A TEST OF MODERATING FACTORS OF BRIEF INTERVENTIONS FOR HAZARDOUS ALCOHOL USE AMONG COLLEGE STUDENTS

By

JOSEPH MIGNOGNA

Bachelor of Science in Psychology
Texas A&M University
College Station, Texas
2004

Master of Science in Psychology
Oklahoma State University
Stillwater, Oklahoma
2007

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Dissertation Approved:

Dr. Thad R. Leffingwell

Dissertation Adviser

Dr. John M. Chaney

Dr. James W. Grice

Dr. Tom J. Brown

Outside Committee Member

Dr. A. Gordon Emslie

Dean of the Graduate College

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CHAPTER I

INTRODUCTION

Frequent, heavy alcohol use on college campuses is a major concern. Hingson, Heeren, Zakocs, Kopstein, and Wechsler (2002) projected that more than 1,400 students' deaths in 1998 were attributed to alcohol-related injuries. Moreover, hazardous alcohol use is attributed to thousands of unintentional injuries, incidents of unprotected sex, and physical and sexual assaults each year.

A 1999 survey demonstrated that nearly half of college students engage in hazardous drinking practices (i.e., binge drinking), a similar rate as demonstrated in 1993 (Wechsler, Lee, Kuo, & Lee, 2000b). Interestingly, while an increased number of students reported abstaining from alcohol, there was also an increase in students engaging in frequent hazardous drinking practices. This polarizing trend in college drinking is concerning, as Wechsler and colleagues (2000b) observed a positive correlation between the frequency of binge drinking episodes and the number of alcohol-related problems experienced. Moreover, students who identify themselves as non-bingeing drinkers yet residing on high-bingeing campuses are more likely than those who reside on low-bingeing campuses to encounter negative impacts such as assault or property damage (Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994).

Over the course of their undergraduate tenure, most hazardous drinking students naturally tend to moderate their drinking practices (Fillmore, 1974; Jackson, Sher, & Gotham, 2001; Newcombe & Bentler, 1987). In an effort to expedite this naturally occurring moderation of drinking practices, brief motivational interventions (BMIs) have been developed and proved to be efficacious at reducing alcohol consumption and related consequences (Carey, Scott-Sheldon, Carey, & DeMartini, 2007a; Larimer & Cronce, 2007; Walter, Miller, & Chiauzzi, 2005). BMIs frequently employ a number of intervention components, including (but not limited to) information about alcohol, skills about how to reduce use, and assessment and personalized feedback about current drinking practices. Additionally, BMIs frequently are adaptations of the therapeutic style and techniques of motivational interviewing (MI; Miller & Rollnick, 2001), applied to a targeted sample of problematic college drinkers in a brief, problem-focused interaction.

One way to provide BMIs to a large number of hazardous college drinkers in a cost-effective manner is through technological means. Given the potentially sensitive nature of reporting on alcohol consumption and related behaviors for underage drinking, computer-delivered interventions provide not only an accurate and reliable route (Ghosh & Griest, 1988), but potentially preferred assessment to human counterpart (Walter et al., 2005). For example, Kobak and colleagues (1997) found that screening for alcohol abuse by computer rather than person was twice more effective at detecting alcohol abuse. Additionally, Kypri, Saunders, and Gallagher (2003) found in their survey of an undergraduate student body that students significantly favored electronic assessment and feedback more than services provided by a health care professional.

The Drinking Assessment and Feedback Tool for College Students (DrAFT-CS, Leffingwell, 2004) is one such empirically-supported electronic BMI (Leffingwell, Hopper, Mignogna, Jackson, Leedy, & Lack, 2007). In this interactive multimedia BMI, a video interviewer guides the user through an assessment of drinking practices and related consequences, and provides interpretive information during the feedback. The DrAFT-CS was intended to model strategies taken from the empirically supported Brief Alcohol Screening and Intervention for College Students (BASICS; Dimeff, Baer, Kivlahan, & Marlatt, 1999; Marlatt, et al., 1998; Murphy, et al., 2001; and Roberts, Neal, Kivlahan, Baer, & Marlatt, 2000).

Overall, both computer-delivered and person-delivered BMIs offer effective interventions for what Wechsler, Dowdall, Maenner, Glendhill, and Lee (1998) describe as, "by far the single most serious public health problem confronting American colleges" (p. 57). However, the literature has yet to examine characteristics of college drinkers that benefit from one format of intervention over the other. Furthermore, research still has yet to conclusively determine what type of user benefits from BMIs regardless of format of administration.

Present Study

The aim of the current study is to examine moderators of BMI efficacy. Some literature about moderators of BMI efficacy has been generated. Mixed support exists for the moderating role of gender (Borsari & Carey, 2000, 2005; Carey, Henson, Carey, & Maisto, 2007b; Collins, Carey, & Silwinski, 2002; Marlatt et al., 1998; Murphy et al., 2004; Neighbors, Larimer, & Lewis, 2004), readiness to change, and drinking status (Carey et al.,

2007b; Fromme & Corbin, 2004; Murphy et al., 2001; Maisto, Conigliaro, McNeil, Kraemer, Conigliaro, & Kelley, 2001). Unexpected results emerged for the moderating role of social comparison, self-regulation skills, time perspective (Carey et al., 2007b), and self-determination (Neighbors, Lewis, Bergstrom, & Larimer, 2006). While Carey and colleagues (2007b) conclude that, "BMIs are relatively robust despite many individual differences inherent in students who receive these interventions" (p. 667), replication is needed to verify this conclusion.

The current study occurs alongside another study comparing the efficacy of DrAFT-CS to a personalized feedback provided in-person by a live interviewer using motivational interviewing strategies (Live BMI). Considering the mixed support regarding BMI moderators, a primary aim of the current study is to test for moderators of BMI efficacy. As such, the proposed moderators of BMI efficacy to be analyzed include gender, readiness to change, and drinking status. Additionally, a few characteristics hypothesized to moderate the efficacy of BMIs, specific to the mode of administration (i.e., computer or person-administered), were tested; namely, attitudes toward and familiarity with the computer, fear of negative evaluation, and social interaction anxiety.

CHAPTER II

REVIEW OF THE LITERATURE

In the United States, persons between the ages of 18 and 29-years-old (27 percent of the total population) consume nearly half of the nation's alcohol (Rogers & Greenfield, 1999), and compared to their non-college attending counterparts, college students consume more alcohol per drinking occasion (SAMHSA, 2006). Literature about the large sub-population of college students within this age demographic stresses the need for intervention. Of the 18-24 year-olds attending U.S. colleges in 1998 (31 percent or approximately 8,000,000 people), it was projected that more than 1,400 deaths were attributed to alcohol-related injuries (Hingson et al., 2002). Furthermore, more than 500,000 students (10.6 percent) were injured, nearly 400,000 (8.4 percent) engaged in unprotected sex, over 600,000 (13.3 percent) were assaulted by intoxicated students, and more than 180,000 students (3.8 percent) were sexually assaulted.

Hazardous college alcohol use is not limited to college campuses in the United States. Karam, Kypri, and Salamoun (2007) reviewed the available literature on alcohol use and related consequences on college campuses outside of the United States. They concluded that the prevalence of high-risk drinking college students in the United States was similar to that of New Zealand, Australia, South America, and Europe. In contrast, Asia and Africa demonstrated lower rates of hazardous drinking college students.

Additionally, some countries evince increasing rates of hazardous drinking practices.

Since 1994, problematic drinking practices have often been referred to by the popular media and research literature as “binge drinking” (Wechsler & Austin, 1998). “Hazardous drinking” has recently been suggested as a more appropriate phrase, as some university personnel and healthcare professionals feel that “binge drinking” is more misleading and less inclusive (Vicary & Karshin, 2002). “High-risk drinking” is yet another phrase used to describe problematic drinking practices. The current review refers to these terms synonymously, as is done in the literature. Operationally defined, binge drinking refers to a drinking occasion during which a man drinks five or more drinks, or for woman four or more drinks, over the course of the past two weeks (Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994).

Hingson and colleagues (2002) projected that 42 percent, or about 3.3 million college students, reported drinking five or more alcohol drinks during the previous month. Similarly, surveying 119 four-year colleges in the United States in 1999, Wechsler and colleagues (2000b) found that 44 percent of the 14,000 students surveyed meet criteria for binge drinking. This ratio of two out of every five students meeting criteria for binge drinking was equivalent to the rate demonstrated by the authors’ 1993 and 1997 surveys, with one important difference. Compared to 1993 and 1997, college student drinking polarized in 1999. Specifically, while students abstaining from drinking increased from 15.4 to 19.2 percent (3.8 percent), the number of students who reported frequent binge drinking episodes (i.e., at least three binge drinking episodes in the previous two weeks) increased from 23.4 percent to 28.1 percent (4.7 percent). While

more students reported abstaining in 1999, more students also reported engaging in frequent binge drinking episodes.

The likelihood of negative alcohol related consequences increases for students who binge more frequently. Comparing the rate of negative consequences encountered by nonbinge, occasional binge, and frequent binge drinking students illustrates this point. For example, Wechsler and colleagues (2000b) observed odds ratios (adjusted for age, marital status, race/ethnicity, sex, and parental education) of approximately 1, 5, and 17 for missing a class, respective to these categories of binge drinking frequency. In other words, frequent binge drinkers were 17 times more likely than nonbinge drinking students to miss a class. They also observed approximate odds ratios of 1, 3, and 8 for driving after drinking; 1, 3, and 6 for arguing with friends; 1, 3, and 8 for getting in trouble with the police; 1, 3, and 8 for being injured; and 1, 5, and 21 for experiencing at least five drinking-related problems. Frequent binge drinkers were eight times more likely to drive drunk, get in trouble with the police, and experience injury; and six times more likely to argue with friends.

Further discussion about the pattern of hazardous drinking practices on college campuses is necessary. In contrast with assumptions made by previous literature employing less sensitive survey methods, Del Boca, Darkes, Greenbaum, and Goldman (2004) observed a dynamic temporal nature of hazardous college drinking. Using a longitudinal design and latent growth curve (LGC) analyses, Del Boca and colleagues observed the alcohol consumption of 237 college student drinkers during their first academic school year. While students tended to drink heavily when they decided to drink (a confirmation of previous literature), a great amount of variability existed for when

students decided that they wanted to drink. In fact, “considerable variability in drinking behavior was found, not only as a function of day of the week, but also from week to week” (p.162). Also of note, 72 percent of the total weekly consumption occurred on Thursday, Friday, and Saturday for 28 of the 32 weeks assessed. The four unaccounted for weeks consisted of school and holiday breaks (times when drinking was heaviest). Bingeing rates for each week ranged from 12 to 28 percent, with 55 percent of the sample reporting at least one bingeing episode over the course of the assessment. Surprisingly, a mean abstinence rate per week of 66 percent was reported. Further examination demonstrates an inverse relationship between academic demands placed on students and their engagement in high-risk drinking practices. Consequently, Del Boca and colleagues (2004) concluded that college drinking is driven by academic contingencies. The short-term fluctuations between abstinence and binge drinking suggests that while many students are indeed engaging in dangerous drinking practices, they are attempting to do so while also remaining academically functional. Many students want to drink, but also want to succeed in their academic pursuits.

In addition to the dynamic temporal nature of alcohol consumption, research also evinces that college student drinking tends to decrease over time. For example, Baer, Kivlahan, Blume, McKnight, and Marlatt (2001) observed that hazardous drinking college students will naturally (i.e., without intervention) over time tend to reduce the amount of alcohol they consume per drinking occasion, despite a lack of concurrent reduction in drinking frequency. A natural trend toward more moderate drinking practices occurs for these students.

Moderate Drinking Practices

Through a process referred to as "maturing out," many hazardous college drinkers come to moderate their drinking (Newcombe & Bentler, 1987). "Maturing out" occurs at even a greater rate following completion of college for most. In a 20-year longitudinal study, Fillmore (1974) observed that as hazardous drinking college students increased in age, the rate at which they engaged in moderate drinking practices also increased. Jackson and colleagues' (2001) seven-year longitudinal study replicated this finding.

Overall, the "maturing out" effect is hopeful. Even with no intervention, many hazardous college drinkers "are not progressing in a downward spiral toward alcoholism" (Fromme, Marlatt, Baer, & Kivlahan, 1994, p.143). Moderate drinking practices substantially reduce a number of personal, social, academic, and legal risks (Wechsler et al., 2000b). Furthermore, it is of added benefit that alcohol consumed at moderate levels is associated with greater health benefits than abstinence or heavy drinking practices. For an excellent review of these benefits see de Lorimier (2000).

Treatment that seeks to moderate the drinking practices of individuals engaging in clinical levels of alcohol use (i.e., alcohol dependence, DSM-IV TR; American Psychological Association, 2000) is a clinically appropriate alternative to abstinence-only treatment goals. Previous literature demonstrates that a clinical sample of problematic drinkers not only prefers, but can successfully achieve, treatment goals of moderation (Sanchez-Craig, Annis, Bronet, & MacDonald, 1984). Furthermore, most non-treatment seeking problematic drinkers naturally recover to non-clinical levels by moderating their drinking practices (Sobell, Ellingstad, & Sobell, 2000).

In sum, nearly half of college students engage in drinking practices associated with a host of negative consequences. Great variability exists in the rate at which college students engage in these dangerous practices. While hazardous drinking students frequently abstain, when they choose to drink, they do so by consuming heavily. Moderating hazardous drinking practices offers one avenue of intervening with these problems. Moderate drinking practices often occur without intervention for many hazardous drinking college students. Moreover, for those drinking at clinical levels, goals of moderation are not only feasible but preferred by many treatment and non-treatment seeking individuals. Today, many effective interventions aimed at moderating hazardous college drinking exist.

Intervening in Hazardous College Drinking

Primary prevention efforts constitute the bulk of hazardous college drinking interventions (Wechsler, Kelley, Weitzman, Giovanni, & Seibring, 2000a; Walters, Bennett, & Noto, 2000). These interventions generally seek to inform all students about the risk of alcohol use. Examples of such interventions include alcohol education courses or media campaigns. Overall, little support exists for the efficacy of primary prevention efforts (Moskowitz, 1989; Walters et al., 2000).

In contrast, great support exists for a number of targeted (or secondary) interventions for hazardous college drinking. Such interventions aim to intervene with college students identified as engaging in dangerous drinking practices. Larimer and Cronce (2002; 2007) provide excellent reviews of targeted interventions. As a useful heuristic, these authors categorize interventions into three general clusters:

educational/awareness, cognitive-behavioral skills-based, or motivational/feedback-based approaches.

Educational/awareness programs have one of three aims: (1) inform students about the dangers of alcohol misuse (information/knowledge interventions); (2) integrate responsible drinking practices with student's values and/or goals (values clarification programs); or (3) provide students with normative information about the college drinking practices and problems and to modify their attitudes of its acceptability (normative re-education programs; Larimer & Cronce, 2002). In a recent review of these interventions, Larimer and Cronce (2007) concluded that little to no support exists for information/knowledge or values clarification programs. Only two of the 17 information/knowledge studies effectively reduced alcohol-related behavioral outcomes. Similarly, only two of the eight values clarification studies reviewed effectively reduced alcohol-related behavioral outcomes (Larimer & Cronce, 2002; 2007). In their review, Walters and Bennett (2000) conclude "that teaching in a general way about the dangers of drinking is not sufficient to lead to significant behavior change" (p. 73).

However, support does exist for the use of normative re-education programs. In fact, seven of the nine studies employing normative re-education programs effectively reduced alcohol-related behavioral outcomes (Larimer & Cronce, 2002; 2007). Interventions that only provided personalized normative feedback or encourage the comparison of the participant's drinking practices to normative information were more effective than normative information presented in generic form (Larimer & Cronce, 2007). Also these authors conclude that women strongly identifying with their female identity may benefit most from feedback with gender-specific norms.

Targeted interventions classified as cognitive-behavioral skills-based programs often provide components of educational/awareness programs, while also providing skills for changing drinking practices and related-beliefs (Larimer & Cronce, 2002). The majority of these interventions are multimodal, as they provide not only skills for drinking responsibly, but also useful life skills. In their review, Larimer and Cronce (2007) concluded that support exists for the use these multimodal interventions over educational and assessment-only interventions at reducing alcohol-related behavioral outcomes. An example of a multimodal intervention is the empirically supported Lifestyle Management Class. In this class, participants learn about the physiological effects of alcohol and risk reduction strategies, and also about stress and time management (Fromme & Orrick, 2004).

In addition to providing skills for changing drinking practices and related-beliefs, challenging participants' expectations about drinking (i.e., social and/or sexual enhancement) is another focus of some cognitive-behavioral skills-based interventions. Larimer and Cronce (2002; 2007) concluded that while four of ten studies support the efficacy of expectancy challenge interventions (primarily for men alone) containing an experiential component (e.g., engaging in an exercise where participants in a social setting attempt to identify which participants consumed an alcohol or placebo drink; Darkes & Goldman, 1993) at reducing alcohol related behavioral outcomes, methodological shortcomings of the current supportive studies limit strong recommendation of their use for men only.

Self-assessment (e.g., repeated comprehensive assessment; Miller, 1999) and self-monitoring (e.g., keeping a diary of drinking; Cronin, 1996) are other forms of cognitive-

behavioral skills-based interventions. Previous research demonstrates that use of these interventions leads to reductions in alcohol consumption (Cronin, 1996; Garvin, Akcirb, & Faulkner, 1990; Miller, 1999; Carey, Carey, Maisto, & Henson, 2006). This finding provides rationale for why the control condition in college drinking research often contains a comprehensive assessment of drinking practices, consequences, and related behaviors.

In contrast to educational/awareness and cognitive-behavioral skills-based programs, motivational/feedback-based approaches strive to enhance hazardous drinkers' motivation to change. These types of approaches typically incorporate components of alcohol education, skills training, and personalized feedback (Larimer & Cronce, 2002), while employing the style and strategies of motivational interviewing (MI; Miller & Rollnick, 2002). MI is "a client-centered, directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence" (p. 25). Four fundamental principles guide the application of MI: expressing empathy, developing discrepancy, rolling with resistance, and supporting self-efficacy. Essential to its implementation is the spirit of MI. Specifically, MI uses a collaborative nature (i.e., a partnership between the client and counselor), aimed at eliciting the intrinsic motivation for change by discussing the client's perspective, values, and goals, while respecting the autonomy of the client.

Most of the empirical support for MI exists in briefer applications than originally designed (Burke, Arkowitz, & Menchola, 2003). Briefer applications of MI became necessary for its integration into a variety of health care interactions. In the literature, motivational/feedback-based approaches are referred to as adaptations of motivational interviewing (AMIs; Burke, Arkowitz, & Menchola, 2003), or as brief motivational

interventions (BMIs; Miller & Rollnick, 1991). For readability, and to be consistent with much of the literature on interventions for college drinking, the following discussion describes this application of MI as BMIs.

Larimer and Cronce's (2007) review concluded that BMIs are efficacious interventions for hazardous college drinking. Additionally, they suggested "that [BMIs] may be most useful when personalized feedback is included as a component; in particular, when personalized normative feedback, BAC [blood alcohol content] skills training, and protective behavioral strategies are incorporated" (p. 2459). Murphy and colleagues (2004) sought to tease apart the effects of MI and that of personalized feedback. At a six-month follow-up assessment, 54 participants assigned to receive either personalized paper-copy feedback with MI or personalized paper-copy feedback alone reported equivalent reductions in consumption. While personalized feedback often accompanies other BMI components, some research supports its use as a stand-alone intervention.

Conclusions of Carey and colleagues' (2007a) meta-analytic review generally agreed with those of Larimer and Cronce (2007). Carey and colleagues (2007a) coded and statistically analyzed 62 published studies of interventions for college drinking between 1985 and 2007. These authors only analyzed the between-groups (not within-groups) effects due to the fluctuations in college drinking patterns discussed earlier, in an attempt to control for historical and maturational confounds. The most successful interventions employed MI techniques (44 percent of the studies), included a decisional balance task (i.e., a common MI technique that has participants list the pros and cons for both changing and not changing their drinking patterns), provided normative feedback,

and feedback about participant's expectations and/or intentions for drinking. In contrast to Carey and colleagues (2007a), Larimer and Cronce (2007) observed mixed support for the use of a decisional balance task and recommended "the need to proceed with caution" regarding its use (p. 2459).

Carey and colleagues (2007a) concluded from their meta-analyses that the characteristics of the most effective interventions model after the protocol for the Brief Alcohol Screening and Intervention for College Students (BASICS; Dimeff, et al., 1999). BASICS is a BMI administered in two brief sessions. During the first session, an assessment of the participant's current drinking behaviors, attitudes, and motivational readiness (i.e., stages of change, Prochaska & DiClemente, 1983) occurs. With this information, administrators provide personalized feedback in a manner consistent with MI. Strong empirical support exists for BASICS usefulness in decreasing alcohol consumption and associated problems, as it was originally designed (i.e., feedback provided by a live counselor; Baer et al., 2001; Marlatt et al., 1998; Murphy et al., 2001; Roberts et al., 2000) and for electronic adaptations modeled after the BASICS protocol (Dimeff & McNeely, 2000; Leffingwell, et al., 2007).

A wealth of literature for intervening in hazardous college drinking exists. Overall, brief motivational interventions or BMIs, especially when personalized normative feedback is included, have proven efficacious at reducing alcohol use and related consequences. Multiple formats of delivering BMIs, that are effective in reducing alcohol-related behavioral outcomes, exist.

Formats of BMI Delivery

BMIs have been delivered in individual, group, computerized, and mailed

feedback formats. While Larimer and Cronce (2007) concluded that, "research continues to support mailed or computerized motivational feedback in the absence of any in-person intervention;" conclusions drawn from Carey and colleagues' (2007a) meta-analyses held that BMIs were less successful when delivered in group, computerized, or mailed format compared to interventions delivered in an individual and face-to-face format. On the other hand, in a review of 13 feedback intervention studies (most of which contained a motivational component), Walters and Neighbors (2005) concluded that "personalized feedback can be effective whether delivered via an individual interview, mail, or computer" (p. 1174).

To account for the mixed conclusions regarding mode of BMI delivery, Walters, and colleagues (2005) argued that certain types of students may benefit more from electronic than in-person interventions. They noted that, "Students can receive information over the computer without feeling that they have to strongly defend an opinion in front of their peers, and interactions between users can be monitored for appropriateness and relevance" (p. 140). Walter and colleagues (2005) also argued other benefits of computerized interventions, such as their ability to provide an easily disseminated, low-cost intervention that incorporates empirically supported components of intervention (e.g., personalized feedback). Additionally, they argued that when students engage in a personalized electronic intervention, they can determine for themselves the need for further intervention. Consequently, computerized interventions incorporate an approach that respects a college student's autonomy, which in turn may reduce the occurrence of psychological reactance (Brehm & Brehm, 1988). Reactance occurs when a person seeks to assert his/her ability to engage in a freedom (e.g.,

drinking) when s/he perceives a threat to that freedom. In reflecting on different formats of assessment and feedback (i.e., in-person, mailed, web-based, and computerized; in Walters, Hester, Chiauzzi, & Miller, 2005), Miller highlights distinct characteristics of electronic BMIs over person-delivered feedback, such as their global availability, ability to update normative information instantaneously, increase user honesty during assessment (also see Ghosh and Griest, 1988, and Kobak et al., 1997), and provide a cost-effective intervention. Electronic interventions are especially appropriate for a college population.

College Students and Technology

College students are the most electronically engaged demographic group (Pew Internet and American Life Project, 2002). In 2001, of the 90 percent of persons 15-24 years of age, 75 percent reported seeking out online health information, with 23 percent seeking information about drugs and alcohol (Kaiser Family Foundation, 2001). Morever, 39 percent of these "online health seekers" report making health behavior changes because of the information they obtained (p. 2). The frequent use of computers in this demographic group and tendency to seek health information online provides another advantage of using computers to intervene in hazardous college drinking.

Kypri, Saunders, and Gallagher (2003) compiled the opinions of a random sample of 1,519 college students (University of Otago, New Zealand) who completed an online survey about the acceptability of a variety of alcohol-related services on campus. Services surveyed included those provided by: health care professionals (i.e., nurse, counselor, psychologist, and physician), distribution of alcohol educational materials,

seminars about drinking, and a web-based anonymous electronic screening feedback intervention. Of note, 950 participants (or 62.5% of the responding sample) were identified by the Alcohol Use Disorders Identification Test as hazardous drinkers. Overall, most students felt that all services should be available; however, students significantly favored the electronic assessment and feedback more than services provided by a health care professional.

It appears that electronic assessment and feedback of college student drinking may be a preferred method of intervening. In her reflections on mechanisms of assessment and feedback, Miller writes, “In general, college students seem to be an ideal population for web-based assessments and feedback given their access, technical savvy, comfort in using the Internet for health-related purposes, and the general real-time culture that they experience on an everyday-basis” (p. 276, Walters et al., 2005). Overall, computerized interventions offer numerous advantages over other modes of intervention. Moreover, electronic resources are widely accepted and used by the college population.

Walters, Miller, and Chiauzzi (2005b) identified and reviewed five commercially available electronically delivered interventions for hazardous college drinking. These interventions consisted of four internet (BACCHUS and GAMMA; Electronic Check-up to Go (e-CHUG); myStudentBody; Under the Influence) and one CD-ROM (Alcohol 101 Plus) delivered interventions. From their review of these interventions, they arrived at four conclusions. Namely, these interventions largely provided educational content, displayed no apparent relationship between length of intervention and effectiveness, included personalized feedback, and primarily contained the content found in self-help, mailed, and face-to-face approaches. With regard to their final conclusion, the authors

note that electronic interventions may provide a distinct advantage in their ability to provide an extensive amount of information when demanded by the user.

