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IMPLEMENTATION AND EVALUATION OF A CLASSROOM-BASED APPROACH TO
EXPECTANCY CHALLENGE FOR REDUCING ALCOHOL USE AMONG FIRST-YEAR
COLLEGE STUDENTS

by

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B.H.Sc. McMaster University, 2005

A thesis submitted in partial fulfillment of the requirements
for the degree of Master of Science
in the Department of Psychology
in the College of Sciences
at the University of Central Florida
Orlando, Florida

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ABSTRACT

There is a pervasive belief in the United States that the college experience typically includes frequent social activities characterized by widespread alcohol use. Unfortunately, awareness of the hundreds of deaths and wide variety of other harms experienced by college students as a result of alcohol use is much less pervasive. In an effort to increase awareness of the negative impact of alcohol use on college campuses, the NIAAA commissioned a panel composed of scientists and college presidents to document alcohol-related harms and identify strategies that have been found to be effective in reducing risky alcohol use based on empirical evidence. The final report of this expert panel was released as a “Call to Action” for institutions nationwide in an effort to increase understanding of the severity and prevalence of risky alcohol use, and to provide descriptions of programs that were considered effective based on empirical evidence. Unfortunately, there were very few strategies found to be effective, and one of the effective approaches could only be implemented in specialized laboratories operated by scientists with expertise in expectancy challenge. Due to the severity and pervasiveness of the college alcohol problem and the limited number of strategies deemed effective, there is clearly a pressing need to develop and validate an expectancy challenge method that could be implemented by any institution without being limited by the need for a specialized laboratory and highly trained personnel. Achievement of these goals was the focus of the present project. To this end, an expectancy challenge curriculum designed for delivery in a college classroom was developed based on a laboratory delivered protocol previously found to be effective in reducing alcohol use among college students, and a classroom delivered curriculum previously found to be effective with high school students. The newly developed college classroom curriculum was implemented in a single session with groups of students during their regular class time in their usual classroom. Measures of alcohol use and associated harms were completed anonymously by each

participant before completing the curriculum and for the month following completion of the curriculum. Analyses indicated significant reductions in alcohol consumption among males and females in comparison to students who were randomly assigned to a wait-list control condition. Unfortunately, significant reductions in alcohol-related harms were not found. The time periods for baseline and follow-up were only one month each, and that limitation in the number of opportunities to experience harms limits the likelihood of demonstrating a significant reduction in harms as well. Overall, this project represents an important advance in the development of alcohol use reduction strategies that are theory-based and effective in reducing alcohol use based on empirical evidence. In addition, the curriculum that was developed and validated in this project represents the first expectancy challenge method that can be readily implemented at any institution willing to devote one hour to reducing their students' risk for a long list of negative consequences associated with alcohol use on college campuses. Motivation and a typical classroom are all that is needed.

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INTRODUCTION

Alcohol consumption is the single most prevalent contributor to academic failure among college students in the United States, and the harm is not limited to those who fail. Increased sexual risk is also pervasive among those who engage in high risk drinking, particularly with regard to engagement in unplanned sexual activity and failure to use contraception (Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994). Virtually every negative experience college students can suffer increases in likelihood with increased use of alcohol. This is particularly salient given that heavy drinking is widespread with over 44% of students reporting at least one instance of high-risk drinking behavior over a one-year period (Araujo & Wong, 2005; Knight, Wechsler, Kuo, Seibring, Weitzman, & Schukit, 2002). Despite increasing attention focused on alcohol abuse among college students, the prevalence of negative consequences continues to be very high. More than 500,000 college students are unintentionally injured each year while under the influence of alcohol, upwards of 600,000 are assaulted, and approximately 1,700 die (Hingson, Heeren, Winter, & Wechsler, 2005). The need for the development and dissemination of effective strategies to address college alcohol abuse is clearly evident.

In recognition of the detrimental effects of alcohol use on college students, most institutions have implemented programming intended to address risky drinking behavior. Unfortunately, many of the most popular strategies have been found to be largely ineffective. For example, one widely used strategy for reducing alcohol abuse among college students is based on social norms theory, which posits that reducing student misperceptions about how peers use alcohol will significantly decrease alcohol-related problems on campus. While social norms programs have been shown to be effective in correcting misperceptions about college drinking norms, student perceptions about peer alcohol use have not been found to significantly relate to actual alcohol use or harmful consequences experienced as a result (Benton, et al., 2006;

Granfield, 2005). It is for this reason that the effectiveness of social marketing campaigns is “in the eye of the beholder,” (Gorman, 1998). Institutions are likely to believe these programs are effective based on successful correction of misperceptions and efficient due to their relatively low cost. However, evidence of effectiveness in reducing actual use of alcohol is scant (National Institute on Alcohol Abuse and Alcoholism, 2002).

Another prevention effort involves use of peer education, whereby students are involved in service programming with other students at the same academic level. Upwards of 83% of all higher education institutions in the United States use peer education, as it is well suited to campus outreach strategies and is cost-effective (Morrison & Talbott, 2005; Turner & Shepherd, 1999). The problem with peer education programming is that it is rarely evidence-based. The approach rests on lay principles and assumptions that do not have roots in a particular school of thought, and often do not succeed when outcome data (when it exists) is evaluated (Fennell, 1993; Turner & Shepard, 1999; Walker & Avis, 1999).

Limited effectiveness of popular approaches like social norms-based campaigns and peer education programming has encouraged a close examination of all aspects of alcohol use among college students. The college experience represents a time of transition when adult roles and responsibilities are postponed, and instead students focus on normative developmental tasks such as making friends and developing autonomy (Larimer, Kilmer, & Lee, 2005). Drugs and alcohol may be used as a social lubricant to help facilitate the transition to adulthood. This speculation is supported by the dramatic increase in alcohol use seen as students move from high school to the college environment. When surveyed about their use of alcohol over a 30 day period, 17.8% of students aged 12-17 report engaging in at least one instance of drinking behavior. The percentage climbs to 61.7% for the 18-25 year-old age group, and alcohol use is often found to peak at approximately 19 years of age (U.S. Department of Health and Human Services, 2003).

The large body of information on college drinking and confusion about the relative effectiveness of the multitude of available programs has made the task of choosing the best approach very difficult for colleges and universities. In an effort to provide evidence-based guidance, the National Advisory Council of the National Institute on Alcohol Abuse and Alcoholism (NIAAA) formed a task force to develop recommendations for the selection of effective prevention approaches and future research to address the problem of alcohol use in college students (National Institute on Alcohol Abuse and Alcoholism, 2002). The recommendations were grouped among three “tiers” according to their effectiveness as indicated by a review of research-based studies. Strategies in Tier 1 of the recommendations made by the task force have strong evidence supporting their effectiveness in reducing alcohol consumption among alcohol-dependent drinkers, problem drinkers, and students whose drinking patterns place them at high risk for developing alcohol-related problems. Tiers 2 and 3 represent strategies that have been shown to be effective in populations similar to those found on college campuses, and strategies that are theoretically promising but require further evaluation, respectively. Among the very few top tier strategies found to be effective among college students were programs focused on challenging alcohol expectancies in the student population.

The term “alcohol expectancies” is used to refer to information stored in the brain about the anticipated effects of alcohol. Memory processes have been identified as a possible final common pathway in explaining drug dependence, such that they may be a part of the causal chain by which antecedents of alcohol influence the consumption and pattern of drinking in individuals (Cruz & Dunn, 2003; Fromme & Dunn, 1992; Goldman, 1999a; Rather & Goldman, 1994). Support for the causal relationship between alcohol expectancies and consumption comes from research that has shown that expectancies exist prior to the drinking experience (Dunn & Goldman, 1996; Kraus, Smith, & Ratner, 1994), predict drinking initiation (Christiansen, Smith,

Roehling, & Goldman, 1989; Stacy, 1997), differentiate light-drinking and heavy-drinking children and adults (Dunn & Earleywine, 2001; Dunn & Goldman, 1998; Dunn & Goldman, 2000; Rather & Goldman, 1994; Rather, Goldman, Roehrich, & Brannick, 1992), mediate the influence of antecedent variables on alcohol use (Darkes & Goldman, 1998; Goldman & Darkes, 1997; Sher, Walitzer, Wood, & Brent, 1991; Stacy, Newcomb, & Bentler, 1991) and when manipulated, results in significantly decreased drinking in heavy-drinking college students (Darkes & Goldman, 1993; Darkes & Goldman, 1998; Dunn, Lau, & Cruz, 2000; Goldman, 1999b; Goldman & Darkes, 1997).

Research investigating alcohol expectancies as memory processes has characterized memory as a symbolic, proximity-based network (Rather & Goldman, 1994). This memory network is composed of “nodes,” which represent unique expectancy concepts. These nodes are either closely or distantly linked based on their intrinsic meaning to and the learning history of the individual, and their activation proceeds in a predictable fashion as the individual encounters stimuli that match previously encoded material relevant to alcohol use (Goldman, 1999b; Rather & Goldman, 1994). It is the activation pattern of these nodes that is theorized to influence the onset and pattern of drinking in individuals.

The framework for an alcohol expectancy memory network involves two primary dimensions, which correspond to factors identified in factor model-based expectancy measures (Fromme, Stroot, & Kaplan, 1993). One is a bipolar positive-negative dimension, characterizing the positive outcomes that are most sought-after (e.g., having fun, feeling happy) and a relief from aversive states that might exist prior to drinking (e.g., anxiety and depression). The second dimension is arousal-sedation, which refers to the observed pharmacological effects of alcohol (e.g., stimulation and sedation) (Goldman, 1999b; Goldman & Darkes, 1997; Rather & Goldman, 1994). Research has demonstrated that high-risk drinkers may rapidly associate positive and

arousing outcomes with alcohol consumption, and may also be cognitively insulated from associations with sedating and adverse consequences. The network of expectancy effects possessed by these high-risk individuals is more “tightly packed,” leading to a rapid activation of expectancies more proximal to the initial association. In contrast, the network of expectancy effects is more dispersed and light drinkers form associations more slowly, such that the associations may inhibit drinking (Rather & Goldman, 1994).

