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EVALUATION OF THE EXPECTANCY CHALLENGE ALCOHOL LITERACY
CURRICULUM (ECALC)
FOR HIGH SCHOOL STUDENTS

by

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M.S. University of Central Florida, 2012

A dissertation submitted in partial fulfillment of the requirements
for the degree of Doctor of Philosophy
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ABSTRACT

Prevention efforts targeted at children and adolescents are important because alcohol consumption contributes to the three leading causes of death in this among 12-20 year-olds: unintentional injury, homicide, and suicide. Research on the causes of alcohol misuse traditionally focused on pharmacological and genetic explanations, but models have expanded to include cognitive processes in the development of alcohol use patterns. Alcohol expectancies, or beliefs about the effects of alcohol, are an important influence on drinking behavior. Expectancies exist prior to the initial drinking experience, predict the onset of alcohol consumption, differentiate both children and adults in terms of light- and heavy-drinking patterns, mediate the influence of precursors on alcohol use, and when manipulated, result in significantly decreased alcohol consumption in heavy-drinking college students.

The Expectancy Challenge Alcohol Literacy Curriculum (ECALC) is a web-based, interactive intervention that leverages technology in order to challenge students' expectancies through a media literacy presentation based on research findings. The 45-minute curriculum links exposure to alcohol media with expectancy beliefs and drinking decisions, and focuses on decreasing the positive reinforcing value of alcohol. The ECALC does not necessarily erase former expectations, but introduces new information about the physiological effects of alcohol that may compete with pre-existing positive expectations for influence over the individual's behavior.

Though the ECALC has been validated with college students, the present study involved revising and evaluating the program to be appropriate for high school students. Results revealed

changes in expectancy processes for students who reported alcohol use initiation and changes in mean BAC among females in this group.

TABLE OF CONTENTS

| | |
|---|-----|
| LIST OF FIGURES | vi |
| LIST OF TABLES | vii |
| CHAPTER 1: PREVENTION PROGRAMS | 1 |
| CHAPTER 2: EXPECTANCIES: A NEW APPROACH | 4 |
| Intervention | 7 |
| Pilot Study results | 9 |
| Hypotheses | 12 |
| CHAPTER 3: METHOD | 14 |
| Participants..... | 14 |
| Measures | 14 |
| Procedure | 15 |
| CHAPTER 4: RESULTS | 18 |
| Analyses of Baseline Data | 19 |
| Analyses of Program Effects | 19 |
| Post-Hoc Analyses | 20 |
| Sex Differences | 20 |
| Prom | 21 |
| Baseline Expectancies..... | 21 |
| Drinkers compared to Non-Drinkers | 22 |

| | |
|---|----|
| CHAPTER 5: DISCUSSION..... | 24 |
| Limitations | 28 |
| Future Directions | 29 |
| APPENDIX A TABLES AND FIGURES | 30 |
| APPENDIX B APPROVED INFORMED CONSENT FORM | 37 |
| APPENDIX C IRB APPROVAL LETTER | 42 |
| APPENDIX D MEASURES..... | 44 |
| REFERENCES | 49 |

LIST OF FIGURES

| | |
|--|----|
| Figure 1. Pre- and Post- CEOA Subscale Scores from Pilot Study | 35 |
| Figure 2. Breakdown of Ratings on Customer Satisfaction Items from Pilot Study | 36 |

LIST OF TABLES

| | |
|--|----|
| Table 1. Changes in Alcohol Expectancy Subscales of the CEOA from Pilot Study | 30 |
| Table 2. Group comparisons for Experimental (n=76) and Control (n=104) at Baseline | 32 |
| Table 3. Alcohol Expectancy Changes Across Experimental and Control | 33 |
| Table 4. Alcohol Use Across Experimental and Control..... | 34 |