The *Drinking Assessment and Feedback Tool for College Students* (DrAFT-CS; Leffingwell, 2004) is one electronic intervention for college drinkers available in CD-ROM format (web-based format is possible, however not currently available). The DrAFT-CS is an empirically supported computerized BMI modeled after the BASICS intervention (Dimeff, et al., 1999). The DrAFT-CS has been evaluated in two randomly controlled trials (Leffingwell, 2006; Leffingwell, et al., 2007). In its initial trial (Leffingwell, 2006), the program appeared to be ineffective at reducing hazardous drinking colleges students, relative to an assessment-only condition. Prior to its second trial, the DrAFT-CS underwent modifications to aspects of the program hypothesized to amplify psychological reactance (Leffingwell, 2006; Miller, 2006). During the second trial, 71 participants completed the DrAFT-CS or a comprehensive assessment (Leffingwell, et al., 2007). Follow-ups conducted at one, four, and six month intervals revealed that while the comprehensive assessment condition displayed little to no change in drinking practices, participants assigned to the DrAFT-CS condition displayed significant changes in their drinking. In fact, participants in the DrAFT-CS condition reduced their total weekly consumption by almost seven drinks at the one month follow-up, and continued to reduce consumption by nine drinks at the six months follow-up. Moreover, as reported in a program satisfaction questionnaire, most participants described DrAFT-CS as non-confrontational (a quality consistent with the principles of MI), thorough, and well organized.

In this interactive multimedia intervention, a video interviewer instructs participants through a comprehensive assessment of their drinking and provides explanatory information during the personalized feedback. The DrAFT-CS is designed to "simulate the well-known BASICS intervention strategies, and is intended to emulate a non-directive, non-confrontational interaction consistent with principles of Motivational Interviewing" (Leffingwell, et. al., 2007). On average, this self-contained intervention (requiring only the program software and a computer) takes participants 30-40 minutes to complete.

Although empirical support exists for its effectiveness, research has yet to investigate how the DrAFT-CS, or for that matter other electronic-BMIs, compare in effectiveness to person-administered BMIs. One such study, conducted by Barnett, Murphy, Colby, and Monti (2007), compared the effectiveness of the electronic-delivered intervention, Alcohol 101, to a therapist-delivered BMI for university-mandated students. Alcohol 101 was the CD-ROM delivered intervention reviewed by Walters and colleagues (2005b), and it is important to note that Alcohol 101 does not provide personalized feedback, nor is it a BMI. Contrary to expectations, neither the BMI nor Alcohol 101 interventions reduced drinking rates at three or 12-month follow-ups.

In sum, empirical support exists for the use of electronic BMIs; however, more research is needed to determine how they directly compare to person-administered BMIs. It is possible that they are similarly efficacious, as Walters and colleagues (2005b) concluded from their observation of similar effect sizes for feedback interventions regardless of format of delivery. However, as Walters and colleagues also note, it is important to consider that certain types of individuals may benefit more than others from

electronically-administered BMIs. Currently, research is completely lacking in addressing potential moderators of computerized interventions. Individual characteristics such as attitudes towards and familiarity with computers may serve as potential moderators, although no research exists examining these characteristics. While more research is needed, some literature exists regarding moderators of the efficacy of person-administered BMIs.

Moderators of BMI Efficacy

Identification of moderators of BMI efficacy is important "because identifying students who are most likely to benefit can lead to better targeting of BMIs, and knowing those individuals who show less benefit can inspire revision and improvement of interventions" (Carey et al., 2007b, p. 663). MacKinnon and Luecken (2008) highlight that for "prevention and intervention programs, understanding critical moderators of program effects has the potential to help direct limited resources to those who are most likely to benefit from them" (p. S100). In their review of the available literature, Carey and colleagues (2007b) stressed that the investigation of moderators of intervention efficacy has largely been neglected. Nevertheless, the literature provides some direction. Some previously identified moderators of intervention efficacy are gender, readiness to change, drinking status, social comparison, self-determination, self-regulation, and time perspective.

Gender. The role of gender in moderating intervention efficacy is mixed. Findings from Carey and colleagues' (2007a) meta-analyses found that initial follow-ups produced greater reductions in alcohol consumption for samples with more women ($B = 0.56$, $p = 0.01$). For example, in Murphy and colleagues' (2004) study mentioned above, a small

sample (N = 54) of hazardous drinking college students either received MI with a personalized feedback printout, or a personalized feedback printout alone. Significant reductions in drinking rates were observed for both groups; however, the women in both groups had greater reductions in consumption following the intervention, compared to the men. However, Murphy and colleagues advised cautious interpretation of their findings. They hypothesized that because the feedback provided addressed a salient female concern (weight gain related to alcohol consumption), there may have been a larger impact on this primarily female (69%) sample more so than its male counterparts. In contrast, Collins, and colleagues (2002) found that male participants assigned to receive either personalized normative feedback or general educational information about alcohol had greater reductions in consumption, compared to the female participants. However, other studies have failed to provide support for the moderating role of gender in BMI efficacy (Borsari & Carey, 2000, 2005; Carey et al., 2007b; Marlatt et al., 1998; Neighbors, et al., 2004).

Readiness to change and drinking status. Participant readiness to change and drinking status (e.g., occasional versus frequent binge drinker) are also proposed moderators of treatment outcome. Rollnick, Heather, Gold, and Hall (1992) developed a measure of a hazardous drinker's readiness to moderate or quit his or her current drinking practices, that categorizes drinkers according to the stages of change model (DiClemente, Prochaska, Fairhurst, Velicer, Velasquez , & Rossi; original formulation of model described in Prochaska & DiClemente's, 1983). According to this model, behavior change proceeds through a set sequence of stages (with increasing levels of readiness to change) leading up to a behavior change attempt (referred to as the action stage).

Specifically, a drinker's readiness to engage in a change attempt as they proceed through the following stages: precontemplation, contemplation, and preparation stages (DiClemente et al., 1991). Fromme and Corbin (2004) compared controls (assessment only or waitlist conditions) to peer-led and professional-led Lifestyle Management Class (LMC) for university-mandated and volunteer college students. A trend toward greater reductions in consumption for volunteer participants in the peer-led and professional-led LMC conditions was observed for those reporting greater readiness to change, compared to controls.

Carey, Carey, Maisto, and Henson (2006) findings somewhat corroborate those of Fromme and Corbin (2004). Carey and colleagues' (2006) assigned participants (N = 509) to one of six conditions. Conditions were created by combining intervention type (BMI-alone, BMI-enhanced, or control) with the presence or absence of the Timeline Followback (TLFB, Sobell & Sobell, 1995) procedure completed at baseline. The BMI-alone condition provided personalized feedback and alcohol education, while the BMI-enhanced provided the components of BMI-alone plus a decisional balance exercise. Overall, students receiving the TLFB procedure reduced consumption more than controls, and students in the BMI-alone condition benefited more than those receiving the TLFB procedure or BMI-enhanced interventions. These benefits were maintained at 12 months follow-up. All follow-up assessments (one, six, and 12-months) revealed that regardless of randomly assigned condition (i.e., BMI conditions or control), participants higher in readiness to change at baseline reported greater reductions in drinking rates and alcohol-related problems. At baseline, participants with higher readiness to change also demonstrated heavier patterns of alcohol consumption. Carey and colleagues (2007b)

concluded that “because heavier drinkers with more problems are the most likely to express greater readiness to change, they drink less over time, even in the absence of an intervention” (p.667).

The finding of Murphy and colleagues’ (2001) comparison between the efficacy of BASICS, an educational intervention, and an assessment-only control support the conclusion of Carey and colleagues (2007b). Murphy and colleagues (2001) observed no group differences between conditions; however, at three and nine months follow-ups, the heavier drinking participants in the BASICS condition drank significantly less than the heavier drinkers in the other two conditions. Walters and Neighbors (2005) speculated that, “for heavier drinkers, the feedback information may have a larger impact, simply because the information regarding consequences, risk factors, and normative perceptions is more extreme” (p. 1178). On the other hand, Carey and colleagues (2007) concluded from their meta-analytic review that “interventions were less successful in reducing problems (compared with controls) when they were targeted to heavy drinkers or other high-risk groups” (p. 2488). As a side note, some fear that normative personalized feedback for a light or abstinent college drinker may cause an increase in consumption. However, research does not currently support this concern (Alderson & Larimer, 2002; Walters & Woodall, 2003).

Outside of a university setting, Maisto and colleagues (2001) compared the efficacy of brief advice (BA), motivational enhancement (ME), or standard care (SC) interventions in a primary care setting for reducing alcohol consumption. No baseline differences emerged between groups for drinking variables. Both the BA and ME are considered BMIs; however, the ME intervention involved a longer initial session (30-45

versus 10-15 minutes), included booster sessions, and implemented more elements of MI. Regardless of group, all participants reduced consumption from baseline to year follow-up. However, contradictory to the research findings above, participants in the BA condition low in readiness to change displayed a greater reduction in consumption compared to those in the BA condition high in readiness to change. The moderating effect for readiness to change was not observed for the ME or SC conditions. The literature provides some support for the moderating role of readiness to change and drinking status, such that most research findings conclude that participants higher in readiness to change and heavier in drinking status are more likely to benefit from BMI intervention than their respective counterparts.

Social comparison. In addition to gender and readiness to change, another potential moderator of treatment outcomes is the tendency to engage in social comparison. A person engages in social comparison when s/he draws, "conclusions about [his/her] own actual or potential characteristics on the basis of the characteristics of actual or imagined other individuals" (Buunk, Gibbons, & Visser, 2002, p. 1). For example, a large sample (N = 1,217) of undergraduate freshman students overestimated the amount of alcohol consumed by typical students relative to the average consumption reported by the participants about their own consumption (d = .75, p < .001; Neighbors, Fossos, Woods, Fabiano, Sledge, & Frost, 2007). Several studies replicate this finding (Baer & Carney, 1993; Baer, Stacy, & Larimer, 1991; Borsari & Carey, 2003; Lewis & Neighbors, 2004; Perkins & Berkowitz, 1986). The discrepancy between the actual and perceived peer drinking norms has been called *pluralistic ignorance* (Prentice & Miller, 1993; Suls & Green, 2003). Additionally, Neighbors and colleagues (2007) observed a

strong positive correlation between male and female participants' alcohol consumption and perceived drinking norms for socially anxious students, compared to students not socially anxious. This was especially true for men. College students tend to overestimate the drinking practices of their peers, and literature suggest that socially anxious students engaging in pluralistic ignorance are also likely to have an increase rate of consumption relative to discrepancy of perceived and actual norms.

Moreover, research demonstrates the mediating effect of perceived peer drinking norms on BMI efficacy (Borsari & Carey, 2000; Neighbors, et al., 2004; Neighbors, et al., 2006). Relatedly, Carey and colleagues (2007b) hypothesized that "students who attend to social comparison information may enhance their BMI outcomes" (p. 663). Carey and colleagues (2007b) observed that participants in the enhanced BMI and control conditions engaging in social comparison maintained or increased consumption, contrary to expectations. They reasoned that "among young adults, strong tendencies to engage in social comparison may increase their vulnerability to environments with elevated peer drinking norms" (p.668). Likewise, the tendency toward social comparison may also make students more vulnerable to interventions aimed at correcting misperceived norms.

Self-determination. Self-determination theory holds that over time, exposure to environments that promote autonomous or controlled behaviors respectively shapes more autonomous or controlled individuals. Individuals with a controlled orientation perceive influence from their environment as limiting their ability to choose how they behave (Deci & Ryan, 1985). Moreover, individuals with a controlled orientation engage more in self-monitoring (Zuckerman, Gioioso, & Tellini, 1988), impression management (Lewis & Neighbors, 2005), and give social reasons for why they drink (Knee & Neighbors,

2002; Neighbors, Larimer, Geisner, & Knee, 2004). Additionally, alcohol consumption by controlled individuals is positively correlated with anticipated social lubricating effects of drinking.

Neighbors and colleagues (2006) randomly assigned participants to an assessment-only condition or to an assessment plus personalized feedback condition. Controlled orientation moderated the effectiveness of personalized feedback in reducing negative drinking related consequences, relative to assessment-only participants. This moderating effect was not observed for weekly drinking or perceived peer drinking norms. Neighbors and colleagues (2006) offered a couple of possible explanations for the differential moderating effects. First, they suggested that reducing negative drinking consequences (e.g., experiencing a hangover or missing class) may have been more desirable than reducing alcohol consumption. The authors also suggested that a moderating effect of controlled orientation for intervention efficacy could have occurred; however, the assessment methods used were not sensitive enough to this change. More specifically, while more controlled participants in the feedback condition may not have differed from assessment-only participants in drinks per week, perhaps there was a reduction in the amount they consumed during specific drinking occasions.

Self-regulation. Self regulation is also a proposed moderator of treatment outcome discussed in college-drinking literature. Self-regulation skills allow "a person to delay gratification in the short term to achieve desired outcomes in the future" (Carey, Neal, & Collins 2004, p. 253). Carey and colleagues (2007b) argued that once motivated to change their drinking practices (i.e., the primary goal of BMIs), students high in self-regulation skills are the best equipped to make changes. While puzzling, the researchers

observed that self-regulation moderated the drinks per week only for participants in the basic BMI condition. They hypothesized that in the basic BMI condition, participants repeatedly focused on drinks per week during personalized feedback. Such repetition may have prompted change by participants high in self-regulation in the basic BMI intervention, while the additional intervention component of the enhanced BMI intervention (e.g., decisional balance activity) possibly diluted the effects of attending to drinks per week during feedback. No other studies investigating the moderating role of self-regulation were identified in the literature

Time perspective. Finally, time perspectives serve as another identified moderator in treatment outcome literature. Time perspective refers to "the relative temporal orientation that motivates (i.e., guides and influences) an individual's typical actions and goals" (Henson, Carey, Carey, & Maisto, 2006, p. 127). Present and future time perspectives refer to the behaviors and goals adopted to meet the desires of the present and future, respectively. While the present-hedonistic time perspective orients toward immediate reward, the future time perspective delays immediate reward for long-term reward (Zimbardo & Boyd, 1999). Time perspective relates to the engagement of health-risk behaviors (e.g., substance use; Wills, Sandy, & Yaeger, 2001) and health protective behaviors (e.g., Henson et al., 2006). Carey and colleagues (2007b) did not find a main effect of future time perspective on drinking behaviors or related problems; however, an interesting effect emerged. As expected, participants in the control condition with a future time perspective drank fewer drinks per week. Unexpectedly, an opposite effect emerged for students in the basic BMI condition. Specifically, participants high in future time perspective consumed more drinks per week than those low in this trait. The authors

suggest that “perhaps this BMI encouraged students who would not normally think about the consequences of their drinking to do so” (p. 668). Further, they add if a true effect did emerge, participants low in future time perspective gain more from participation in their BMI.

From their analyses of multiple moderators, Carey and colleagues (2007b) state that their findings “suggest that BMIs are relatively robust despite many individual differences inherent in students who receive these interventions” (p. 667). However, much more research is needed to determine the veracity of their findings. Currently, mixed support exists for the moderating role of gender, readiness to change, and drinking status; while unexpected results emerged for the moderating role of social comparison, self-regulation skills, self-determination, and time perspective, and these results have yet to be replicated.

Field, Duncan, Washington, and Adinoff (2007) found that in treatment-seeking veterans with substance dependence (N = 200), state anxiety was negatively associated with motivation to change. State anxiety is a description of the anxiety experienced in the moment the questionnaire was completed. This type of anxiety could potentially be influenced by the number of a person’s thoughts, including anticipatory thoughts about prior treatment interactions with a therapist. Consequently, another potential moderator of a person-administered BMI may be the level of anxiety a hazardous drinking college student experiences in relation to having to interact with a therapist. It would seem plausible that anxiety related to interacting with the therapist and fears about being evaluated by the therapist could negatively impact the efficacy of a person-administered BMI.

Present Study

The current study occurred alongside another study comparing the efficacy of DrAFT-CS to a person-administered DrAFT-CS (Live BMI). The primary intent of the current study was to test for moderators of BMI efficacy, regardless of format of administration (computerized versus live BMI administration). Due to concerns associated with participant fatigue following baseline assessment and the dilutive effects this could have on treatment response (in addition to the increase in alpha inflation following multiple analyses), an examination of all previously studied moderators of BMI efficacy was not the aim of the current study. Instead, the current study focused on the potential moderating effects of the most commonly, or readily, assessed characteristics in the treatment of alcohol use problems and related research. Namely, the proposed moderators of BMI efficacy included gender, readiness to change, and drinking status. The following hypotheses were made regarding the moderating relationships of these variables:

Hypothesis 1— Men will benefit more from BMIs than will women.

Hypothesis 2— Participants higher in readiness-to-change their drinking practices will benefit more from BMIs than those low in readiness-to-change.

Hypothesis 3— Heavier consuming participants will benefit more from BMIs than less heavy consuming participants.

Additionally, the following hypotheses were made regarding potential moderators specific to computerized BMIs and person-administered BMIs, about which no current research exists.

Hypothesis 4—Participants with more positive attitudes toward and more familiarity with computers will benefit more from the DrAFT-CS intervention than will those with less positive attitudes toward and less familiarity with computers.

Hypothesis 5—Participants with less fear of negative evaluation will benefit more from Live BMI than those with greater fears of negative evaluation.

Hypothesis 6— Participants with less social interaction anxiety will benefit more from Live BMI than those with greater social interaction anxiety.

CHAPTER III

METHODS

Participants

Undergraduate college students were recruited from a participant pool at a south central 4-year university. Students who agreed to participate earned course credit for completing an in-lab, web-based, baseline assessment and (if applicable to participant condition) intervention. Participants earned a total of $15 for completion of the 10-week online follow-up assessment. During study recruitment, students who endorsed binge drinking criteria in the previous month on a brief screener completed prior to registration on the SONA research website were emailed an invitation to participate in the study. In the email invitation, students were asked if interested to email the researchers and provide a phone number they could be reached at for further interviewing for study inclusion criteria. Upon receipt of an email expressing interest, a research team member verified interested students' qualifications for study enrollment, including enrollment in college (as indicated by registration on the SONA system), report of at least one episode of binge drinking, at least 20 drinks per month on average, and no current participation in treatment for substance use and/or emotional/behavioral problems.

Of the over 1500 undergraduates screened, 221 were invited by email to participate, and 173 were scheduled and randomly assigned to one of four treatment

conditions: (1) an assessment-only (AO) control, (2) extended-assessment (EA) control, (3) DrAFT-CS, or (4) Live BMI (see description of conditions below). Of the 173 participants scheduled, 152 completed baseline assessment, and 144 completed a 10-week follow-up (94.7 percent retention). Two of the 144 participants provided inconsistent responses (i.e., random answers) to assessment questionnaires. Additionally, despite endorsing the screening criteria during study recruitment, baseline assessment revealed that two participants reported no consumption of alcohol during the past month, and thus were excluded from participating. Consequently, 140 completers, or 92.1 percent of the intent-to-treat sample were included in the primary analyses. Of this sample, 37 participants were randomly assigned to DrAFT-CS, 33 participants assigned to Live BMI, 33 participants assigned to EA, and 37 participants assigned to AO (for flow chart see Figure 1 in Appendix A).

Sample Characteristics (see Table 1 in Appendix B)

The majority of the sample was male (*n* = 79, 56.4%) with a mean age of 20.29 (*SD* = 1.856, range = 18 – 32). The participants described themselves as predominately Caucasian or White (*n* = 118, 84.9%), single (*n* = 111, 79.3%), not involved with the Greek system (*n* = 95, 68.8%), and living with a roommate off-campus (*n* = 72, 51.4%). Most of the participants were reportedly in their freshman year (*n* = 48, 34.3%), followed by those in their junior year (*n* = 39, 27.9%), participants in their senior year (*n* = 32, 22.9%), and least often in their sophomore year (*n* = 21, 15.0%).

Measures (see Appendix C)

Demographic form. A demographic questionnaire assessed for gender, age,

weight, year in college, ethnicity, current living arrangements, major/minor, grade point average, Greek system involvement, and dating/marital status.

Daily Drinking Questionnaire (DDQ). The DDQ (Collins, Parks, & Marlatt, 1985) is self-report questionnaire used to assess the quantity and frequency (i.e., number of hours of drinking) of typical alcohol consumption on each day of the week for the month preceding its administration. The DDQ has moderate convergent validity with the form it originated from, the Drinking Practices Questionnaire (DPQ; Cahalan, Cisin, & Crossley, 1969). Data from the DDQ provided total number of drinks per week, weekend (Thursday, Friday, and Saturday), as well as peak blood alcohol level (BAL; see Appendix D, for Widmark's formula used to calculate BAL).

Frequency-Quantity Questionnaire (FQQ). The FQQ (adapted from Cahalan & Cisin, 1968 and reported in Dimeff, et al., 1999) is a four-item measure of quantity and frequency of alcohol consumption during the past month. Participants are asked to recall the number of drinks consumed on a typical and peak occasion. Also, participants are asked to recall how frequently they drank in the past month, as well as, how often they drank "to get drunk."

Brief-Young Adult Alcohol Consequences Questionnaire (B-YAACQ). The B-YAACQ (Kahler, Strong, & Read, 2005) assessed for alcohol-related life problems. The Young Adult Alcohol Consequences Questionnaire was refined using Rasch model analyses (based on item response theory), and resulted in the development of the 24-item B-YAACQ. The B-YAACQ uses a dichotomous response format, and covers the following areas of problematic college drinking: social interpersonal consequences,

impaired control, self-perception, self-care, risk behaviors, academic/occupational consequences, excessive drinking, and physiological dependence. Total scores range from 0 to 24. Based on their findings, Kahler and colleagues (2005) found that "by a score of 10, individuals are likely to report at least some potentially important psychosocial consequences," and "by a score 15, many symptoms consistent with conceptualization of alcohol abuse and dependence may be present." The B-YAACQ demonstrates good internal consistency (Cronbach's α = .89; Kahler et al., 2005). Additionally, this measure demonstrates good convergent validity with the YAACQ (r = .95*)* and the Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989; r = .78). Read and colleagues (2005) state that "For measuring a single dimension of alcohol problem severity, the B-YAACQ should provide the most optimal measurement properties" (p. 1189). The reliability of the B-YAACQ for the current study was good (Cronbach's α = .84).

College Alcohol Problems Scale – revised (CAPS-r). The CAPS-r (Maddock, Laforge, Rossi, & O'Hare, 2001; O'Hare, 1997) is an 8-item measure of problematic college drinking. The CAPS-r employees a Likert scale response format with "0" indicating "never/almost never," and "5" indicating "10 or more times." The CAPS-r consists of two subscales, namely the Personal Problems (CAPS-r, Personal) and Social Problems (CAPS-r, Social), with scores ranging from 0 to 20 for each subscale. With Cronbach's α coefficients of .75 for the CAPS-r, Social subscale and .79 for the CAPS-r, Personal subscale, this measure evinces adequate internal reliability. Moreover, in a representative university wide sample, the CAPS-r scales demonstrated adequate external validity, as it demonstrated to be "strongly related" to drinking variables (i.e., drinking

days (r = .51), drinks per occasion (r = .44), and peak drinks (r = .50); and strongly correlated (r = .78) with a well-developed (albeit longer) measure of problematic youth alcohol consumption (i.e., the Young Adult Alcohol Problems Screening Test; Hurlbut & Sher, 1992; Maddock et al., 2001). For the current study, the reliability of the CAPS-r, Personal was good (Cronbach's α = .84); however, the reliability of the CAPS-r, Social was concerning as Cronbach's alpha equals .48, although this is less of a concern with such short scales.

Computer Aversion, Attitudes, and Familiarity Index (CAAFI). The CAAFI (Schulenberg, Yutrzenka, & Gohm, 2006) is a 40-item measure of computer attitudes, aversion, and familiarity. This measure has a 7-point Likert scale response format (-3 for "absolutely false," 0 for "neutral," and 3 for "absolutely true"), with nearly half of the items reverse scored. Higher total scores on the CAAFI indicate more positive attitudes, familiarity, and comfort with computers. In its development, four factors (attitudes, familiarity, aversion-discomfort, and aversion-fear) emerged from exploratory and confirmatory factor analyses of undergraduate students. Each of these factors demonstrates good internal consistency (α = .75 or greater). The reliability of the CAAFI for the current study was good (α = .90).

Fear of Negative Evaluation (FNE). The FNE (Watson & Friend, 1969) is a 30-item (dichotomous response format with total scores ranging from 0 to 30) measure of expectations and distress associated with being negatively evaluated by others. Higher scores on the FNE indicate greater anxiety. The FNE is significantly correlates with other measures of social approval (r =.77), anxiety (r = .60), and social-evaluative anxiety (r = .47; Watson & Friend, 1969). Additionally, the FNE demonstrates excellent internal

consistency (Kuder-Richardson Formula 20 = .94-.96), and good 1-month test-retest reliability (r = .78 - .94; Watson & Friend, 1969). The reliability of the FNE for the current study was good (α = .93).