This network model of memory suggests a mechanism for the operation of alcohol expectancies, which lends itself to the theory that the successful manipulation and undermining of social- and arousal-based expectancies may result in decreased alcohol consumption. This concept has been tested in a secondary-intervention format called “expectancy challenge” (Darkes & Goldman, 1993, 1998; Dunn et al., 2000). The expectancy challenge intervention traditionally involves the use of a bar-laboratory in which heavy-drinking college students are exposed to information and an experience that challenges their expectancies of arousal in relation to alcohol use. The experience involves the administration of alcoholic and non-alcoholic beverages to these students, who are told to expect one type of beverage but may or may not be given this type. They are then challenged to identify, among the group and including themselves, who received an alcoholic beverage and who did not. The inability to correctly identify actual drinkers at better than chance levels is used to disconnect the associations between alcohol and various experiences that are produced by expectancy rather than the pharmacology of alcohol. This aspect of the strategy involves “challenging” the expectancies of heavy drinkers and led to the name of the approach (Darkes, 1995; Darkes & Goldman, 1993; Goldman, 1999b; Goldman & Darkes, 1997). When key expectancies for social facilitation are successfully challenged and altered, subsequent alcohol use has been found to significantly decline.

While traditional prevention programs focus on teaching the dangers of drinking, the expectancy challenge decreases the positive reinforcement value of alcohol consumption. The intervention does not necessarily erase former expectancies, but introduces information into the memory network that may compete with pre-existing information for influence over the individual's behavioral output (Goldman, 1999b). The effectiveness of the expectancy challenge supports a causal interpretation of expectancy operation and lends itself to the theoretical proposition that alcohol consumption is heavily influenced by cognitive processes prior to the development of physiological dependence (Darkes & Goldman, 1993).

Although previous work with the expectancy challenge has demonstrated success in decreasing alcohol consumption among heavy-drinking college students, concerns have arisen with the multi-session format of this intervention in addition to being based in a bar-laboratory setting (Wiers & Kummeling, 2004). Early formulations of the expectancy challenge were also focused on reducing alcohol use among heavy drinking males, and thus subsequent research modifying the program for implementation with females have produced variable results (Lau-Barraco & Dunn, 2008; Musher-Eizenman & Kulick, 2003; Wiers & Kummeling, 2004). Reluctance of heavy-drinking college students to cooperate in a multiple-session intervention, the necessity of a bar-laboratory setting and inconsistent demonstrations of effectiveness with females has made the expectancy challenge less likely to be amenable to wide scale implementation in educational institutions. In order to facilitate the widespread use of expectancy-based prevention strategies, effective approaches must be developed that can be delivered in typical settings, in a minimum amount of time, to both male and female students who are in the early stages of their drinking experiences. Therefore, the ideal approach would be a single-session prevention program taking place in a classroom setting with first-year students. Moving in this direction, Cruz and Dunn (2003) successfully implemented a single-session,

classroom-based strategy with elementary-school children. An interactive classroom exercise was designed to alter the expectancy processes of these students such that they demonstrated a higher likelihood of activation of expectancies of sedation and impairment following exposure to the expectancy modification alcohol prevention exercise. The modified expectancy challenge was then administered to high school students and succeeded in altering likely patterns of activation, reducing likely activation of expectancies of sociability and arousal associated with alcohol use, and in decreasing alcohol consumption in heavy drinking males (Cruz, 2007).

The purpose of the present study is to modify the Cruz (2007) expectancy challenge protocol to be appropriate for delivery in a single session, in a typical classroom setting, and with first-year college students. The study is intended to demonstrate the effectiveness of this approach by reducing both alcohol consumption and alcohol expectancies of sociability and arousal among males and females in the college population, and it will compare the effectiveness of this expectancy modification strategy against a wait-list control group. If successful, the single-session classroom-based version of the expectancy challenge will be available to educational institutions as a cost-effective, brief, and validated strategy for reducing alcohol consumption in the college population.

Hypotheses

- 1) Participants in the Expectancy Challenge treatment condition will exhibit a significant decrease in alcohol consumption from baseline assessment to one-month follow-up relative to participants in the wait-list control condition. The decrease will be evidenced by reductions in mean number of drinks consumed per sitting and peak number of drinks consumed in one sitting over the month.

- 2) Participants in the Expectancy Challenge treatment condition will exhibit significant reductions in the endorsement of expectancies of sociability and arousal from baseline assessment to one-month follow-up relative to participants in the wait-list control condition. The reductions will be assessed using factor model-based expectancy measures.
- 3) Participants in the Expectancy Challenge treatment condition will exhibit significant reductions in the number of negative consequences experienced from baseline assessment to one-month follow-up relative to participants in the wait-list control condition. The reductions will be assessed using sum scores for the alcohol-related harms measures.
- 4) For each of the hypotheses above, reductions will not interact with gender.

METHOD

Participants

Participants included 190 males and 277 females who were undergraduate students at a large open-enrollment state university. During the course of the study, 79 students either reported being above first-year educational status or failed to complete follow-up measures due to absence during the class session in which follow-up assessment measures were collected. These participants were subsequently excluded from outcome analyses. In addition, 268 students reported concurrent enrollment in AlcoholEDU, another alcohol-use prevention program. AlcoholEDU is a four-part knowledge-based alcohol prevention program designed to be completed online over a period of one to two months. The program was implemented for the first time by the University of Central Florida during this study's baseline enrollment period. Due to the concurrent nature of the AlcoholEDU implementation and the classroom-based expectancy challenge project, students who reported participation in AlcoholEDU during baseline enrollment were excluded from the following analyses, resulting in a final sample of 120 participants (38 males, 82 females). The sample distribution in the expectancy challenge and wait-list control conditions were 48 (16 males, 32 females) and 72 (22 males, 50 females) respectively. The mean age of participants was 18.06 years ($SD = 0.24$), and ranged from 18 to 19 years. All participants were of first-year class standing. Self-reported ethnicity was 65.8% Caucasian, 16.7% African-American, 10% Hispanic, and 7.5% Asian-American.

Measures

Demographic Information

Demographic data collected included information on gender, age, educational status, ethnicity, living situation, affiliation with a fraternity or sorority, athletic team membership, grade point average, and weight. A sample of this questionnaire is provided in Appendix A.

Alcohol Consumption

A timeline follow-back procedure (TLFB; Sobell, Maisto, Sobell, & Cooper, 1979; Sobell & Sobell, 1992) was used to establish a typical alcohol consumption pattern for the 30-day period immediately prior to completion of baseline assessment measures, as well as for the 30-day period immediately following the initial assessment. Participants recorded their drinking on a calendar with self-identified historical reference points to enhance recall. The TLFB has well-established psychometric properties and is considered an ideal technique to aide memory recall in research on addiction (Babor, Brown, & Del Boca, 1990; Levy et al., 2004; Sobell, et al., 2001). In particular, the TLFB has demonstrated sensitivity to variation in behavioral patterns related to indices of quantity and frequency (Carey, 1997; Sobell & Sobell, 1992; Waldron, Slesnick, Brody, Turner, & Peterson, 2001) and is useful in minimizing cognitive biases that are often present during autobiographical recall (Bradburn, Rips, & Shevell, 1987; Loftus & Marburger, 1983; Menon, 1993). A sample of this measure is provided in Appendix B.

Factor Model-Based Expectancy Measures

Alcohol expectancies were assessed at baseline and one-month follow-up using two factor model-based expectancy measures. The Alcohol Expectancy Questionnaire-Adolescent

Version (AEQ-A; Brown, Christiansen & Goldman, 1987) has established reliability and validity, and is among the most widely used expectancy scales with the AEQ-A Subscale 2 (Social Facilitation) shown to have the highest correlation with alcohol use (Dunn, et al., 2000). The AEQ-A2 is a 17-item true/false measure designed to assess desired and aversive social expectancies associated with alcohol consumption. The Comprehensive Effects of Alcohol Questionnaire (CEOA; Fromme, Stroot & Kaplan, 1993) also possesses excellent psychometric characteristics and was developed in response to criticisms of the AEQ-A. The CEOA is a 76-item measure that assesses anticipated effects of alcohol as well as subjective evaluation of those effects through ratings on a 5-point value scale ranging from 1 (*disagree/bad*) to 5 (*agree/good*). The CEOA consists of four positive subscales (Sociability, Tension Reduction, Liquid Courage, and Sexuality) and three negative subscales (Cognitive and Behavioral Impairment, Risk and Aggression, and Self-Perception). This measure has also been used successfully to measure significant changes in expectancies in previous expectancy challenge studies (Dunn et al., 2000). Samples of these measures are provided in Appendix C.

Alcohol-related Harms

Alcohol-related harms were assessed using two measures of negative consequences experienced as a result of alcohol consumption. The Rutgers Alcohol Problem Index (RAPI; White & Labouvie, 1989) is a 23-item self-report measure developed as an index of drinking consequences experienced by adolescents over the past three years. Items are rated by frequency of occurrence on a 5-point scale ranging from 0 (never) to 4 (more than 10 times). The Drinker Inventory of Consequences (DrInC-2L; Miller, Tonigan, & Longabaugh, 1995) is a 50-item self-report measure designed to measure lifetime consequences of drinking using a true/false response format. It also possesses excellent psychometric properties (Forcehimes, Tonigan,

Miller, Kenna & Baer, 2007). Eight questions related to harms of greater severity than those on the RAPI were selected for inclusion in baseline and follow-up assessment measures. In the present study, both the RAPI and the DrInC-2L were modified to assess negative consequences experienced over the past 30 days with items using an open-ended response format. These modifications were made in order to accurately assess the number of consequences experienced during the same 30-day period measured by the TLFB. Samples of these measures are provided in Appendix D.

Procedure

University of Central Florida courses known to enroll primarily first-year students were selected for inclusion in the study. Twenty-four class sections of approximately twenty students each were randomly assigned to an expectancy challenge or wait-list control condition. Participants in the expectancy challenge condition completed baseline assessment measures and received the expectancy challenge presentation within the same meeting, and then completed follow-up assessment measures at four-weeks following baseline assessment. Participants in the wait-list control condition completed baseline and follow-up assessment measures at the same time as those in the expectancy challenge condition, however did not receive the expectancy challenge presentation until after completion of follow-up assessment measures.

All assessment and presentation sessions were held in campus classrooms during regular class meeting times. Only students at least 18 years of age were permitted to complete the informed consent procedure (see Appendix E) and complete assessment measures.

