) or a stage beyond *Contemplation*, which is associated with a greater awareness of the problem (i.e., *Preparation, Action, or Maintenance*). Specifically, it was predicted that a higher percentage of those receiving the gender personalized normative information will progress to the *Contemplation* stage or beyond than those receiving nonspecific personalized normative feedback or the no feedback control group. To test for this hypothesis, the researchers conducted a chi-square test of independence to determine the relationship between the normative feedback groups and the stage of change at posttest. Percentages were also calculated for number of participants in each stage at posttest.

The CAPS-r was also included in the current study for secondary analysis. The researchers were interested in the relationship between the individual items and total score on the CAPS-r, and the number of drinks the participant typically drank per episode for all drinkers. In addition, a 3 x 2 (feedback x gender) mixed design repeated measures analysis of variance (ANOVA), was used to determine if there were any main effects or interactions for changes on the total score from the CAPS-r. No formal hypotheses were made in this regard.

CHAPTER III

RESULTS

Preliminary Analyses

To determine if there were any differences between those participants who completed just the pretest (i.e., noncompleters) and those who completed the pretest and the posttest (i.e., completers), a series of chi-square tests of independence and independent samples *t* tests were completed.

Chi-square tests of independence showed no significant differences between participants who completed both pre and post intervention assessments and those who did not complete the posttest questionnaire with sex and race/ethnicity, $\chi^2 (1) = .61, p > .05$; $\chi^2 (4) = 2.13, p > .05$, respectively. There were, however, significant differences between younger students (i.e., freshmen and sophomores) and upper level students (i.e., juniors, seniors and others), $\chi^2 (1) = 6.11, p < .05$ and type of feedback received, $\chi^2 (2) = 8.85, p < .05$. From these results, it was determined that completers did not differ from non-completers on sex or race/ethnicity. However, more upper level students missed the posttest and the non-specific feedback condition was the least represented at pretest. At posttest, the least represented feedback condition was the control group.

A series of *t*-tests were conducted to assess possible differences between the completers and noncompleters on the three dependent variables. There was a significant difference between completers and noncompleters in how many drinks one typically

drinks per occasion. Completers drank significantly fewer drinks per occasion, than noncompleters, $t(343) = -2.38, p < .05$. Completers had an average score of .88 ($SD = 1.05$), which is associated with 1-2 drinks per drinking occasion and noncompleters had an average score of 1.2 ($SD = 1.35$), which is associated with 3-4 drinks per drinking occasion. The t -tests showed no significant differences between the completers and noncompleters with respect to perceptions of the number of drinks others drink per occasion and the frequency of participants' drinking, $t(344) = -.530, p > .05$ and $t(343) = -.390, p > .05$, respectively.

It was anticipated that the difference in level of drinking between the completers and the noncompleters could impact results; therefore, the pretest values of the three dependent variables were used as covariates for the corresponding posttest measures. The covariate used for the perception of number of drinks consumed by others per episode was 5.89 drinks. The covariates for the behavioral dependent variables were 2.67 (associated with drinking 2-4 times a month), and 1.38 (associated with consuming 3-4 drinks per episode) for the frequency of personal drinking and number of drinks per episode, respectively.

Main Hypotheses

Analyses for the three drinking related dependent variables included only those participants who completed both the pretest and posttest and reported drinking at least 2-4 times a month.

Changes in Perceptions of Others' Drinking

The first ANCOVA demonstrated a significant main effect for the type of normative feedback for the perceptions of others' drinking, $F = 6.55 (2, 129)$, $p < .05$. This variable specifically measured the number of drinks per episode that the participants thought other students drank on their campus. The adjusted mean and standard error for each of the groups are as follows: gender-specific feedback, 4.21 (.25); nonspecific gender feedback, 4.56 (.34); and control, 5.5 (.26). Eta squared was .90.

Follow-up tests were conducted to evaluate pairwise comparisons among the adjusted means. The Tukey Honestly Significant Difference (HSD) procedure found significant differences between the adjusted means comparing the gender-specific feedback group and the control group, as well as between the nonspecific feedback group and control group. Differences between the two treatment conditions were not significant.

The main effect for gender was not significant, nor was the feedback x gender interaction for the perception of others' drinking behaviors (Table 2).

Changes in the Frequency of Personal Drinking

The ANCOVA showed no significant main effects for feedback or gender, and the feedback x gender interaction was also not significant for the frequency of personal drinking (Table 3).

Changes in the Quantity per Drinking Episode

The ANCOVA showed no significant main effects for feedback or gender, and the feedback x gender interaction was also not significant for the quantity per episode of personal drinking (Table 4).

Table 2

ANOCOVA Table: Gender and Type of Feedback Main Effects and Interactions for Perceptions of Other's Drinking (Number of Drinks per Occasion).

| Variable | <i>F</i> | <i>df</i> | <i>p</i> | Eta squared |
|--------------------------------|----------|-----------|----------|-------------|
| Gender | .67 | 1, 129 | > .05 | .13 |
| Normative feedback | 6.55 | 2, 129 | < .05 | .90 |
| Gender x normative feedback | .36 | 2, 129 | > .05 | .10 |

Table 3

ANCOVA Table: Gender and Type of Feedback Main Effects and Interactions for Changes in Frequency of Personal Drinking.

| Variable | <i>F</i> | <i>df</i> | <i>p</i> | Eta squared |
|--------------------------------|----------|-----------|----------|-------------|
| Gender | .46 | 1, 129 | > .05 | .10 |
| Normative feedback | .12 | 2, 129 | > .05 | .07 |
| Gender x normative feedback | .01 | 2, 129 | > .05 | .05 |

Relationships Among Variables

The relationship between age and drinking perceptions and behaviors were evaluated using a Pearson *r* correlation. For all participants who completed the pretest, age was significantly correlated with pretest measures of the participants' perceptions of others' drinking ($r = -.16, p < .001$) and the number of drinks the participants drank per episode ($r = -.16, p < .01$). According to these correlations, age was negatively correlated with perceptions of others' drinking and personal drinking behaviors. The older the participant, the less they thought other students drank per episode and the less they drank per episode. For all participants who completed the posttest, correlations were present for the same variables, $r = -.15, p < .05$ and $r = -.17, p < .01$, respectively, with the same trend in responses.

Table 4

ANCOVA Table: Gender and Type of Feedback Main Effects and Interactions for Changes in Number or Drinks Personally Consumed per Occasion.

| Variable | F | df | p | Eta squared |
|-----------------------------|------|--------|-------|-------------|
| Gender | 2.69 | 1, 129 | > .05 | .37 |
| Normative feedback | .25 | 2, 129 | > .05 | .09 |
| Gender x normative feedback | .97 | 2, 129 | > .05 | .22 |

Secondary Analyses

Transtheoretical model of change analyses. It was predicted that the majority of the sample would be in the *Precontemplation* Stage. There were a total of 135 participants who reported drinking 2-4 times a month or more and answered the question about the Transtheoretical Stages of Change Model on both the pretest and posttest. The majority of the sample, 46%, were in the *Precontemplation* Stage at pretest. The remainder of the participants were in the *Contemplation, Preparation, Action* and *Maintenance* Stages (6%, 5%, 21% and 10%, respectively). The remaining 12% reported to have never had more than 5 (for males) or 4 (for females) drinks at one time.

Table 5 shows the percentage for each normative feedback group for each stage of change for the pretest and posttest for all completers. Of all completers, the majority (31% combined), reported to have never drank alcohol or had 4 drinks (for females) or 5 drinks (for males) or more drinks per occasion. Table 5 also demonstrates the

surprisingly low percentage of completers that were in the *Precontemplation* stage at the pretest.