Readiness to Change Questionnaire (RCQ). The RCQ (Rollnick, et al., 1992) is a 12-item, 5-point Likert scale (anchored by "strongly disagree," and "strongly agree") measure of motivation (i.e., readiness) to moderate or stop current drinking practices, and is based on the stages of change model (Prochaska & DiClemente's, 1983, DiClemente et al., 1991). Rollnick and colleagues (1992) found it appropriate to use the RCQ with a "population of excessive alcohol consumers with low levels of dependence who are not formally seeking help for drinking problems" (p. 752). Principal component analyses revealed that the RCQ demonstrates three distinct components or stages of change, namely: precontemplation (P), contemplation (C), and action (A). The RCQ demonstrates good internal consistency (P, α = .73; C, α = .80; and A, α = .85), and test-retest reliability (P, r = .82; C, r = .86; and A, r = .78; Rollnick, et al., 1992). The RCQ also demonstrates good predictive validity for measuring changes in drinking practices over time (Heather, Rollnick, and Bell, 1992). The original scoring method used by Rollnick and colleagues (1992) assigned participants to a particular stage of change, however items assessing for each stage of change lacks discriminate validity. However, Budd and Rollnick (1996) found that a continuous score of readiness to change, evincing predictive validity (with intention to and reductions in alcohol consumption at a 6 month follow-up, r = -.46) and reliability (Cronbach's α coefficient of 0.85), can alternatively be computed. For the purposes of this study, the continuous score is used. As such, total RCQ scores

range from 0 to 60. The reliability of the RCQ for the current study was concerning, as Cronbach's alpha equaled .40.

Social Interaction Anxiety Scale (SIAS). The SIAS (Mattick & Clarke, 1998) is a 30-item, 5-point Likert scale measure of social interaction fears (scores range from 0 to 150). The SIAS demonstrates high internal consistency (α = .86 - .94; Heimberg, Mueller, Holt, Hope, Liebowitz, 1992; Mattick & Clarke, 1998; Osman, Guitierrez, Barrios, Kopper, & Chiros, 1998) and test-retest reliability (4 to 12 weeks, r = .86 to .92; Heimberg, et al., 1992; Mattick & Clarke, 1998). Factor analysis conducted on clinical samples diagnosed with social phobia suggests that the SIAS measures the construct of fear during social interactions (Mattick & Clarke, 1998). The SIAS demonstrates high convergent validity to other social anxiety measures (r = .66 to .81; Mattick & Clarke, 1998), and in particular measures of anxiety experienced during social interactions (Heimberg et al., 1992). Also, the SIAS demonstrates high discriminate validity to measures of depression (r = .47), general anxiety (r = .45 to .58), and locus f control (r = .30; Mattick & Clarke, 1998). Heimberg and colleagues (1992) found that scores equal to or greater than 34 (one standard deviation above a community sample mean) correctly identified 82 percent of a sample of persons with social phobia (54 out of 66 people). The reliability of the SIAS for the current study was good (Cronbach's α = .90).

Design and Procedures (see experimental flow chart in Figure 1 of Appendix A)

Upon arrival in the lab at their scheduled time, participants were asked to sign an Informed Consent Form (see Appendix D). Following informed consent, all participants were asked to complete the baseline assessment, specifically, all measures listed above. Each participant was then randomly assigned to one of four conditions: (1) an

assessment-only (AO) control, (2) extended-assessment (EA) control, (3) DrAFT-CS, or (4) Live BMI. A description of each of these conditions follows below. Baseline participation required about 30 to 90 minutes to complete. Ten-weeks following baseline assessment, participants were contacted and asked to complete an online follow-up assessment questionnaire, requiring 15 to 20 minutes to complete. The follow-up assessment consisted of the DDQ, FQQ, CAPSr, and B-YAACQ. Participants were instructed to answer each measure with regard to the previous month. It should be noted that the week of Spring Break did not occur during the assessed month. Information about alcohol was made available for all participants following participation at baseline, including strategies for how to moderate drinking practices. Additionally, all interested participants were provided with referral information for local treatment providers.

Treatment Conditions

Assessment-only (AO) control. Participation in the AO condition involved completing the baseline assessment and the follow-up assessment.

Extended-assessment (EA) control. Participation in the EA condition involved completing the baseline, intervention, and follow-up assessments. The intervention assessment contained the same questions that the participants in the treatment conditions are asked (see description of questions assessed in the descriptions of treatment conditions that follow), however did not receive any feedback, via computer or person-delivered. This condition controls for any possible effects of completing the additional assessments required for the interventions, above and beyond the research assessment.

Drinkers Assessment and Feedback Tool—College Students (DrAFT-CS).

Participation in the DrAFT-CS condition involved completing the baseline assessment, DrAFT-CS intervention, and the follow-up assessment. The DrAFT-CS intervention included the following measures: adaptations of the DDQ and FQQ, Rutgers Alcohol Problem Index (RAPI; a measure of common problems reported by college drinkers), Alcohol Dependence Scale (ADS, assesses for level of alcohol dependence), Drinking Norms Rating Form (DNRF; assesses for perceived drinking norms), Alcohol Perceived Risks Problems (APRP; assesses for perception of risk related to alcohol use), and the Brief Health Inventory (BHI; assesses for overall psychological distress). This intervention provided personalized feedback to participants in a number of areas, including their reported current alcohol consumption (quantity, frequency, typical and peak BAC) and related problems, perceived versus actual normative feedback about typical college drinking, perceived risk and expectations of drinking, symptoms of alcohol dependence and related problems, alcohol-related expenditures (i.e., caloric and financial costs), motivation for change, emotional or behavioral problems that could exacerbate alcohol abuse, and familial risk for experiencing alcohol abuse problems.

Person-administered DrAFT-CS (Live BMI). Participation in the Live BMI condition involved completing the baseline assessment, Live BMI intervention, and the follow-up assessment. The Live BMI intervention included a computer-administered assessment that mimics the assessment conducted during the DrAFT-CS intervention. Following the Live BMI assessment, a master's level therapist provided personalized feedback that mimics the feedback provided by the DrAFT-CS (see Appendix D for an example). In an attempt to control for therapist's characteristics between treatment conditions, the same therapist used to guide participants through the DrAFT-CS program also provided live

feedback to participants in the Live BMI condition. Training in administering a brief motivational intervention was provided to the therapist by a clinical psychologist specializing in this application. Additionally, to ensure treatment fidelity, the feedback provided by the therapist was audited for protocol consistency by the psychologist.

CHAPTER IV

RESULTS

Randomization Check

To ensure random assignment was effective in controlling for differences between groups, chi-square analyses tested for the presence of any meaningful differences between conditions on categorical demographic variables (e.g., ethnicity). These tests revealed no statistically significant differences between groups with regard to all categorical demographic variables (i.e, undergraduate class status, ethnicity, gender, Greek affiliation, and living situation), except for current relationship status ($\chi^2(6) = 16.60$, $p = .01$, Cramer's V = .24; see Table 1 in Appendix B). Specifically, while only one participant in the AO group was involved in a romantic relationship (2.7%), a higher percentage of participants in the other groups indicated they were dating (Live, $n = 9$, 27.3%; DrAFT, $n = 6$, 16.2%; EA, $n = 12$, 36.4%). One-way ANOVA tests were also used to assess for meaningful differences between conditions on measures of alcohol consumption (DDQ and FQQ), alcohol-related consequences (CAPS-r subscales and B-YAACQ), proposed moderating variables (CAFFI, RCQ, FNE, and SIAS), and continuous demographic variables (i.e., age and weight) assessed at baseline (see Table 2). No statistically significant differences were found between the four groups at baseline with regard to these continuous variables.

Primary Analyses

Overview. Analyses aimed to test for the presence of moderating variables of BMI efficacy. As defined by Baron and Kenny (1986), a moderator is a "qualitative …or quantitative variable that affects the direction and/or strength of the relationship between an independent or predictor variable and a dependent or criterion variable" (p. 1174). For the current analyses, treatment outcome scores are reflected as change scores (i.e., difference from baseline to follow-up on dependent variable scores). Maxwell and Howard (1981) stated that change scores are the preferred choice of analysis in certain circumstances. One such circumstance occurs when baseline and follow-up measures are based on self-report, from which response-shift bias can arise. Response-shift bias is a shift in a participant's internal evaluation standard between baseline and follow-up report, and therefore, under this potential shift, analyses based on change scores provide meaningful results while alternative methods of analyzing change (e.g., analysis of covariance) do not. Change scores were computed from frequency and quantity of alcohol consumption variables (i.e., DDQ and FQQ), as well as measures of alcohol related consequences and problems (i.e., CAPS-r Personal, CAPS-r Social, and BYAACQ) between baseline and follow-up assessments. Specifically, the following DDQ variables change scores were used: total typical quantity of drinks per week (DDQ-Week), total typical quantity of drinks per weekend (i.e., Thursday, Friday, and Saturday; DDQ-Weekend), average number of drinks per typical drinking occasion during week (DDQ-Average Drink), average number of drinks per typical drinking occasion during weekend (DDQ- Weekend Average), and peak BAL for typical drinking on a weekend day (BAL-Thursday, BAL-Friday, and BAL-Saturday). Also, the following FQQ

variables change scores were used: peak quantity in a single drinking occasion (FQQ-Peak), number of alcohol drinks on an average weekend evening (FQQ-Average), frequency of drinking occasions (FQQ-Often), or frequency of drinking to get drunk (FQQ-Drunk). A correlations matrix of these dependent variables is found in Table 3.

Following a rank ordering of participant scores on the proposed continuous moderator variables, scores were trichotomized into three equivalent groups. As described by Rosenthal and Rosnow (1993), this method is referred to as "blocking," and is a valid alternative to having a continuous covariate. The author acknowledges that criticisms of categorizing a proposed continuous moderating variable exist (e.g., Barron and Kenny, 1986; Frazier, Tix; & Barron, 2004). However, blocking the dependent variables into three groups for the current study allows for the observation of linear or curvilinear effects and ease of interpretability of interactions between the independent, dependent, and moderating variables.

Method of analysis. Analysis of variance (ANOVA) tests were conducted to examine the hypothesized moderators. A moderating effect was observed when the *F* statistic for the interaction of the IV and proposed moderator reached significance ($p \leq .05$). A quick reference of the ANOVA interactions that were statistically significance, as described in the analyses below, is found in Table 4. Simple effects, followed by simple comparisons (when appropriate), were conducted to further explore significant interactions (Page, Braver, & MacKinnon, 2003). Levene's test was used to test the assumption of equality of error variances; violations of this assumption and adjustments made are noted below. As the aim of this study was to identify moderators of BMI efficacy, main effects results of intervention efficacy are not reported. For the interested

reader, the comparative effectiveness of the BMIs described in the current study can be found in Wagener (2009).

Hypothesis 1 (see Table 5 and Table 6). The first hypothesis states that men would benefit more from BMIs than women. To test this hypothesis, a 4 (treatment group; AO, EA; DrAFT-CS, and Live) x 2 (gender) ANOVA was conducted. A significant treatment group by gender interaction was observed for *FQQ-Average* ($F(3, 132) = 2.69$, $p = .05$, $\eta^2 = .06$). To further describe this moderating relationship, follow-up simple effect analyses indicated that gender was significant for Live condition participants ($F(1, 132) = 6.54$, $p = .01$, $\eta^2 = .05$). However, contrary to the hypothesized direction, women in the Live condition demonstrated a greater reduction in the number of alcohol drinks consumed on an average weekend evening ($M = 3.93$, $SD = 6.52$) compared to their male counterparts ($M = -1.18$, $SD = 6.98$). In other words, for the Live condition, females had a change of about four drinks less on an average weekend evening following participation in the Live BMI, while their male counterparts had an increase of about one drink. While not significant, and contrary to the significant effect for gender in the Live BMI condition, the males in the DrAFT-CS condition reported a greater reduction in the number of alcohol drinks consumed on an average weekend evening ($M = 2.72$, $SD = 5.68$) in comparison to their female counterparts ($M = .42$, $SD = 4.74$.)

Hypothesis 2 (see Table 7 and Table 8). The second hypothesis states that participants higher in readiness-to-change current drinking practices would benefit more from BMIs than those low in readiness-to-change (as assessed by the RCQ). To test this hypothesis, a 4 (treatment group) x 3 (readiness to change blocks) ANOVA was

conducted. All ANOVA's conducted to test the dependent variable change scores were non-significant.

Hypothesis 3. The third hypothesis states that heavier consuming participants would benefit more from BMIs than less heavy consuming participants. To test this hypothesis, 4 (treatment group) x 3 (quantity of drinking blocks; i.e., light, medium, heavy) ANOVAs were conducted based on two time periods. Specifically, quantity of drinking blocks were formed for both the summation of participant's report for *total week* drinks (see Table 9 and Table 10) and *total weekend* drinks (i.e., Thursday, Friday, and Saturday ; see Table 11 and Table 12), both data reported on the DDQ. For quantity of *total weeks* drinks, participants in the "light" drinking block reported a range of 5 to 15 drinks (M = 11.26), "medium" drinking participants reported consuming 16 to 24 drinks (M = 19.81), and the "heavy" block reported 25 to 97 drinks (M = 37.5). For quantity of *total weekend* drinks, participants in the "light" drinking block reported a range of 3 to 13 drinks (M = 9.8), "medium" drinking participants reported consuming 14 to 22 drinks (M = 17.7), and the "heavy" block reported 23 to 62 drinks (M = 32.72).

A significant interaction for the treatment groups by *total week* drinks blocks was observed for the change score in alcohol related problems, as assessed by the BYAACQ ($F(6, 124) = 2.66$, $p = .02$, $\eta^2 = .10$). To further describe this moderating relationship, follow-up simple effect analyses were significant for participants in both control conditions (EA: $F(2, 124) = 3.21$, $p = .04$, $\eta^2 = .05$; AO: $F(2, 124) = 7.16$, $p = .001$, $\eta^2 = .10$). Simple comparison analyses revealed a significant difference for BYAACQ change score in the EA condition between participants in the medium versus heavy drinks blocks ($F(1, 124) = 6.43$, $p = .01$, $\eta^2 = .05$). Specifically, for the EA condition, participants

grouped in the medium block for *total week* drinks (*M* = 5.17, *SD* = 6.82) had a significantly greater reduction in alcohol related problems (as measured by the BYAACQ) in comparison to the participants grouped in the heavy block for *total weeks* drinks (*M* = -1.18, *SD* = 6.98). For participants in the AO condition, simple comparison analyses revealed a significant moderating interaction between the light and medium blocks ($F(1, 124) = 12.90$, $p = .001$, $\eta^2 = .09$), and between the medium and heavy blocks ($F(1, 124) = 7.57$, $p = .01$, $\eta^2 = .06$). Specifically, for the AO condition, participants grouped in the medium block for *total week* drinks (*M* = 5.25, *SD* = 5.00) had a significantly greater reduction in alcohol related problems in comparison to the participants grouped in the light block for *total week* drinks (*M* = -2.15, *SD* = 3.33). AO participants grouped in the medium block for *total week* drinks (*M* = 5.25, *SD* = 5.00) also had a significantly greater reduction in alcohol related problems in comparison to the participants grouped in the heavy block (*M* = -0.02, *SD* = 5.63).

Second, the treatment group by quantity of *total weekend* drinks interaction was significant for change scores of alcohol related problems, as assessed by the Personal subscale of the CAPS-r (CAPS-r Personal, $F(6, 122) = 2.41$, $p = .03$, $\eta^2 = .11$). To further describe this moderating effect, follow-up simple effect analyses revealed marginal significance for participants in the Live condition ($F(2, 122) = 2.96$, $p = .055$, $\eta^2 = .05$) and AO condition ($F(2, 122) = 2.97$, $p = .055$, $\eta^2 = .05$). Simple comparisons revealed significant difference in CAPS-r Personal change scores between the medium and heavy *total weekend* drinks blocks ($F(1, 122) = 5.84$, $p = .02$, $\eta^2 = .05$). Specifically, participants in the Live condition grouped in the medium blocks for *total weekend* drinks (*M* = 2.44, *SD* = 5.36) had a significantly greater reduction in CAPS-r Personal scores than

participants in the heavy block (*M* = -2.26, *SD* = 5.62). For participants in the AO condition, simple comparisons revealed significant differences for CAPS-r Personal change scores between the light and medium blocks for *total weekend* drinks ($F(1, 122) = 5.65$, $p = .02$, $\eta^2 = .04$). Specifically, AO condition participants grouped in the medium block (*M* = 1.30, *SD* = 2.21) had a significantly greater reduction in CAPS-r Personal scores compared to participants grouped in the light block for *total weekend* drinks, who had an increase in their CAPS-r Personal Scores (*M* = -3.09, *SD* = 4.70).

Hypothesis 4 (see Table 13 and Table 14). The fourth hypothesis states that participants with more positive attitudes towards and familiarity with computers (as measure by the CAAFI) would benefit more from the DrAFT-CS intervention than those with less positive attitudes toward and less familiarity with computers. To test this hypothesis, a 4 (treatment group) x 3 (attitudes and familiarity toward computers blocks) ANOVA was conducted. The treatment group by attitudes toward and familiarity with computers interaction was not significant for any of the dependent variables.

Hypothesis 5 (see Table 15 and Table 16). The fifth hypothesis states that participants with less fear of negative evaluation (FNE) would benefit more from the Live condition than those with greater fear of negative evaluation. To test this hypothesis, a 4 (treatment condition) x 3 (FNE blocks; i.e., low, medium, high) ANOVA was conducted. A significant interaction was observed for the FQQ-Average change score ($F(6, 124) = 2.53$, $p = .024$, $\eta^2 = .11$). However, Levene's test of equality of error variances was violated for this analysis ($F(11, 124) = 2.21$, $p = .02$), and thus leading to a positively-biased *F*-test. As reviewed by Page and colleagues (2003), a more stringent alpha level should be used to account for this violation. These authors note Keppel's

(1991) suggestion that when the ratio of the smallest to largest group variance is larger than three to one, it is appropriate to adjust the *p*-value to .03. In the current analyses the variance is greater than this ratio, and thus the alpha level of p =.03 was applied. Consequently, the observed moderating effect was significant. To further describe this moderating effect, follow-up simple effect analyses revealed a significant difference for participants in the DrAFT-CS condition ($F(2, 124) = 4.58$, $p = .01$, $\eta^2 = .07$). Simple comparison analyses found that for participants in the DrAFT-CS condition, a significant difference in the number of drinks consumed on an average weekend evening existed between the low and medium FNE blocks ($F(1, 124) = 6.04$, $p = .02$, $\eta^2 = .05$). Specifically, participants grouped in the low FNE block ($M = 4.96$, $SD = 4.36$) had a significantly greater reduction in average weekend evening drinks in comparison to the participants grouped in the medium FNE block ($M = -.19$, $SD = 5.58$). Additionally, for participants in the DrAFT-CS condition, simple comparisons revealed a significant difference between the low and high FNE groups for FQQ-Average scores ($F(1, 12) = 6.71$, $p = .01$, $\eta^2 = .05$). Specifically, participants grouped in the low FNE block ($M = 4.96$, $SD = 4.36$) had a significantly greater reduction in average weekend evening drinks in comparison to the participants grouped in the high FNE block ($M = -.75$, $SD = 3.85$).

Hypothesis 6 (see Table 17 and Table 18). The final hypothesis states that participants with less social interaction anxiety (as measured by the SIAS) would benefit more from the Live BMI than those with greater social interaction anxiety. To test this hypothesis, a 4 (treatment condition) x 3 (SIAS blocks, i.e., low, medium, high) ANOVA was conducted. The treatment group by SIAS blocks interaction was not significant for any of the dependent variables.

CHAPTER V

DISCUSSION

The projected impacts of alcohol-use on the Nation's college students are startling. Hingson and colleagues (2002) projected that 1998 alone witnessed more than1,400 deaths from alcohol-related injuries, 500,000 alcohol-related injuries, and 780,000 students assaulted by intoxicated students. These authors projected that 42 percent (approximately 3.3 million) of college students engaged in hazardous drinking practices (i.e. binge drinking). Such drinking practices are associated with an increased risk of experiencing health, social, academic, and legal problems (Wechsler et al., 2000b). Recent observations of college campuses have witness a polarizing trend in college drinking. Specifically, while an increasing number of students are abstaining from drinking alcohol, an increasing number of students are engaging in frequent hazardous drinking practices. Given that a number of alcohol-related problems are positively correlated with frequency of binge drinking occasions, this trend is concerning (Wechsler et al., 2000b). Much literature on brief motivational interventions (BMI), especially BMIs that include personalized normative feedback, supports their effectiveness at reducing drinking and associated consequences among college students (Murphy et al., 2004). In contrast, the identification of moderators of BMI efficacy has been largely neglected in the literature. Identifying which students benefit most from

BMIs can lead to not only better targeting efforts, but also "inspire revision and improvement of interventions" (Carey et al., 2007b, p. 663).

The aim of the present study was to extend upon the literature by analyzing six proposed moderators of BMI efficacy. Specifically, moderators of BMI efficacy were examined in a randomized controlled trial comparing a person-administered BMI (Live), a computer-administered BMI (DrAFT-CS), and two control conditions (minimal assessment, or AO, and extended assessment, or EA). Mixed literature on the moderating role of three of the proposed moderators for the current study exists, namely: gender, readiness to change drinking behaviors, and drinking status (i.e., light, moderate, or heavy quantity of alcohol consumption). However, no current research exists regarding the other three proposed moderators' influence on the efficacy of BMIs; namely, attitudes toward and comfort with computers, fear of negative evaluation, and social interaction anxiety. Between subjects, analysis of variance (ANOVA) tests were conducted to analyze the relationship of the proposed moderators on the efficacy of the BMIs. Change scores of multiple variables of alcohol consumption and related consequences between baseline and 10-week follow-up were used to compare the treatment conditions.

Overall, the findings of the current study support conclusions drawn by Carey and colleagues (2007b) that "BMIs produce relatively robust effects" (p. 663, Carey et al., 2007b), at least in regards to the proposed moderators examined in the current study. Specifically, participant readiness to change, attitudes toward and comfort with computers, and social interaction anxiety evinced no moderating effect on the efficacy of either the DrAFT-CS or Live BMIs. Additionally, of the proposed moderating variables (i.e, gender, drinking status, and fear of negative evaluation) that did demonstrate a

moderating effect on the efficacy of the BMI on alcohol consumption and associated consequences, the statistically significant moderating effect was of little meaningful clinical significance. Each of the proposed moderating variables demonstrating a moderating effect of BMI efficacy produced significance for only one out of 14 possible change score variables. Considering that the 14 change score variables represented multiple measures of alcohol consumption and associated consequences (e.g., the BYAACQ and CAPSr Personal and Social subscales are three measures of associated impacts of hazardous drinking), impacting only one change score without reductions in corroborative variables reduces the interpretability of a single significant moderating effect. Additionally, all of the discussed moderating relationships had small effect sizes (η^2 ranged from .05 to .11).

Study Limitations

The current results should be considered in the context of the study's limitations. One notable limitation was the questionable reliability of the CAPS-r Social subscale and the RCQ measures reported by the current sample (Cronbach's alpha equals .48 and .40, respectively.). Previous studies using these scales reported higher internal consistency in college student responses (Maddock, et al., 2001; O'Hare, 1997; Rollnick, et al., 1992). The cause for this inconsistency in report is unclear; perhaps the current sample was less reliable in their self-report about drinking consequences and readiness to change than other hazardous drinking college students. Also, since data were collected from only one university and the majority of the sample identified as Caucasian/White, the generalizability of the current findings may be limited.

Another potential limitation to the current study include how participant alcohol use at baseline and 10-week follow-up on the DDQ were assessed. Specifically, participants were asked to report on their *typical* drinking practice (quantity and frequency) over the previous month and not *actual* drinking practices. Participants may have been less reliable in reporting *typical* compared to *actual* drinking practices, as the report of *typical* drinking requires a more thoughtful response from participants (e.g., a participant has to think about his past three Saturdays, how much and how long he drank on each occasion, and decide on what respective numbers are most representative for that day). The current study assessed the *typical* drinking of participants to circumvent problems associated with the knowledge described earlier, specifically that "considerable variability in drinking behavior [for college students is] found, not only as a function of day of the week, but also from week to week" (Del Boca, et al., p. 162). Also, while the self-report method is vulnerable to self-presentation bias, and noted as a limitation in other studies of college alcohol use (e.g., Carey et al, 2007b), it should be noted that previous literature has described the self report of drinking behaviors as "quite respectable" when match with collateral report (Marlatt et al., 1998).

Additionally, as a result of the logistical challenges of the current study, the small size of the four treatment conditions resulted in a significant reduction in the power of some of the current analyses (see Tables 6, 8, 10, 12, 14, and 16 in Appendix B). Consequently, the possibility of a Type II error increased, and it could be argued that with a larger sample size a larger number of moderating relationships of the proposed moderating variables may have occurred for the current study. However, also of note is

that a number of tests of moderating relationships for the current study had power that was moderate to large, and no moderating relationship was observed.

Conclusions

In summary, the present study sought to contribute to the mixed findings on the moderating effects of gender, readiness to change, and drinking status on the efficacy of BMIs on hazardous college student drinking. Additionally, the present study sought to extend upon this existing body of literature by testing newly proposed moderators of BMI efficacy, namely, attitudes toward and comfort with computers, fear of negative evaluation, and social interaction anxiety. Overall, the results support the conclusion that the efficacy of BMIs on hazardous college student drinking is robust to the proposed moderators in the current study.