Classroom-based Expectancy Challenge Protocol

The classroom-based expectancy challenge presentation was based on the procedure developed by Cruz (2007), which was the first single-session, classroom-based expectancy challenge exercise to be implemented outside the bar-laboratory environment. The original classroom-based procedure was implemented and evaluated in elementary and high school settings (Cruz, 2007; Cruz & Dunn, 2003) with age-appropriate content. The modified curriculum was designed to increase attention to the sedating effects of alcohol and undermine the anticipation of social and arousing outcomes through presentation of material relevant to first-year undergraduate students. The presentation was delivered by trained undergraduate peer educators in order to maximize receptivity to content and cost-effectiveness of the program.

The session commenced with a discussion on the expected effects of alcohol. Students were presented with video clips depicting commonly televised advertisements and asked to identify the expectancy effects promoted in each video clip. The focus then shifted to a discussion of the pharmacological realities of alcohol as a depressant and some common misconceptions about its effect on individuals. Students were asked to identify effects consistent with this fact and taught to differentiate between the ‘real’ and ‘expected’ effects of alcohol. Upon completion of the presentation, students were divided into small teams, while a subgroup of students were named “judges.” The teams viewed a series of video clips showcasing either expected or pharmacological effects of alcohol. Teams then competed to identify effects of alcohol portrayed in each clip, with each effect earning one point. During competition, teams were encouraged to “challenge” effects named by opposing teams in order to steal points, prompting discussion about the validity of certain effects as resultant of expectancy or pharmacology. Judges decided which of the opposing teams had correctly identified the alcohol effect and earned the point based on opposing arguments. Upon conclusion of the competition,

the team with the greatest number of points was pronounced the winner. Due to the educational nature of the presentation, the winning team was not given a prize, but was congratulated on having demonstrated superior understanding of concepts presented in the program.

RESULTS

Of the 470 participants who initially enrolled in the study, 120 (26%) were first-year students, completed baseline and follow-up assessment measures, and were not concurrently enrolled in another knowledge-based alcohol prevention program. Analyses indicated that exclusion based on failure to meet the criteria above did not differ between conditions.

Baseline Participant Characteristics

Chi square analyses were conducted to assess baseline differences between conditions on demographic variables of gender and ethnicity. No significant differences were found. Univariate analyses of variance (ANOVA) confirmed that the groups were similar in age [$F(1, 118) = .025, p = .875$], alcohol consumption [mean number of drinks per sitting, $F(1, 118) = .037, p = .848$, and peak number of drinks over the month, $F(1, 118) = .190, p = .664$] and AEQ-A2 scores [$F(1, 118) = 1.279, p = .260$]. In addition, MANOVAs were conducted to examine baseline differences in CEOA scores [$F(7, 111) = .971, p = .456$] and alcohol-related harms [$F(2, 116) = 1.134, p = .325$] at pre-test. No significant differences between conditions were found. These results suggest equivalence between groups at baseline on measured characteristics, providing support for concluding effectiveness of the program based on between-group differences at follow-up.

Changes in Alcohol Consumption

A 2 (expectancy challenge, wait-list control) x 2 (baseline, follow-up) x 2 (male, female) mixed ANOVA with Bonferroni correction was conducted to assess drinking changes from baseline to one-month following the intervention. The following assumptions were tested and met, (a) independence of observations, (b) normality, and (c) sphericity.

Results did not indicate a significant interaction between condition, gender, and time of drinking assessment on mean number of drinks consumed per sitting, $F(1, 116) = 3.197, p = .076$ partial $\eta^2 = .027$, or peak number of drinks consumed per sitting over the month, $F(1, 116) = 2.463, p = .119$, partial $\eta^2 = .021$. Subsequent analyses revealed a significant interaction between condition and time of drinking assessment on mean number of drinks consumed per sitting, $F(1, 116) = 4.177, p < .05$, partial $\eta^2 = .035$, and peak number of drinks consumed in one sitting over the month, $F(1, 116) = 4.998, p < .05$, partial $\eta^2 = .041$ (see Figures 1 and 2 respectively). This indicates that, on average, participants in the expectancy challenge condition exhibited a significantly greater decrease in mean number of drinks consumed per sitting from baseline ($M = 3.42, SD = 4.39$) to follow-up ($M = 1.88, SD = 3.11$) compared to those in the wait-list control condition ($M = 3.28, SD = 3.02$ and $M = 2.78, SD = 2.78$ respectively). Participants in the expectancy challenge condition also reported a significantly lower peak number of drinks consumed in one sitting over the month from baseline ($M = 5.36, SD = 7.50$) to follow-up ($M = 2.66, SD = 4.36$) compared to participants in the wait-list control condition ($M = 4.82, SD = 5.04$ and $M = 4.18, SD = 4.60$ respectively). No interaction between gender and time of assessment was found for mean number of drinks consumed per sitting, $F(1, 116) = 0.737, p = .392$, partial $\eta^2 = .006$, or peak number of drinks consumed in one sitting, $F(1, 116) = 0.893, p = .347$, partial $\eta^2 = .008$, indicating that males and females did not exhibit significantly different changes in either outcome variable over time.

Changes in Alcohol Expectancies

Expectancy changes were assessed with 2 (expectancy challenge, wait-list control) x 2 (baseline, follow-up) x 2 (male, female) mixed ANOVAs on the AEQ-A2 Social Facilitation subscale and each of the seven CEOA subscales (Sociability, Tension Reduction, Liquid

Courage, Sexuality, Cognitive/Behavioral Impairment, Risk and Aggression, and Self-Perception). Because multiple ANOVAs were conducted, the Bonferroni correction for multiple comparisons was applied to correct for the probability of Type 1 error.

No significant interaction was found between condition, gender and time on the AEQ-A2 subscale or the seven CEOA subscales. Subsequent analyses also indicated that changes in alcohol expectancies were not significantly different between conditions or genders from baseline to follow-up (see Table 1 for summary of results). Assessment measures did not successfully capture significant changes in alcohol expectancies among participants in the expectancy challenge condition compared with participants in the wait-list control group over the one-month follow-up period (see Table 2 for means and standard deviations).

Changes in Number of Alcohol-Related Harms

A 2 (expectancy challenge, wait-list control) x 2 (baseline, follow-up) x 2 (male, female) doubly multivariate analysis was conducted to assess differences between participants in the expectancy challenge condition and participants in the wait-list control condition in the amount of change in negative consequences experienced as assessed by the RAPI and DrInC-2L outcome measures. A significant interaction between condition, gender, and time was not found on the linear combination of the two dependent variables, $F(2, 107) = .888, p = .415, \text{partial } \eta^2 = .016$. Subsequent analyses did not reveal significant interactions between condition and time, or gender and time, on the linear combination of the two dependent variables [$F(2, 107) = .929, p = .398, \text{partial } \eta^2 = .017$, and $F(2, 107) = .068, p = .935, \text{partial } \eta^2 = .001$ respectively (see Figures 3 and 4)]. These results indicate that participants in the expectancy challenge condition did not experience significantly different changes in the number of alcohol-related harms occurring from baseline to follow-up assessment compared to participants in the wait-list control

condition as assessed by the RAPI [(Exp: $M = 2.83$, $SD = 5.31$ to $M = 3.08$, $SD = 8.00$)(Ctrl: $M = 4.53$, $SD = 7.27$ to $M = 3.40$, $SD = 5.42$)] or the DrInC-2L [(Exp: $M = 1.82$, $SD = 4.08$ to $M = 1.60$, $SD = 3.45$)(Ctrl: $M = 1.91$, $SD = 3.56$ to $M = 1.30$, $SD = 2.83$)].

DISCUSSION

The present study represents a “next step” in a long line of research supporting the effectiveness of the expectancy challenge strategy. Prior research has established the utility of the bar-laboratory based intervention in reducing alcohol consumption among heavy drinking male (Darkes & Goldman, 1993, 1998; Dunn et al., 2000) and female college students (Lau-Barraco & Dunn, 2008). Subsequent studies have modified the strategy for implementation in a classroom setting that eliminates the expense of a bar-lab and the need to administer alcohol for an experiential component. Cruz and Dunn (2003) demonstrated the effectiveness of a single-session, classroom-based expectancy challenge program in challenging expectancies of sociability and arousal among elementary and high school students, and also found a significant reduction in alcohol consumption among heavy drinking high school males following exposure to the program (Cruz, 2007). The purpose of the present study was to modify the classroom-based expectancy challenge to be effective in both males and females in the first-year college population. Findings revealed that the modified expectancy challenge for first-year students lead to significant reductions in the amount of alcohol consumed among both male and female first-year students compared to those who received no alcohol programming. Unfortunately, findings also revealed that measures of expectancy and alcohol-related harms did not capture significantly different changes in alcohol expectancies or harms, respectively, between the two study groups.

There are a number of implications of the current findings. First, reductions in alcohol consumption were found across participants who received the expectancy challenge program. As assessed by the Timeline Followback, participants reported consuming significantly less alcohol during an average sitting and reaching a significantly lower peak number of drinks in one sitting during the 30 days following the curriculum implementation compared to those who did not receive alcohol prevention programming. These findings are meaningful given evidence that

many students who enter the college environment from high school increase their drinking following matriculation. More specifically, 40-50% of students who enter college as nondrinkers begin drinking during their first year (Lo & Globetti, 1993; Moos, Moos, & Kulik, 1976), and 25% of first-year students engage in heavy episodic drinking when they had not previously done so in the high school environment (Weitzman, Nelson, & Wechsler, 2003). Present findings indicate that the classroom-based expectancy challenge may be successfully utilized to combat this “college effect” and inoculate students against initiating heavy drinking practices that are often seen among first-year undergraduate students.

A second implication is that the present study demonstrated effectiveness in both male and female students. Prior to the development of the classroom-based expectancy challenge, many formulations of the experiential intervention were based on a protocol developed for heavy drinking male students, and thus showed difficulty in producing effects among female students. It was not until 2008, when Lau-Barraco and Dunn (2008) utilized a single-session format of the bar-based expectancy challenge modified to target females in addition to males, that effects were seen among both male and female heavy drinking students. In accordance with these results, modifications were made to the Cruz (2007) classroom-based expectancy challenge in order to replicate findings with both genders. Specifically, content related to the negative social and sexual effects of alcohol that are believed to resonate with female first-year students was included in the curriculum. The reductions in drinking found among females indicates that including content related to the specific target population may be helpful in implementing strategies consistently effective in both genders.