CHAPTER 1: PREVENTION PROGRAMS

Prevention efforts targeted at children and adolescents provide the highest potential to reduce the likelihood of drug-related harms. For alcohol, this is particularly relevant because alcohol consumption among the 12-20 year-old age bracket contributes to the three leading causes of death in this age group: unintentional injury, homicide, and suicide (Miller, 2007). In order to mitigate harms caused by alcohol for today's youth, such as those mentioned above as well as academic problems and legal issues, the acting Surgeon General of the United States issued a *Call to Action to Prevent and Reduce Underage Drinking* in March 2007. The *Call to Action* highlights the nature and extent of underage drinking while also outlining its consequences. The *Call* suggests a new, more comprehensive and developmentally sensitive approach to understanding, preventing, and reducing underage drinking. In addition, the call specifically holds public schools accountable in the coordinated national effort to prevent and reduce underage drinking and its consequences. To accomplish these goals, the *Call to Action* emphasizes the following strategies:

- 1) Changing the culture by challenging norms and expectations surrounding underage drinking;
- 2) Preventing adolescents from starting to drink;
- 3) Delaying initiation of drinking;
- 4) Intervening early, especially with high-risk youth;

- 5) Reducing drinking and its negative consequences, including the progression to alcohol use disorders (AUDs) among those who already have started drinking; and

Identifying adolescents who have AUDs and therefore could benefit from treatment and recovery support services (“Underage Drinking— Highlights From The Surgeon General's Call to Action,” 2007).

Despite the employment of substance use prevention programs in nearly all schools in the United States, use of most substances has not decreased significantly over the last decade. Specifically, according to the most recent Monitoring the Future study (2012), alcohol use remains prevalent among youth. Nearly three quarters of students (69%) have consumed alcohol (more than just a few sips) by the end of high school. The proportions of tenth and twelfth grade students who endorsed consuming at least one alcoholic beverage within the 30-day period prior to the survey administration were 28% and 42% respectively. More than half (54%) of 12th graders report having been drunk at least once in their life. Among 12th graders, 24% admitted to binge drinking (i.e., having five or more drinks in a row during the prior two-week interval at least once)—the pattern of alcohol consumption that may be of greatest concern from a public health perspective (Monitoring the Future, 2012).

Research suggests that “at best, programs based on information and attitude change alone have minimal effect on adolescent substance use behavior, and at worst, encourage experimentation,” (Perry & Kelder, 1992). Therefore, the selection of an appropriate, empirically built program is essential in order to impact students in a positive way. Based on the continued prevalence of underage alcohol use over the past decade, however, it is apparent that current

prevention efforts implemented in schools have either peaked in effectiveness, or are largely ineffective despite the best intentions of those who implement the programs (Dietz & Dunn, 2013). The most recent meta-analysis of the prevention literature (Dietz & Dunn, 2013) indicated that, consistent with previous analyses, school based prevention programs have little, if any, effect on actual alcohol use of students. The inclusion of harm reduction strategies, a media literacy component, and programs that specifically target only one substance at a time (e.g., alcohol versus a general substance use prevention program) were associated with the best outcomes.

While nearly 75% of Florida 12th grade students have used alcohol at some point in their lifetimes, 44% of Florida 12th graders and 25% of Florida 11th graders have used alcohol within the last 30 days. Nearly 40% of Orange County high school students have used alcohol within the last 30 days (2010 Florida Youth Substance Abuse Survey).

CHAPTER 2: EXPECTANCIES: A NEW APPROACH

Research on the causes of alcohol use, abuse, and dependence traditionally focused on pharmacological and genetic explanations. Within the last three decades, models have expanded to include cognitive processes as a critical component of the development of alcohol use patterns (Goldman, Brown, Christiansen, & Smith, 1991; Goldman, 1999).

Alcohol expectancies, or beliefs about the effects of alcohol, are an important influence on drinking behavior (see Goldman, Darkes, & Del Boca, 1999). Support for the causal relationship between alcohol expectancies and consumption comes from research that has shown that expectancies exist prior to the initial drinking experience, predict the onset of alcohol consumption, differentiate both children and adults in terms of light- and heavy-drinking patterns, and mediate the influence of precursors on alcohol use (Darkes & Goldman, 1998; Dunn & Earleywine, 2001; Dunn, Lau, & Cruz, 2000; Kraus, Smith, & Ratner, 1994; Rather, Goldman, Roehrich, & Brannick, 1992). Moreover, with regard to adolescent expectancy development, there is evidence for a critical period. This critical period of alcohol expectancy development in adolescence has been conceptualized as a time period (typically in middle adolescence) where negative expectancies for alcohol weaken while positive outcome expectancies strengthen. That is, during this period, teenagers beliefs progress such that alcohol causes more positive and less negative outcomes to occur (Copeland, Proctor, Terlecki, Kulesza, & Williamson, 2014). This transformation period is crucial because as highlighted above, positive expectancies predict a variety of drinking initiation and drinking behavior variables.