REFERENCES

American Psychiatric Association. (2000). Diagnostic and statistical manual of mental disorders (4th ed. text revision). Washington, DC: Author.

Anderson, B. K., & Larimer, M. E. (2002). Problem drinking and the workplace: An individualized approach to prevention. *Psychology of Addictive Behaviors, 16*, 243-251.

Baer, J. S., & Carney, M. M. (1993). Biases in the perceptions of the consequences of alcohol use among college students. *Journal of Studies on Alcohol, 54*, 54-60.

Baer, J. S., Kivlahan, D. R., Blume, A. W., McKnight, P., & Marlatt, G. A. (2001). Brief intervention for heavy-drinking college students: 4-year follow-up and natural history. *American Journal of Public Health, 91*, 1310-1316.

Baer, J. S., Stacy, A., & Larimer, M. (1991). Biases in the perception of drinking norms among college students. *Journal of Studies on Alcohol, 52*, 580-586.

Barnett, N. P., Murphy, J. G., Colby, S. M., & Monti, P. M. (2007). Efficacy of counselor vs. computer-delivered intervention with mandated college students. *Addictive Behaviors, 32*, 2529-2548.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*, 1173-1182.

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

Borsari, B., & Carey, K. B. (2003). Descriptive and injunctive norms in college drinking: A meta-analytic integration. *Journal of Studies on Alcohol, 64*, 331-341.

Borsari, B., & Carey, K. B. (2005). Two brief alcohol interventions for mandated college students. *Psychology of Addictive Behaviors, 19*, 296-302.

Brehm, J. W. (1966). *A Theory of Psychological Reactance*: Academic Press.

Budd, R. J., & Rollnick, S. (November, 1996). The structure of the Readiness to Change Questionnaire*:* A test of Prochaska & DiClemente's transtheoretical model. *British Journal of Health Psychology. 1*, 365-376.

Burke, B. L., Arkowitz, H., & Menchola, M. (2003). The efficacy of motivational interviewing: A meta-analysis of controlled clinical trials. *Journal of Consulting and Clinical Psychology, 71*, 843-861.

Buunk, B. P., Gibbons, F. X., & Visser, A. (2002). The relevance of social comparison processes for prevention and health care. *Patient Education and Counseling, 47*, 1-3.

Cahalan, D., & Cisin, I. H. (1968). American drinking practices: Summary of findings from a national probability sample: II. Measurement of massed versus spaced drinking. *Quarterly Journal of Studies on Alcohol, 29*, 642.

Cahalan, D., Cisin, I. H., & Crossley, H. M. (1969). American drinking practices: A national study of drinking behavior and attitudes. *Monographs of the Rutgers Center of Alcohol Studies, 6*, 260-260.

Carey, K. B., Carey, M. P., Maisto, S. A., & Henson, J. M. (2006). Brief Motivational Interventions for Heavy College Drinkers: A Randomized Controlled Trial. *Journal of Consulting and Clinical Psychology, 74*, 943-954.

Carey, K. B., Henson, J. M., Carey, M. P., & Maisto, S. A. (2007a). Which heavy drinking college students benefit from a brief motivational intervention? *Journal of Consulting and Clinical Psychology, 75*, 663-669.

Carey, K. B., Neal, D. J., & Collins, S. E. (2004). A psychometric analysis of the self-regulation questionnaire. *Addictive Behaviors, 29*, 253-260.

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

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

Collins, S. E., Carey, K. B., & Sliwinski, M. J. (2002). Mailed personalized normative feedback as a brief interention for at-risk college drinkers. *Journal of Studies on Alcohol, 63*, 559-567.

Cronin, C. (1996). Harm reduction for alcohol-use-related problems among college students. *Substance Use & Misuse, 31*, 2029-2037.

Darkes, J., & Goldman, M. S. (1993). Expectancy challenge and drinking reduction: Experimental evidence for a mediational process. *Journal of Consulting and Clinical Psychology, 61*, 344-353.

Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality, 19*, 109-134.

Del Boca, F. K., Darkes, J., Greenbaum, P. E., & Goldman, M. S. (2004). Up Close and Personal: Temporal Variability in the Drinking of Individual College Students During Their First Year. *Journal of Consulting and Clinical Psychology, 72*, 155-164.

de Lorimier, A. A. (2000). Alcohol, Wine, and Health. *The American Journal of Surgery, 180*, 357-361.

DiClemente, C. C., Prochaska, J. O., Fairhurst, S. K., Velicer, W. F., Velasquez, M. M., & Rossi, J. S. (1991). The process of smoking cessation: An analysis of precontemplation, contemplation, and preparation stages of change. *Journal of Consulting and Clinical Psychology, 59*, 295-304.

Dimeff, L. A., Baer, J. S., Kivlahan, D. R., & Marlatt, G. A. (1999). *Brief Alcohol Screening and Intervention for College Students (BASICS): A harm reduction approach*. New York, NY, US: Guilford Press.

Dimeff, L. A., & McNeely, M. (2000). Computer-enhanced primary care practitioner advice for high-risk college drinkers in a student primary health-care setting. *Cognitive and Behavioral Practice, 7*, 82-100.

Field, C. A., Duncan, J., Washington, K., & Adinoff, B. (2007). Association of baseline characteristics and motivation to change among patients seeking treatment for substance dependence. *Drug and Alcohol Dependence, 91*, 77-84.

Fillmore, K. M. (1974). Drinking and problem drinking in early adulthood and middle age: An exploratory 20-year follow-up study. *Quarterly Journal of Studies on Alcohol, 35*, 819-840.

Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology, 51 (1)*, 115-134.

Fromme, K., & Corbin, W. (2004). Prevention of Heavy Drinking and Associated Negative Consequences Among Mandated and Voluntary College Students. *Journal of Consulting and Clinical Psychology, 72*, 1038-1049.

Fromme, K., Marlatt, G. A., Baer, J. S., & Kivlahan, D. R. (1994). The Alcohol Skills Training Program: A group intervention for young adult drinkers. *Journal of Substance Abuse Treatment, 11*, 143-154.

Fromme, K., & Orrick, D. (2004). The Lifestyle Management Class: A harm reduction approach to college drinking. *Addiction Research & Theory, 12*, 335-351.

Garvin, R. B., Alcorn, J. D., & Faulkner, K. K. (1990). Behavioral strategies for alcohol abuse prevention with high-risk college males. *Journal of Alcohol and Drug Education, 36*, 23-34.

Ghosh, A., & Greist, J. H. (1988). Computer treatment in psychiatry. *Psychiatric Annals, 18*, 246-250.

Heimberg, R. G., Mueller, G. P., Holt, C. S., & Hope, D. A. (1992). Assessment of anxiety in social interaction and being observed by others: The Social Interaction Anxiety Scale and the Social Phobia Scale. *Behavior Therapy, 23*, 53-73.

Henson, J. M., Carey, M. P., Carey, K. B., & Maisto, S. A. (2006). Associations among health behaviors and time perspective in young adults: Model testing with boot-strapping replication. *Journal of Behavioral Medicine, 29*, 127-137.

Hingson, R. W., Heeren, T., Zakocs, R. C., Kopstein, A., & Wechsler, H. (2002). Magnitude of alcohol-related mortality and morbidity among U. S. college students ages 18-24. *Journal of Studies on Alcohol, 63*, 136.

Hurlbut, S. C., & Sher, K. J. (1992). Assessing alcohol problems in college students. *Journal of American College Health, 41*, 49-58.

Jackson, K. M., Sher, K. J., Gotham, H. J., & Wood, P. K. (2001). Transitioning into and out of large-effect drinking in young adulthood. *Journal of Abnormal Psychology, 110*, 378-391.

Kahler, C. W., Strong, D. R., & Read, J. P. (2005). Toward efficient and comprehensive measurement of the alcohol problems continuum in college students: The Brief Young Adult Alcohol Consequences Questionnaire. *Alcoholism: Clinical and Experimental Research, 29*, 1180-1189.

Kaiser Family Foundation. (2001, December). *Generation Rx.com: how young people use the Internet for health information*. Available at: http://www.kff.org/entmedia/loader.cfm?url=/commonspot/security/getfile.cfm&PageID=13719. Accessed May 17, 2008.

Karam, E., Kypri, K., & Salamoun, M. (2007). Alcohol use among college students: An international perspective. *Current Opinion in Psychiatry, 20*, 213-221.

Knee, C. R., & Neighbors, C. (2002). Self-determination, perception of peer pressure, and drinking among college students. *Journal of Applied Social Psychology, 32*, 522-543.

Kobak, K. A., Taylor, L. v., Dottl, S. L., Greist, J. H., Jefferson, J. W., Burroughs, D., et al. (1997). A computer-administered telephone interview to identify mental disorders. *JAMA: Journal of the American Medical Association, 278*, 905-910.

Kypri, K., Saunders, J. B., & Gallagher, S. J. (2003). Acceptability of various brief intervention approaches for hazardous drinking among university students. *Alcohol and Alcoholism, 38*, 626-628.

Larimer, M. E., & Cronce, J. M. (2002). Identification, prevention, and treatment: A review of individual-focused strategies to reduce problematic alcohol consumption by college students. *Journal of Studies on Alcohol*, 148-163.

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

Leffingwell, T. R. (2004). Drinking Assessment and Feedback Tool for College Students [Computer software] (Version 2.0). Stillwater, OK.

Leffingwell, T. R., Horton, R., Mignogna, J., Jackson, M. J., Leedy, M. & Lack, C. (2006, April). *High-risk drinking prevention among college students: Year Three.* Poster presented at the Annual Oklahoma Health Research Conference, Oklahoma Center for the Advancement of Science and Technology, Oklahoma City, Oklahoma.

Leffingwell, T. R., Hopper, R, Mignogna, J., Jackson, M., Leedy, M., & Lack, C. (2007). *A randomized trial of a computerized multimedia feedback intervention for high-risk drinking among college students.* Paper presented at the Society for Behavioral Medicine Washington, District of Columbia.

Lewis, M. A., & Neighbors, C. (2004). Gender-specific misperceptions of college student drinking norms. *Psychology of Addictive Behaviors, 18*, 334-339.

Lewis, M. A., & Neighbors, C. (2005). Self-determination and the use of self-presentation strategies. *Journal of Social Psychology, 145,* 469-489.

MacKinnon, D. P., & Luecken, L. J. (2008). How and for whom? Mediation and moderation in health psychology. *Health Psychology, 27 (2),* S99-S100.

Maddock, J. E., Laforge, R. G., Rossi, J. S., & O'Hare, T. (2001). The College Alcohol Problems Scale. *Addictive Behaviors, 26,* 385-398.

Maisto, S. A., Conigliaro, J., McNeil, M., Kraemer, K., Conigliaro, R. L., & Kelley, M. E. (2001). Effects of two types of brief intervention and readiness to change on alcohol use in hazadous drinkers. *Journal of Studies on Alcohol, 62,* 605-614.

Marlatt, G. A., Baer, J. S., Kivlahan, D. R., Dimeff, L. A., Larimer, M. E., Quigley, L. A., et al. (1998). Screening and brief intervention for high-risk college student drinkers: Results from a 2-year follow-up assessment. *Journal of Consulting and Clinical Psychology, 66,* 604-615.

Mattick, R. P., & Clarke, J. C. (1998). Development and validation of measures of social phobia, scrutiny fear, and social interaction anxiety. *Behaviour Research and Therapy, 36,* 455-470.

Maxwell, S. E., & Howard, G. S. (1981). Change scores—necessarily anathema? *Educational and Psychological Measurement, 41,* 747-756.

Miller, W. R., & Rollnick, S. (1991). *Motivational interviewing: Preparing people to change addictive behavior*. New York, NY, US: Guilford Press.

Miller, W. R., & Rollnick, S. (2002). *Motivational interviewing: Preparing people for change (2nd ed.).* New York, NY, US: Guilford Press.

Miller, W. R. (2006, Febuary). Feedbackfire. *Motivational Interviewing Network of Trainers Bulletin, 13,* 3.

Moskowitz, J. M. (1989). The primary prevention of alcohol problems: A critical review of the research literature. *Journal of Studies on Alcohol, 50,* 54.

Murphy, J. G., Duchnick, J. J., Vuchinich, R. E., Davison, J. W., Karg, R. S., Olson, A. M., et al. (2001). Relative efficacy of a brief motivational intervention for college student drinkers. *Psychology of Addictive Behaviors, 15,* 373-379.

Murphy, J. G., Benson, T. A., Vuchinich, R. E., Deskins, M. M., Eakin, Flood, et al. (2004). A comparison of personalized feedback for college student drinkers delivered with and without a motivational interview. *Journal of Studies on Alcohol and Drugs, 65 (2),* 200-203.

O'Hare, T., & Sherrer, M. V. (1997). Drinking problems, alcohol expectancies, and drinking contexts in college first offenders. *Journal of Alcohol and Drug Education, 43,* 31-45.

Neal, D. J., Corbin, W. R., & Fromme, K. (2006). Measurement of alcohol-related consequences among high school and college students: Application of item response models to the Rutgers Alcohol Problem Index. *Psychological Assessment, 18,* 402-414.

Neighbors, C., Fossos, N., Woods, B. A., Fabiano, P., Sledge, M., & Frost, D. (2007). Social anxiety as a moderator of the relationship between perceived norms and drinking. *Journal of Studies on Alcohol and Drugs, 68,* 91-96.

Neighbors, C., Larimer, M. E., Geisner, I. M., & Knee, C. R. (2004). Feeling controlled and drinking motives among college students: Contingent self-esteem as a mediator. *Self and Identity, 3*, 207-224.

Neighbors, C., Larimer, M. E., & Lewis, M. A. (2004). Targeting misperceptions of descriptive drinking norms: Efficacy of a computer-delivered personalized normative feedback intervention. *Journal of Consulting and Clinical Psychology, 72*, 434-447.

Neighbors, C., Lewis, M. A., Bergstrom, R. L., & Larimer, M. E. (2006). Being controlled by normative influences: Self-determination as a moderator of a normative feedback alcohol intervention. *Health Psychology, 25*, 571-579.

Newcomb, M. D., & Bentler, P. M. (1987). Changes in drug use from high school to young adulthood: Effects of living arrangement and current life pursuit. *Journal of Applied Developmental Psychology, 8*, 221-246.

Osman, A., Gutierrez, P. M., Barrios, F. X., Kopper, B. A., & Chiros, C. E. (1998). The Social Phobia and Social Interaction Anxiety Scales: evaluation of psychometric properties. *Journal of Psychopathology and Behavioral Assessment, 20*, 249-264.

Page, M. C., Braver, S. L., & MacKinnon, D. P., (2003). *Levine's Guide to SPSS for Analysis of Variance (2nd ed.)*. Mahwah, NJ: Lawrence Erlbaum Associates.

Perkins, H. W., & Berkowitz, A. D. (1986). Perceiving the community norms of alcohol use among students: Some research implications for campus alcohol education programming. *International Journal of the Addictions, 21*, 961-976.

Pew Internet and American Life Project (2002). The internet goes to college. http://www.pewinternet.org/pdfs/PIP_College_Report.pdf, Retrieved January 4, 2008.

Prentice, D. A., & Miller, D. T. (1993). Pluralistic ignorance and alcohol use on campus: Some consequences of misperceiving the social norm. *Journal of Personality and Social Psychology, 64*, 243-256.

Prochaska, J. O., & DiClemente, C. C. (1983). Stages and processes of self-change of smoking: Toward an integrative model of change. *Journal of Consulting and Clinical Psychology, 51*, 390-395.

Roberts, L. J., Neal, D. J., Kivlahan, D. R., Baer, J. S., & Marlatt, G. A. (2000). Individual drinking changes following a brief intervention among college students: Clinical significance in an indicated preventive context. *Journal of Consulting and Clinical Psychology, 68*, 500-505.

Rogers, J. D., & Greenfield, T. K. (1999). Beer drinking accounts for most of the hazardous alcohol consumption reported in the United States. *Journal of Studies on Alcohol, 60*, 732-739.

Rollnick, S., Heather, N., Gold, R., & Hall, W. (1992). Development of a short 'readiness to change' questionnaire for use in brief, opportunistic interventions among excessive drinkers. *British Journal of Addiction, 87*, 743-754.

Rosenthal, R., & Rosnow, R. L. (1993). *Essentials of Behavioral Research: Methods and Data Analysis (3rd ed.)*. Boston: McGraw-Hill.

Sanchez-Craig, M., Annis, H. M., Bronet, A. R., & MacDonald, K. R. (1984). Random assignment to abstinence and controlled drinking: Evaluation of a cognitive-behavioral program for problem drinkers. *Journal of Consulting and Clinical Psychology, 52*, 390-403.

Schulenberg, S. E., Yutrzenka, B. A., & Gohm, C. L. (2006). The Computer Aversion, Attitudes, And Familiarity Index (CAAFI): A measure for the study of computer-related constructs. *Journal of Educational Computing Research, 34*, 129-146.

Sobell, L. C., Ellingstad, T. P., & Sobell, M. B. (2000). Natural recovery from alcohol and drug problems: Methodological review of the research with suggestions for future directions. *Addiction, 95*, 749-764.

Sobell, L.C. & Sobell, M. B. (1995). *Alcohol Timeline Followback Users' Manual*. Toronto, Canada: Addiction Research Foundation.

Substance Abuse and Mental Health Services Administration. (2006). *Results from the 2005 National Survey on Drug Use and Health: National Findings, DHHS Publication No. SMA 06-4194.* Rockville, MD: Office of Applied Studies.

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

Vicary, J. R., & Karshin, C. M. (2002). College alcohol abuse: A review of the problems, issues, and prevention approaches. *Journal of Primary Prevention, 22*, 299-331.

Wagener, T. (2008*). Genuine vs. DrAFT-CS: A Randomized Trial Comparing Computer and Live Personalized Feedback Interventions for High-Risk Drinking among College Students*. Unpublished doctoral dissertation, Oklahoma State University.

Walters, S. T., Bennett, M. E., & Noto, J. V. (2000). Drinking on campus: What do we know about reducing alcohol use among college students? *Journal of Substance Abuse Treatment, 19*, 223-228.

Walters, S. T., Hester, R. K., Chiauzzi, E., & Miller, E. (2005). Demon rum: High-tech solutions to an age-old problem. *Alcoholism: Clinical and Experimental Research, 29*, 270-277.

Walters, S. T., Miller, E., & Chiauzzi, E. (2005b). Wired for wellness: e-Interventions for addressing college drinking. *Journal of Substance Abuse Treatment, 29*, 139-145.

Walters, S. T., & Neighbors, C. (2005). Feedback interventions for college alcohol misuse: What, why and for whom? *Addictive Behaviors, 30*, 1168-1182.

Walters, S. T., & Woodall, W. G. (2003). Mailed feedback reduces consumption among moderate drinkers who are employed. *Prevention Science, 4*, 287-294.

Watson, D., & Friend, R. (1969). Measurement of social-evaluative anxiety. *Journal of Consulting and Clinical Psychology, 33*, 448-457.

Wechsler, H., Davenport, A., Dowdall, G., & Moeykens, B. (1994). Health and behavioral consequences of binge drinking in college: A national survey of students at 140 campuses. *JAMA: Journal of the American Medical Association, 272*, 1672-1677.

Wechsler, H., Kelley, K., Weitzman, E. R., San Giovanni, J. P., & Seibring, M. (2000a). What colleges are doing about student binge drinking: A survey of college administrators. *Journal of American College Health, 48*, 219.

Wechsler, H., Lee, J. E., Kuo, M., & Lee, H. (2000b). College binge drinking in the 1990s: A continuing problem: Results of the Harvard School of Public Health 1999 College Alcohol Study. *Journal of American College Health, 48*, 199-210.

Wechsler, H. A., S. B. (1998). Binge drinking: The five/four measure. *Journal of Studies of Alcohol, 59*, 122-124.

Wills, T. A., Sandy, J. M., & Yaeger, A. M. (2001). Time perspective and early-onset substance use: A model based on stress-coping theory. *Psychology of Addictive Behaviors, 15*, 118-125.

Zimbardo, P. G., & Boyd, J. N. (1999). Putting time in perspective: A valid, reliable individual-differences metric. *Journal of Personality and Social Psychology, 77*, 1271-1288.

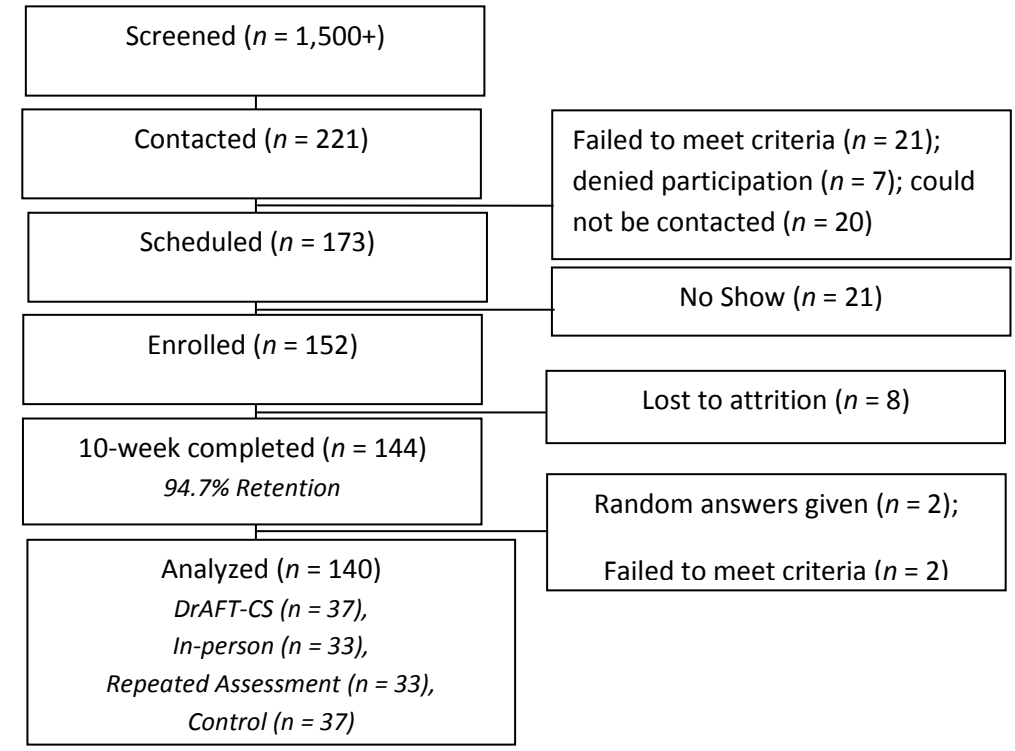
Zuckerman, M., Gioioso, C., & Tellini, S. (1988). Control orientation, self-monitoring, and preference for image versus quality approach to advertising. *Journal of Research in Personality, 22*, 89-100.