Because of the intervention focus of the current research, all completers who reported drinking 2-4 times a month or more were selected and percentages were recalculated. Table 6 includes the same information as Table 5, yet selects for the “heavy drinkers.” Table 6 shows the majority of those participants reporting to drink 2-4 times a month or more to be in the *Precontemplation* stage. In addition, even among those who do report to drink more often, 10 to 12% of the combined sample reported abstinence or drinking at non-binging levels (see Table 6).

The researchers also wished to determine feedback effects for those participants who reported drinking 2-4 times a month or more and were in the *Precontemplation* stage at pretest. Frequencies for the *Precontemplation* stage were compared to the frequencies of the other stages (*Contemplation*, *Action* and *Preparation* were collapsed) for each feedback condition and a chi-square test of independence determined that the relationship was not significant between the feedback groups and the participants’ movement in the model, $\chi^2 (2) = 1.83, p > .05$. The percentage and frequencies for each group in each stage of change is provided in Table 7. Also, Table 8 shows the posttest means and standard deviations for each of the dependent variables for each stage in the Transtheoretical Model for all participants who completed both the pretest and posttest.

Table 5

Percentages for All Completers in Each Stage of the Transtheoretical Model of Change for Each Normative Feedback Group (n = 245).

| Stage of change | Type of feedback | | | |
|-----------------------|------------------------|--------------------|----------------|-----------------|
| | <u>Gender-Specific</u> | <u>Nonspecific</u> | <u>Control</u> | <u>Combined</u> |
| Precontemplation | % | % | % | % |
| Pretest | 22 | 25 | 34 | 27 |
| Posttest | 25 | 24 | 35 | 28 |
| Contemplation | | | | |
| Pretest | 6 | 2 | 6 | 5 |
| Posttest | 6 | 6 | 4 | 5 |
| Preparation | | | | |
| Pretest | 6 | 2 | 1 | 3 |
| Posttest | 6 | 6 | 5 | 6 |
| Action | | | | |
| Pretest | 13 | 16 | 20 | 16 |
| Posttest | 11 | 10 | 11 | 11 |
| Maintenance | | | | |
| Pretest | 21 | 19 | 12 | 18 |
| Posttest | 15 | 22 | 16 | 17 |
| Abstinence/ Non-binge | | | | |
| Pretest | 32 | 37 | 27 | 31 |
| Posttest | 37 | 32 | 29 | 33 |

Table 6

Percentages for Participants Who Drink 2-4 Times a Month or More in Each Stage of the Transtheoretical Model of Change for Each Normative Feedback Group (n = 135).

| Stage of change | Type of feedback | | | |
|-----------------------|------------------------|--------------------|----------------|-----------------|
| | <u>Gender-specific</u> | <u>Nonspecific</u> | <u>Control</u> | <u>Combined</u> |
| Precontemplation | % | % | % | % |
| Pretest | 41 | 46 | 51 | 46 |
| Posttest | 45 | 43 | 53 | 47 |
| Contemplation | | | | |
| Pretest | 10 | 3 | 6 | 7 |
| Posttest | 10 | 11 | 6 | 9 |
| Preparation | | | | |
| Pretest | 10 | 3 | 2 | 5 |
| Posttest | 6 | 8 | 9 | 7 |
| Action | | | | |
| Pretest | 17 | 19 | 26 | 21 |
| Posttest | 12 | 16 | 15 | 14 |
| Maintenance | | | | |
| Pretest | 8 | 16 | 6 | 9 |
| Posttest | 14 | 16 | 9 | 13 |
| Abstinence/ Non-binge | | | | |
| Pretest | 14 | 13 | 9 | 12 |
| Posttest | 14 | 5 | 9 | 10 |

Significant differences between the stages and drinking related variables were determined using an analysis of variance (ANOVA) for each of the dependent variables. To summarize the results, there were differences between the stages of the Transtheoretical Model of Change for all three dependent variables. The results for each dependent variable were $F(5, 129) = 4.38, p < .05$; $F(5, 129) = 8.35, p < .05$; and $F(5, 129) = 20.64, p < .05$ for the perceptions of others' alcohol use, the frequency of personal drinking, and the number of drinks personally consumed per episode, respectively. Tukey HSD post hoc analyses compared each stage in the Transtheoretical Model of change for each variable. Only one significant difference was found for the perceptions of others' alcohol use. At posttest, completers in the *Precontemplation* stage had higher perceptions of alcohol use than completers in the *Maintenance* stage. Behaviorally, completers in the *Precontemplation*, *Contemplation*, and *Preparation* stages drank significantly more often than those in the *Action* stage. Finally, completers in the *Precontemplation* stage drank significantly more drinks per occasion than completers in the *Preparation*, *Action*, and *Maintenance* stages. There was not a significant difference between the *Precontemplation* and *Contemplation* stages for number of drinks consumed per occasion.

CAPS-r analyses. Finally, the analysis of the relationship between alcohol related problems (from the CAPS-r) and the number of drinks the participant typically consumes are presented for both the pre- and posttest data in Table 9 and include all completers who reported to drink (less than monthly or more). The researchers also used a 3 x 2 (feedback x gender) mixed design repeated measures ANOVA and determined that there were no significant gender or normative feedback main effects or a feedback x gender

interaction for differences in alcohol related problems on the CAPS-r total score from pre- to posttest for completers who reported drinking at least once monthly. Table 10 shows results from the repeated measures ANOVA and Table 11 shows the means and standard deviations of the CAPS-r total score for the two experimental groups and control group at posttest. Differences between groups were not significant, $F(2, 205) = .574, p > .05$.

Table 7

Posttest Percentages and Frequencies (in parentheses) of Completers in Each Stage of Change for Each Normative Feedback Group (n = 61).

| Stage of change | Type of feedback | | | Total (n = 61) |
|------------------|-----------------------------|-------------------------|---------------------|-------------------|
| | Gender-Specific (n = 20) | Nonspecific (n = 17) | Control (n = 24) | |
| Precontemplation | 70% (14) | 88% (15) | 79% (19) | 79% (48) |
| Contemplation | 15% (3) | 6% (1) | 4% (1) | 8% (5) |
| Preparation | 5% (1) | 4% (1) | | 3% (2) |
| Action | 10% (2) | | 17% (4) | 10% (6) |

Note. Includes only completers reporting to drink 2-4 times a month or more and were in the *Precontemplation* stage at pretest.

Table 8

Posttest Means and Standard Deviations (in parentheses) for Each of the Drinking Related Dependent Variables by Stage in the Transtheoretical Model.

| | Perceptions* | | Frequency** | | Quantity*** | |
|------------------|--------------|-------|-------------|-------|-------------|-------|
| | Mean | (SD) | Mean | (SD) | Mean | (SD) |
| Precontemplation | 5.5 | (2.6) | 2.9 | (0.8) | 1.8 | (1.0) |
| Contemplation | 4.1 | (1.2) | 2.3 | (0.9) | 1.4 | (0.7) |
| Preparation | 5.2 | (2.4) | 2.3 | (0.8) | 0.8 | (0.6) |
| Action | 4.3 | (1.5) | 2.1 | (0.5) | 0.5 | (0.5) |
| Maintenance | 3.0 | (0.9) | 2.0 | (0.6) | 0.3 | (0.5) |

Note. Greater numbers indicate greater alcohol use. Includes only participants reporting to drink at least 2-4 times a month.

*Perceived number of drinks for others, **Personal frequency of drinking, ***Personal number or drinks per episode.

Table 9

Correlations Between Number of Drinks per Episode and Questions on CAPS-r for All Drinkers.

| CAPS-r question | <u>Pretest</u> Pearson Correlation (n = 283) | <u>Posttest</u> Pearson Correlation (n = 206) |
|-------------------------|--|---|
| Feel sad | .15* | ns |
| Feel nervous | .21** | .19** |
| Appetite/Sleep problems | .28** | .40** |

Table 9 (continued).