Because the influence of expectancies on drinking behavior is profound, it is particularly noteworthy that when expectancies are manipulated experimentally, significantly decreased alcohol consumption has been observed (Darkes & Goldman, 1993, 1998; Dunn et al., 2000; Fried & Dunn, 2012). Thus, whether the high school participants have begun to consume alcohol or not, they will benefit from expectancy intervention.

As described above, the manner in which information about alcohol's anticipated effects is stored and processed in memory suggests how alcohol expectancies may influence the development of heavy alcohol consumption. In short, individuals with positive associations of alcohol tend to consume alcohol more heavily than those with strong negative associations. This model lends itself to the theory that the successful incorporation of negative beliefs about the effects of alcohol results in decreased alcohol consumption.

The ability to use expectancy theory as means to change future drinking behavior in children was demonstrated in a study by Cruz and Dunn (2003). An interactive single-session, classroom-based exercise was designed to alter the associations of elementary aged students, which resulted in participants forming negative associations with alcohol subsequent to the exercise.

This concept has been successfully employed in an intervention called "Expectancy Challenge" (Darkes & Goldman, 1993, 1998; Dunn et al., 2000). The concept is derived from the incongruent relationship between the pharmacological effects of alcohol (e.g., dizziness, fatigue) and the behaviors often observed in individuals who are under the influence (e.g., sociability). In other word, many common behavioral effects of alcohol are actually placebo effects that are

culturally and experientially learned rather than caused by pharmacological processes (Martin & Sayette, 1993).

Traditional Expectancy Challenge interventions use a bar-laboratory in which participants engage in an experience that challenges their positive and arousing expectancies of alcohol consumption. Expectancy Challenge involves the administration of alcoholic and non-alcoholic beverages to participants who are at least 21 years of age. Participants are told that they will be receiving alcoholic beverages. The experimental manipulation, however, is that only a small proportion of participants actually receive alcohol, while the others receive beverages that are specially designed to smell and taste like a beverage which contains alcohol. After time has passed, the manipulation is revealed and participants 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 (the accuracy rate is about 50%, or equal to chance) is used to disconnect the associations between alcohol and various experiences that are produced by expectancy rather than pharmacology of alcohol. This aspect of the strategy involves “challenging” the expectations of heavy drinkers and led to the name of the approach (Goldman & Darkes, 1997; Goldman, 1999b; Darkes, 1995; Darkes & Goldman, 1993). A large drawback, despite very successful results, is the requirement of administering alcohol. High school students are obviously ineligible because they are all under the legal drinking age in the United States, which is currently 21 years. It is from this original intervention and limitations that the ECALC was born. Expectancy research can now be disseminated outside of a bar-lab setting with much reduced resource allocation.

In 2003, NIAAA issued a Call to Action that recognized the impact of using alcohol expectancy theory to decrease the incidence of drinking in college students and thus it is a key component of the intervention. Many common behavioral effects of alcohol are placebo effects (demonstrated through balanced placebo design studies) that are culturally and experientially learned rather than caused by pharmacological processes (Martin & Sayette, 1993). This body of research suggests that expectancy theory provides a sound, empirical, evidence-based, foundation from which intervention efforts are derived.

Additionally, results from a Meta-Analysis conducted by Dietz & Dunn (2013) on classroom based prevention programs provide support for the method in the study population. Specifically, programs that targeted alcohol only, as opposed to multiple substances at once, produced a significant, yet smaller than “small” effect per Cohen’s 1988 guidelines ($d=0.14$; 95% CI = 0.01, 0.27; $p=0.03$), while multi-target programs did not exert a significant effect on alcohol use ($p=0.18$). Additionally, programs, which used media deconstruction, the crux of the ECALC, discussed below, resulted in stronger positive effects than any other specific strategy ($d=0.12$, 95% CI: 0.05, 0.20, $p<0.01$).