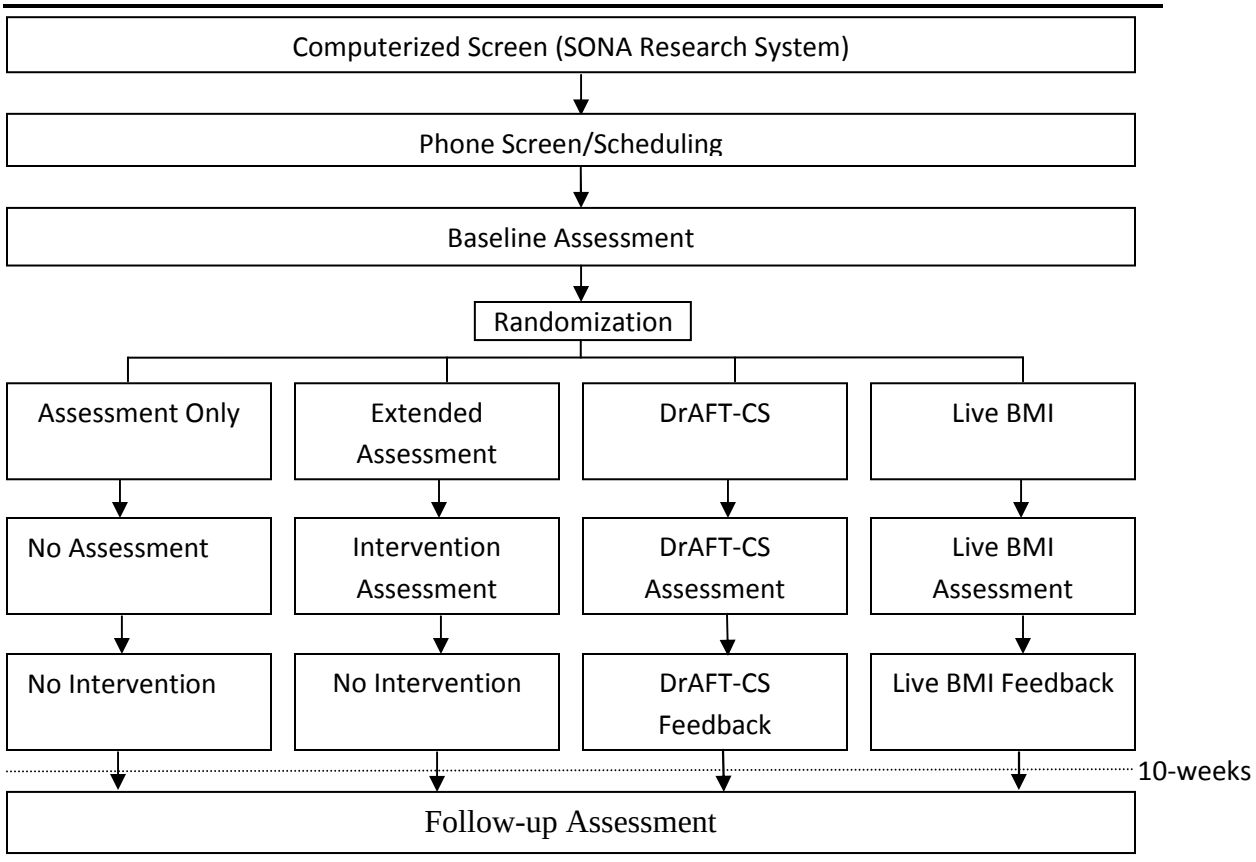
APPPENDICES

APPPENDIX A
FIGURES

Figure 1

Experimental Flow Chart





APPPENDIX B
TABLES

Table 1

Participant Baseline Characteristics & χ^2 Analyses of Differences Between Experimental Condition

Variable		Experimental Condition				χ^2	$p \leq$
		Live BMI	DrAFT-CS	Extended Assessment	Assessment Only		
Gender	Male	19	18	16	26	4.66	.20
	Female	14	19	17	11		
Year in School	Freshman	11	12	10	15	11.18	.26
	Sophomore	8	7	1	5		
	Junior	8	7	14	10		
	Senior	6	11	8	7		
Relationship Status	Single	24	30	21	36	16.60*	.01*
	Married	0	1	0	0		
	Dating	9	6	12	1		
Greek Involvement	Yes	22	26	24	23	0.91	.82
	No	11	10	9	13		
Ethnicity	Caucasian	29	30	30	29	19.58	.36
	Amer. Indian	0	0	0	2		
	Hispanic	1	3	1	2		
	Hispanic/Latino	1	2	1	0		
	Asian	0	0	0	2		
	Biracial	2	1	0	2		
	Other	0	1	0	0		
	Did not answer	0	0	1	0		
Living situation	Alone	3	3	1	5	15.58	.79
	Spouse	0	1	0	0		
	Partner	1	0	0	0		
	Parents	0	1	2	1		
	Greek housing	8	6	5	7		
	Dorms	5	6	7	5		
	Roommate	15	20	18	19		
	Children only	1	0	0	0		

Note: * = p < .05., Cramér's V = .24

Table 2

Participant Baseline Characteristics & One-way Analysis of Variance (ANOVA) Tests

Variable	Experimental Group				*F*	$p \leq$
	Live BMI	DrAFT-CS	Extended Assessment	Assessment Only		
Age	20.45 (2.46)	20.30 (1.70)	20.39 (1.56)	20.05 (1.67)	.32	.81
Weight	163.58 (35.02)	154.67 (26.71)	156.18 (47.24)	168.43 (32.19)	1.16	.33
DDQ-Avg Drink	7.71 (3.81)	6.41 (2.44)	6.01 (3.48)	7.45 (4.49)	1.71	.17
DDQ-WE Avg	8.49 (4.03)	7.43 (3.45)	6.90 (3.92)	8.13 (4.84)	1.01	.39
DDQ-Week	23.94 (12.40)	23.92 (15.52)	20.03 (13.72)	23.19 (14.16)	.59	.62
DDQ-Weekend	22.61 (12.12)	19.65 (10.12)	18.18 (12.29)	20.16 (11.15)	.86	.46
Thursday-BAC	.120 (.134)	.096 (.087)	.057 (.082)	.078 (.089)	2.39	.07
Friday-BAC	.132 (.078)	.135 (.083)	.116 (.076)	.108 (.099)	.80	.50
Saturday-BAC	.140 (.110)	.130 (.082)	.119 (.078)	.087 (.124)	1.84	.14
FQQ-Peak	12.23 (4.79)	11.72 (4.61)	11.08 (4.58)	12.64 (4.36)	.75	.53
FQQ-Average	9.44 (5.30)	9.72 (5.65)	8.47 (4.80)	8.91 (4.54)	.41	.74
FQQ-Often	8.32 (4.74)	9.57 (5.27)	8.41 (5.05)	8.99 (5.79)	.43	.73
FQQ-Drunk	4.73 (3.94)	6.76 (5.80)	4.12 (3.79)	5.85 (5.65)	1.98	.12
CAPS-r Personal	7.60 (3.29)	7.89 (3.97)	8.18 (4.48)	7.94 (4.43)	.11	.95
CAPS-r Social	6.67 (2.65)	7.38 (3.11)	7.12 (2.54)	7.65 (2.57)	.78	.51
BYAACQ	10.13 (4.21)	11.15 (5.51)	10.81 (5.40)	11.48 (4.66)	.47	.71
RCQ	-1.98 (4.96)	-2.69 (4.65)	-2.53 (4.79)	-1.22 (4.97)	.69	.56
CAFFI	20.45 (33.56)	27.10 (20.42)	28.72 (28.47)	31.22 (29.35)	.91	.44
FNE	10.87 (7.23)	9.98 (6.90)	14.02 (7.41)	12.97 (9.51)	1.86	.14
SIAS	16.72 (8.67)	16.05 (10.04)	20.68 (12.31)	19.43 (12.36)	1.39	.25

Note. Means are listed for each group (with standard deviations listed in parentheses); DDQ-Avg Drink = average number of drinks per typical drinking occasion during week as assessed by the Daily Drinking Questionnaire; DDQ-WE Avg = average number of drinks per typical drinking occasion during weekend; DDQ-Week = total typical quantity of drinks per week; DDQ-Weekend = total typical quantity of drinks per weekend; Thursday-BAC = peak blood alcohol level for typical drinking on a Thursday; Friday-BAC = peak blood alcohol level for typical drinking on a Friday; Saturday-BAC = peak blood alcohol level for typical drinking on a Saturday; FQQ-Peak = highest number of alcohol drinks consumed in one occasion during the past month; FQQ-Average = average number of drinks on a weekend evening; FQQ-Often = number of drinking occasions during the past month; FQQ-Drunk = number of occasions participant drank "to get drunk" in the past month; CAPS-r Personal = College Alcohol Problems Scale, revised, Personal Subscale; CAPS-r Social = College Alcohol Problems Scale, revised, Social Subscale; B-YAACQ = alcohol-related problems; RCQ = Readiness to Change Questionnaire; CAFFI = Computer Aversion, Attitudes, and Familiarity Index; FNE = Fear of Negative Evaluation; SIAS = Social Interaction Anxiety Scale

Table 3

Correlations Matrix of Dependent Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. DDQ-WE Avg	1.00													
2. DDQ-Avg Drink	.88**	1.00												
3. DDQ-Weekend	.68**	.68**	1.00											
4. DDQ-Week	.70**	.71**	.85**	1.00										
5. Saturday-BAC	.31**	.25**	.60**	.48**	1.00									
6. Friday-BAC	.26**	.28**	.62**	.47**	.63**	1.00								
7. Thursday-BAC	.46**	.45**	.52**	.48**	-0.05	-0.01	1.00							
8. FQQ-Drunk	0.04	0.07	.17*	.19*	0.05	0.10	0.06	1.00						
9. FQQ-Often	0.11	0.10	.30**	.43**	.21*	.21*	0.12	.41**	1.00					
10. FQQ-Average	.30**	.21*	.37**	.38**	.36**	.35**	0.11	0.07	.28**	1.00				
11. FQQ-Peak	.38**	.27**	.31**	.32**	.23**	.18*	.19*	0.14	.21*	.34**	1.00			
12. CAPSr-Social	.33**	.38**	.36**	.40**	0.14	.22*	.23**	.23**	0.15	-0.06	0.00	1.00		
13. CAPSr-Personal	0.05	0.06	.20*	0.15	0.10	.18*	0.03	0.07	.20*	0.07	0.01	.23**	1.00	
14. B-YAACQ	0.06	0.05	0.13	.21*	.20*	.24**	0.02	.19*	.37**	.25**	.30**	.27**	.40**	1.00

Note. ** = p < .01., * = p < .05.; See Table 2 note for variable labels.

Table 4

Summary of Significant Analysis of Variance (ANOVA) Interactions for the Proposed Moderating Variables

	H1	H2	H3		H4	H5	H6
	Gender	*RTC*	*Drinking Status, Week*	*Drinking Status, Weekend*	*CAAF*	*FNE*	*SIA*
DDQ-WE Avg							
DDQ-Avg Drink							
DDQ-Weekend							
DDQ-Week							
Saturday-BAC							
Friday-BAC							
Thursday-BAC							
FQQ-Drunk							
FQQ-Often							
FQQ-Average	X					X	
FQQ-Peak							
CAPSr-Social							
CAPSr-Personal				X			
B-YAACQ			X				

Note. X = significant ANOVA interaction; H1 = hypothesis 1, H2 = hypothesis 2, etc.; RTC = readiness to change; Drinking Status, Week = drinking status based on total drinking for the week; Drinking Status, Weekend = drinking status based on total drinking for the weekend; CAAF = attitudes toward and familiarity with computers; FNE = fear of negative evaluation ; SIA = social interaction anxiety; See Table 2 note for variable labels not described here.

Table 5

Hypothesis 1: Mean Change Scores for Condition by Gender Groups

	Live BMI			DrAFT-CS		
Measure	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*
DDQ-Avg Drink	1.93 (2.83)	2.02 (2.34)	1.97 (2.59)	.27 (3.21)	1.40 (1.27)	.85 (2.45)
DDQ-WE Avg	2.42 (3.36)	2.98 (3.62)	2.66 (3.43)	.49 (4.16)	1.38 (1.86)	.95 (3.18)
DDQ-Week	5.42 (11.92)	4.71 (5.99)	5.12 (9.74)	-2.00 (11.11)	4.63 (5.74)	1.41 (9.28)
DDQ-Weekend	6.16 (9.95)	5.71 (6.12)	5.97 (8.42)	1.44 (7.56)	4.47 (4.60)	3.00 (6.32)
Thursday-BAC	.041 (.062)	.048 (.095)	.044 (.076)	.048 (.072)	.043 (.054)	.046 (.063)
Friday-BAC	.027 (.067)	.065 (.170)	.043 (.121)	-.018 (.053)	.025 (.062)	.004 (.061)
Saturday-BAC	.014 (.088)	.081 (.129)	.043 (.111)	.025 (.108)	.048 (.080)	.036 (.094)
FQQ-Peak	2.39 (5.34)	4.68 (4.83)	3.36 (5.18)	3.08 (5.06)	.84 (4.44)	1.93 (4.82)
FQQ-Average	-1.18 (6.98)	3.93 (6.52)	.98 (7.16)	2.72 (5.68)	.42 (4.74)	1.54 (5.28)
FQQ-Often	1.37 (3.07)	.29 (3.58)	.91 (3.29)	.14 (6.53)	1.89 (5.17)	1.04 (5.86)
FQQ-Drunk	.66 (3.52)	-.21 (2.69)	.29 (3.18)	-.56 (5.54)	2.25 (4.28)	.85 (5.08)
CAPS-r Personal	-.44 (2.75)	.10 (2.95)	-.21 (2.80)	-1.86 (2.93)	.47 (2.89)	-.63 (3.10)
CAPS-r Social	-.68 (3.63)	.53 (6.82)	-.17 (5.15)	-2.24 (4.70)	-1.63 (3.83)	-1.92 (4.21)
B-YAACQ	1.28 (2.57)	4.65 (5.85)	2.76 (4.56)	2.29 (4.63)	2.89 (3.32)	2.60 (3.96)
	Extended Assessment			Assessment Only		
Measure	*Male*	*Female*	*Total*	*Male*	*Female*	*Total*
DDQ-Avg Drink	1.20 (5.22)	.22 (1.57)	.69 (3.77)	.77 (3.98)	.11 (2.49)	.58 (3.58)
DDQ-WE Avg	1.57 (5.29)	.34 (1.42)	.94 (3.81)	.72 (4.04)	-.38 (2.85)	.39 (3.72)
DDQ-Week	4.13 (16.14)	2.24 (5.20)	3.15 (11.69)	-.15 (9.64)	-1.45 (11.40)	-.54 (10.05)
DDQ-Weekend	4.25 (16.49)	2.06 (4.16)	3.12 (11.72)	1.27 (6.40)	-1.36 (9.05)	.49 (7.26)
Thursday-BAC	.016 (.111)	.025 (.068)	.021 (.090)	-.011 (.096)	-.018 (.093)	-.013 (.094)
Friday-BAC	.030 (.101)	.006 (.047)	.018 (.077)	.018 (.098)	-.024 (.055)	.005 (.089)
Saturday-BAC	.025 (.107)	.020 (.053)	.022 (.082)	-.016 (.119)	-.024 (.135)	-.019 (.122)
FQQ-Peak	1.38 (3.24)	1.41 (2.90)	1.39 (3.02)	.62 (4.11)	.18 (4.05)	.49 (4.04)
FQQ-Average	.88 (3.50)	1.38 (4.26)	1.14 (3.86)	-1.08 (6.02)	-1.27 (5.16)	-1.14 (5.71)
FQQ-Often	-.13 (2.58)	1.62 (6.30)	.77 (4.87)	.56 (7.14)	.86 (4.70)	.65 (6.45)
FQQ-Drunk	-.56 (2.46)	-.21 (2.11)	-.38 (2.26)	.69 (5.06)	.45 (5.93)	.62 (5.25)
CAPS-r Personal	.05 (3.93)	-.75 (1.91)	-.35 (3.07)	.31 (2.85)	-.60 (1.84)	.05 (2.61)
CAPS-r Social	-1.19 (3.85)	-.06 (4.51)	-.61 (4.18)	-.97 (4.03)	.00 (2.92)	-.71 (3.75)
B-YAACQ	2.32 (5.73)	3.99 (6.77)	3.21 (6.26)	1.11 (5.67)	1.42 (5.85)	1.20 (5.65)

Note. Means are listed (with standard deviations in parentheses). See Table 2 note for variable labels.

Table 6

Hypothesis 1: Analysis of Variance (ANOVA) Results for Condition by Gender Interaction

	F	df	p	η^2	*1 - β*
DDQ-WE Avg	0.80	3, 132	0.495	0.02	0.22
DDQ-Avg Drink	0.76	3, 132	0.517	0.02	0.21
DDQ-Weekend	0.78	3, 132	0.508	0.02	0.21
DDQ-Week	1.37	3, 132	0.255	0.03	0.36
Saturday-BAC	0.89	3, 131	0.446	0.02	0.24
Friday-BAC	0.08	3, 131	0.971	0.00	0.06
Thursday-BAC	1.91	3, 131	0.130	0.04	0.49
FQQ-Drunk	1.27	3, 131	0.287	0.03	0.33
FQQ-Often	0.54	3, 132	0.658	0.01	0.16
FQQ-Average*	2.69	3, 132	0.049	0.06	0.64
FQQ-Peak	1.58	3, 132	0.198	0.03	0.41
CAPSr-Social	2.32	3, 126	0.078	0.05	0.57
CAPSr-Personal	0.03	3, 126	0.992	0.00	0.06
B-YAACQ	0.57	3, 128	0.638	0.01	0.16

Note. See Table 2 note for variable labels; * = $p < .05$.

Table 7

Hypothesis 2: Mean Change Scores for Condition by Readiness to Change Blocks

	Live BMI				DrAFT-CS			
Measure	*Low*	*Med.*	*High*	*Total*	*Low*	*Med.*	*High*	*Total*
DDQ-WE Avg	4.62 (3.94)	1.97 (2.71)	2.92 (3.5)	2.84 (3.31)	1.46 (1.77)	-.46 (4.22)	1.79 (2.93)	.95 (3.18)
DDQ-Avg Drink	2.91 (1.34)	1.77 (2.32)	2.03 (3.41)	2.1 (2.52)	.97 (1.27)	-.38 (2.86)	1.97 (2.58)	.85 (2.45)
DDQ-Weekend	7.71 (7.13)	4.93 (7.54)	7.9 (9.64)	6.47 (8.04)	3.15 (4.3)	3.17 (7.69)	2.67 (7.16)	3 (6.32)
DDQ-Week	8.43 (7.57)	3.67 (8.38)	7.3 (1.65)	5.84 (8.96)	2.92 (5.25)	-1.5 (13.65)	2.67 (7.18)	1.41 (9.28)
Saturday-BAC	.083 (.158)	.023 (.102)	.047 (.093)	.043 (.112)	.034 (.076)	.046 (.103)	.029 (.111)	.036 (.094)
Friday-BAC	.035 (.049)	.036 (.083)	.07 (.083)	.046 (.076)	.034 (.039)	.047 (.096)	.058 (.04)	.046 (.063)
Thursday-BAC	.049 (.043)	.048 (.169)	.047 (.054)	.048 (.119)	.006 (.036)	-.002 (.087)	.007 (.055)	.004 (.061)
FQQ-Drunk	1.07 (3.21)	.17 (3.57)	-.4 (2.65)	.19 (3.18)	2.35 (4.62)	.05 (5.19)	-.04 (5.5)	.85 (5.08)
FQQ-Often	1.93 (2.46)	.1 (2.6)	1.5 (4.64)	.94 (3.34)	1.5 (5.03)	1.46 (6.92)	.13 (5.96)	1.04 (5.86)
FQQ-Average	-1.14 (7.65)	1.4 (5.5)	2.95 (8.65)	1.33 (6.99)	2.27 (5.75)	.83 (4.86)	1.46 (5.5)	1.54 (5.28)
FQQ-Peak	3.71 (5.09)	4.37 (4.87)	2.35 (5.69)	3.59 (5.09)	2.46 (3.18)	.5 (3.09)	2.79 (7.22)	1.93 (4.82)
CAPSr-Social	-.13 (.43)	-.06 (3.11)	-.54 (3.51)	-.22 (2.85)	.39 (1.82)	-1.92 (3.94)	-.44 (3.04)	-.63 (3.1)
CAPSr-Personal	.67 (5.68)	-1.23 (5.21)	2 (3.74)	.12 (4.96)	-.62 (3.15)	-2.42 (2.51)	-2.91 (6.3)	-1.92 (4.21)
B-YAACQ	3.71 (3.91)	2.32 (5.24)	3.16 (4.25)	2.88 (4.59)	3.54 (3.67)	1.25 (3.67)	3 (4.59)	2.6 (3.96)

Note. Means are listed (with standard deviations in parentheses). See Table 2 note for variable labels.

Table 7, continued

Hypothesis 2: Mean Change Scores for Condition by Readiness to Change Blocks

	Extended Assessment				Assessment Only			
Measure	*Low*	*Med.*	*High*	*Total*	*Low*	*Med.*	*High*	*Total*
DDQ-WE Avg	2.23 (6.36)	.26 (1.29)	.33 (1.21)	.94 (3.81)	.73 (2.78)	-.03 (2.84)	.46 (4.91)	.39 (3.72)
DDQ-Avg Drink	1.56 (6.31)	.24 (1.61)	.28 (1.36)	.69 (3.77)	.99 (2.4)	.29 (2.15)	.48 (5.03)	.58 (3.58)
DDQ-Weekend	6.82 (19.38)	1.67 (4.08)	.8 (5.01)	3.12 (11.72)	4.27 (6.02)	-1.18 (8.39)	-1.07 (6.57)	.49 (7.26)
DDQ-Week	7.82 (18.64)	1.08 (4.38)	.5 (6)	3.15 (11.69)	4.82 (8.16)	-1.73 (1.59)	-3.6 (9.91)	-.54 (1.05)
Saturday-BAC	.042 (.128)	.003 (.039)	.025 (.054)	.022 (.082)	.04 (.075)	-.008 (.061)	-.069 (.162)	-.019 (.122)
Friday-BAC	.038 (.111)	.015 (.056)	.009 (.105)	.021 (.09)	.028 (.062)	-.009 (.057)	-.045 (.124)	-.013 (.094)
Thursday-BAC	.039 (.122)	.01 (.021)	.004 (.058)	.018 (.077)	.011 (.062)	.002 (.068)	.004 (.119)	.005 (.089)
FQQ-Drunk	-.86 (2.34)	.54 (1.75)	-.95 (2.55)	-.38 (2.26)	.73 (4.72)	-.64 (6.07)	1.47 (5.16)	.62 (5.25)
FQQ-Often	.73 (4.31)	.25 (3.68)	1.45 (6.8)	.77 (4.87)	4.27 (8.57)	-1.05 (4.38)	-.77 (5.1)	.65 (6.45)
FQQ-Average	1.09 (3.73)	.96 (4.66)	1.4 (3.27)	1.14 (3.86)	1.64 (3.78)	-1.45 (5.45)	-2.93 (6.54)	-1.14 (5.71)
FQQ-Peak	1.27 (3.61)	1.67 (2.53)	1.2 (3.16)	1.39 (3.02)	1.45 (3.11)	.36 (5.5)	-.13 (3.5)	.49 (4.04)
CAPSr-Social	.27 (3.41)	.25 (2.05)	-1.91 (3.51)	-.35 (3.07)	-.12 (2.5)	1.09 (2.07)	-.69 (2.98)	.05 (2.61)
CAPSr-Personal	-2.64 (3.8)	.58 (3.68)	.2 (4.66)	-.61 (4.18)	-1 (5.31)	.07 (2.25)	-1.15 (3.53)	-.71 (3.75)
B-YAACQ	1.06 (6.34)	4.18 (4.47)	4.49 (7.72)	3.21 (6.26)	1.42 (5.35)	1.67 (4.38)	.69 (6.88)	1.2 (5.65)

Note. Means are listed (with standard deviations in parentheses). See Table 2 note for variable labels.

Table 8

Hypothesis 2: Analysis of Variance (ANOVA) Results for Condition by Readiness to Change Block Interaction

	F	*df*	*p*	η^2	*1 - β*
DDQ-WE Avg	0.39	6, 127	0.884	0.02	0.16
DDQ-Avg Drink	0.44	6, 127	0.850	0.02	0.18
DDQ-Weekend	0.51	6, 127	0.803	0.02	0.20
DDQ-Week	0.56	6, 127	0.764	0.03	0.22
Saturday-BAC	0.93	6, 126	0.474	0.04	0.36
Friday-BAC	1.11	6, 126	0.358	0.05	0.43
Thursday-BAC	0.10	6, 126	0.996	0.00	0.07
FQQ-Drunk	0.77	6, 126	0.599	0.04	0.29
FQQ-Often	0.91	6, 127	0.492	0.04	0.35
FQQ-Average	1.07	6, 127	0.382	0.05	0.41
FQQ-Peak	0.59	6, 127	0.736	0.03	0.23
CAPSr-Social	1.23	6, 121	0.298	0.06	0.47
CAPSr-Personal	1.60	6, 121	0.153	0.07	0.60
B-YAACQ	0.75	6, 123	0.610	0.04	0.29

Note. See Table 2 note for variable labels; * = $p < .05$.

Table 9

Hypothesis 3: Mean Change Scores for Condition by Drinking Status (based on Drinks per Week) Blocks

	Live BMI				DrAFT-CS			
Variable	*Low*	*Med.*	*High*	*Total*	*Low*	*Med.*	*High*	*Total*
DDQ-WE Avg	1.2 (2.75)	4.8 (3.57)	2.13 (3.2)	2.66 (3.43)	1.64 (1.94)	1 (3.09)	.31 (4.1)	.95 (3.18)
DDQ-Avg Drink	.39 (2.49)	3.55 (2.1)	1.97 (2.41)	1.97 (2.59)	.98 (1.35)	1.39 (2.93)	.21 (2.67)	.85 (2.45)
DDQ-Weekend	2.5 (6.2)	8.9 (8.2)	6.38 (9.61)	5.97 (8.42)	4.09 (4.21)	1.69 (7.45)	3.38 (6.81)	3 (6.32)
DDQ-Week	1.3 (5.85)	8.9 (8.16)	5.15 (12.39)	5.12 (9.74)	2.27 (5.9)	-1.15 (13.13)	3.23 (6.75)	1.41 (9.28)
Saturday-BAC	.019 (.078)	.066 (.139)	.043 (.113)	.042 (.111)	.049 (.086)	.037 (.091)	.025 (.109)	.036 (.094)
Friday-BAC	.045 (.075)	.074 (.08)	.02 (.072)	.044 (.076)	.049 (.035)	.03 (.049)	.057 (.09)	.046 (.063)
Thursday-BAC	0 (.052)	.059 (.048)	.064 (.181)	.043 (.121)	.009 (.04)	-.019 (.075)	.02 (.06)	.004 (.061)
FQQ-Drunk	.1 (2.47)	.7 (2.06)	.12 (4.36)	.29 (3.18)	.32 (3.8)	.31 (5.01)	1.92 (6.31)	.85 (5.08)
FQQ-Often	0 (2.46)	2.3 (2.53)	.54 (4.13)	.91 (3.29)	.64 (6.61)	-1.23 (5.91)	3.65 (4.31)	1.04 (5.86)
FQQ-Average	.95 (6.3)	3.9 (9.86)	-1.23 (4.66)	.98 (7.16)	1.41 (4.27)	-.96 (5.15)	4.15 (5.26)	1.54 (5.28)
FQQ-Peak	2.35 (4.2)	5.55 (4.88)	2.46 (5.9)	3.36 (5.18)	2.91 (3.02)	.88 (6.08)	2.15 (4.79)	1.93 (4.82)
CAPSr-Social	-.62 (3.16)	.35 (2.18)	-.24 (3.01)	-.21 (2.8)	-.06 (1.64)	-.7 (3.74)	-1 (3.42)	-.63 (3.1)
CAPSr-Personal	1.49 (3.56)	1.13 (5.38)	-2.26 (5.62)	-.17 (5.15)	-1.1 (3.18)	-2.31 (5.6)	-2.16 (3.47)	-1.92 (4.21)
B-YAACQ	4.2 (4.96)	3.69 (3.63)	.99 (4.56)	2.76 (4.56)	3.7 (3.89)	1.58 (5.18)	2.69 (2.56)	2.6 (3.96)

Note. Means are listed (with standard deviations in parentheses). See Table 2 note for variable labels.