Correlations Between Number of Drinks per Episode and Questions on CAPS-r for All Drinkers.

| CAPS-r question | Pretest Pearson Correlation (n = 283) | Posttest Pearson Correlation (n = 206) |
|---------------------------|---|--|
| Unplanned sexual activity | .35** | .29** |
| Drove under the influence | .43** | .32** |
| No protection during sex | .17** | .15* |
| Illegal activities | .35** | .31** |
| CAPS-r total score | .44** | .36** |

Note. ** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Table 10

Repeated Measures ANOVA Table: Gender and Type of Feedback Main Effects and Interactions for CAPS-r Total Score.

| Variable | F | df | p |
|-----------------------------|-----|--------|-------|
| Gender | .15 | 1, 198 | > .05 |
| Normative feedback | .31 | 2, 198 | > .05 |
| Gender x normative feedback | .26 | 2, 198 | > .05 |

Note. Includes all completers who drink once a month or more.

Table 11

Means and Standard Deviations (in parentheses) for Posttest CAPS-r Total Score by Normative Feedback Group.

| Type of feedback | Mean | SD | N |
|------------------|------|--------|----|
| Gender-Specific | 3.68 | (5.14) | 80 |
| Nonspecific | 3.96 | (4.55) | 53 |
| Control | 4.6 | (6.24) | 73 |

Note: Calculated for completers reporting to drink at least once a month at pretest.

CHAPTER IV

DISCUSSION

Primary Hypotheses

Personalized normative feedback has been used in interventions at colleges in an attempt to decrease the common overestimations students make about their cohort's alcohol use. Some researchers simply measure the change in the perceptions (i.e., Williams et al., 2002), and others have assessed behavioral changes in drinking patterns after the presentation of normative feedback (i.e., Neighbors, Larimer & Lewis, 2004). The methods of dissemination are also broadly heterogeneous, making comparisons between interventions difficult. The current study assessed both cognitions and self-report behaviors before and after the group presentation of personalized normative feedback that was either personalized by gender or presented for the typical student.

The feedback provided in the current study was adapted from BASICS (Dimeff, baer, Kivlahan & Marlatt, 1999) and provided participants with information about their drinking behaviors and compared that to the behaviors of their peers. Results of the current study showed that gender-specific feedback and nonspecific gender feedback was more effective in reducing the perceived number of drinks other students consumed per occasion than the control group. There was an absence of a difference between the two types of feedback, however. There were also no significant differences between the two

normative feedback groups and the control group or male and female participants for behavioral change (i.e. drinking frequency and quantity per occasion).

A review of previous research using normative feedback in different capacities have found similar and dissimilar results. For example, Stamper, Smith, Gant, and Bogle (2004) found that feedback aimed at decreasing overestimations students make for peer alcohol use was effective, yet it was unclear if the behavioral changes were significant because of pretest differences between those who received feedback and the comparison group. In addition, Marlatt et al. (1998) provided participants with feedback during a brief motivational interviewing intervention and reported behavioral changes. The current study did not replicate those findings with the group administered feedback, which begs for further examination of the individually administered motivational interview and follow-up with additional feedback about the individual's progress to increase the chances of behavioral change due to the participants' active involvement in motivational interviewing. In addition, the current research did not replicate the behavioral changes found in other studies (i.e., Baer, Marlatt, Kivlahan, Fromme, Larimer & Williams, 1992; Bosari & Carey, 2000; Collins, Carey, & Sliwinski, 2002; Neighbors et al., 2004; Schroeder & Prentice, 1998). For example, Collins et al. provided participants with gender-specific feedback and found a decrease in heavy drinking episodes. These researchers did not compare gender-specific feedback with nonspecific gender feedback and a control group, however, thus significant differences are not certain between the gender-specific feedback group and a nonspecific gender feedback group because of the lack of a comparison group.

Finally, Barnett, Far, Mauss, and Miller (1996) found that normative information resulted in the greatest reductions in perceptions of others' drinking behaviors when compared to those receiving values clarification, a combination of values clarification and feedback, and a control group. They also found that a change in perceptions was positively correlated with changes in drinking behaviors (i.e. decrease in perception correlated with decreases in drinking behaviors). Behavioral changes, however, occurred for participants in all conditions, questioning the effectiveness of feedback and the alcohol interventions used, on overall behavior.

In summary, it is evident in the current study that normative feedback, whether it was gender-specific or not, was more effective in reducing the misperceptions the participants made about other students' alcohol use than the misperceptions made by the control group. Regardless, the targeting of gender did not significantly change the misperceptions more than feedback for the typical student. Overall, there were no significant differences in the reported frequency of drinking and quantity of drinks per drinking episode between males and females and among normative feedback groups which questions the overall usefulness of feedback used as an intervention without additional components (e.g., motivational interviewing, social skills training, drink refusal skills, cognitive behavioral therapy, etc.).

Participants' Perceptions and Drinking Behaviors

According to pretest measurements, 84% of the completers in the current study have used alcohol at least once in the past year, which is consistent with previous research (Wechsler et al., 2003). Thirty-eight percent of male completers participated in

heavy episodic drinking in the past year, defined as 5-6 drinks per episode. Forty-seven percent of female completers reported to drink 3-4 drinks per episode, which is consistent with previous research at other universities (i.e., Haines & Spear, 1996; Kypri & Langley, 2003) and is also consistent with campus norms. The data from the norms came from the ACHA-NCHA assessment at the same university and found that 50% of females and 37% of males drank 3-4 or 5-6 drinks per episode, respectively.

Previous research has found that college students generally perceive their peers engage in drinking more than the norm (Mattern & Neighbors, 2004). The current study replicated earlier findings of social normative research (Lewis & Neighbors, 2004) and found that, overall, females made more accurate predictions than males. More specifically, female participants made more accurate predictions for a student of the same gender than for a nonspecific gender student. On the other hand, male participants made more accurate predictions for the typical student than for students of the same gender. For the current intervention, the norms presented to the participants for the male and female students at the same campus were determined from campus wide ACHA-NCHA data and were 4.04 and 3.02 drinks per episode, respectively. The norm provided for the nonspecific 'typical' student was 3.04 drinks per episode.

Of the completers, male participants in the current study reported the belief that other male students drank 7.12 ($SD = 4.18$) drinks per episode, while the typical student drank 5.93 ($SD = 3.68$). On the other hand, female participants were more accurate for the same gendered student and reported the belief that the same gendered student drinks 4.17 ($SD = 2.18$) drinks per episode, whereas the 'typical' student drinks an average of 5.25 ($SD = 2.8$) drinks per occasion.

The overall norm or average for all completers in the current study was 3-4 drinks per episode, according to the mean score on the AUDIT and for females, is less than the norm found for other females at the same campus through ACHA-NCHA. According to AUDIT mean scores, male completers drank an average of 3-4 drinks per occasion, while female completers drank an average of 1-2 drinks per occasion. The fact that females in the current study drank fewer drinks per episode than the campus norm may have impacted results, even though the inclusion criteria of drinking at least 2 to 4 times a week was included in the main analyses to capture heavier drinkers.

Lewis and Neighbors (2004) have found the use of socially proximal information to be the most beneficial when providing individualized feedback to students about normative alcohol use. The researchers attempted to provide the most relevant information in the gender-specific feedback group (i.e. feedback about the same gendered student at the same university). Results from the current study indicated that predictions of others' alcohol use were more accurate when asking about a student of the same gender for female participants only. Analyses for the main hypotheses, however, did not reflect any gender differences in the effectiveness of the intervention for any of the drinking related dependent variables.

Secondary Analyses

The current study included the Alcohol: Stages of Change (Short Form) to assess each participant's stage in the Transtheoretical Stages of Change Model originally developed by Prochaska and his colleagues. Similar to previous research (Donovan et al., 1998; Vik et al., 2000), the majority (46%) of the completers who reported drinking 2-4

times a month or more were in the *Precontemplation* stage. The remainder of the participants were distributed among the *Contemplation*, *Preparation*, *Action*, *Maintenance* stages or reported to not drink excessively.