Another implication of the study involves the absence of differential changes revealed by assessment measures in expectancies or harms among expectancy challenge and wait-list control participants. A number of possible explanations may account for these findings. With regard to

alcohol expectancies, many studies demonstrating the ability of the expectancy challenge to successfully target expectancies previously used memory-model based assessment measures alone or in addition to factor-model based measures such as the AEQ-A2 or CEOA. Both the AEQ-A2 and the CEOA have recently been criticized for neglecting to address key factors in identifying alcohol expectancies in addition to their use of limited response formats (true/false and 4-point Likert scales) (Fromme & D'Amico, 2000; Ham, Stewart, Norton, & Hope, 2005). It is possible that memory-model based measures may be more sensitive to changes in alcohol expectancies. Goldman and Darkes (2004) describe efforts of factor-model based expectancy measures to identify discrete and distinctive dimensions of expectancy such as positive-negative and arousal-sedation that may characterize motivations to drink. It is important to note that, while these dimensions are indeed a component of alcohol expectancy, there are many other influences to consider such as behavioral, cognitive, and sensory effects, socio-cultural legal and illness-related outcomes, and alcohol doses, beverage types, and drinking circumstances (Goldman & Darkes, 2004). Given the array of factors that may contribute to the development and influence of alcohol expectancy, it may be more effective to use methods based on multidimensional scaling (MDS) that allow mapping of discrete expectancy items onto multidimensional space. The resulting maps have been shown to directly relate to behavioral processes (Goldman & Darkes, 2004). Similarly, use of the RAPI and DrInC-2L as measures of alcohol-related harms in the current study may have failed to identify consequences specific to this unique population. The RAPI was originally published and validated in 1989. Critics state that the lack of current validation efforts despite the widespread use of this measure among college students may be problematic when interpreting results. In a study conducting item response theory (IRT) to examine use of the RAPI on senior-level high school and first-year college students, it was found that certain items on the 23-item measure a) did not apply to

students in this age group; b) applied differentially to males and females, or high school and college students; or c) did not possess sufficient endorsement despite ample power to demonstrate meaningful, practical differences when comparing groups (Neal, Corbin, & Fromme, 2006). In addition, the original RAPI measured alcohol-related consequences experienced over the past 3 years. The current study, in efforts to obtain information specific to the follow-up period, measured consequences experienced over a 30-day period. The DrInC-2L was similarly modified. Criticisms of the appropriateness of both these measures for this particular population in addition to the modified period of assessment may account for the failure of these particular assessment measures to capture changes in alcohol-related harms which correspond to changes in alcohol consumption among first-year students. These findings may represent the need for a re-evaluation of available assessment measures for use with students entering the college environment in order to accurately capture the unique set of harms experienced by this group.

A final implication is that the current study demonstrated for the first time that a single-session, classroom-based, and expectancy-based curriculum could be effectively implemented with the first-year college population. This finding directly addresses numerous criticisms of the experiential expectancy challenge intervention, including the necessity of an expensive bar-lab, the administration of alcohol to college students, and applicability to only heavy-drinking college males. The current classroom-based expectancy challenge may be successfully delivered in a 50-minute time frame without the need for an experiential component and with effectiveness in both male and female first-year college students. In addition, this is the first study to successfully utilize trained, volunteer peer educators in the dissemination of an expectancy-based alcohol prevention curriculum. The success of this program demonstrates that undergraduate

peer educators may serve as an efficient and cost-effective means of dissemination, thereby making this prevention program inexpensive and easily implemented by educational institutions.

There are several limitations in the present study that should be noted. First, the 30-day follow-up period represents a “snapshot” of drinking changes and therefore a longer follow-up period may be helpful in establishing the lasting effects of this expectancy curriculum. It is important to note that assessment measures were administered during the first month of the academic year, and therefore results may not capture changes in drinking that occur throughout the semester as a result of changing academic demands and holidays such as New Year’s Eve or Spring Break. The length and timing of the follow-up period may also serve as an alternative explanation for the absence of significant findings with regard to changes in alcohol-related harms. A useful modification to assessment procedures would encompass longer-term assessment of alcohol consumption, expectancies, and harms in order to capture effects of the curriculum throughout the academic year.

Second, a careful analysis of assessment measures appropriate to this population would be useful in obtaining more detailed and accurate findings. Measures such as the AEQ-A2, CEOA, RAPI and Drinc-2L may not constitute sufficiently sensitive methods of assessing alcohol expectancies and harms, and therefore use of specific multidimensional-based measures and those tailored to the experiences of first-year students may yield more relevant information about the effects of the expectancy challenge curriculum.

A third limitation pertains to the ethnic and academic homogeneity of the present sample. Although representative of the university-population from which the sample was drawn, the majority of the sample consisted of Caucasian students (65.8%). Given the large body of research documenting the many cultural influences that exist on the development and maintenance of alcohol use behaviors (Carle, 2008; Corbin, Vaughan, & Fromme, 2008;

Duranceaux, Shuckit, Luczak, Eng, Carr, & Wall, 2008) it is important to note that the results of this study may be primarily extended to Caucasian individuals. The current sample was also composed of students enrolled in an elective course designed to acclimate matriculating students into the college environment (“Strategies for Success”, SLS 1501). Therefore, the sample used in this study may represent a unique group of students who are qualitatively different from the typical college student population. Further research should focus on including a wider range of both ethnicities and academic backgrounds in order to improve the generalizability of current findings.

In summary, the present study was the first to implement and evaluate a classroom-based expectancy challenge curriculum in the first-year college population. Exposure to the curriculum lead to significant reductions in alcohol consumption in comparison to participants in a wait-list control condition. Significant changes in expectancies and alcohol-related harms were not captured, and this may be due in part to the sample size involved. A larger sample size may have provided sufficient power to detect statistically significant changes on these measures. Overall, these findings represent an important step in the process of translating a theory-based intervention strategy previously validated in a distinctive bar-laboratory into a more practical, cost-effective and easily implemented format while maintaining effectiveness. The peer-delivered, classroom-based expectancy challenge curriculum developed and validated in this project is ideal for college campuses seeking to adopt effective alcohol prevention strategies for use with first-year students and will encourage the continued development and evaluation of functional strategies to reach and prevent harmful alcohol use behavior among a larger, more diverse population.

Mean Consumption (Number of Drinks per Sitting) by Time and Condition

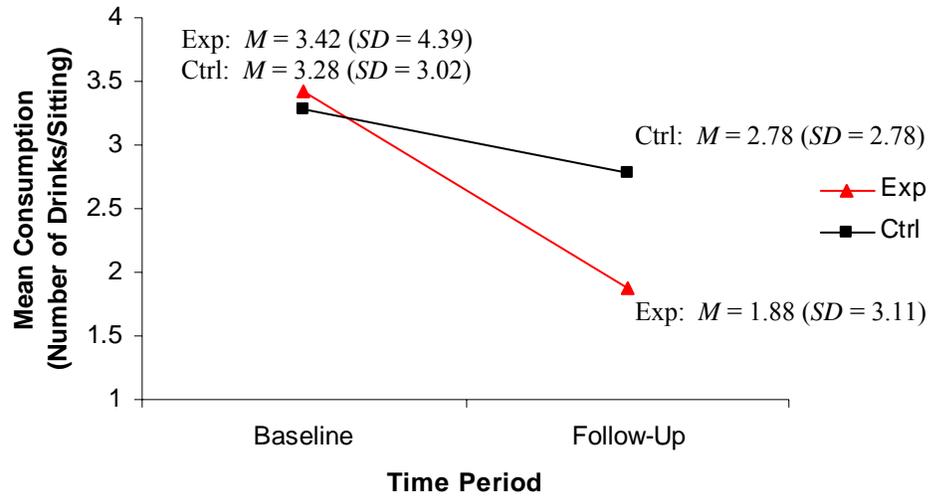


Figure 1: Mean alcohol consumption at baseline and 1-month follow-up.

Peak Consumption (Number of Drinks in One Sitting per Month) by Time and Condition

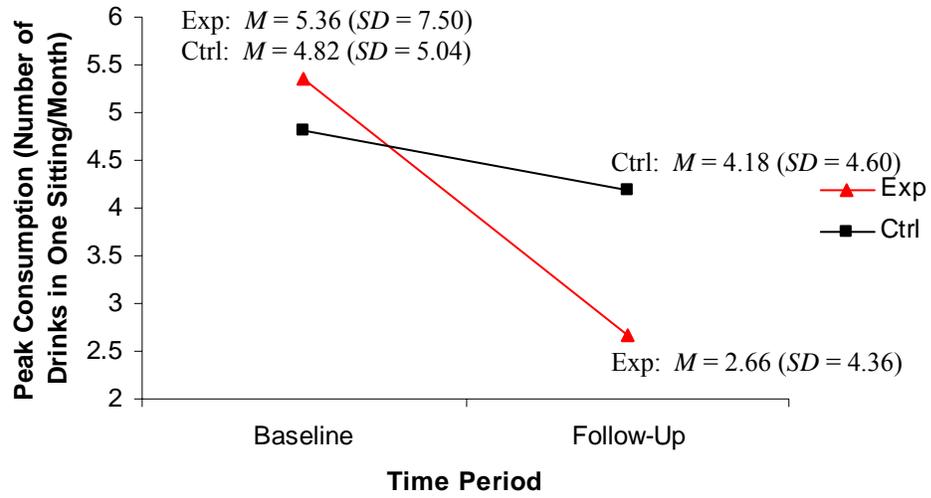


Figure 2: Peak alcohol consumption at baseline and 1-month follow-up.

Alcohol-Related Harms (RAPI) by Time and Condition

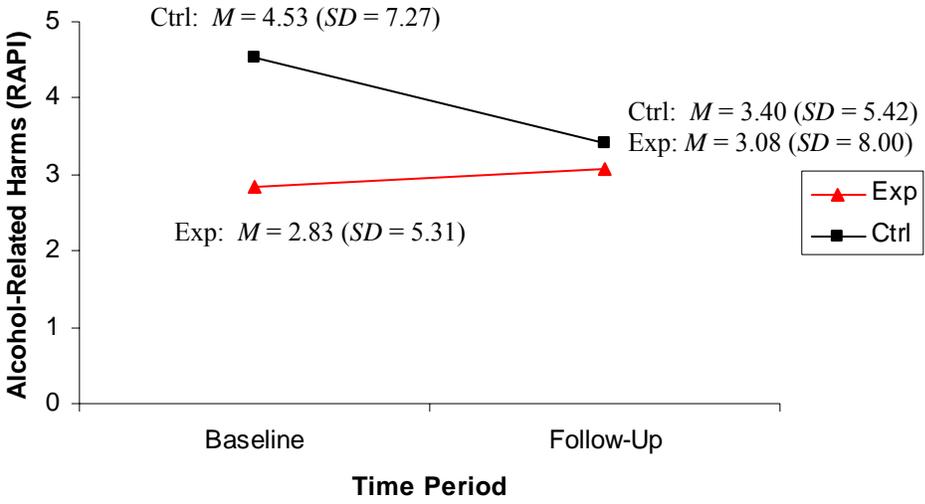


Figure 3: Alcohol-related harms (RAPI) at baseline and 1-month follow-up.