Table 9, continued

Hypothesis 3: Mean Change Scores for Condition by Drinking Status (based on Drinks per Week) Blocks

	Extended Assessment				Assessment Only			
Variable	*Low*	*Med.*	*High*	*Total*	*Low*	*Med.*	*High*	*Total*
DDQ-WE Avg	-.06 (1.35)	.63 (1.12)	3.48 (7.81)	.94 (3.81)	-.21 (2.43)	.5 (2.7)	.79 (5.37)	.39 (3.72)
DDQ-Avg Drink	-.15 (1.51)	.79 (.93)	2.21 (8.06)	.69 (3.77)	.07 (1.59)	.67 (2.48)	.91 (5.46)	.58 (3.58)
DDQ-Weekend	-.21 (5.24)	2.67 (4.48)	1.57 (23.34)	3.12 (11.72)	-2.36 (7.94)	-.08 (7.1)	3.46 (6.13)	.49 (7.26)
DDQ-Week	-.57 (5.05)	2.25 (6.11)	12.14 (21.84)	3.15 (11.69)	-4.73 (11.08)	.23 (8.55)	2.23 (1.12)	-.54 (1.05)
Saturday-BAC	.015 (.047)	.015 (.053)	.05 (.158)	.022 (.082)	-.007 (.075)	-.013 (.125)	-.034 (.155)	-.019 (.122)
Friday-BAC	-.005 (.088)	.035 (.051)	.048 (.138)	.021 (.09)	-.011 (.057)	-.003 (.074)	-.024 (.134)	-.013 (.094)
Thursday-BAC	-.003 (.04)	.02 (.035)	.056 (.154)	.018 (.077)	-.018 (.041)	-.028 (.049)	.058 (.123)	.005 (.089)
FQQ-Drunk	.21 (1.89)	.08 (1.93)	-2.36 (2.61)	-.38 (2.26)	-2.23 (5.16)	1.77 (3.17)	1.88 (6.32)	.62 (5.25)
FQQ-Often	.36 (3.68)	.54 (6.73)	2 (3.46)	.77 (4.87)	-3.18 (5.02)	1.96 (3.86)	2.58 (8.34)	.65 (6.45)
FQQ-Average	.68 (4.07)	1.33 (2.46)	1.71 (5.59)	1.14 (3.86)	-1.82 (6.72)	-.31 (5.99)	-1.38 (4.79)	-1.14 (5.71)
FQQ-Peak	1.14 (2.91)	1.67 (2.53)	1.43 (4.28)	1.39 (3.02)	-.73 (4.58)	.77 (4.04)	1.23 (3.61)	.49 (4.04)
CAPSr-Social	-1.38 (3.1)	-.17 (2.21)	1.26 (3.88)	-.35 (3.07)	-1 (2.1)	.52 (2.42)	.54 (3.04)	.05 (2.61)
CAPSr-Personal	-.14 (4.09)	-1.5 (4.78)	0 (3.51)	-.61 (4.18)	-2.73 (5.02)	1.21 (2.14)	-.48 (2.72)	-.71 (3.75)
B-YAACQ	3.14 (4.4)	5.17 (6.82)	-.55 (8.02)	3.21 (6.26)	-2.15 (3.33)	5.25 (5)	-.02 (5.63)	1.2 (5.65)

Note. Means are listed (with standard deviations in parentheses). See Table 2 note for variable labels.

Table 10

Hypothesis 3: Analysis of Variance (ANOVA) Results for Condition by Drinking Status Block (based on Drinks per Week) Interaction

	F	*df*	*p*	η^2	*1 - β*
DDQ-WE Avg	1.67	6, 128	0.134	0.07	0.62
DDQ-Avg Drink	0.90	6, 128	0.496	0.04	0.35
DDQ-Weekend	1.30	6, 128	0.262	0.06	0.50
DDQ-Week	1.35	6, 128	0.239	0.06	0.51
Saturday-BAC	0.36	6, 127	0.904	0.02	0.15
Friday-BAC	0.86	6, 127	0.523	0.04	0.33
Thursday-BAC	0.86	6, 127	0.526	0.04	0.33
FQQ-Drunk	1.48	6, 127	0.190	0.07	0.56
FQQ-Often	1.64	6, 128	0.142	0.07	0.61
FQQ-Average	1.79	6, 128	0.106	0.08	0.66
FQQ-Peak	0.95	6, 128	0.460	0.04	0.37
CAPSr-Social	0.80	6, 122	0.572	0.04	0.31
CAPSr-Personal	1.69	6, 122	0.128	0.08	0.63
B-YAACQ*	2.66	6, 124	0.019	0.11	0.85

Note. See Table 2 note for variable labels; * = $p < .05$.

Table 11

Hypothesis 3: Mean Change Scores for Condition by Drinking Status (based on Drinks per Weekend) Blocks

	Live BMI				DrAFT-CS			
Variable	*Low*	*Med.*	*High*	*Total*	*Low*	*Med.*	*High*	*Total*
DDQ-WE Avg	1.07 (2.8)	4.23 (3.52)	2.55 (3.46)	2.66 (3.43)	1.63 (2.23)	1.37 (2.55)	-.4 (4.55)	.95 (3.18)
DDQ-Avg Drink	.22 (2.44)	2.94 (1.65)	2.4 (2.82)	1.97 (2.59)	.81 (1.33)	1.39 (2.46)	-.13 (2.98)	.85 (2.45)
DDQ-Weekend	2 (6)	7.2 (6.56)	7.64 (1.37)	5.97 (8.42)	2.5 (5.63)	3.63 (6.28)	2.2 (7.38)	3 (6.32)
DDQ-Week	.67 (5.43)	7.2 (6.51)	6.5 (12.92)	5.12 (9.74)	.88 (6.27)	2.47 (11.72)	-.2 (5.81)	1.41 (9.28)
Saturday-BAC	-.005 (.067)	.075 (.134)	.049 (.111)	.042 (.111)	.046 (.083)	.032 (.082)	.037 (.128)	.036 (.094)
Friday-BAC	.029 (.07)	.079 (.078)	.028 (.076)	.044 (.076)	.045 (.041)	.038 (.045)	.059 (.101)	.046 (.063)
Thursday-BAC	.01 (.066)	.045 (.048)	.063 (.174)	.043 (.121)	-.003 (.046)	.014 (.069)	-.01 (.06)	.004 (.061)
FQQ-Drunk	.28 (2.55)	.15 (1.8)	.39 (4.32)	.29 (3.18)	.25 (4.92)	1.61 (4.63)	-.05 (6.23)	.85 (5.08)
FQQ-Often	-.39 (2.26)	2.05 (2.23)	.93 (4.23)	.91 (3.29)	0 (7.71)	1.11 (4.78)	1.75 (6.61)	1.04 (5.86)
FQQ-Average	-.28 (5.26)	3.15 (8.76)	.25 (7.12)	.98 (7.16)	.94 (4.62)	.29 (4.97)	4.4 (5.72)	1.54 (5.28)
FQQ-Peak	2.39 (4.46)	4.4 (4.09)	3.25 (6.39)	3.36 (5.18)	2.75 (3.01)	1.45 (5.16)	2.2 (5.61)	1.93 (4.82)
CAPSr-Social	-.56 (3.35)	.18 (2.09)	-.24 (3.01)	-.21 (2.8)	-.47 (1.87)	-.34 (3.75)	-1.3 (2.5)	-.63 (3.1)
CAPSr-Personal	.21 (2.85)	2.44 (5.36)	-2.26 (5.62)	-.17 (5.15)	-2 (2.94)	-2 (4.68)	-1.71 (4.4)	-1.92 (4.21)
B-YAACQ	3.11 (4.51)	4.72 (4.13)	.99 (4.56)	2.76 (4.56)	2 (2.31)	2.44 (5.02)	3.3 (2.71)	2.6 (3.96)

Note. Means are listed (with standard deviations in parentheses). See Table 2 note for variable labels.

Table 11, continued

Hypothesis 3: Mean Change Scores for Condition by Drinking Status (based on Drinks per Weekend) Blocks

	Extended Assessment				Assessment Only			
Variable	*Low*	*Med.*	*High*	*Total*	*Low*	*Med.*	*High*	*Total*
DDQ-WE Avg	.18 (1.4)	.29 (1.28)	3.17 (7.27)	.94 (3.81)	-.04 (2.32)	-.2 (2.65)	1.21 (5.23)	.39 (3.72)
DDQ-Avg Drink	-.04 (1.51)	.34 (1.6)	2.46 (7.23)	.69 (3.77)	.09 (1.62)	.17 (2.37)	1.32 (5.31)	.58 (3.58)
DDQ-Weekend	.64 (5.54)	1.64 (4.82)	9.5 (21.8)	3.12 (11.72)	-2 (7.28)	-.6 (7.95)	3.57 (5.98)	.49 (7.26)
DDQ-Week	.86 (5.59)	1.64 (6.28)	9.25 (21.3)	3.15 (11.69)	-2.38 (11.02)	-2.3 (9.01)	2.43 (9.8)	-.54 (1.05)
Saturday-BAC	.017 (.05)	.008 (.056)	.052 (.143)	.022 (.082)	-.027 (.119)	-.004 (.08)	-.021 (.153)	-.019 (.122)
Friday-BAC	.007 (.086)	.018 (.068)	.049 (.126)	.021 (.09)	-.009 (.056)	-.01 (.08)	-.017 (.131)	-.013 (.094)
Thursday-BAC	.008 (.014)	.006 (.059)	.051 (.143)	.018 (.077)	-.012 (.032)	-.033 (.056)	.049 (.123)	.005 (.089)
FQQ-Drunk	.39 (1.98)	-.45 (2.11)	-1.63 (2.57)	-.38 (2.26)	-1.85 (4.87)	2.6 (3.29)	1.5 (6.09)	.62 (5.25)
FQQ-Often	2.29 (5.56)	-.41 (4.5)	-.25 (3.77)	.77 (4.87)	-1.19 (6.19)	.6 (3.49)	2.39 (8.04)	.65 (6.45)
FQQ-Average	.96 (4.16)	1.64 (3.2)	.75 (4.53)	1.14 (3.86)	-1.38 (6.13)	-.6 (6.74)	-1.29 (4.87)	-1.14 (5.71)
FQQ-Peak	1.71 (3.02)	.91 (2.43)	1.5 (3.96)	1.39 (3.02)	.31 (3.99)	-.2 (5.03)	1.14 (3.48)	.49 (4.04)
CAPSr-Social	-1.08 (3.01)	-1.18 (2.48)	1.98 (3)	-.35 (3.07)	-.83 (2.08)	1.2 (2.39)	-.02 (3.02)	.05 (2.61)
CAPSr-Personal	.79 (4.59)	-2.18 (2.18)	-.88 (5.08)	-.61 (4.18)	-3.08 (4.7)	1.3 (2.21)	-.25 (2.8)	-.71 (3.75)
B-YAACQ	4.85 (6.73)	2.09 (4.18)	1.67 (8.01)	3.21 (6.26)	-.3 (4.68)	4.55 (5.9)	.2 (5.66)	1.2 (5.65)

Note. Means are listed (with standard deviations in parentheses). See Table 2 note for variable labels.

Table 12

Hypothesis 3: Analysis of Variance (ANOVA) Results for Condition by Drinking Status Block (based on Drinks per Weekend) Interaction

	F	*df*	*p*	η^2	*1 - β*
DDQ-WE Avg	1.62	6, 128	0.146	0.07	0.61
DDQ-Avg Drink	1.09	6, 128	0.372	0.05	0.42
DDQ-Weekend	0.80	6, 128	0.573	0.04	0.31
DDQ-Week	0.75	6, 128	0.614	0.03	0.29
Saturday-BAC	0.54	6, 127	0.778	0.02	0.21
Friday-BAC	0.66	6, 127	0.685	0.03	0.25
Thursday-BAC	0.85	6, 127	0.532	0.04	0.33
FQQ-Drunk	1.28	6, 127	0.269	0.06	0.49
FQQ-Often	0.93	6, 128	0.473	0.04	0.36
FQQ-Average	0.91	6, 128	0.490	0.04	0.35
FQQ-Peak	0.34	6, 128	0.916	0.02	0.14
CAPSr-Social	1.45	6, 122	0.202	0.07	0.55
CAPSr-Personal*	2.41	6, 122	0.031	0.11	0.80
B-YAACQ	1.55	6, 124	0.169	0.07	0.58

Note. See Table 2 note for variable labels; * = $p < .05$.

Table 13

Hypothesis 4: Mean Change Scores for Condition by CAAFI Blocks

	Live BMI				DrAFT-CS			
Variable	*Low*	*Med.*	*High*	*Total*	*Low*	*Med.*	*High*	*Total*
DDQ-WE Avg	2.53 (2.59)	2.6 (3.21)	2.87 (4.67)	2.66 (3.43)	.78 (2.21)	1.78 (2.97)	-.08 (4.18)	.94 (3.22)
DDQ-Avg Drink	2.24 (2.61)	1.9 (2.85)	1.75 (2.51)	1.97 (2.59)	.24 (1.67)	1.37 (3.14)	.71 (2.13)	.85 (2.49)
DDQ-Weekend	7.55 (7.81)	6.33 (9.18)	3.8 (8.53)	5.97 (8.42)	.4 (6.88)	4.13 (6.28)	3.73 (6.05)	2.97 (6.41)
DDQ-Week	7.55 (8.05)	4.92 (1.97)	2.7 (1.22)	5.12 (9.74)	-3 (14.02)	3.33 (6.84)	2.09 (6.01)	1.19 (9.32)
Saturday-BAC	.042 (.096)	.029 (.089)	.059 (.152)	.042 (.111)	-.024 (.082)	.069 (.091)	.052 (.094)	.037 (.096)
Friday-BAC	.027 (.073)	.068 (.079)	.034 (.076)	.044 (.076)	.031 (.051)	.05 (.053)	.059 (.085)	.047 (.063)
Thursday-BAC	.095 (.179)	.036 (.072)	-.004 (.064)	.043 (.121)	.003 (.087)	-.003 (.044)	.012 (.061)	.003 (.062)
FQQ-Drunk	.68 (2.91)	-.63 (3.22)	.95 (3.48)	.29 (3.18)	.28 (7.08)	1.9 (5.22)	-.36 (2.81)	.77 (5.14)
FQQ-Often	.86 (2)	1.04 (4.04)	.8 (3.74)	.91 (3.29)	-1.25 (6.84)	1.47 (4.8)	2.64 (6.39)	1.07 (5.94)
FQQ-Average	-.05 (7.35)	.63 (9.31)	2.55 (3.48)	.98 (7.16)	.8 (5.27)	1.3 (5.66)	2.68 (5.3)	1.58 (5.35)
FQQ-Peak	4.14 (5.31)	.67 (4.29)	5.75 (4.98)	3.36 (5.18)	2.2 (5.45)	2.23 (4.66)	1.27 (5.08)	1.93 (4.89)
CAPSr-Social	.11 (1.26)	.04 (3.47)	-.79 (3.09)	-.21 (2.8)	-.92 (3.52)	-.69 (3.39)	-.19 (2.69)	-.59 (3.14)
CAPSr-Personal	1.74 (4.49)	-.08 (4.74)	-2.01 (5.96)	-.17 (5.15)	-3.67 (4.06)	-.93 (4.8)	-2.19 (3.29)	-2.03 (4.22)
B-YAACQ	4.25 (4.35)	2.57 (3.8)	1.48 (5.55)	2.76 (4.56)	.22 (3.87)	4.43 (4.48)	2.36 (2.29)	2.65 (4.01)

Note. Means are listed (with standard deviations in parentheses). See Table 2 note for variable labels.

Table 13, continued

Hypothesis 4: Mean Change Scores for Condition by CAAFI Blocks

	Extended Assessment				Assessment Only			
Variable	*Low*	*Med.*	*High*	*Total*	*Low*	*Med.*	*High*	*Total*
DDQ-WE Avg	1.78 (6.44)	.11 (1.46)	.74 (2.19)	.89 (3.86)	-.18 (2.58)	.29 (3.14)	1.01 (5.07)	.39 (3.72)
DDQ-Avg Drink	2.06 (6.38)	-.08 (1.75)	.04 (1.63)	.64 (3.82)	.04 (1.86)	.29 (3.37)	1.33 (4.88)	.58 (3.58)
DDQ-Weekend	5.1 (19.63)	1.78 (4.99)	2.38 (7.41)	3.06 (11.9)	-2.08 (7.84)	1.5 (8.57)	1.92 (4.94)	.49 (7.26)
DDQ-Week	4.5 (19.69)	2.44 (4.77)	2.46 (7.46)	3.09 (11.87)	-3.5 (11.47)	-.08 (1.9)	1.77 (7.65)	-.54 (1.05)
Saturday-BAC	.03 (.12)	.003 (.041)	.026 (.075)	.021 (.083)	-.011 (.071)	-.019 (.128)	-.025 (.158)	-.019 (.122)
Friday-BAC	.048 (.117)	.021 (.066)	-.006 (.083)	.019 (.091)	.022 (.054)	-.01 (.078)	-.046 (.126)	-.013 (.094)
Thursday-BAC	.038 (.109)	.01 (.066)	.008 (.06)	.018 (.079)	-.025 (.045)	.014 (.089)	.026 (.114)	.005 (.089)
FQQ-Drunk	0 (2.22)	-.89 (3.02)	-.35 (1.86)	-.39 (2.29)	-1.13 (4.96)	2.75 (4.95)	.27 (5.48)	.62 (5.25)
FQQ-Often	0 (3.77)	1.22 (3)	1.12 (6.76)	.8 (4.95)	-1.46 (5.31)	1.46 (3.04)	1.85 (9.15)	.65 (6.45)
FQQ-Average	.2 (2.9)	1.06 (5.43)	1.38 (2.99)	.92 (3.71)	-1.67 (6.97)	-.83 (4.78)	-.92 (5.63)	-1.14 (5.71)
FQQ-Peak	-.2 (2.39)	2.44 (2.4)	1.69 (3.54)	1.31 (3.03)	1.5 (4.36)	1 (3.02)	-.92 (4.44)	.49 (4.04)
CAPSr-Social	-.3 (3.27)	.09 (1.98)	-.75 (3.82)	-.36 (3.12)	.42 (2.57)	-.39 (2.19)	.08 (3.12)	.05 (2.61)
CAPSr-Personal	-3.4 (3.75)	.56 (3.75)	.08 (3.52)	-.88 (3.94)	-.93 (3.5)	-1.72 (4.48)	.42 (3.23)	-.71 (3.75)
B-YAACQ	2 (5.27)	3.75 (4.4)	3.59 (8.18)	3.12 (6.34)	2.83 (5.95)	1.32 (5.32)	-.42 (5.64)	1.2 (5.65)

Note. Means are listed (with standard deviations in parentheses). See Table 2 note for variable labels.

Table 14

Hypothesis 4: Analysis of Variance (ANOVA) Results for Group by CAAFI Block Interaction

	F	*df*	*p*	η^2	*1 - β*
DDQ-WE Avg	0.57	6, 126	0.752	0.03	0.22
DDQ-Avg Drink	0.81	6, 126	0.564	0.04	0.31
DDQ-Weekend	0.72	6, 126	0.635	0.03	0.28
DDQ-Week	0.83	6, 126	0.550	0.04	0.32
Saturday-BAC	0.86	6, 125	0.523	0.04	0.33
Friday-BAC	1.08	6, 125	0.375	0.05	0.42
Thursday-BAC	1.50	6, 125	0.183	0.07	0.56
FQQ-Drunk	1.15	6, 125	0.336	0.05	0.44
FQQ-Often	0.35	6, 126	0.911	0.02	0.14
FQQ-Average	0.09	6, 126	0.997	0.00	0.07
FQQ-Peak	2.08	6, 126	0.060	0.09	0.73
CAPSr-Social	0.26	6, 120	0.954	0.01	0.12
CAPSr-Personal	1.94	6, 120	0.080	0.09	0.70
B-YAACQ	1.12	6, 122	0.354	0.05	0.43

Note. See Table 2 note for variable labels; * = $p < .05$.

Table 15

Hypothesis 5: Mean Change Scores for Condition by FNE Blocks

	Live BMI				DrAFT-CS			
Variable	*Low*	*Med.*	*High*	*Total*	*Low*	*Med.*	*High*	*Total*
DDQ-WE Avg	2.14 (2.27)	3.03 (4.86)	2.88 (3.21)	2.66 (3.43)	.65 (4.1)	.83 (3.18)	1.38 (1.52)	.89 (3.25)
DDQ-Avg Drink	1.85 (2.11)	1.67 (2.91)	2.38 (2.95)	1.97 (2.59)	.74 (1.84)	.51 (3.58)	1.6 (1.31)	.85 (2.52)
DDQ-Weekend	6 (6.47)	3.9 (9.87)	7.82 (9.23)	5.97 (8.42)	4.5 (6.05)	.62 (7.44)	4.13 (5.03)	2.97 (6.49)
DDQ-Week	5.75 (6.68)	3.6 (12.62)	5.82 (1.4)	5.12 (9.74)	3 (6.23)	-2.46 (12.73)	5.5 (5.88)	1.54 (9.48)
Saturday-BAC	.022 (.098)	.064 (.139)	.045 (.101)	.042 (.111)	.067 (.1)	0 (.097)	.049 (.077)	.038 (.097)
Friday-BAC	.017 (.073)	.036 (.072)	.081 (.075)	.044 (.076)	.064 (.083)	.036 (.044)	.034 (.051)	.047 (.064)
Thursday-BAC	.089 (.171)	0 (.086)	.033 (.055)	.043 (.121)	.002 (.059)	-.011 (.057)	.027 (.079)	.002 (.062)
FQQ-Drunk	.25 (3.22)	.8 (3.85)	-.14 (2.67)	.29 (3.18)	1.61 (4.73)	-.65 (2.93)	1.71 (4.81)	.76 (4.17)
FQQ-Often	.04 (3.03)	2.25 (3.73)	.64 (3.03)	.91 (3.29)	2.96 (6.55)	.19 (4.67)	1.06 (4.27)	1.5 (5.43)
FQQ-Average	-.83 (3.66)	-.25 (7.04)	4.09 (9.41)	.98 (7.16)	4.96 (4.36)	-.19 (5.58)	-.75 (3.85)	1.74 (5.34)
FQQ-Peak	3.17 (4.47)	3.75 (7.04)	3.23 (4.38)	3.36 (5.18)	2.14 (2.41)	3.5 (6.34)	-.75 (5.12)	1.99 (4.95)
CAPSr-Social	-.56 (1.35)	.79 (2.58)	-.83 (3.98)	-.21 (2.8)	-.49 (2.49)	-2 (3.61)	1.03 (2.59)	-.71 (3.11)
CAPSr-Personal	-1.09 (5.36)	-.94 (4.95)	1.6 (5.17)	-.17 (5.15)	-1.79 (3.29)	-2.62 (5.03)	-1.25 (4.83)	-1.97 (4.26)
B-YAACQ	2.26 (4.57)	2.48 (4.38)	3.63 (5.08)	2.76 (4.56)	2.57 (3.48)	1.67 (4.56)	3.5 (4)	2.47 (3.95)

Note. Means are listed (with standard deviations in parentheses). See Table 2 note for variable labels.

Table 15, continued

Hypothesis 5: Mean Change Scores for Condition by FNE Blocks

	Extended Assessment				Assessment Only			
Variable	*Low*	*Med.*	*High*	*Total*	*Low*	*Med.*	*High*	*Total*
DDQ-WE Avg	-.67 (1.61)	.19 (1.13)	2.45 (5.67)	1.03 (3.91)	-.39 (2.61)	-.17 (2.17)	1.54 (5.13)	.39 (3.72)
DDQ-Avg Drink	-.59 (1.72)	.14 (1.25)	1.85 (5.73)	.77 (3.88)	-.21 (1.84)	.31 (1.61)	1.54 (5.36)	.58 (3.58)
DDQ-Weekend	-1.25 (3.4)	.64 (5.44)	7.38 (17.25)	3.23 (12.09)	-.57 (8.55)	-.33 (4.39)	2.07 (7.52)	.49 (7.26)
DDQ-Week	-1 (4.16)	.79 (6.42)	7.23 (16.87)	3.26 (12.06)	-2.86 (11.24)	.11 (6.88)	1.36 (1.68)	-.54 (1.05)
Saturday-BAC	-.012 (.081)	.011 (.049)	.042 (.112)	.021 (.084)	-.008 (.067)	-.046 (.121)	-.011 (.165)	-.019 (.122)
Friday-BAC	.022 (.099)	.004 (.047)	.041 (.127)	.022 (.093)	-.011 (.061)	-.007 (.048)	-.018 (.139)	-.013 (.094)
Thursday-BAC	-.039 (.067)	.002 (.043)	.054 (.1)	.018 (.08)	.006 (.073)	0 (.078)	.009 (.113)	.005 (.089)
FQQ-Drunk	-2.25 (1.66)	.25 (2.79)	-.54 (1.66)	-.4 (2.33)	-.5 (5.19)	.06 (4.23)	2.11 (5.87)	.62 (5.25)
FQQ-Often	-2 (4)	1.21 (5.98)	.38 (3.55)	.45 (4.82)	-1.82 (5.39)	-.39 (4.17)	3.79 (7.58)	.65 (6.45)
FQQ-Average	-3 (4.16)	1.14 (3.21)	2.58 (4)	1.21 (3.97)	-1.14 (6.74)	-.67 (5.48)	-1.43 (5.11)	-1.14 (5.71)
FQQ-Peak	1 (3.46)	1.29 (2.67)	1.38 (3.4)	1.29 (2.99)	-.29 (4.43)	.44 (2.6)	1.29 (4.48)	.49 (4.04)
CAPSr-Social	.75 (1.26)	-.66 (2.21)	-.31 (4.25)	-.33 (3.11)	-.5 (2.41)	.84 (2.7)	.15 (2.82)	.05 (2.61)
CAPSr-Personal	-2 (3.83)	-.86 (4.94)	.15 (3.87)	-.58 (4.31)	-.16 (3.67)	-.12 (2.16)	-1.75 (4.63)	-.71 (3.75)
B-YAACQ	4 (5.23)	3.77 (6.86)	2.06 (6.68)	3.06 (6.45)	-.93 (4.8)	4.48 (5.46)	1.22 (5.87)	1.2 (5.65)

Note. Means are listed (with standard deviations in parentheses). See Table 2 note for variable labels.