Because the Transtheoretical model is dynamic in nature, the participant can cycle through the stages in a relatively short period of time (i.e., 3 months). Therefore, an attempt to obtain empirical evidence of differences between the stages and cognitive and behavioral changes presents a challenge. Previous research (Vik et al., 2000) found that behavioral changes were associated with differences between the stages. For example, they reported that participants in the *Precontemplation* stage drank less than those in the *Contemplation* and *Action* stages, as measured by number of drinking days and number of heavy drinking episodes in the past 3 months. The current study found that for those completers reporting to drink at least 2-4 times a month and reported to be in the *Precontemplation* stage at posttest had significantly higher perceptions of others' alcohol use than those in the *Maintenance* stage. In addition, completers in the *Precontemplation*, *Contemplation*, *Preparation*, and *Action* stages reported drinking more frequently than those in the *Maintenance* stage. Finally, completers in the *Precontemplation* stage drank more (drinks per episode) than those in the *Preparation*, *Action* and *Maintenance* stages. The difference between those in the *Precontemplation* stage and the *Contemplation* stage was not significant for that dependent variable.

It was hypothesized that there would be a relationship between the stage of change at pretest and movement from the *Precontemplation* stage to another stage in the model according to the type of normative feedback. Specifically, it was hypothesized that participants in the *Precontemplation* stage at pretest and reported drinking 2-4 times a

month or more would have more movement in the model than those participants receiving nonspecific gender feedback or no feedback. A chi-square analysis determined no such relationship in the current study. In other words, the provision of normative feedback did not seem to effect participants' movement through the stages of change. For example, only 21% of all completers in the *Precontemplation* stage at pretest moved to another stage at posttest. This non-significant relationship could be explained by the characteristics of the population or the method of assessment, as well as the differences between the completers and non-completers at pretest.

It has already been noted in the literature that there are problems associated with excessive drinking, such as driving while intoxicated, motor vehicle accidents, and mental health problems such as depression and anxiety and other high risk behaviors (e.g., Berkowitz & Perkins, 1986; Pullen, 1994). Because of these relationships, the researchers also examined the relationship between individual items on the CAPS-r and the CAPS-r total and the number of drinks personally drank per occasion as well as the changes in the CAPS-r total score over time. Correlations are reported in Table 9 and clearly demonstrate why alcohol research, and in particular, research involving harm reduction messages should continue, especially in regard to excessive drinking due to the magnitude of the relationships. For example, the ACHA-NCHA reported that 9% of male and 4% of female students who participated in the study drove after consuming 5 or more drinks per drinking occasion. In addition, the current study found moderately strong positive correlations for the relationships between drinking and unplanned/unprotected sexual activity, driving under the influence, and participation in other illegal activities, which requires the attention of health educators nationwide. Also, social normative

feedback does not appear, at least in the present study, to effect negative alcohol related problems as evidenced by non-significant differences on the CAPS-r total score between the experimental groups and the control group from pretest to posttest. Although this intervention focused primarily on normative feedback about peer alcohol use, the inclusion of the CAPS-r provided valuable information about the types of issues that need to be addressed by health educators.

Limitations and Strengths

There were several limitations apparent in the current research that may have had an effect on the findings. First, approximately half of the sample comprised of students starting their freshman year of college. Thus, these students were asked to report on their own underage drinking. Therefore, the only data collected in the current study, and the data used to determine the norms in the ACHA-NCHA, were self-report. Even though precautions were taken to protect the data, self-report may have been compromised (i.e., under-reporting personal alcohol use behaviors).

Another limitation in the current study may involve the university's culture in that it has traditionally been a commuter school and attitudes towards drinking may be more conservative than other areas of the region.

Finally, differences between the completers and non-completers may have impacted results. Analyses showed that completers drank significantly fewer drinks per episode than non-completers. The use of inclusion criteria was utilized to capture the heavier drinking students; however, it cannot be denied that the heavier drinking students were not included in the analysis because of missing the posttest measurement.

Despite limitations, there were also several strengths of the current study, including the measurement of two possible confounds in the design. In Appendix I, the researchers questioned each participant about possible participation in a campus wide Alcohol Awareness Week and/or an alcohol use and feedback computer program. Involvement in these programs was minimal. Of the 246 completers, 16% participated in Alcohol Awareness Week, and 8% participated in computerized assessment and were distributed evenly across the three feedback conditions.

Another strength in the current study involves the assessment, crude as it may be, of the Transtheoretical Model and the readiness to change of participants. Although the results between groups were unremarkable in regard to readiness to change, it provides a point of continuation for further research. For example, more empirical evidence of behavioral differences between the stages can be helpful to properly match participants with the most effective alcohol related prevention and intervention programs, including those involving social normative feedback.

The current study also included the use of a new “specialty drink” measure when asking participants to report their perceptions and behaviors about drinking. The inclusion of this measure may increase the congruency of what the average college student thinks of a specialty drink and the correct number of standard drinks. For example, if a participant regularly observes his or her friends going out and drinking three specialty drinks, the participant may report that exact number. However, if the participant is reminded that those specialty drinks have the average of at least three standard shots of 80-proof liquor, the participant is more accurate in reporting that nine

standard drinks were consumed. Certainly, more research using this “Hurricane Effect” is needed.

Future Directions

Of course, replication and expansion of the current study would be beneficial to determine the effects of gender personalization with a sample that consistently consumes more alcohol than the participants in the current study. In particular, more information about participants’ readiness to change and cognitive and behavioral changes after the presentation of norms would be helpful in improving upon the alcohol education that already takes place at colleges and universities nationwide.

The current study utilized a particular question from the AUDIT (the frequency of drinking) as inclusion criteria for the main analyses. Perhaps replication of this study with different inclusion criteria, such as total score on the AUDIT or total score on the CAPS-r would be more useful, because of higher scores on each of those scales being associated with more alcohol related problems. For example, Neighbors et al. (2004) sought participants reporting one heavy drinking episode in the previous month and found significant behavioral changes after the presentation of normative feedback.

In addition, Larimer, Turner, Mallet and Geisner (2004) argue that the inclusion of injunctive norms (i.e. the acceptability of drinking behaviors among peer groups) in prevention and intervention strategies based on social norms may be beneficial. In fact, a comparison of descriptive and injunctive norms may help to determine how normative feedback could or should be presented to college students to attain the greatest reduction in harmful drinking.

It may also be useful to determine the impact normative information has on non-binging participants. Because of the relatively high percentage of completers who reported to either abstain from alcohol or drink at non-binge levels, that question can be addressed, yet is out of the scope of this particular research endeavor.

Summary

The results of the current study demonstrate that feedback, in general, decreased misperceptions of others' alcohol use more than not receiving feedback. No significant differences existed between gender-specific feedback and nonspecific gender feedback, leading us to believe that tailoring the feedback by gender may not be necessary. The lack of behavioral changes after the presentation of the personalized normative feedback in the present study questions the effectiveness of the feedback for anything other than making students' beliefs more congruent with campus norms.

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APPENDIXES

APPENDIX A

Research Consent Form

Research Consent Form

I. Federal and university regulations require us to obtain signed consent for participation in research involving human participants. After reading the statements in section II through IV below, please indicate your consent by signing and dating this form.

II. Statement of Procedure: This study is being conducted by Renee Lojewski to fulfill university requirements for a graduate degree in Counseling Psychology. The purpose of this project is to measure the level of drinking that takes place at UWF and assess your thoughts about others' drinking behaviors at UWF. Your teacher may provide extra credit to those who are willing to participate in the study. If you decide you do not want to take part in the study, you may do so with no penalty to yourself.