Alcohol-Related Harms (DrInC) by Time and Condition

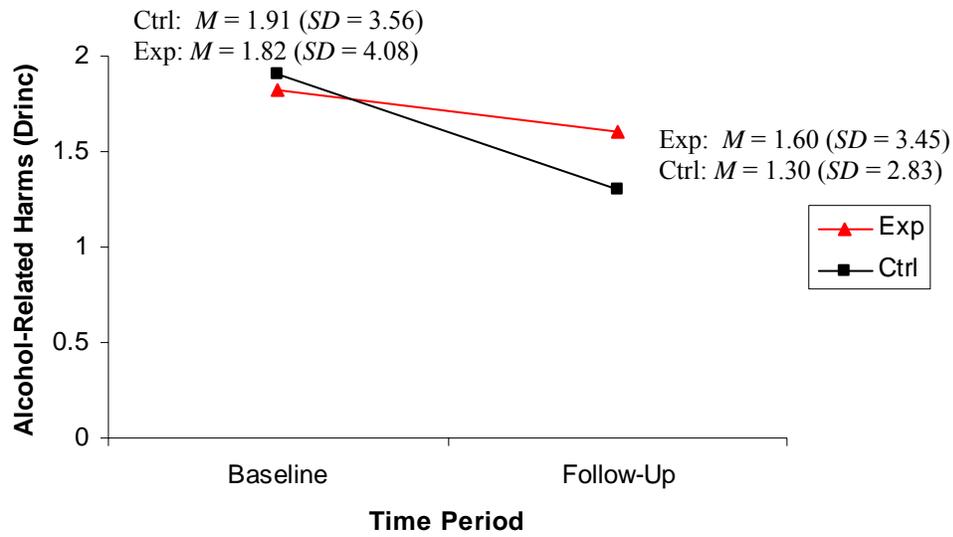


Figure 4: Alcohol-related harms (DrInC) at baseline and 1-month follow-up.

Table 1. Summary of Results for Measures of Alcohol Expectancy

	Condition x Gender x Time	Condition x Time	Gender x Time
AEQ-A2 Social Facilitation	$F(1, 116) = .300, p = .585,$ partial $\eta^2 = .003$	$F(1, 116) = .802, p = .372,$ partial $\eta^2 = .007$	$F(1, 116) = .011, p = .917,$ partial $\eta^2 = .000$
CEOA Sociability	$F(1, 115) = 1.812, p = .181,$ partial $\eta^2 = .016$	$F(1, 115) = .728, p = .395,$ partial $\eta^2 = .006$	$F(1, 115) = .650, p = .422,$ partial $\eta^2 = .006$
CEOA Tension Reduction	$F(1, 108) = .07, p = .79,$ partial $\eta^2 = .00$	$F(1, 108) = .33, p = .57,$ partial $\eta^2 = .00$	$F(1, 108) = .66, p = .42,$ partial $\eta^2 = .01$
CEOA Liquid Courage	$F(1, 108) = .057, p = .812,$ partial $\eta^2 = .001$	$F(1, 108) = 3.371, p = .069,$ partial $\eta^2 = .030$	$F(1, 108) = 2.962, p = .088,$ partial $\eta^2 = .027$
CEOA Sexuality	$F(1, 115) = .327, p = .569,$ partial $\eta^2 = .003$	$F(1, 115) = 1.725, p = .192,$ partial $\eta^2 = .015$	$F(1, 115) = .166, p = .684,$ partial $\eta^2 = .001$
CEOA Cognitive/Behavioral Impairment	$F(1, 115) = .401, p = .528,$ partial $\eta^2 = .003$	$F(1, 115) = 1.457, p = .230,$ partial $\eta^2 = .013$	$F(1, 115) = .077, p = .782,$ partial $\eta^2 = .001$
CEOA Risk & Aggression	$F(1, 115) = .1.391, p = .241,$ partial $\eta^2 = .012$	$F(1, 115) = .443, p = .507,$ partial $\eta^2 = .004$	$F(1, 115) = .002, p = .963,$ partial $\eta^2 = .000$
CEOA Self-Perception	$F(1, 115) = .693, p = .407,$ partial $\eta^2 = .006$	$F(1, 115) = .164, p = .687,$ partial $\eta^2 = .001$	$F(1, 115) = .598, p = .441,$ partial $\eta^2 = .005$

Table 2. Means and Standard Deviations for Measures of Alcohol Expectancy at Baseline and 1-Month Follow-Up

	Expectancy Challenge*		Wait-List Control*	
	Baseline	Follow-up	Baseline	Follow-up
AEQ-A2 Social Facilitation	9.18 (4.00)	9.96 (4.02)	10.02 (3.96)	10.40 (4.51)
CEOA Sociability	2.17 (0.71)	2.08 (0.75)	2.28 (0.62)	2.15 (0.71)
CEOA Tension Reduction	1.92 (0.79)	1.95 (0.69)	1.82 (0.72)	1.75 (0.68)
CEOA Liquid Courage	1.32 (0.71)	1.48 (0.70)	1.51 (0.73)	1.42 (0.76)
CEOA Sexuality	1.49 (0.79)	1.54 (0.81)	1.63 (0.82)	1.53 (0.72)
CEOA Cognitive/Behavioral Impairment	1.93 (0.63)	1.73 (0.64)	1.99 (0.66)	1.92 (0.57)
CEOA Risk & Aggression	1.09 (0.63)	1.11 (0.66)	1.26 (0.75)	1.15 (0.73)
CEOA Self-Perception	0.92 (0.71)	0.97 (0.67)	1.14 (0.88)	1.17 (0.87)

* Differences in expectancy scores between conditions from baseline to follow-up assessment were not significant.

APPENDIX A: DEMOGRAPHICS QUESTIONNAIRE

Age: _____ years old

Current GPA: _____

(Circle only **ONE** answer for each question below, except where noted otherwise)

Sex: Male Female

Current Weight: _____ lbs

What is your CURRENT educational status?

Freshman Sophomore Junior Senior Post-Bac Non-Degree Seeking

Which answer BEST describes your ethnicity?

Caucasian/White African-American/Black Hispanic Asian-American Other

Which answer BEST describes your living situation?

Residence Hall University affiliated off-campus Fraternity or sorority

Independent house/apartment

With whom do you live? (circle all that apply)

With roommate(s) Alone With parent(s) With significant other Other (specify: _____)

Are you CURRENTLY in a fraternity/sorority?

Yes No

Are you CURRENTLY an athlete at the University of Central Florida?

Yes No

How many hours do you work at a job outside of school PER WEEK?

0 Hours <10 hrs 10-20 hrs 20-30 hrs 30-40 hrs > 40 hrs

What is your FATHER'S highest level of education?

Less than High School	Associate's Degree (A.A. or A.S.)
Some High School	Bachelor's Degree
High School Diploma/GED	Master's Degree
Some College	Doctoral Level Degree (Ph.D, M.D., J.D.)

What is your MOTHER'S highest level of education?

Less than High School	Associate's Degree (A.A. or A.S.)
Some High School	Bachelor's Degree
High School Diploma/GED	Master's Degree
Some College	Doctoral Level Degree (Ph.D, M.D., J.D.)

What, if any, is your religious affiliation? _____

On a scale of 1-10 (1 = not strong at all; 10= very strong) how strong of a religious affiliation would you say you have? _____

Have you completed Alcohol EDU? YES NO

APPENDIX B: ALCOHOL CONSUMPTION

September / October 2006 Calendar

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
September 17 <i>Add/Drop Ends</i> # of Drinks: ____ Over ____ hours	18 <i>Classes begin</i> # of Drinks: ____ Over ____ hours	19 # of Drinks: ____ Over ____ hours	20 # of Drinks: ____ Over ____ hours	21 # of Drinks: ____ Over ____ hours	22 <i>Late Registration Ends</i> # of Drinks: ____ Over ____ hours	23 # of Drinks: ____ Over ____ hours
24 # of Drinks: ____ Over ____ hours	25 # of Drinks: ____ Over ____ hours	26 # of Drinks: ____ Over ____ hours	27 # of Drinks: ____ Over ____ hours	28 # of Drinks: ____ Over ____ hours	29 <i>Payment Deadline</i> # of Drinks: ____ Over ____ hours	30 Sports: <i>UCF vs. Villanova</i> # of Drinks: ____ Over ____ hours
October 1 # of Drinks: ____ Over ____ hours	2 <i>Labor Day</i> # of Drinks: ____ Over ____ hours	3 <i>Fraternity Recruitment Begins</i> # of Drinks: ____ Over ____ hours	4 # of Drinks: ____ Over ____ hours	5 # of Drinks: ____ Over ____ hours	6 # of Drinks: ____ Over ____ hours	7 # of Drinks: ____ Over ____ hours
8 # of Drinks: ____ Over ____ hours	9 <i>Patriot Day</i> # of Drinks: ____ Over ____ hours	10 # of Drinks: ____ Over ____ hours	11 # of Drinks: ____ Over ____ hours	12 # of Drinks: ____ Over ____ hours	13 # of Drinks: ____ Over ____ hours	14 Sports: <i>UCF vs. USF</i> # of Drinks: ____ Over ____ hours
15 # of Drinks: ____ Over ____ hours	16 # of Drinks: ____ Over ____ hours	17 # of Drinks: ____ Over ____ hours	18 # of Drinks: ____ Over ____ hours	19 # of Drinks: ____ Over ____ hours	20 # of Drinks: ____ Over ____ hours	21 # of Drinks: ____ Over ____ hours

APPENDIX C: FACTOR MODEL-BASED EXPECTANCY MEASURES

AEQ-A2

Please read the following statements about the effects of alcohol. If you think that the statement is true, or mostly true, then mark "true". If you think the statement is false, or mostly false, or rarely happens to most people, then mark "false". When the statements refer to "drinking alcohol", you may think in terms of drinking any alcoholic beverage, such as beer, wine, whiskey, liquor, rum, scotch, vodka, gin, or various alcoholic mixed drinks. Whether or not you have had actual drinking experiences yourself, you are to answer in terms of how you think alcohol affects the typical or average drinker. It is important that you respond to every statement.