Table 16

Hypothesis 5: Analysis of Variance (ANOVA) Results for Condition by FNE Block Interaction

	F	*df*	*p*	η^2	*1 - β*
DDQ-WE Avg	0.34	6, 124	0.916	0.02	0.14
DDQ-Avg Drink	0.17	6, 124	0.984	0.01	0.09
DDQ-Weekend	0.45	6, 124	0.845	0.02	0.18
DDQ-Week	0.58	6, 124	0.747	0.03	0.22
Saturday-BAC	0.68	6, 123	0.667	0.03	0.26
Friday-BAC	0.75	6, 123	0.608	0.04	0.29
Thursday-BAC	1.22	6, 123	0.299	0.06	0.47
FQQ-Drunk	1.09	6, 123	0.372	0.05	0.42
FQQ-Often	1.87	6, 124	0.092	0.08	0.68
FQQ-Average*	2.53	6, 124	0.024	0.11	0.83
FQQ-Peak	0.78	6, 124	0.588	0.04	0.30
CAPSr-Social	1.47	6, 120	0.195	0.07	0.55
CAPSr-Personal	0.65	6, 119	0.689	0.03	0.25
B-YAACQ	1.05	6, 121	0.398	0.05	0.40

Note. See Table 2 note for variable labels; * = $p < .05$.

Table 17

Hypothesis 6: Mean Change Scores for Condition by SIAS Blocks

	Live BMI				DrAFT-CS			
Variable	*Low*	*Med.*	*High*	*Total*	*Low*	*Med.*	*High*	*Total*
DDQ-WE Avg	4.15 (4.11)	2.57 (2.68)	.95 (3.8)	2.66 (3.43)	.26 (3.73)	1.35 (3.51)	1.67 (1.66)	.95 (3.18)
DDQ-Avg Drink	2.11 (2.42)	2.11 (2.57)	1.44 (3.17)	1.97 (2.59)	.37 (2.56)	1.03 (3.09)	1.45 (1.63)	.85 (2.45)
DDQ-Weekend	7.11 (7.79)	7 (7.86)	2 (1.46)	5.97 (8.42)	2.82 (6.32)	.78 (8.26)	5.09 (4.01)	3 (6.32)
DDQ-Week	7.33 (8.8)	6.06 (8.29)	0 (13.39)	5.12 (9.74)	.88 (7.25)	1.44 (7.47)	2.18 (13.42)	1.41 (9.28)
Saturday-BAC	.048 (.152)	.037 (.087)	.048 (.119)	.042 (.111)	.046 (.099)	0 (.113)	.052 (.065)	.036 (.094)
Friday-BAC	.027 (.093)	.05 (.062)	.05 (.092)	.044 (.076)	.041 (.082)	.038 (.035)	.06 (.046)	.046 (.063)
Thursday-BAC	.12 (.194)	.027 (.058)	-.016 (.067)	.043 (.121)	-.007 (.052)	.009 (.026)	.017 (.093)	.004 (.061)
FQQ-Drunk	.5 (3.57)	-.03 (3.49)	.79 (1.93)	.29 (3.18)	.76 (4.37)	-.33 (5.34)	2.05 (6.18)	.85 (5.08)
FQQ-Often	2.22 (3.95)	.38 (3.44)	.5 (1.32)	.91 (3.29)	.79 (5.6)	.44 (5.97)	1.91 (6.61)	1.04 (5.86)
FQQ-Average	-2.44 (6.84)	2.85 (7.24)	.86 (6.62)	.98 (7.16)	2 (5.15)	2.17 (5.39)	.32 (5.68)	1.54 (5.28)
FQQ-Peak	3.78 (7.17)	4.06 (4.67)	1.14 (3.02)	3.36 (5.18)	2.12 (3.12)	3.5 (6)	.36 (5.85)	1.93 (4.82)
CAPSr-Social	-.88 (1.36)	.15 (3.07)	-.28 (3.55)	-.21 (2.8)	-1.71 (2.73)	-.66 (3.08)	1.06 (3.16)	-.63 (3.1)
CAPSr-Personal	-.75 (3.85)	.48 (5.68)	-1 (5.66)	-.17 (5.15)	-1.89 (2.45)	-4.75 (5.68)	.09 (4.37)	-1.92 (4.21)
B-YAACQ	3.56 (3.44)	1.78 (4.98)	3.96 (4.98)	2.76 (4.56)	2.06 (2.99)	2.88 (3.4)	3.3 (5.77)	2.6 (3.96)

Note. Means are listed (with standard deviations in parentheses). See Table 2 note for variable labels.

Table 17, continued

Hypothesis 6: Mean Change Scores for Condition by SIAS Blocks

	Extended Assessment				Assessment Only			
Variable	*Low*	*Med.*	*High*	*Total*	*Low*	*Med.*	*High*	*Total*
DDQ-WE Avg	3.28 (6.69)	-.54 (1.49)	.42 (1.05)	.94 (3.81)	-.87 (2.65)	.67 (4.84)	.95 (2.82)	.39 (3.72)
DDQ-Avg Drink	2.88 (6.5)	-.83 (1.49)	.3 (1.55)	.69 (3.77)	-.44 (2.16)	.75 (4.58)	1.08 (3.13)	.58 (3.58)
DDQ-Weekend	9.22 (2.84)	-.33 (4.66)	1.53 (4.36)	3.12 (11.72)	-.56 (8.63)	-1.27 (5.92)	3.23 (7.38)	.49 (7.26)
DDQ-Week	8.44 (2.44)	.33 (6.18)	1.67 (5.12)	3.15 (11.69)	-1.67 (11)	-3.4 (8.07)	3.54 (1.81)	-.54 (1.05)
Saturday-BAC	.055 (.128)	.015 (.062)	.007 (.054)	.022 (.082)	-.019 (.05)	-.042 (.147)	.01 (.128)	-.019 (.122)
Friday-BAC	.066 (.12)	-.014 (.057)	.014 (.08)	.021 (.09)	-.023 (.058)	-.022 (.126)	.005 (.072)	-.013 (.094)
Thursday-BAC	.061 (.119)	-.027 (.064)	.018 (.028)	.018 (.077)	.029 (.073)	0 (.092)	-.005 (.098)	.005 (.089)
FQQ-Drunk	-.89 (3.62)	-.28 (.83)	-.13 (1.88)	-.38 (2.26)	-.11 (5.66)	-1.63 (4.3)	3.73 (4.75)	.62 (5.25)
FQQ-Often	-.5 (3.04)	1.06 (4.56)	1.37 (5.97)	.77 (4.87)	-1.28 (4.87)	-1.17 (4.93)	4.08 (7.81)	.65 (6.45)
FQQ-Average	2 (3.32)	-1.11 (3.62)	1.97 (3.97)	1.14 (3.86)	-1.11 (5.11)	-1.2 (6.96)	-1.08 (4.87)	-1.14 (5.71)
FQQ-Peak	.67 (3.32)	2 (2.83)	1.47 (3.07)	1.39 (3.02)	.67 (4.24)	-.4 (4.73)	1.38 (2.99)	.49 (4.04)
CAPSr-Social	.98 (3.18)	.13 (2.8)	-1.4 (2.95)	-.35 (3.07)	.33 (3.54)	-.27 (2.4)	.25 (2.19)	.05 (2.61)
CAPSr-Personal	-.44 (4.3)	-.89 (1.9)	-.53 (5.21)	-.61 (4.18)	.22 (1.99)	-1.09 (4.04)	-.99 (4.58)	-.71 (3.75)
B-YAACQ	1.86 (7.28)	3.73 (3.27)	3.74 (7.04)	3.21 (6.26)	1.08 (4.5)	-.5 (6.22)	3.24 (5.36)	1.2 (5.65)

Note. Means are listed (with standard deviations in parentheses). See Table 2 note for variable labels.

Table 18

Hypothesis 6: Analysis of Variance (ANOVA) Results for Condition by SIAS Block Interaction

	F	*df*	*p*	η^2	*1 - β*
DDQ-WE Avg	1.97	6, 128	0.075	0.08	0.70
DDQ-Avg Drink	1.50	6, 128	0.185	0.07	0.56
DDQ-Weekend	1.69	6, 128	0.128	0.07	0.63
DDQ-Week	1.37	6, 128	0.231	0.06	0.52
Saturday-BAC	0.39	6, 127	0.886	0.02	0.16
Friday-BAC	0.90	6, 127	0.500	0.04	0.34
Thursday-BAC	1.89	6, 127	0.087	0.08	0.68
FQQ-Drunk	1.05	6, 127	0.397	0.05	0.40
FQQ-Often	1.00	6, 128	0.428	0.04	0.38
FQQ-Average	1.27	6, 128	0.276	0.06	0.48
FQQ-Peak	0.95	6, 128	0.464	0.04	0.36
CAPSr-Social	1.84	6, 122	0.097	0.08	0.67
CAPSr-Personal	1.06	6, 122	0.393	0.05	0.40
B-YAACQ	0.44	6, 124	0.849	0.02	0.18

Note. See Table 2 note for variable labels; * = $p < .05$.

APPPENDIX C
MEASURES

Demographics

To protect your identification please enter your personal identification code number below. Remember, your code number consists of the last 4 digits of your social security number, your birth month, and birth day**.**

(For example, if your social security number is 123-45-6789 and your birth date is Feb. 7, your unique code number would be 6789-02-07.)

Last 4 digits of your social security number: ### - ## -

Birth month: -- choose one --

Birth day: -- choose one --

Gender: male female

Current Age

Year in College Choose One

Ethnicity Choose One

Your current living situation Choose One

Your current marital status Choose One

Are you a Greek member? Choose One

Daily Drinking Questionnaire (DDQ; Collins, et al., 1985)

For the following questions, *one drink* equals:

- 4 ounces of wine
- 1 wine cooler
- 12 ounces of 3.2 beer
- 8-10 ounces of "6-point" beer, malt liquor, ice beers, or "microbrew" beers
- A mixed drink with 1 ounce of liquor
- A single shot of liquor

For the *past month*, please select a number for each day of the week indicating the *typical number of drinks* you usually consume on that day, and the *typical number of hours* you usually drink on that day. Highlight the box, then enter your answer. Please be sure to fill out the information regarding weight.

***** If you did not consume any drinks on a certain day please enter "0" in the "# of Drinks" box and "0" in the "# of Hours" box.*****

Sunday	# of Drinks # of Hours	
Monday	# of Drinks # of Hours	
Tuesday	# of Drinks # of Hours	
Wednesday	# of Drinks # of Hours	
Thursday	# of Drinks # of Hours	
Friday	# of Drinks # of Hours	
Saturday	# of Drinks # of Hours	

Frequency-Quantity Questionnaire (FQQ)

For the following questions, *one drink* equals:

- 4 ounces of wine
- 1 wine cooler
- 12 ounces of "3-2" beer
- 8-10 ounces of "6-point" beer, malt liquor, ice beers, or "microbrew" beers
- A mixed drink with 1 ounce of liquor
- A single shot of liquor

Think of the occasion you drank the most this past month. How much did you drink?		
On *an average weekend evening*, how much alcohol do you typically drink? Estimate for the past month.		
How often during the last month did you drink alcohol?		
On how many occasions did you drink to get drunk in the past 30 days?		

Brief-Young Adult Alcohol Consequences Questionnaire (B-YAACQ), page 1 of 2

Answer the following questions based on your experiences over the past year.	
While drinking, I have said or done embarrassing things.	-- choose one --
I have had a hangover (headache, sick stomach) the morning after I had been drinking.	-- choose one --
I have felt very sick to my stomach or thrown up after drinking.	-- choose one --
I often have ended up drinking on nights when I had planned not to drink.	-- choose one --
I have taken foolish risks when I have been drinking.	-- choose one --
I have passed out from drinking.	-- choose one --
I have found that I needed larger amounts of alcohol to feel any effect, or that I could no longer get high or drunk on the amount that used to get me high or drunk.	-- choose one --
When drinking, I have done impulsive things that I have regretted later.	-- choose one --
I've not been able to remember large stretches of time while drinking heavily.	-- choose one --
I have driven a car when I knew I had too much to drink to drive safely.	-- choose one --
I have not gone to work or missed classes at school because of drinking, a hangover, or illness caused by drinking.	-- choose one --
My drinking has gotten me into sexual situations I later regretted.	-- choose one --
I have often found it difficult to limit how much I drink.	-- choose one --

I have become very rude, obnoxious, or insulting after drinking.	-- choose one --
I have woken up in an unexpected place after heavy drinking.	-- choose one --
I have felt badly about myself because of my drinking.	-- choose one --
I have had less energy or felt tired because of my drinking.	-- choose one --
The quality of my work or school work has suffered because of my drinking.	-- choose one --
I have spent too much time drinking.	-- choose one --
I have neglected my obligations to family, work, or school because of my drinking.	-- choose one --
My drinking has created problems between myself and my boyfriend/girlfriend/spouse, parents, or other near relatives.	-- choose one --
I have been overweight because of drinking.	-- choose one --
My physical appearance has been harmed by my drinking.	-- choose one --
I have felt like I needed a drink after I'd gotten up (that is, before breakfast).	-- choose one --

College Alcohol Problem Scale-Revised (CAPS-r)

Use the drop-down boxes below to rate HOW OFTEN you have had any of the following problems over the past month as a result of drinking alcoholic beverages.		
Felt sad, blue, or depressed		past month
Was nervous or irritable		past month
Felt bad about myself		past month
Had problems with appetite or sleeping		past month
Engaged in unplanned sexual activity		past month
Drove under the influence		past month
Did not use protection when engaging in sex		past month
Engaged in illegal activities associated with drug use		past month

Answer the following questions by clicking on one of the options that best describes how each statement applies to you.
I often read computer magazines. Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true Neutral ☐ Prefer not to respond
I enjoy connecting new computer accessories. Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true Neutral ☐ Prefer not to respond
I keep up with the latest computer software. Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true Neutral ☐ Prefer not to respond
I keep up with the latest computer hardware. Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true Neutral ☐ Prefer not to respond
I often read computer books. Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true Neutral ☐ Prefer not to respond

I enjoy reading computer magazines.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true
Neutral

☐ Prefer not to respond

My friends often ask me computer-related questions.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true
Neutral

☐ Prefer not to respond

I am comfortable changing (installing/upgrading) computer software.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true
Neutral

☐ Prefer not to respond

I can add new hardware to a computer.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true
Neutral

☐ Prefer not to respond

I enjoy learning to use new software programs.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true
Neutral

☐ Prefer not to respond

I enjoy using computers. Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true Neutral ☐ Prefer not to respond
I avoid using computers whenever possible. Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true Neutral ☐ Prefer not to respond
Using a computer is entertaining. Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true Neutral ☐ Prefer not to respond
I like to use computer input devices such as a keyboard, a touch pad, a mouse, etc. Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true Neutral ☐ Prefer not to respond
Being able to use a computer is important to me. Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true Neutral ☐ Prefer not to respond

E-mail is an easy way to communicate with people.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true
Neutral

☐ Prefer not to respond

Computers are beneficial because they save people time.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true
Neutral

☐ Prefer not to respond

I like using word-processing programs.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true
Neutral

☐ Prefer not to respond

I use e-mail every day.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true
Neutral

☐ Prefer not to respond

I use a computer input device every day (e.g., a keyboard, a touch pad, a mouse).

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true
Neutral

☐ Prefer not to respond

When I use a computer, I am afraid that I will damage it.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true

Neutral

☐ Prefer not to respond

Overall, I feel that I don't know how to use a computer.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true

Neutral

☐ Prefer not to respond

I do not understand how to use computer software (e.g., word-processing programs, spreadsheet programs, etc.).

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true

Neutral

☐ Prefer not to respond

I can use a computer to successfully perform tasks.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true

Neutral

☐ Prefer not to respond

I feel like a fool when I am using a computer and others are around.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true

Neutral

☐ Prefer not to respond

I feel that I understand how to use computer files, documents, and folders.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true

Neutral

☐ Prefer not to respond

Computers are too scientific for me.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true

Neutral

☐ Prefer not to respond

I am smart enough to use a computer.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true

Neutral

☐ Prefer not to respond

I must have a reference manual or a help file to run computer software.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true

Neutral

☐ Prefer not to respond

When using a computer, I often lose data.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true

Neutral

☐ Prefer not to respond

I worry about security on the Internet. Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true Neutral ☐ Prefer not to respond
Shopping on the Internet is risky because someone else might receive and misuse my financial information. Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true Neutral ☐ Prefer not to respond
Computers have too much influence in our lives. Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true Neutral ☐ Prefer not to respond
I worry about companies getting information about me when I visit their Web site. Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true Neutral ☐ Prefer not to respond
This country relies too much on computers. Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true Neutral ☐ Prefer not to respond

People develop vision problems from using computers.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true
Neutral

☐ Prefer not to respond

I think that people can develop physical problems in their hands/arms/neck from using computers for long periods of time.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true
Neutral

☐ Prefer not to respond

I am very concerned about computer viruses.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true
Neutral

☐ Prefer not to respond

I am concerned about getting "junk" mail in my e-mail.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true
Neutral

☐ Prefer not to respond

It bothers me if I have to look at a computer screen for a long period of time.

Absolutely false ☐ ☐ ☐ ☐ ☐ ☐ ☐ Absolutely true
Neutral

☐ Prefer not to respond

Fear of Negative Evaluation (FNE), page 1 of 3

For the following statements, please answer each in terms of whether it is true or false for you.	
I rarely worry about seeming foolish to others.	-- choose one --
I worry about what people will think of me even when I know it doesn't make any difference.	-- choose one --
I become tense and jittery if I know someone is sizing me up.	-- choose one --
I am unconcerned even if I know people are forming an unfavorable impression of me.	-- choose one --
I feel very upset when I commit some social error.	-- choose one --
The opinions that important people have of me cause me little concern.	-- choose one --
I am often afraid that I may look ridiculous or make a fool of myself	-- choose one --
I react very little when other people disapprove of me.	-- choose one --
I am frequently afraid of other people noticing my shortcomings.	-- choose one --
The disapproval of others would have little effect on me.	-- choose one --
If someone is evaluating me I tend to expect the worst.	-- choose one --
I rarely worry about what kind of impression I am making on someone.	-- choose one --

I am afraid that others will not approve of me.	-- choose one --
I am afraid that people will find fault with me.	-- choose one --
Other people's opinions of me do not bother me.	-- choose one --
I am not necessarily upset if I do not please someone.	-- choose one --
When I am talking to someone, I worry about what they may be thinking about me.	-- choose one --
I feel that you can't help making social errors sometimes, so why worry about it.	-- choose one --
I am usually worried about what kind of impression I make.	-- choose one --
I worry a lot about what my superiors think of me.	-- choose one --
If I know someone is judging me, it has little effect on me.	-- choose one --
I worry that others will think I am not worthwhile.	-- choose one --
I worry very little about what others may think of me.	-- choose one --
Sometimes I think I am too concerned with what other people think of me.	-- choose one --

I often worry that I will say or do the wrong things.	-- choose one --
I am often indifferent to the opinions others have of me.	-- choose one --
I am usually confident that others will have a favorable impression of me.	-- choose one --
I often worry that people who are important to me won't think very much of me.	-- choose one --
I brood about the opinions my friends have about me.	-- choose one --
I become tense and jittery if I know I am being judged by my superiors.	-- choose one --

Readiness to Change Questionnaire (RCQ)

The following questionnaire is designed to identify how you personally feel about your drinking right now. Please read each of the questions below carefully, and then decide whether you agree or disagree with the statements. Please select from each drop-down box, your choice to each question.	
I don't think I drink too much.	
I am trying to drink less than I used to.	
I enjoy my drinking, but sometimes I drink too much.	
Sometimes I think I should cut down on my drinking.	
It's a waste of time thinking about my drinking.	
I have just recently changed my drinking habits.	
Anyone can talk about wanting to do something about drinking, but I am actually doing something about it.	
I am at the stage where I should think about drinking less alcohol.	
My drinking is a problem sometimes.	
There is no need for me to think about changing my drinking.	
I am actually changing my drinking habits right now.	
Drinking less alcohol would be pointless for me.	

Social Interaction Anxiety Scale (SIAS), page 1 of 2

For each question, please circle a number to indicate the degree to which you feel the statement is characteristic or true of you.	
I get nervous if I have to speak with someone in authority (teacher, boss, etc.).	
I have difficulty making eye-contact with others.	
I become tense if I have to talk about myself or my feelings.	
I find difficulty mixing comfortably with the people I work with.	
I find it easy to make friends of my own age.	
I tense-up if I meet an acquaintance in the street.	
When mixing socially I am uncomfortable.	
I feel tense if I am alone with just one other person.	
I am at ease meeting people at parties, etc.	
I have difficulty talking with other people.	
I find it easy to think of things to talk about.	
I worry about expressing myself in case I appear awkward.	

I find it difficult to disagree with another's point of view.	
I have difficulty talking to attractive persons of the opposite sex.	
I find myself worrying that I won't know what to say in social situations.	
I am nervous mixing with people I don't know well.	
I feel I'll say something embarrassing when talking.	
When mixing in a group, I find myself worrying I will be ignored.	
I am tense mixing in a group.	
I am unsure whether to greet someone I know only slightly.	

APPPENDIX D

Widmark's Formula (Dimeff, et al.,1999)

BAL = [(# drinks/2) x (gc/weight)] – (# hours x mr)

drinks = number of standard drinks (0.5 oz. alcohol each)

gc = gender constant; 7.5 for males and 9.0 for females

hours = number of hours between first and last drink

mr = metabolic rate for alcohol = 0.016

Informed Consent for Research Participation

Alcohol Use in College

What is the project? Who is responsible for the project?

This project is designed to investigate collegiate alcohol use. The project is titled "Alcohol Use In College" and is being conducted by Thad R. Leffingwell, Ph.D., Associate Professor in the Department of Psychology at Oklahoma State University. This project is approved by OSU's Institutional Review Board.

Why might I be asked to participate?

You have been invited to participate because you indicated at least one occasion of high-risk drinking in the last month on a screening questionnaire and you are currently a college student between the ages of 18 and 23.

What will I be asked to do?

Those who meet eligibility criteria will be invited to participate in the study. If you choose to participate, you will complete a brief packet that assesses your alcohol use and associated behaviors and consequences. This assessment will take 30-90 minutes to complete. You will then be asked to complete two brief (< 20 minutes) follow-up assessments that assess your alcohol use ad associated behaviors and consequences over the next two months by completing a questionnaire on the internet. Your decision to participate is strictly voluntary, and you may choose to stop participating at any time.

What are the risks of participating in this project?

Some people may experience some discomfort when responding to sensitive questions about their use of alcohol or related consequences. Participation in this study may also cause some people to reflect on important life choices and experiences, and information about professional services available in the community will be made available to you. Participation in this study requires that you divulge information about behavior that may be illegal (e.g., drinking alcohol under age). Thus, there is some small risk that this data may be subpoenaed by a judge.

What about my privacy and confidentiality?

Participation in this study will require you to share some information that you may consider quite private and sensitive. All records from this study will be kept confidential to the extent allowable by law, and several measures will be taken to make it very unlikely that this confidentiality is compromised. Computerized data will be maintained on a password-protected computer in a password-protected file accessible only by the researchers. Identifying information will be replaced with a code number, and information that connects code numbers with names will be kept in a separate file by the researchers. Data for this study will be kept for three years and then will be destroyed. Results of this study will be reported collectively. In other words, no individual data will be reported. It is possible that the consent process and data collection will be observed by research oversight staff responsible for safeguarding the rights and wellbeing of people who participate in research.

What are the benefits of participating?