This study includes a follow-up which will require collection of identifying information from each participant. Although I will be able to determine who filled out each questionnaire, none of the information you provide during this experiment will be used individually. There will be two people with access to this secure information you are providing, myself and my thesis chair, Dr. Rotunda. You will be asked to complete the same questionnaire that you are filling out today at a later date. If at any time you are uncomfortable with filling out the questionnaire, please do not feel obligated to continue with the study.

Please understand that:

1. You will be asked questions about alcohol use on campus and your own alcohol use.
2. You will be asked to fill out similar questionnaires at a later date.
3. It will require about 20 minutes of your time for the initial screening, and about 20 minutes at follow-up.
4. You may discontinue participation in this study at any time with no penalty.
5. You have the option to provide contact information (eg. Name, email address) in case you are not able to complete the follow-up at the designated time and location.

III. Potential Risk of the Study:

Discussing alcohol and alcohol related issues can be uncomfortable. If you require any assistance after the measurements are taken, please contact the people

recommended in section IV. There are no other risks associated with this survey research.

IV. Potential Benefits of the Study:

1. The information from this study can be incorporated into interventions to reduce unwanted consequences from excessive drinking and other problem behaviors and lead to a better understanding of drinking that takes place on college campuses and how to address it.

2. To provide some incentive to complete the study, I will be picking (at random) several consent forms that contain your contact information and giving out prizes near the end of the semester. This is another reason I am taking your email address.

If for any reason you do experience any discomfort during the process of this study, please feel free to contact me or my thesis chair, Dr. Rotunda of the Psychology Department (rrotunda@uwf.edu). You may also contact the Counseling Center on campus (850-474-2420) for more information.

Finally, if you are under the age of 18, please inform me. If you would like to participate, parental permission is required for you to fill out the questionnaires. Otherwise, please fill out the bottom portion of this consent form. I will be collecting this sheet prior to you filling out your packets.

Thank you in advance and I look forward to seeing you again. Please feel free to contact me at any time, my email address is ral16@students.uwf.edu.

V. Statement of Consent: I certify that I have read and fully understand the Statement of Procedure given above and agree to participate in the research project described. My permission is given voluntarily, and I understand that I may withdraw from the study at any time with no penalties. I will be provided with a copy of this consent form.

Please PRINT your name: _____ Date: _____

Please SIGN your name: _____

UWF Email address: _____

Last 4 Digits of phone # followed by your initials

_____ ; _____

(e.x. 1726, RL)

APPENDIX B

Demographic Information Collection Form

1. ***Gender: Please Circle ONE***

Male Female

2. ***Age:*** _____

3. ***Race/ethnicity:*** _____

4. ***Year in school: Circle ONE***

FRESHMAN SOPHMORE JUNIOR SENIOR OTHER

5. ***Enrollment at UWF: Circle ONE***

Full time Part time

6. ***Employment status: Please Circle ONE***

On campus job Off campus job Both Neither

7. ***# of hours you typically work per week:*** _____

LAST 4 DIGITS OF PHONE # : _____ , **INITIALS** _____ , _____

APPENDIX C

Modified Version of the Drinking Norms Rating Form

Pretest and Posttest

This section asks you to report on your drinking and to estimate others' drinking over the past year.

For all questions, one drink equals:

- 4 oz. wine
- 10 oz. wine cooler
- 12 oz beer (8 oz of Canadian, Malt Liquor, or Ice Beers, or 10 oz. of Microbrew)
- 1 cocktail with 1 oz. of 100 proof liquor or 1¼ oz. of 80 proof liquor
- A specialty drink (ex. martini, Long Island Iced Tea, Absolut Stress, Rum & Coke, Whiskey & Coke) has an average of 3 standard shots of 80 proof liquor per drink.

*This questionnaire asks you to report on drinking behaviors at your school.

1. Consider a typical week during the last year. How much alcohol, on average (measured in number of drinks), does **your best friend** drink on each day of a typical week?

| Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|--------|---------|-----------|----------|--------|----------|--------|
| | | | | | | |

2. Consider a typical week during the last year. How much alcohol, on average (measured in number of drinks), does a **typical student** at your school drink on each day of a typical week?

| Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|--------|---------|-----------|----------|--------|----------|--------|
| | | | | | | |

3. How often do you think a **typical student** at your school consumes alcohol?

- | | | |
|---|--|--|
| <input type="checkbox"/> Never | <input type="checkbox"/> Three times a month | <input type="checkbox"/> Four times a week |
| <input type="checkbox"/> Less than once per month | <input type="checkbox"/> Once a week | <input type="checkbox"/> Five times a week |
| <input type="checkbox"/> Once a month | <input type="checkbox"/> Two times a week | <input type="checkbox"/> Six times a week |
| <input type="checkbox"/> Two times a month | <input type="checkbox"/> Three times a week | <input type="checkbox"/> Every day |

4. How many drinks on average do you think a **typical student** at your school consumes on a given occasion

- | | | |
|-----------------------------------|------------------------------------|--|
| <input type="checkbox"/> 0 drinks | <input type="checkbox"/> 9 drinks | <input type="checkbox"/> 18 drinks |
| <input type="checkbox"/> 1 drink | <input type="checkbox"/> 10 drinks | <input type="checkbox"/> 19 drinks |
| <input type="checkbox"/> 2 drinks | <input type="checkbox"/> 11 drinks | <input type="checkbox"/> 20 drinks |
| <input type="checkbox"/> 3 drinks | <input type="checkbox"/> 12 drinks | <input type="checkbox"/> 21 drinks |
| <input type="checkbox"/> 4 drinks | <input type="checkbox"/> 13 drinks | <input type="checkbox"/> 22 drinks |
| <input type="checkbox"/> 5 drinks | <input type="checkbox"/> 14 drinks | <input type="checkbox"/> 23 drinks |
| <input type="checkbox"/> 6 drinks | <input type="checkbox"/> 15 drinks | <input type="checkbox"/> 24 drinks |
| <input type="checkbox"/> 7 drinks | <input type="checkbox"/> 16 drinks | <input type="checkbox"/> 25 or more drinks |
| <input type="checkbox"/> 8 drinks | <input type="checkbox"/> 17 drinks | |

This section asks you to report on your drinking and to estimate others' drinking over the past year.

For all questions, one drink equals:

- 4 oz. wine
- 10 oz. wine cooler
- 12 oz beer (8 oz of Canadian, Malt Liquor, or Ice Beers, or 10 oz. of Microbrew)
- 1 cocktail with 1 oz. of 100 proof liquor or 1¼ oz. of 80 proof liquor
- A specialty drink (ex. martini, Long Island Iced Tea, Absolut Stress, Rum & Coke, Whiskey & Coke) has an average of 3 standard shots of 80 proof liquor per drink.

***This part of the questionnaire asks you to report on drinking behaviors of a typical student that is the same gender as yourself at your school.**

5. Consider a typical week during the last year. How much alcohol, on average (measured in number of drinks), does a **typical same-gendered student** at your school drink on each day of a typical week?

| Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|--------|---------|-----------|----------|--------|----------|--------|
| | | | | | | |

6. How many drinks on average do you think a **typical same-gendered student** at your school consumes on a given occasion?