True False

- | | | |
|-----|-----|---|
| ___ | ___ | 1. People become harder to get along with after they have had a few drinks of alcohol. |
| ___ | ___ | 2. Drinking alcohol creates problems. |
| ___ | ___ | 3. Drinking alcohol makes a bad impression on others. |
| ___ | ___ | 4. People drink alcohol in order to get attention. |
| ___ | ___ | 5. Parties are <u>not</u> as much fun if people are drinking alcohol. |
| ___ | ___ | 6. People feel more caring and giving after a few drinks of alcohol. |
| ___ | ___ | 7. Drinking alcohol makes people more friendly. |
| ___ | ___ | 8. Drinking alcohol is OK because it allows people to join in with others who are having fun. |
| ___ | ___ | 9. Sweet alcoholic drinks taste good. |
| ___ | ___ | 10. Most alcoholic drinks taste good. |
| ___ | ___ | 11. People act like better friends after a few drinks of alcohol. |
| ___ | ___ | 12. Most alcohol tastes terrible. |
| ___ | ___ | 13. Having a few drinks of alcohol is a nice way to enjoy the holidays. |
| ___ | ___ | 14. It's fun to watch others act silly when they are drinking alcohol. |
| ___ | ___ | 15. People drink alcohol because they feel forced to do so by their peers. |
| ___ | ___ | 16. Alcoholic beverages make parties more fun. |
| ___ | ___ | 17. People get in better moods after a few drinks of alcohol. |

CEOA

The following section assesses what you would expect to happen if you were under the influence of alcohol.

Circle one option from disagree to agree – depending on whether you expect the effect to happen to you if you were under the influence of alcohol. These effects will vary, depending upon the amount of alcohol you typically consume.

This is not a personality assessment. We want to know what you expect to happen if you were to drink alcohol, not how you are when you are sober. Example: If you are always emotional, you would not circle agree as your answer unless you expected to become MORE EMOTIONAL if you drank.

If I were under the influence of alcohol:

1. I would be outgoing.....	Disagree	Slightly Disagree	Slightly Agree	Agree
2. My senses would be dulled.....	Disagree	Slightly Disagree	Slightly Agree	Agree
3. I would be humorous.....	Disagree	Slightly Disagree	Slightly Agree	Agree
4. My problems would seem worse.....	Disagree	Slightly Disagree	Slightly Agree	Agree
5. It would be easier to express my feelings.....	Disagree	Slightly Disagree	Slightly Agree	Agree
6. My writing would be impaired.....	Disagree	Slightly Disagree	Slightly Agree	Agree
7. I would feel sexy.....	Disagree	Slightly Disagree	Slightly Agree	Agree
8. I would have difficulty thinking.....	Disagree	Slightly Disagree	Slightly Agree	Agree
9. I would neglect my obligations.....	Disagree	Slightly Disagree	Slightly Agree	Agree
10. I would be dominant.....	Disagree	Slightly Disagree	Slightly Agree	Agree
11. My head would feel fuzzy.....	Disagree	Slightly Disagree	Slightly Agree	Agree
12. I would enjoy sex more.....	Disagree	Slightly Disagree	Slightly Agree	Agree
13. I would feel dizzy.....	Disagree	Slightly Disagree	Slightly Agree	Agree
14. I would be friendly.....	Disagree	Slightly Disagree	Slightly Agree	Agree
15. I would be clumsy.....	Disagree	Slightly Disagree	Slightly Agree	Agree
16. It would be easier to act out my fantasies.....	Disagree	Slightly Disagree	Slightly Agree	Agree
17. I would be loud, boisterous, or noisy.....	Disagree	Slightly Disagree	Slightly Agree	Agree
18. I would feel peaceful.....	Disagree	Slightly Disagree	Slightly Agree	Agree
19. I would be brave and daring.....	Disagree	Slightly Disagree	Slightly Agree	Agree
20. I would feel unafraid.....	Disagree	Slightly Disagree	Slightly Agree	Agree
21. I would feel creative.....	Disagree	Slightly Disagree	Slightly Agree	Agree
22. I would be courageous.....	Disagree	Slightly Disagree	Slightly Agree	Agree

23. I would feel shaky or jittery the next day.....	Disagree	Slightly Disagree	Slightly Agree	Agree
24. I would feel energetic.....	Disagree	Slightly Disagree	Slightly Agree	Agree
25. I would act aggressively.....	Disagree	Slightly Disagree	Slightly Agree	Agree
26. My responses would be slow.....	Disagree	Slightly Disagree	Slightly Agree	Agree
27. My body will be relaxed.....	Disagree	Slightly Disagree	Slightly Agree	Agree
28. I would feel guilty.....	Disagree	Slightly Disagree	Slightly Agree	Agree
29. I would feel calm.....	Disagree	Slightly Disagree	Slightly Agree	Agree
30. I would feel moody.....	Disagree	Slightly Disagree	Slightly Agree	Agree
31. It would be easier to talk to people.....	Disagree	Slightly Disagree	Slightly Agree	Agree
32. I would be a better lover.....	Disagree	Slightly Disagree	Slightly Agree	Agree
33. I would feel self-critical.....	Disagree	Slightly Disagree	Slightly Agree	Agree
34. I would be talkative.....	Disagree	Slightly Disagree	Slightly Agree	Agree
35. I would act tough.....	Disagree	Slightly Disagree	Slightly Agree	Agree
36. I would take risks.....	Disagree	Slightly Disagree	Slightly Agree	Agree
37. I would feel powerful.....	Disagree	Slightly Disagree	Slightly Agree	Agree
38. I would act sociable.....	Disagree	Slightly Disagree	Slightly Agree	Agree

The following section assesses whether you think each effect, which may result from drinking alcohol, is bad or good.

Check from bad to good -- depending on whether you think this particular effect is bad, neutral, or good, etc.

We want to know if you think a particular effect is bad or good, **REGARDLESS of whether you expect it to happen to YOU** personally when you drink alcohol.

This effect of alcohol is:

	Bad	Slightly bad	Neutral	Slightly good	Good
1. Being outgoing	_____	_____	_____	_____	_____
2. Dulled senses	_____	_____	_____	_____	_____
3. Being humorous	_____	_____	_____	_____	_____
4. Problems seeming worse	_____	_____	_____	_____	_____
5. Expressing feelings more easily	_____	_____	_____	_____	_____
6. Impaired writing	_____	_____	_____	_____	_____
7. Feeling sexy	_____	_____	_____	_____	_____
8. Having difficulty thinking	_____	_____	_____	_____	_____
9. Neglecting obligations	_____	_____	_____	_____	_____
10. Being dominant	_____	_____	_____	_____	_____

	Bad	Slightly bad	Neutral	Slightly good	Good
11. Head feeling fuzzy	_____	_____	_____	_____	_____
12. Enjoying sex more	_____	_____	_____	_____	_____
13. Feeling dizzy	_____	_____	_____	_____	_____
14. Being friendly	_____	_____	_____	_____	_____
15. Being clumsy	_____	_____	_____	_____	_____
16. Easier to act out fantasies	_____	_____	_____	_____	_____
17. Being loud, boisterous, or noisy	_____	_____	_____	_____	_____
18. Feeling peaceful	_____	_____	_____	_____	_____
19. Being brave and daring	_____	_____	_____	_____	_____
20. Feeling unafraid	_____	_____	_____	_____	_____
21. Feeling creative	_____	_____	_____	_____	_____
22. Being courageous	_____	_____	_____	_____	_____
23. Feeling shaky or jittery the next day	_____	_____	_____	_____	_____
24. Feeling energetic	_____	_____	_____	_____	_____
25. Acting aggressively	_____	_____	_____	_____	_____
26. Having slow responses	_____	_____	_____	_____	_____
27. Having a relaxed body	_____	_____	_____	_____	_____
28. Feeling guilty	_____	_____	_____	_____	_____
29. Feeling calm	_____	_____	_____	_____	_____
30. Feeling moody	_____	_____	_____	_____	_____
31. Being easier to talk to people	_____	_____	_____	_____	_____
32. Being a better lover	_____	_____	_____	_____	_____
33. Feeling self-critical	_____	_____	_____	_____	_____
34. Being talkative	_____	_____	_____	_____	_____
35. Acting tough	_____	_____	_____	_____	_____
36. Taking risks	_____	_____	_____	_____	_____
37. Feeling powerful	_____	_____	_____	_____	_____
38. Acting sociable	_____	_____	_____	_____	_____

APPENDIX D: ALCOHOL-RELATED HARMS

RAPI

Different things happen to people while they are drinking alcohol or as a result of their alcohol use. Some of these things are listed below. **Please indicate how many times each has happened to you during the last 30 days while you were drinking alcohol or as the result of your alcohol use.**

How many times have the following things happened to you while you were drinking alcohol or because of your alcohol use during the last 30 days?

- a) Not able to do your homework or study for a test..... _____ times
- b) Got into fights, acted bad, or did mean things..... _____ times
- c) Missed out on other things because you spent too much money on alcohol..... _____ times
- d) Went to work or school high or drunk..... _____ times
- e) Caused shame or embarrassment to someone..... _____ times
- f) Neglected your responsibilities..... _____ times
- g) Relatives avoided you..... _____ times
- h) Felt that you needed more alcohol than you used to use in order to get the same effect..... _____ times
- i) Tried to control your drinking by trying to drink only at certain times of the day or certain places..... _____ times
- j) Had withdrawal symptoms, that is, felt sick because you stopped or cut down on drinking... _____ times
- k) Noticed a change in your personality..... _____ times
- l) Felt that you had a problem with alcohol _____ times
- m) Missed a day (or part of a day) of school or work..... _____ times
- n) Tried to cut down or quit drinking..... _____ times
- o) Suddenly found yourself in a place that you could not remember getting to..... _____ times
- p) Passed out or fainted suddenly..... _____ times
- q) Had a fight, argument or bad feelings with a friend _____ times
- r) Had a fight, argument or bad feelings with a family member..... _____ times
- s) Kept drinking when you promised yourself not to..... _____ times
- t) Felt you were going crazy..... _____ times
- u) Had a bad time..... _____ times
- v) Felt physically or psychologically dependent on alcohol..... _____ times
- w) Was told by a friend or neighbor to stop or cut down drinking _____ times

DrInC-2L (Selected questions)

The following lists a number of events that drinkers sometimes experience. How many times have you experienced each event in the last 30 days?