If you choose to participate, the primary benefit is that you will receive two units of research credit for your participation in the first session. Additionally you will receive $5 for your participation in the online one-month follow-up, and $10 for the two-month follow-up. Also, you will earn an entry into a lottery drawing for a personal portable DVD player with each follow-up assessment. If you complete each follow-up assessment, you will have three chances to win this prize (approximate odds of winning are 1:90). Additionally, regardless of what condition to which you are randomly assigned, you will receive a brochure with information about alcohol use and referral information should you wish to seek professional assistance for your drinking behavior. In addition, participants in the two of the three conditions will receive feedback about their use of alcohol and associated consequences that may help them make decisions to reduce their risk.

What are the alternatives?

The alternative is to not participate. Your participation is voluntary. There is no penalty for choosing to not participate. If you are eligible for research credit in a course due to your participation, the instructor of that course will make optional comparable activities available. You may choose to not participate now, or at any time during your participation. Participation in this study should not be viewed as a substitute for treatment of alcohol problems or for a professional evaluation of your health.

What if I have other questions or concerns about my participation?

If you have any questions or need to report an effect about the research procedures, you may contact Thad R. Leffingwell, Ph.D. at (405) 744-7494 or 116 North Murray, Stillwater, Oklahoma 74078. If you have questions about your rights as a research participant, you may take them to Shelia Kennison, Ph.D., IRB Chair of OSU's Institutional Review board at (405) 744-1676 or 219 Cordell North, Stillwater, OK 78078.

STATEMENT OF VOLUNTARY PARTICIPATION

I understand that participation is voluntary and that I will not be penalized if I choose not to participate. I also understand that I am free to withdraw my consent at any time and end my participation in this project without penalty.

SIGNATURES

"I have read and fully understand the consent form. I have had a chance to ask questions about the study and my questions have been answered to my satisfaction. I sign this form freely and voluntarily. I copy of this form has been given to me."

Date: _____/ _____/_____ Time: _____:_____am/pm

Name (please print) Signature

"I certify that I have personally explained all elements of this form to the participant before requesting the participant to sign it."

Signed: _____

Project director or authorized representative

Example of Personalized Feedback in Live Condition

Personal Feedback Report
prepared for

Jack Daniels

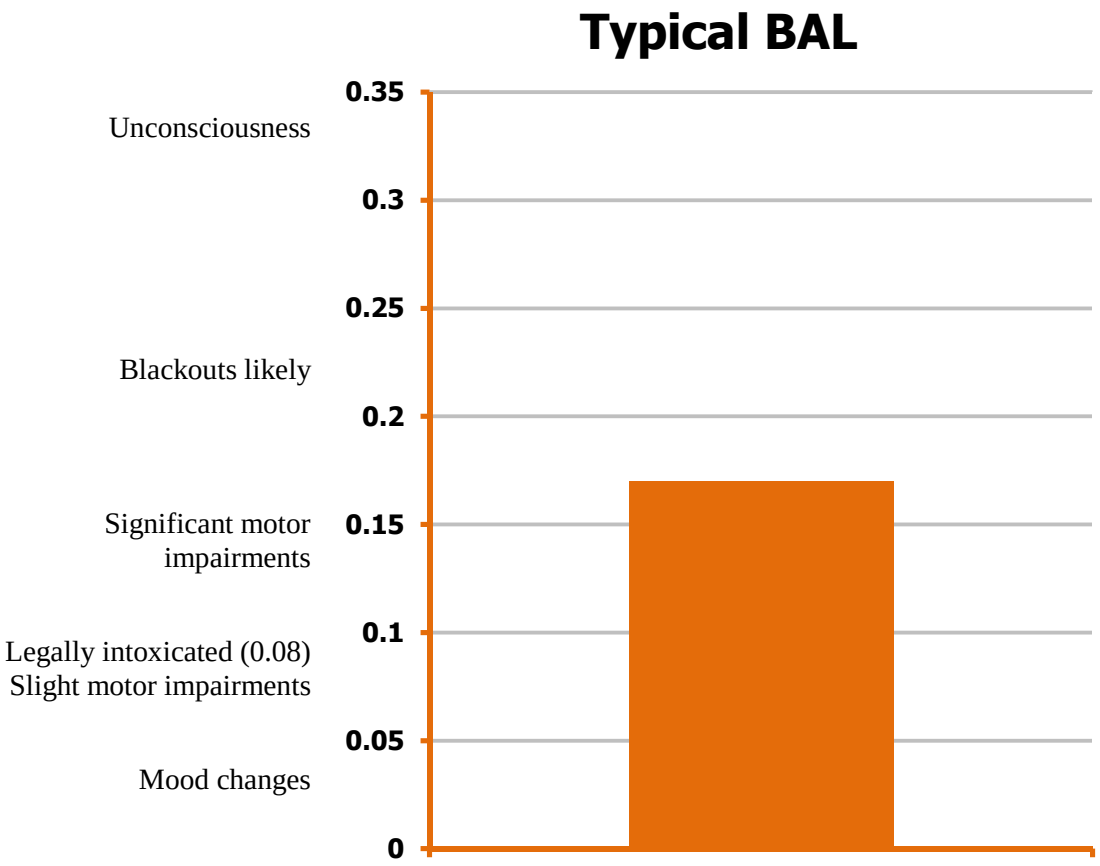
Behavior Change Lab

Department of Psychology

Oklahoma State University

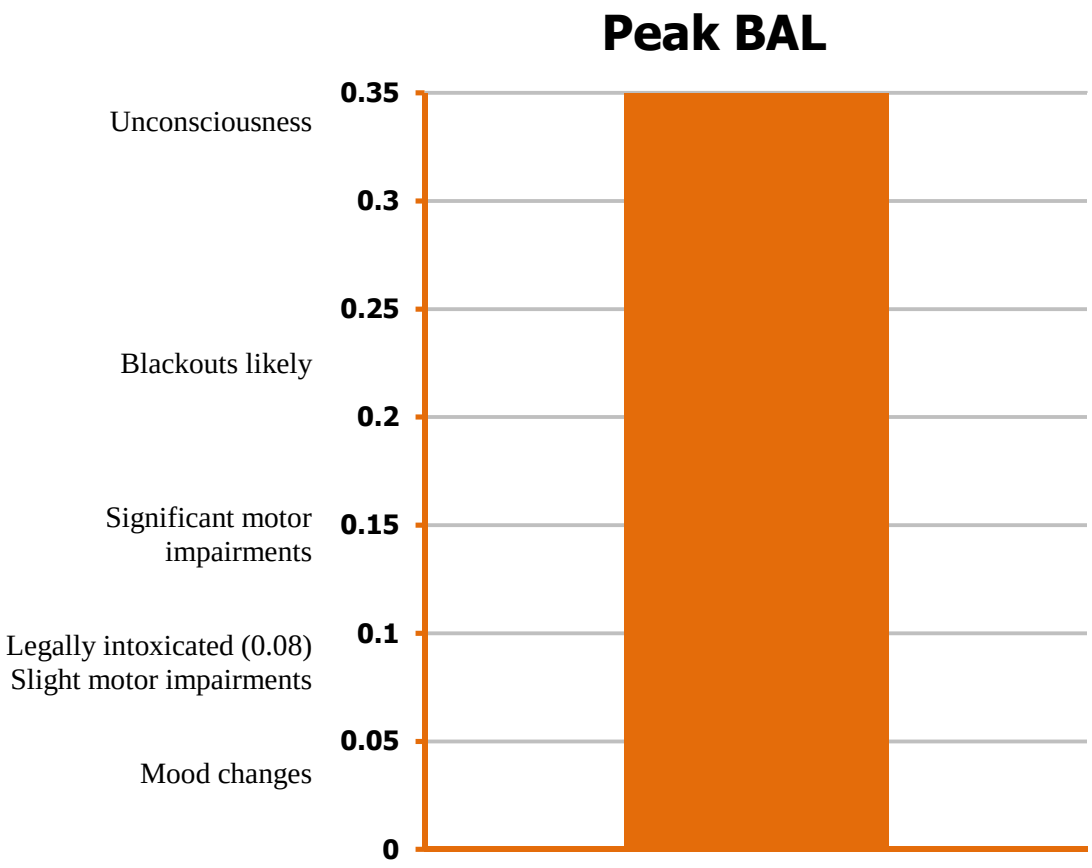
For a typical drinking occasion you reported drinking **8** drinks over a period of **4.5** hours.

Your BAL for a typical drinking occasion is **.17**.

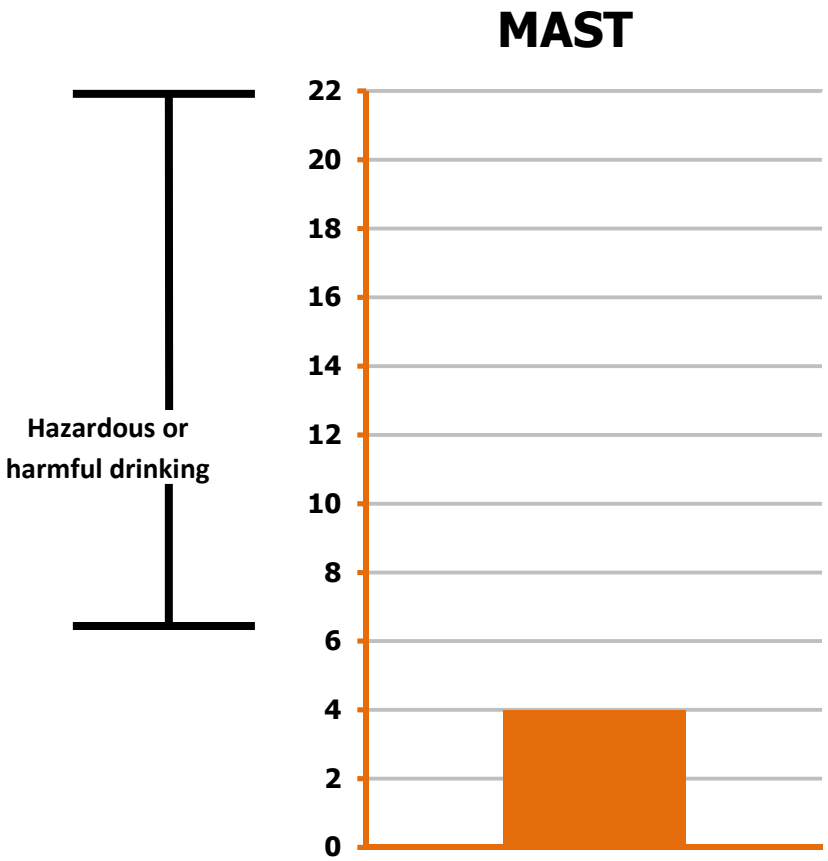


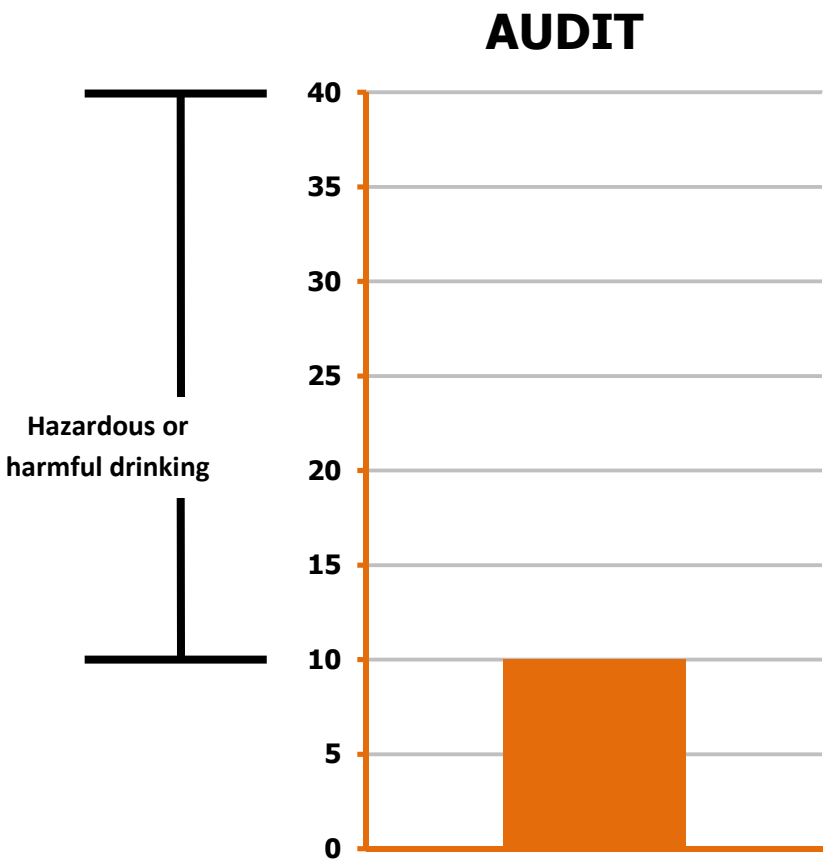
For your peak drinking experience in the past 6 months, you reported drinking **14** drinks over a period of **6** hours.

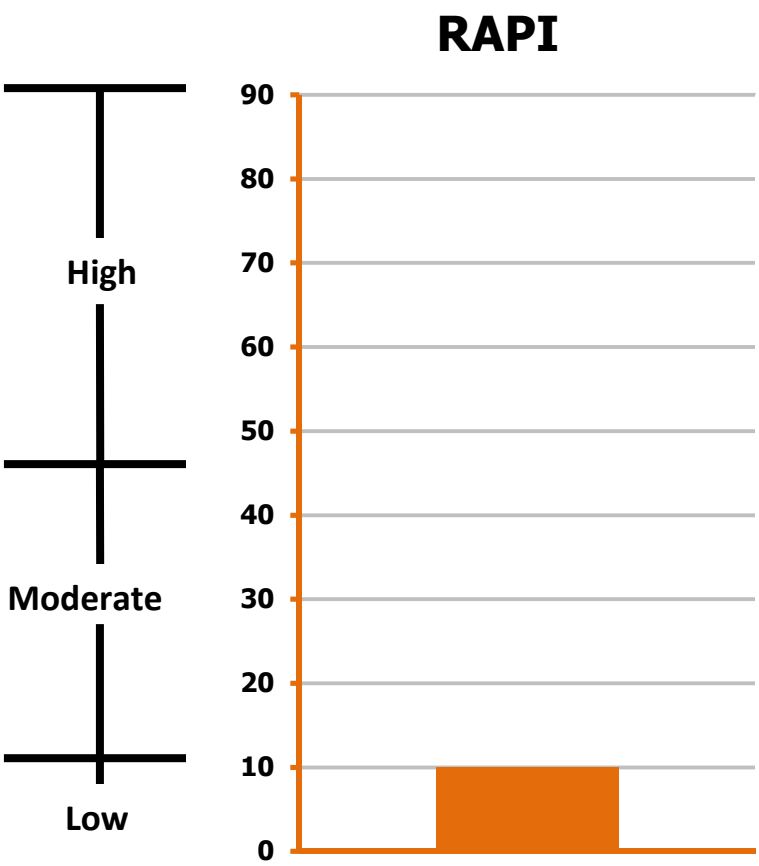
Your BAL for a peak drinking occasion is **.35.**



	What you said	What it is
Percentage of students who consumed alcohol in the past year	**70%**	80%
Percentage of students who consumed alcohol in the past 30 days	**50%**	62%
Percentage of students who drove a car while under the influence of alcohol during the past year?	**30%**	29%
Percentage of students who missed class due to alcohol use?	**45%**	29%
Percentage of students who do not drink alcohol at all?	**10%**	20%
Percentage of students who drink 5-8 drinks on one occasion?	**50%**	17%
Percentage of students who drink more than 8 drinks on one occasion?	**20%**	1%


MAST
Hazardous or harmful drinking
22
20
18
16
14
12
10
8
6
4
2
0


AUDIT
Hazardous or harmful drinking
40
35
30
25
20
15
10
5
0


RAPI
High
Moderate
Low
90
80
70
60
50
40
30
20
10
0

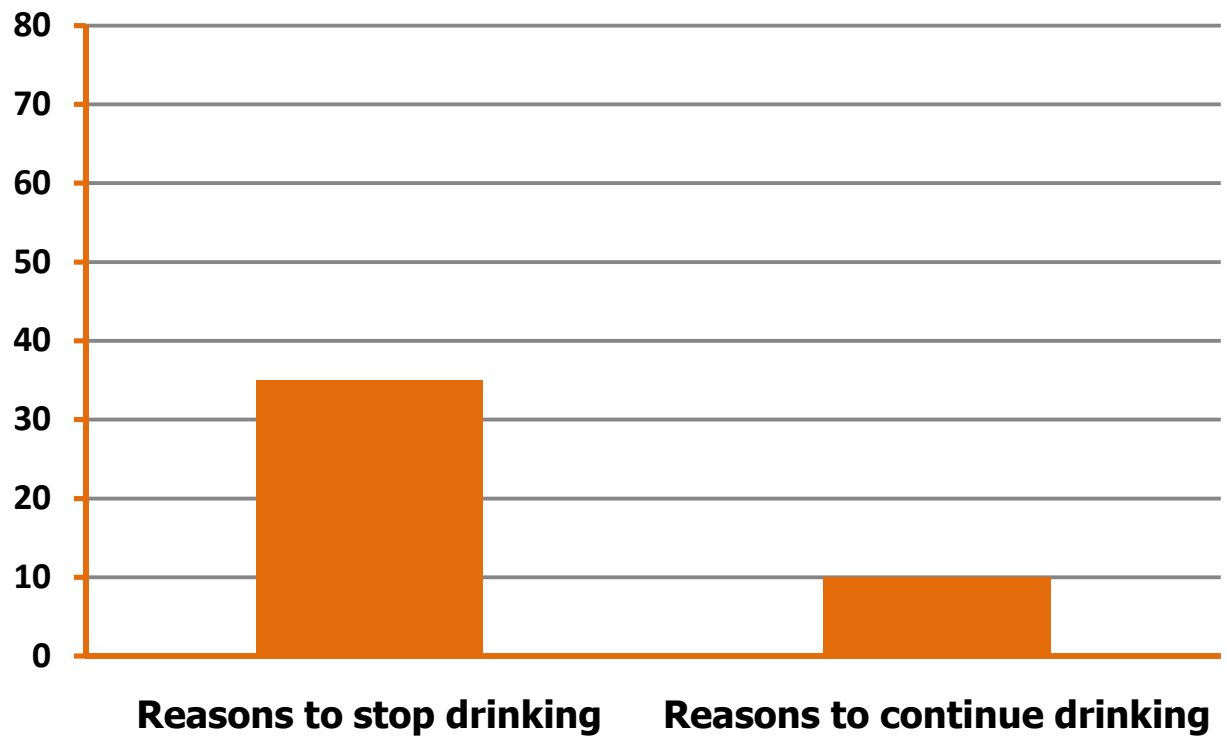
DSM Criteria – Abuse (1 or more)

Drinking has resulted in failure to fulfill duties at work, home, or school.
Drinking in situations when it is physically dangerous.
Legal problems related to drinking.
Continued drinking despite it causing repeated problems.

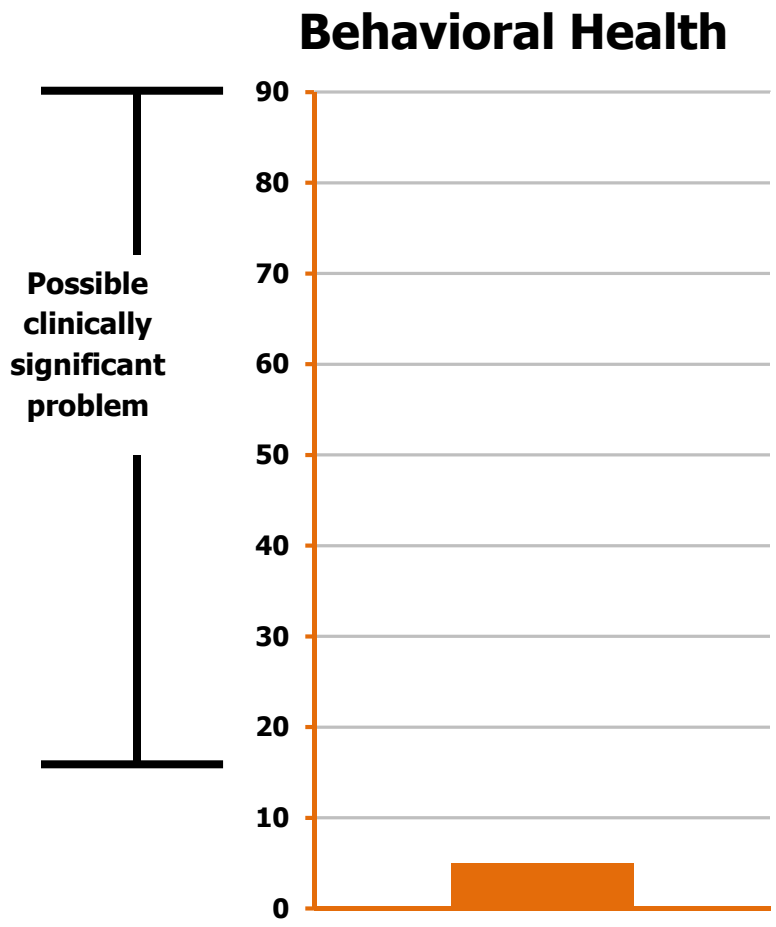
DSM Criteria – Dependence (3 or more)

Tolerance (needing more alcohol to gain the same effect)
Withdrawal (taking alcohol to get rid of unpleasant symptoms)
Drinking larger amounts or over a longer period of time than you planned
Having a persistent desire or history of unsuccessful attempts to quit drinking
Spending a lot of time drinking or recovering from the effects of drinking
Giving up things at work, home, or with friends to drink
Continuing to drink despite having problems caused by drinking

Decisional Balance Questionnaire (pro/cons chart)



BHI (Chart)


Behavioral Health
Possible clinically significant problem
90
80
70
60
50
40
30
20
10
0

You reported a negative/positive family history of alcoholism.

1728 calories from alcohol in an average week

To burn off these calories it would take:

384 minutes walking

Or

301 minutes on a Stairmaster

$192 a semester if you drank cheaper, domestic beer

$624 a semester if you drank mixed drinks or are buying alcohol at a bar

Your true cost is most likely somewhere between these two

Situations where you might drink excessively:	
At a party	When having unpleasant emotions
At a concert	When in physical discomfort
When celebrating	When having pleasant emotions
After a fight with someone close to you	When in conflict with others
When feeling down	When under social pressure to use
When angry or upset	During pleasant times with others
When with a lover	When testing control over your use of alcohol
When on a date	When fighting urges and temptations to drink
Before having sex	

What is your current goal for your drinking behavior?

No change	
Reduce quantity	
Reduce frequency	
Reduce quantity and frequency	
Completely abstain	

At this moment how committed are you to making a change in your drinking habits?

0% (not at all committed) – 50% (somewhat committed) – 100% (totally committed)

VITA

Joseph Mignogna

Candidate for the Degree of

Doctor of Philosophy

Dissertation: A TEST OF MODERATING FACTORS OF BRIEF INTERVENTIONS FOR HAZARDOUS ALCOHOL USE AMONG COLLEGE STUDENTS

Major Field: Psychology

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Psychology at Oklahoma State University, Stillwater, Oklahoma in July, 2010.

Completed the requirements for the Master of Science in Psychology at Oklahoma State University, Stillwater, Oklahoma in May, 2007

Completed the requirements for the Bachelor of Science in Psychology at Texas A&M University, College Station, Texas in May, 2004.

Experience:

1. *Intern* at the Michael E. DeBakey VA Medical Center, Houston, TX
2. *Assistant Director of Clinical Services* and *Psychological Associate* at the OSU Psychological Services Center and Marriage and Family Center, Stillwater, Oklahoma
3. *Practicum Student* at the OSU Health Care Center, Tulsa, Oklahoma
4. *Graduate Instructor* for OSU Introductory Psychology Course, Stillwater, Oklahoma

Professional Memberships:

Association for Behavioral and Cognitive Therapies, Motivational Interviewing Network of Trainers, American Psychological Association

Name: Joseph Mignogna Date of Degree: July, 2010

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: A TEST OF MODERATING FACTORS OF BRIEF INTERVENTIONS FOR HAZARDOUS ALCOHOL USE AMONG COLLEGE STUDENTS

Pages in Study: 138 Candidate for the Degree of Doctor of Philosophy

Major Field: Psychology

Scope and Method of Study: Half of all college students engage in drinking practices associated with a host of academic, interpersonal, legal, and health-related problems. Brief Motivational Interventions (BMIs) are programs aimed at reducing college student drinking and related consequences. While a great body of literature exists in support of these interventions, literature has yet to determine what individual characteristics of hazardous college drinkers moderate the efficacy of BMIs. In the current study, hazardous college drinkers (*n = 152)* were randomly assigned to a control condition, a computer delivered BMI, or to a person-administered BMI. Data were collected for drinking frequency, quantity, and associated consequences at baseline and at 10-week follow-up assessments. Additionally, data on the proposed moderators of BMI efficacy were collected at baseline assessment, including gender, readiness to change, and drinking status. Additionally, characteristics specific to the mode of BMI administration (i.e., computer or person-administered) were examined, including attitudes toward and familiarity with computers, fear of negative evaluation, and social interaction anxiety.

Findings and Conclusions: Analysis of variance (ANOVA) tests were conducted to examine if the proposed factors moderated the efficacy of the BMIs. No clinically meaningful moderating relationships were observed for any of the proposed moderators. Overall, results show that BMI efficacy is robust to the proposed moderators in the current study.

ADVISER'S APPROVAL: Thad R. Leffingwell, Ph.D.