- | | | |
|-----------------------------------|------------------------------------|--|
| <input type="checkbox"/> 0 drinks | <input type="checkbox"/> 9 drinks | <input type="checkbox"/> 18 drinks |
| <input type="checkbox"/> 1 drink | <input type="checkbox"/> 10 drinks | <input type="checkbox"/> 19 drinks |
| <input type="checkbox"/> 2 drinks | <input type="checkbox"/> 11 drinks | <input type="checkbox"/> 20 drinks |
| <input type="checkbox"/> 3 drinks | <input type="checkbox"/> 12 drinks | <input type="checkbox"/> 21 drinks |
| <input type="checkbox"/> 4 drinks | <input type="checkbox"/> 13 drinks | <input type="checkbox"/> 22 drinks |
| <input type="checkbox"/> 5 drinks | <input type="checkbox"/> 14 drinks | <input type="checkbox"/> 23 drinks |
| <input type="checkbox"/> 6 drinks | <input type="checkbox"/> 15 drinks | <input type="checkbox"/> 24 drinks |
| <input type="checkbox"/> 7 drinks | <input type="checkbox"/> 16 drinks | <input type="checkbox"/> 25 or more drinks |
| <input type="checkbox"/> 8 drinks | <input type="checkbox"/> 17 drinks | |

This section asks you to report on your drinking and to estimate others' drinking over the since the beginning of the semester.

For all questions, one drink equals:

- 4 oz. wine
- 10 oz. wine cooler
- 12 oz beer (8 oz of Canadian, Malt Liquor, or Ice Beers, or 10 oz. of Microbrew)
- 1 cocktail with 1 oz. of 100 proof liquor or 1¼ oz. of 80 proof liquor
- A specialty drink (ex. martini, Long Island Iced Tea, Absolut Stress, Rum & Coke, Whiskey & Coke) has an average of 3 standard shots of 80 proof liquor per drink.

***This questionnaire asks you to report on drinking behaviors at your school.**

1. Consider a typical week since the beginning of the semester. How much alcohol, on average (measured in number of drinks), does **your best friend** drink on each day of a typical week?

| Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|--------|---------|-----------|----------|--------|----------|--------|
| | | | | | | |

2. Consider a typical week since the beginning of the semester. How much alcohol, on average (measured in number of drinks), does a **typical student** at your school drink on each day of a typical week?

| Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|--------|---------|-----------|----------|--------|----------|--------|
| | | | | | | |

3. How often do you think a **typical student** at your school consumes alcohol?

- | | | |
|---|--|--|
| <input type="checkbox"/> Never | <input type="checkbox"/> Three times a month | <input type="checkbox"/> Four times a week |
| <input type="checkbox"/> Less than once per month | <input type="checkbox"/> Once a week | <input type="checkbox"/> Five times a week |
| <input type="checkbox"/> Once a month | <input type="checkbox"/> Two times a week | <input type="checkbox"/> Six times a week |
| <input type="checkbox"/> Two times a month | <input type="checkbox"/> Three times a week | <input type="checkbox"/> Every day |

4. How many drinks on average do you think a **typical student** at your school consumes on a given occasion

- | | | |
|-----------------------------------|------------------------------------|--|
| <input type="checkbox"/> 0 drinks | <input type="checkbox"/> 9 drinks | <input type="checkbox"/> 18 drinks |
| <input type="checkbox"/> 1 drink | <input type="checkbox"/> 10 drinks | <input type="checkbox"/> 19 drinks |
| <input type="checkbox"/> 2 drinks | <input type="checkbox"/> 11 drinks | <input type="checkbox"/> 20 drinks |
| <input type="checkbox"/> 3 drinks | <input type="checkbox"/> 12 drinks | <input type="checkbox"/> 21 drinks |
| <input type="checkbox"/> 4 drinks | <input type="checkbox"/> 13 drinks | <input type="checkbox"/> 22 drinks |
| <input type="checkbox"/> 5 drinks | <input type="checkbox"/> 14 drinks | <input type="checkbox"/> 23 drinks |
| <input type="checkbox"/> 6 drinks | <input type="checkbox"/> 15 drinks | <input type="checkbox"/> 24 drinks |
| <input type="checkbox"/> 7 drinks | <input type="checkbox"/> 16 drinks | <input type="checkbox"/> 25 or more drinks |
| <input type="checkbox"/> 8 drinks | <input type="checkbox"/> 17 drinks | |

This section asks you to report on your drinking and to estimate others' drinking over the since the beginning of the semester.

For all questions, one drink equals:

- 4 oz. wine
- 10 oz. wine cooler
- 12 oz beer (8 oz of Canadian, Malt Liquor, or Ice Beers, or 10 oz. of Microbrew)
- 1 cocktail with 1 oz. of 100 proof liquor or 1¼ oz. of 80 proof liquor
- A specialty drink (ex. martini, Long Island Iced Tea, Absolut Stress, Rum & Coke, Whiskey & Coke) has an average of 3 standard shots of 80 proof liquor per drink.

***This part of the questionnaire asks you to report on drinking behaviors of a typical student that is the same gender as yourself at your school.**

5. Consider a typical week since the beginning of the semester. How much alcohol, on average (measured in number of drinks), does a **typical same-gendered student** at your school drink on each day of a typical week?

| Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|--------|---------|-----------|----------|--------|----------|--------|
| | | | | | | |

6. How many drinks on average do you think a **typical same-gendered student** at your school consumes on a given occasion?

- | | | |
|-----------------------------------|------------------------------------|--|
| <input type="checkbox"/> 0 drinks | <input type="checkbox"/> 9 drinks | <input type="checkbox"/> 18 drinks |
| <input type="checkbox"/> 1 drink | <input type="checkbox"/> 10 drinks | <input type="checkbox"/> 19 drinks |
| <input type="checkbox"/> 2 drinks | <input type="checkbox"/> 11 drinks | <input type="checkbox"/> 20 drinks |
| <input type="checkbox"/> 3 drinks | <input type="checkbox"/> 12 drinks | <input type="checkbox"/> 21 drinks |
| <input type="checkbox"/> 4 drinks | <input type="checkbox"/> 13 drinks | <input type="checkbox"/> 22 drinks |
| <input type="checkbox"/> 5 drinks | <input type="checkbox"/> 14 drinks | <input type="checkbox"/> 23 drinks |
| <input type="checkbox"/> 6 drinks | <input type="checkbox"/> 15 drinks | <input type="checkbox"/> 24 drinks |
| <input type="checkbox"/> 7 drinks | <input type="checkbox"/> 16 drinks | <input type="checkbox"/> 25 or more drinks |
| <input type="checkbox"/> 8 drinks | <input type="checkbox"/> 17 drinks | |

APPENDIX D

Modified Version of The Alcohol Use and Disorders Identification Test

Pretest and Posttest

**Please circle one answer to each question
based on the *previous year*.**

| Questions | | | | | |
|--|--------|-------------------|-------------------------------|------------------|---------------------------|
| 1. How often do you have a drink containing alcohol? | Never | Monthly or less | 2-4 times a month | 2-3 times a week | 4 or more times a week |
| 2. How many drinks containing alcohol do you have on a typical day when you are drinking? | 1 or 2 | 3 or 4 | 5 or 6 | 7 to 9 | 10 or more |
| 3. How often do you have six or more drinks on one occasion? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily |
| 4. How often during the last year have you found that you were not able to stop drinking once you started? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily |
| 5. How often during the last year have you failed to do what is normally expected of you because of drinking? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily |
| 6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily |
| 7. How often during the last year have you had a feeling of guilt or remorse after drinking? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily |
| 8. How often during the last year have you been unable to remember what happened the night before because of your drinking? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily |
| 9. Have you or someone else been injured because of your drinking? | No | | Yes, but not in the last year | | Yes, during the last year |
| 10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down? | No | | Yes, but not in the last year | | Yes, during the last year |