- a) I have driven a motor vehicle after having three or more drinks. _____ times
- b) I have ridden in a motor vehicle with someone I knew had 3 or more drinks. _____ times
- c) I have taken foolish risks when I have been drinking. _____ times
- d) When drinking, I have done impulsive things that I regretted later. _____ times
- e) I have been arrested for driving under the influence of alcohol. _____ times
- f) I have had trouble with the law (other than driving while intoxicated) because of my drinking. _____ times
- g) While drinking or intoxicated, I have been physically hurt, injured, or burned. _____ times
- h) While drinking or intoxicated, I have injured someone else. _____ times

APPENDIX E: INFORMED CONSENT

September, 2006

Dear Research Participant,

A study sponsored by the Psychology Department at the University of Central Florida and the Office of Alcohol and Other Drug Prevention Programming will involve anonymously completing measures before and after receiving an alcohol presentation. Questions will ask about alcohol use and related attitudes and behaviors. All of your responses will be anonymous. Your name will not be recorded or used to identify the records, and all information gathered will only be used anonymously to improve the education students like you receive. **Your honesty is essential to the study, which is why we guarantee anonymity.** You can withdraw from the study at any time without penalty, and you will receive no compensation for participating. Only those individuals who are at least 18 years of age will be included in this study.

Although there are no foreseeable risks from your participation in this investigation, should you have an emotional reaction to any of the material presented, please notify the leader in your session or the primary investigator listed on this form.

Principal Investigator:

Michael Dunn, Ph.D.
Dept. of Psychology
mdunn@mail.ucf.edu
(407) 823-3083

Co-Investigators:

Tom Hall, MSW, LCSW
SDES
tvhall@mail.ucf.edu
(407) 823-0869

Jenn Siva, B.H.Sc.
Dept. of Psychology
jsiva@mail.ucf.edu
(407) 823-2522

In addition, the University requires that we inform every research participant of the following:

You acknowledge that the University of Central Florida is an agency of the State of Florida and that the University of Central Florida's operations and liabilities are regulated by Florida law, including the University of Central Florida's ability to indemnify any person, firm or corporation for injury or loss caused by the University of Central Florida; that the State of Florida is self-insured to the extent of its liability under law; and that liability in excess of that specified in statute may be awarded only through special legislative action. Accordingly, the University of Central Florida's ability to compensate you for any injury suffered during this research study is very limited.

Information regarding your rights as a research volunteer may be obtained from:

Barbara Ward, CIM
University of Central Florida (UCF)
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, FL 32826-3246
Telephone: 407-823-2901

If you have no objections to participating in this study, **please print and sign your name below.** If you feel you need additional information, please contact Jenn Siva at 407-823-2522.

Sincerely,

- I want to participate in this study.
- I do not want to participate in this study.

Jenn Siva, B.H.Sc.
Department of Psychology
University of Central Florida

Your Name (Please Print)

Your Signature (Please Sign)

APPENDIX F: IRB APPROVAL LETTERS



Office of Research & Commercialization

June 26, 2006

Michael E. Dunn, Ph.D.
College of Arts and Sciences
Department of Psychology
PH 305C
Orlando, FL 32816-1390

Dear Dr. Dunn:

With reference to your protocol #06-3550 entitled, "**Classroom-Based Expectancy Challenge with College Students**," I am enclosing for your records the approved, expedited document of the UCFIRB Form you had submitted to our office. **This study was approved on 6/22/06. The expiration date will be 6/21/07.** Should there be a need to extend this study, a Continuing Review form must be submitted to the IRB Office for review by the Chairman or full IRB at least one month prior to the expiration date. This is the responsibility of the investigator. **Please notify the IRB office when you have completed this research study.**

Please be advised that this approval is given for one year. Should there be any addendums or administrative changes to the already approved protocol, they must also be submitted to the Board through use of the Addendum/Modification Request form. Changes should not be initiated until written IRB approval is received. Adverse events should be reported to the IRB as they occur.

Should you have any questions, please do not hesitate to call me at 407-823-2901.

Please accept our best wishes for the success of your endeavors.

Cordially,

Barbara Ward

Barbara Ward
UCF IRB Coordinator
(FWA00000351 Exp. 5/13/07, IRB00001138)

Copies: IRB File

BW:jt



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901, 407-882-2012 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

EXPEDITED CONTINUING REVIEW APPROVAL NOTICE

From : **UCF Institutional Review Board**
FWA00000351, Exp. 5/07/10, IRB00001138

To : **Dr. Michael E. Dunn**

Date : **June 21, 2007**

IRB Number: **SBE-06-03550**

Study Title: **Classroom-Based Expectancy Challenge with College Students**

Dear Researcher,

This letter serves to notify you that the continuing review application for the above study was reviewed and approved by the IRB Vice chair on **6/21/2007** through the expedited review process according to 45 CFR 46 (and/or 21 CFR 50/56 if FDA-regulated).

Continuation of this study has been approved for a one-year period. The expiration date is 06/20/2008. This study was determined to be no more than minimal risk and the category for which this study qualified for expedited review is:

7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Use of the approved, stamped consent document(s) is required. The new form supersedes all previous versions, which are now invalid for further use. Only approved investigators (or other approved key study personnel) may solicit consent for research participation. Subjects or their representatives must receive a copy of the consent form(s).

All data must be retained in a locked file cabinet for a minimum of three years (six if HIPAA applies) past the completion of this research. Any links to the identification of participants should be maintained on a password-protected computer if electronic information is used. Additional requirements may be imposed by your funding agency, your department, or other entities. Access to data is limited to authorized individuals listed as key study personnel.

To continue this research beyond the expiration date, a Continuing Review Form must be submitted 2 – 4 weeks prior to the expiration date. Use the Unanticipated Problem Report Form or the Serious Adverse Event Form (within 5 working days of event or knowledge of event) to report problems or events to the IRB. Do not make changes to the study (i.e., protocol methodology, consent form, personnel, site, etc.) before obtaining IRB approval. Changes can be submitted for IRB review using the Addendum/Modification Request Form. An Addendum/Modification Request Form **cannot** be used to extend the approval period of a study. All forms may be completed and submitted online at <https://iris.research.ucf.edu>.

On behalf of Tracy Dietz, Ph.D., UCF IRB Chair, this letter is signed by:

Signature applied by Janice Turchin on 06/21/2007 04:53:07 PM EDT



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901, 407-882-2012 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

EXPEDITED CONTINUING REVIEW APPROVAL NOTICE

From : **UCF Institutional Review Board**
FWA00000351, Exp. 5/07/10, IRB00001138

To : **Michael E. Dunn** and Co-PIs: **Janani Sivasithamparam, Thomas V. Hall**

Date : **May 27, 2008**

IRB Number: **SBE-06-03550**

Study Title: **Classroom-Based Expectancy Challenge with College Students**

Dear Researcher,

This letter serves to notify you that the continuing review application for the above study was reviewed and approved by the IRB Vice-chair on **5/24/2008** through the expedited review process according to 45 CFR 46 (and/or 21 CFR 50/56 if FDA-regulated).

Continuation of this study has been approved for a one-year period. The expiration date is 5/23/2009. This study was determined to be no more than minimal risk and the category for which this study qualified for expedited review is:

7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Use of the approved, stamped consent document(s) is required. The new form supersedes all previous versions, which are now invalid for further use. Only approved investigators (or other approved key study personnel) may solicit consent for research participation. Subjects or their representatives must receive a copy of the consent form(s).

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On behalf of Tracy Dietz, Ph.D., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 05/27/2008 09:14:25 AM EDT

IRB Coordinator

REFERENCES

Araujo, G.C. & Wong, E.H. (2005). High risk drinking and college students' self-perceptions. *Psychological Reports, 97*, 936-944.

Babor, T.F., Brown, J., & Del-Boca, F.K. (1990). Validity of self-reports in applied research on addictive behaviors: Fact or fiction? *Behavioral Assessment, 12*, 5-31.

Benton, S.L., Downey, R.G., Gilder, P.S., Benton, S.A., Shin, K., Newton, D.W., Arck, W., & Price, A. (2006). Predicting negative drinking consequences: Examining descriptive norm perception. *Journal of Studies on Alcohol, 67*, 399-405.

Bradburn, N.M., Rips, L.J. & Shevell, S.K. (1987). Answering autobiographical questions: The impact of memory and inference on surveys. *Science, 236*, 157-161.

Brown, S.A., Christiansen, B.A., & Goldman, M.S. (1987). The Alcohol Expectancy Questionnaire: An instrument for the assessment of adolescent and adult alcohol expectancies. *Journal of Studies on Alcohol, 48*, 483-491.

Carey, K.B. (1997). Reliability and validity of the time-line follow-back interview among psychiatric outpatients: A preliminary report. *Psychology of Addictive Behaviors, 11*, 26-33.

Carle, A.C. (2008). Cross-cultural validity of alcohol dependence across Hispanics and non-Hispanic Caucasians. *Hispanic Journal of Behavioral Sciences, 30*, 106-120.

Christiansen, B.A., Smith, G.T., Roehling, P.V., & Goldman, M.S. (1989). Using alcohol expectancies to predict adolescent drinking behavior at one year. *Journal of Consulting and Clinical Psychology, 57*, 93-99.

Corbin, W.R., Vaughan, E.L., & Fromme, K. (2008). Ethnic differences and the closing of the sex gap in alcohol use among college-bound students. *Psychology of Addictive Behaviors, 22*, 240-248.

Cruz, I.Y. (2007). Challenging alcohol expectancies to reduce alcohol consumption among high school students (Doctoral dissertation, University of Central Florida, 2007). *Dissertation Abstracts International*, 67, 5394.

Cruz, I.Y. & Dunn, M.E. (2003). Lowering risk for early alcohol use by challenging alcohol expectancies in elementary school children. *Journal of Consulting and Clinical Psychology*, 71, 493-503.