**Please circle one answer to each question
according to *the current semester.***

| Questions | | | | | |
|---|--------|-------------------|--|------------------|--------------------------|
| 1. How often do you have a drink containing alcohol since the beginning of the semester? | Never | Monthly or less | 2-4 times a month | 2-3 times a week | 4 or more times a week |
| 2. How many drinks containing alcohol do you have on a typical day when you are drinking since the beginning of the semester? | 1 or 2 | 3 or 4 | 5 or 6 | 7 to 9 | 10 or more |
| 3. How often do you have six or more drinks on one occasion since the beginning of the semester? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily |
| 4. How often since the beginning of the semester have you found that you were not able to stop drinking once you started? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily |
| 5. How often since the beginning of the semester have you failed to do what is normally expected of you because of drinking? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily |
| 6. How often since the beginning of the semester have you needed a first drink in the morning to get yourself going after a heavy drinking session? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily |
| 7. How often since the beginning of the semester have you had a feeling of guilt or remorse after drinking? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily |
| 8. How often since the beginning of the semester have you been unable to remember what happened the night before because of your drinking? | Never | Less than monthly | Monthly | Weekly | Daily or almost daily |
| 9. Have you or someone else been injured because of your drinking since the beginning of the semester? | No | | Yes, but not since the beginning of the semester | | Yes, during the semester |
| 10. Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down? | No | | Yes, but Not since the beginning of the semester | | Yes, during the semester |

APPENDIX E

Modified Version of the Alcohol: Stages of Change (Short Form)

Pretest and Posttest

In the last month have you had 5 or more drinks in a row? (PLEASE CIRCLE ONE)

note: For females, please answer to 4 or more drinks in a row

1. Yes, and I do not intend to stop drinking 5 or more drinks in a row.
2. Yes, but I intend to stop drinking 5 or more drinks in a row during the next 6 months.
3. Yes, but I intend to stop drinking 5 or more drinks in a row in the next 30 days.
4. No, but I have had 5 or more drinks in a row in the past 6 months.
5. No, and I have not had 5 or more drinks in a row in the past 6 months.
6. No, I have never had more than 5 drinks in a row.

Since the beginning of the semester, have you had 5 or more drinks in a row?

(PLEASE CIRCLE **ONE**)

*****note: For females, please answer to 4 or more drinks in a row*****

1. Yes, and I do not intend to stop drinking 5 or more drinks in a row.
2. Yes, but I intend to stop drinking 5 or more drinks in a row during the next **6 months.**
3. Yes, but I intend to stop drinking 5 or more drinks in a row in the **next 30 days.**
4. No, but I have had 5 or more drinks in a row in the past 6 months.
5. No, and I have not had 5 or more drinks in a row in the past 6 months.
6. No, I have never had more than 5 drinks in a row.

APPENDIX F

Modified Version of the College Alcohol Problems Scale-Revised

Pretest and Posttest

Use the scale below to rate HOW OFTEN you have had any of the following problems over the past year as a result of drinking alcoholic beverages.

1. Feeling sad, blue, or depressed

- (a) Never (b) Yes, but not in the past year (c) 1-2 times
(d) 3-5 times (e) 6-9 times (f) 10 or more times

2. Nervousness, irritability

- (a) Never (b) Yes, but not in the past year (c) 1-2 times
(d) 3-5 times (e) 6-9 times (f) 10 or more times

3. Caused you to feel bad about yourself

- (a) Never (b) Yes, but not in the past year (c) 1-2 times
(d) 3-5 times (e) 6-9 times (f) 10 or more times

4. Problems with appetite or sleeping

- (a) Never (b) Yes, but not in the past year (c) 1-2 times
(d) 3-5 times (e) 6-9 times (f) 10 or more times

5. Engaged in unplanned sexual activity

- (a) Never (b) Yes, but not in the past year (c) 1-2 times
(d) 3-5 times (e) 6-9 times (f) 10 or more times

6. Drove under the influence

- (a) Never (b) Yes, but not in the past year (c) 1-2 times
(d) 3-5 times (e) 6-9 times (f) 10 or more times

7. Did not use protection when engaging in sex

- (a) Never (b) Yes, but not in the past year (c) 1-2 times
(d) 3-5 times (e) 6-9 times (f) 10 or more times

1. Illegal activities associated with drug use

- (a) Never (b) Yes, but not in the past year (c) 1-2 times
(d) 3-5 times (e) 6-9 times (f) 10 or more times

Use the scale below to rate HOW OFTEN you have had any of the following problems since the beginning of the semester as a result of drinking alcoholic beverages.

1. Feeling sad, blue, or depressed
 - (a) Never
 - (b) Yes, but not in the current semester
 - (c) 1-2 times
 - (d) 3-5 times
 - (e) 6-9 times
 - (f) 10 or more times
2. Nervousness, irritability
 - (a) Never
 - (b) Yes, but not in the current semester
 - (c) 1-2 times
 - (d) 3-5 times
 - (e) 6-9 times
 - (f) 10 or more times
3. Caused you to feel bad about yourself
 - (a) Never
 - (b) Yes, but not in the current semester
 - (c) 1-2 times
 - (d) 3-5 times
 - (e) 6-9 times
 - (f) 10 or more times
4. Problems with appetite or sleeping
 - (a) Never
 - (b) Yes, but not in the current semester
 - (c) 1-2 times
 - (d) 3-5 times
 - (e) 6-9 times
 - (f) 10 or more times
5. Engaged in unplanned sexual activity
 - (a) Never
 - (b) Yes, but not in the current semester
 - (c) 1-2 times
 - (d) 3-5 times
 - (e) 6-9 times
 - (f) 10 or more times
6. Drove under the influence
 - (a) Never
 - (b) Yes, but not in the current semester
 - (c) 1-2 times
 - (d) 3-5 times
 - (e) 6-9 times
 - (f) 10 or more times
7. Did not use protection when engaging in sex
 - (a) Never
 - (b) Yes, but not in the current semester
 - (c) 1-2 times
 - (d) 3-5 times
 - (e) 6-9 times
 - (f) 10 or more times
8. Illegal activities associated with drug use
 - (a) Never
 - (b) Yes, but not in the current semester
 - (c) 1-2 times
 - (d) 3-5 times
 - (e) 6-9 times
 - (f) 10 or more times

APPENDIX G

Personalized Normative Feedback Worksheets

Nonspecific Normative Feedback

Gender-Specific Normative Feedback (Male)

Gender-Specific Normative Feedback (Female)



For the following questions, please use the following as a guide for a **standard drink**:

4 oz of wine

10 oz wine cooler

12 oz of beer (10 oz microbrew)

1 cocktail with 1 oz 100-proof liquor or 1.25 oz of 80-proof liquor

A specialty drink (ex. martini, Long Island Iced Tea, Absolut Stress, Rum & Coke, Whiskey & Coke, etc.) has an average of 3 standard shots of 80-proof liquor per drink.

I usually have ____ standard drinks when I do drink.

I think that **UWF students** have ____ standard drinks when they do drink.

The average number of standard drinks that **UWF students** have when they drink is ____.

According to UWF statistics, I am in the ____ percentile for drinking. (I drink more than ____% of **UWF students**).



For the following questions, please use the following as a guide for a **standard drink**:

4 oz. of wine

10 oz wine cooler

12 oz of beer (10 oz microbrew)

1 cocktail with 1 oz 100-proof liquor or 1.25 oz of 80-proof liquor

A specialty drink (ex. martini, Long Island Iced Tea, Absolut Stress, Rum & Coke, Whiskey & Coke) has an average of 3 standard shots of 80-proof liquor per drink.

I usually have ____ standard drinks when I do drink.

I think that **male UWF students** have ____ standard drinks when they do drink.

The average number of standard drinks that **male UWF students** have when they drink is ____.

According to UWF statistics, I am in the ____ percentile for drinking. (I drink more than ____% of **male UWF students**).



For the following questions, please use the following as a guide for a **standard drink**:

4 oz. of wine

10 oz wine cooler

12 oz of beer (10 oz microbrew)

1 cocktail with 1 oz 100-proof liquor or 1.25 oz of 80-proof liquor

A specialty drink (ex. martini, Long Island Iced Tea, Absolut Stress, Rum & Coke, Whiskey & Coke) has an average of 3 standard shots of 80-proof liquor per drink.