Darkes, J. (1995). Expectancy challenge and drinking reduction: An evaluation of two expectancy challenge strategies. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, 56, 0504.

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.

Darkes, J. & Goldman, M.S. (1998). Expectancy challenge and drinking reduction: Process and structure in the alcohol expectancy network. *Experimental and Clinical Psychopharmacology*, 6, 64-76.

Dunn, M.E. & Earleywine, M. (2001). Activation of alcohol expectancies in memory in relation to limb of the blood alcohol curve. *Psychology of Addictive Behaviors*, 15, 18-24.

Dunn, M.E. & Goldman, M.S. (1996). Empirical modeling of an alcohol expectancy network in elementary school children as a function of grade. *Experimental and Clinical Psychopharmacology*, 4, 209-217.

Dunn, M.E. & Goldman, M.S. (1998). Age and drinking-related differences in the memory organization of alcohol expectancies in 3rd-, 6th-, 9th-, and 12th grade children. *Journal of Consulting and Clinical Psychology*, 66, 579-585.

Dunn, M.E. & Goldman, M.S. (2000). Age and drinking-related differences in alcohol expectancies of children assessed as free-word-association responses. *Alcoholism: Clinical and Experimental Research, 24*, 1639-1646.

Dunn, M.E., Lau, C.H., & Cruz, I.Y. (2000). Changes in activation of alcohol expectancies in memory in relation to changes in alcohol use after participation in an expectancy challenge program. *Experimental and Clinical Psychopharmacology, 8*, 566-575.

Duranceaux, N.C., Shuckit, M.A., Luczak, S.E., Eng, M.Y., Carr, L.G., & Wall, T.L. (2008). Ethnic differences in level of response to alcohol between Chinese Americans and Korean Americans. *Journal of Studies on Alcohol and Drugs, 69*, 227-234.

Fennell, R. (1993). A review of evaluations of peer education programs. *Journal of American College Health, 41*, 251-253.

Forcehimes, A.A., Tonigan, J.S., Miller, W.R., Kenna, G.A., & Baer, J.S. (2007). Psychometrics of the Drinker Inventory of Consequences (DrInC). *Addictive Behaviors, 32*, 1699-1704.

Fromme, K. & D'Amico, E.J. (2000). Measuring adolescent alcohol outcome expectancies. *Psychology of Addictive Behaviors, 14*, 206-212.

Fromme, K. & Dunn, M.E. (1992). Alcohol expectancies, social and environmental cues as determinants of drinking and perceived reinforcement. *Addictive Behaviors, 17*, 167-177.

Fromme, K., Stroot, E., & Kaplan, D. (1993). Comprehensive effects of alcohol: Development and psychometric assessment of a new expectancy questionnaire. *Psychological Assessment, 1*, 19-26.

Goldman, M.S. (1999a). Expectancy operation: Cognitive-neural models and architectures. In I. Kirsch (Ed.), *How expectancies shape experience*. Washington, DC: American Psychological Association.

Goldman, M.S. (1999b). Risk for substance abuse: Memory as a common etiological pathway. *Psychological Science, 10*, 196-198.

Goldman, M.S. & Darkes, J. (1997). Expectancy mediation of a biopsychosocial risk for alcohol use and alcoholism. In I. Kirsch (Ed.), *Expectancy, experience, and behavior* (pp. 233-262). Washington, DC: American Psychological Association

Goldman, M.S., & Darkes, J. (2004). Alcohol expectancy multiaxial assessment: A memory network-based approach. *Psychological Assessment, 16*, 4-15.

Gorman, D.M. (1998). The irrelevance of evidence in the development of school-based drug prevention policy, 1986-1996. *Evaluation Review, 22*, 118-146.

Granfield, R. (2005). Alcohol use in college: Limitations on the transformation of social norms. *Addiction Research and Theory, 13*, 281-292.

Ham, L.S., Stewart, S.H., Norton, P.J., & Hope, D.A. (2005). Psychometric assessment of the Comprehensive Effects of Alcohol Questionnaire: Comparing a brief version to the original full scale. *Journal of Psychopathology and Behavioral Assessment, 27*, 141-158.

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

Knight, J.R., Wechsler, H., Kuo, M., Seibring, M., Weitzman, E.R., & Schukit, M.A. (2002). Alcohol abuse and dependence among U.S. college students. *Journal of Studies on Alcohol, 63*, 263-270

Kraus, D., Smith, G.T., & Ratner, H.H. (1994). Modifying alcohol-related expectancies in grade-school children. *Journal of Studies on Alcohol, 55*, 535-542

Larimer, M.E., Kilmer, J.R., & Lee, C.M. (2005). College student drug prevention: A review of individually-oriented prevention strategies. *Journal of Drug Issues, 35*, 431-456.

Lau-Barraco, C. & Dunn, M.E. (2008). Evaluation of a single-session expectancy challenge intervention to reduce alcohol use among college students. *Psychology of Addictive Behaviors*, 22, 168-175.

Levy, S., Sherritt, L., Harris, S.K., Gates, E.C., Holder, D.W., Kulig, J.W., & Knight, J.R. (2004). Test-retest reliability of adolescents' self-report of substance use. *Alcoholism: Clinical and Experimental Research*, 28, 1236-1241.

Lo, C.C. & Globetti, G. (1993). A partial analysis of the campus influence of drinking behavior: Students who enter college as nondrinkers. *Journal of Drug Issues*, 23, 715-725.

Loftus, E.F. & Marburger, W. (1983). Since the eruption of Mt. St. Helens, has anyone beaten you up? Improving the accuracy of retrospective reports with landmark events. *Memory and Cognition*, 11, 114-120.

Menon, G. (1993). The effects of accessibility of information in memory on judgments of behavioral frequencies. *Journal of Consumer Research*, 20, 431-440.

Miller, W.R., Tonigan, J.S., & Longabaugh, R. (1995). The drinker inventory of consequences (DrInC): An instrument for assessing adverse consequences of alcohol abuse test manual. *National Institute on Alcohol Abuse and Alcoholism Project Match Monograph Series*, 4, Rockville, MD: US. Department of Health and Human Services.

Moos, R., Moos, B., & Kulik, J. (1976). College student abstainers, moderate drinkers, and heavy drinkers: A comparative analysis. *Journal of Youth and Adolescence*, 5, 349-360.

Morrison, S.D., & Talbott, L.L. (2005). TRUCE for advocacy and peer education in tobacco prevention. *Journal of American College Health*, 54, 193-195.

Musher-Eizenman, D.R. & Kulick, A.D. (2003). An alcohol expectancy-challenge prevention program for at risk college women. *Psychology of Addictive Behaviors*, 17, 163-166.

National Institute on Alcohol Abuse and Alcoholism (2002). *A call to action: Changing the culture of drinking at U.S. college*. NIH Publication No. 02-5010. Bethesda, MD: National Institute on Alcohol Abuse and Alcoholism

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.

Rather, B.C. & Goldman, M.S. (1994). Drinking-related differences in the memory organization of alcohol expectancies. *Experimental and Clinical Psychopharmacology, 2*, 167-183.

Rather, B.C., Goldman, M.S., Roehrich, L., & Brannick, M. (1992). Empirical modeling of an alcohol expectancy memory network using multidimensional scaling. *Journal of Abnormal Psychology, 101*, 174-183

Sher, K.J., Walitzer, K.S., Wood, P.A., & Brent, E.E. (1991). Characteristics of children of alcoholics: Putative risk factors, substance use and abuse, and psychopathology. *Journal of Abnormal Psychology, 100*, 427-448

Sobell, L.C., Agrawal, S., Annis, H., Ayala-Velazquez, H., Echeverria, L., Leo, G.I., Rybakowski, J.S., Sandahl, C., Saunders, B., Thomas, S., & Ziolkowski, M. (2001). Cross-cultural evaluation of two drinking assessment instruments: Alcohol Timeline Followback and Inventory of Drinking Situations. *Substance Use & Misuse, 36*, 313-331.

Sobell, L.C., Maisto, S.A., Sobell, M.B., & Cooper, A.M. (1979). Reliability of alcohol abusers' self-reports of drinking behavior. *Behavior Research and Therapy, 17*, 157-160.

Sobell, L.C. & Sobell, M.B. (1992). Timeline follow-back: A technique for assessing self-report alcohol consumption. In Litten, R.Z., Allen, J.P., (Eds.), *Measuring alcohol consumption: Psychology and biochemical methods*. Totowa NJ: Humana Press.

Stacy, A.W. (1997). Memory activation and expectancy as prospective predictors of alcohol and marijuana use. *Journal of Abnormal Psychology, 106*, 61-73.

Stacy, A.W., Newcomb, M.D., & Bentler, P.M. (1991). Cognitive motivation and problem drug use: A 9-year longitudinal study. *Journal of Abnormal Psychology, 100*, 502-512

Turner, G. & Shepherd, J. (1999). A method in search of a theory: Peer education and health promotion. *Health Education Research, 14*, 235-247.

U.S. Dept. of Health and Human Services, Substance Abuse and Mental Health Services Administration, Office of Applied Studies. NATIONAL SURVEY ON DRUG USE AND HEALTH, 2003 [Computer file]. ICPSR version. Research Triangle Park, NC: Research Triangle Institute [producer], 2004. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2004.

Waldron, H.B., Slesnick, N., Brody, J.L., Turner, C.W., & Peterson, T.R. (2001). Treatment outcomes for adolescent substance abuse at 4- and 7-month assessments. *Journal of Consulting and Clinical Psychology, 69*, 802-813.

Walker, S.A. & Avis, M. (1999). Common reasons why peer education fails. *Journal of Adolescence, 22*, 573-577.

Wechsler, W., Davenport, A., Dowdall, G., Moeykens, B., & Castillo, S. (1994). Health and behavioural consequences of binge drinking in college. *Journal of the American Medical Association, 272*, 1672.

Weitzman, E. R., Nelson, T. F., & Wechsler, H. (2003). Taking up binge drinking in college: The influences of person, social group, and environment. *Journal of Adolescent Health, 32*, 26–35.

White, H.R. & Labouvie, E.W. (1989). Towards the assessment of adolescent problem drinking. *Journal of Studies on Alcohol, 50*, 30-37.

Wiers, R.W. & Kummeling, R.H. (2004). An experimental test of an alcohol expectancy challenge in mixed gender groups of young heavy drinkers. *Addictive Behaviors*, 29, 215-220.