I usually have ____ standard drinks when I do drink.

I think that **female UWF students** have ____ standard drinks when they do drink.

The average number of standard drinks that **female UWF students** have when they drink is ____.

According to UWF statistics, I am in the ____ percentile for drinking. (I drink more than ____% of **female UWF students**).

APPENDIX H

Normative Information Worksheets

Nonspecific Gender Norms

Gender-Specific Norms

UWF NORMS

The average UWF student drinks **3.04** standard drinks when he or she does drink.

**based on students under 32 years of age.

To determine your percentile rank, look at the number corresponding with the number of drinks you report to drink when you do engage in drinking alcohol.

| NUMBER OF DRINKS | PERCENTILE RANK |
|------------------|-----------------|
| 0 | 26 |
| 1 | 34 |
| 2 | 46 |
| 3 | 58 |
| 4 | 68 |
| 5 | 77 |
| 6 | 85 |
| 7 | 88 |
| 8 | 92 |
| 9 | 94 |
| 12-15 | 98 |
| 16-21 | 99 |
| 22 or over | 100 |

Other Alcohol Related Information:

According to the National College Health Assessment conducted on the UWF campus in Spring 2005...

- When it comes to perceptions of others' use of alcohol, 96% of students think that the typical UWF student has used alcohol in the past 30 days. 44% believe that the typical student used alcohol daily in the past 30 days.
- 82% of UWF students think that other UWF students drink between 3-8 drinks when they do drink, with an average of about 5 drinks.
- 57% of students **did not drink** in the last **2 weeks**.
- Over a two week period, 74% of UWF students reported that they either did not drink or had fewer than 5 drinks at one sitting. For those students who did have 5 or more drinks at one sitting, only 12% did it one time, and 6% did it two times.
- Within the last 30 days, **about 18% had used alcohol in the past, but not in the last 30 days and 22% had never used alcohol**. 22% used alcohol 1 or 2 days in the past month, and 14% used alcohol 3 or 4 days during the past month. Only 3.5% of UWF students used alcohol 20-30 days out of the past 30 days.

*All information is based on the ACHA-NCHA Assessment held on the UWF campus in Spring 2005. All data is based on 855 web surveys. Additional information is available upon request.

UWF NORMS

The average male UWF student drinks **4.04** standard drinks when he does drink.

The average female UWF student drinks **3.02** standard drinks when she does drink.

**based on students under 32 years of age.

To determine your percentile rank, look at the number corresponding with the number of drinks you report to drink when you do engage in drinking alcohol.

| Male Rank | | Female Rank | |
|------------------|-----------------|------------------|-----------------|
| NUMBER OF DRINKS | PERCENTILE RANK | NUMBER OF DRINKS | PERCENTILE RANK |
| 0 | 27 | 0 | 27 |
| 1 | 34 | 1 | 35 |
| 2 | 44 | 2 | 50 |
| 3 | 56 | 3 | 63 |
| 4 | 63 | 4 | 74 |
| 5 | 71 | 5 | 83 |
| 6 | 80 | 6 | 90 |
| 7 | 83 | 7 | 92 |
| 8 | 88 | 8 | 95 |
| 9-11 | 91-94 | 9 | 96-99 |
| 12-15 | 96-97 | 12-15 | 99 |
| 16-21 | 98-99 | 16-21 | 99-100 |
| 22 or over | 100 | 22 or over | 100 |

Other Alcohol Related Information:

According to the National College Health Assessment conducted on the UWF campus in Spring 2005:

Males

When it comes to perceptions of others' alcohol use, 96% of male UWF students think that the typical UWF student has used alcohol in the past 30 days. 43% of male UWF students think that the typical student used alcohol daily in the past 30 days.

77% of male UWF students think that other UWF students drink between 3-8 drinks when they do drink, with an average of about 5 drinks.

53% of male UWF students **did not drink** in the last 2 weeks.

Over a two week period, 65% of male UWF students reported that they either did not drink or had fewer than 5 drinks at one sitting. For those who did have 5 or more drinks at one sitting, 16% of male UWF students did it one time, and 7% of males did it two times.

Within the last 30 days, **18% of male UWF students did not use alcohol and 22% have never used alcohol.** 15% of male UWF students used alcohol 1 or 2 days in the past month, and 14% used alcohol 3 or 4 days in the past month. Only 6% of male UWF students used alcohol 20-30 days out of the past 30 days.

When it comes to perceptions of others' alcohol use, 96% of female students think that the typical UWF student has used alcohol in the past 30 days. 45% of female UWF students think that the

Females

typical student used alcohol daily in the past 30 days.

80% of female UWF students think that other UWF students drink between 3-8 drinks when they do drink, with an average of about 5 drinks.

58% of female UWF students **did not drink** in the last 2 weeks.

Over a two week period, 78% of female UWF students reported that they either did not drink or had fewer than 5 drinks at one sitting. For those who did have 5 or more drinks at one sitting, 11% of female UWF students did it one time, and 5% of females did it two times.

Within the last 30 days, **18% of female UWF students did not use alcohol and 22% have never used alcohol.** 24% of female UWF students used alcohol 1 or 2 days in the past month, and 15% used alcohol 3 or 4 days in the past month. Only 3% of female UWF students used alcohol 20-30 days out of the past 30 days.

* All information is based on the ACHA-NCHA Assessment held on the UWF campus in Spring 2005. All data is based on 855 web surveys. Additional information is available upon request.

APPENDIX I

E-chug/Alcohol Awareness Assessment

Have you participated in e-chug (an online alcohol Q&A activity)?

Check one: yes no not sure

Did you participate in activities for Alcohol Awareness Week on UWF's campus?

Check one: yes no not sure

APPENDIX J

Institutional Review Board Approval Letter

August 01, 2005

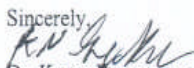
Ms. Renee Lojewski
4301 Creighton Rd.
Apt 45
Pensacola, FL 32504


Dear Ms. Lojewski:

The Institutional Review Board (IRB) for Human Research Participant Protection has completed its review of your proposal titled "A Gender-Specific Personalized Normative Feedback Approach to Decreasing Alcohol Use among College Students" as it relates to the protection of human participants used in research, and has granted approval for you to proceed with your study. As a research investigator, please be aware of the following:

- You acknowledge and accept your responsibility for protecting the rights and welfare of human research participants and for complying with all parts of 45 CFR Part 46, the UWF IRB Policy and Procedures, and the decisions of the IRB. You may view these documents on the Office of Research web page at <http://www.research.uwf.edu>. You acknowledge completion of the IRB ethical training requirements for researchers as attested in the IRB application.
- You will ensure that legally effective informed consent is obtained and documented. If written consent is required, the consent form must be signed by the participant or the participant's legally authorized representative. A copy is to be given to the person signing the form and a copy kept for your file.
- You will promptly report any proposed changes in previously approved human participant research activities to the Office of Research and Graduate Studies. The proposed changes will not be initiated without IRB review and approval, except where necessary to eliminate apparent immediate hazards to the participants.
- **You are responsible for reporting progress of approved research to the Office of Research and Graduate Studies at the end of the project period. Approval for this project is valid for one year. If the data phase of your project continues beyond one year, you must request a renewal by the IRB before approval of the first year lapses. Project Directors of research requiring full committee review should notify the IRB when data collection is completed.**
- You will immediately report to the IRB any injuries or other unanticipated problems involving risks to human participants.

Good luck in your research endeavors. If you have any questions or need assistance, please contact the Office of Research and Graduate Studies at 857-6378.

Sincerely,

Dr. Karen Rasmussen, Chair
IRB for Human Research
Participant Protection


Ms. Sandra VanderHeyden
Director of Sponsored Research

cc: Dr. Robert Rotunda