Intervention

The Expectancy Challenge Alcohol Literacy Curriculum (ECALC) is a web-based, interactive intervention that is presented by a trained facilitator. The intervention leverages technology in order to challenge students’ expectancies through a media literacy presentation based on research findings linking exposure to alcohol media with expectancy beliefs and drinking decisions. The curriculum reduces or eradicates drinking by challenging alcohol

expectancies and decreasing the reinforcing value of alcohol so behavior is consistent with low-risk or non-drinking (Sivasithamparam, 2008; Schreiner, 2010; Fried & Dunn, 2012).

This ECALC harnesses the lessons learned from expectancy theory, and packages them in one, 45-minute presentation to maximize benefits. It addresses students' expectations of alcohol's effects without the administration of alcoholic drinks or the use of a bar lab environment. Instead, a media literacy approach is utilized to challenge student associations of positive alcohol expectancies promoted by popular media advertising, resulting in a decrease of the positively reinforcing value of alcohol. The ECALC does not necessarily erase former expectations, but introduces new information about the negative effects of alcohol that may compete with pre-existing positive expectations for influence over the individual's behavior (Goldman, 1999b).

In order to facilitate the widespread use of curriculum-based prevention strategies, it was necessary to develop an effective approach that could be delivered in a minimum amount of time to students in a classroom setting. Therefore, the ideal approach is a single-session prevention that can be delivered in a classroom setting. Though across implementations with small class sizes (< 50 students), large class sizes (>100 students), and fraternity and sorority chapters, students receiving the ECALC demonstrated significant decreases in both the number of standard drinks they were consuming per week and the number of binge-drinking episodes while students in the control group increased their drinking over the same one-month period, the most current version of the ECALC has not yet been tested with high school students (Sivasithamparam, 2008; Schreiner, 2010; Fried & Dunn, 2012). While these findings are considered successful, given the increasing rates of high-school students consuming alcohol in

dangerous ways, the need for an effective alcohol prevention/early intervention program targeted at high school students is imperative.

The program has been refined over years of intensive research and evaluation. Thus, the program duration has been reduced to one, approximately 45-minute delivery. The evaluation is expected to mirror the successes of past studies of the ECALC with the additional benefit of prevention and delaying initiation of alcohol use in high school students.

Additionally, pilot testing was conducted in the spring of 2013. Focus groups with high school juniors and seniors advised the revision of the ECALC to make it more developmentally appropriate. Changes in narration quantity, aesthetics, and facilitator interaction have been employed to optimize the ECALC for students in the high school range.

Pilot Study results

Forty-three high school sophomores and juniors from Timber Creek High School (Orange County) participated in a focus group for the Expectancy Challenge Alcohol Literacy Curriculum on May 31, 2013. The goal of the focus group was to present a revised version of the ECALC appropriate for high school students and elicit feedback regarding the effectiveness, engagement, and practicality of the ECALC in a high school classroom. Additionally, students' expectancies were measured pre- and post- intervention via the Comprehensive Effects of Alcohol (CEOA). It is noteworthy that the Sexuality subscale items were omitted due to the Orange County IRB's request. Expectancies were measured because data demonstrate that when manipulated, significantly decreased alcohol consumption is observed (Darkes & Goldman, 1998; Dunn & Earleywine, 2001; Dunn, Lau, & Cruz, 2000; Rather, Goldman, Roehrich, & Brannick, 1992). All 3 positive subscales (Sociability, Tension Reduction, and Liquid Courage)

and the Composite scale were reduced from pre- to post- test. Results from the assessment of alcohol expectancies are presented in figure 1. A one-way repeated measures ANOVA was conducted to determine whether significant changes in expectancies as measured by the CEOA were observed. A Bonferonni correction was applied. All subscales, including the sum positive and sum negative, were significantly different with the exception of Tension Reduction. Means and F values are displayed in table 1.

Students also participated in a survey where they rated 5 satisfaction items. The items included:

- 1) The information provided was informative.
- 2) The language used was appropriate and easy to understand.
- 3) The information was presented in a logical manner.
- 4) The program kept my attention.
- 5) The length of the program was appropriate

Students were asked to indicate whether they disagreed, slightly disagreed, slightly agreed, or agreed with each statement. Results are displayed in figure 2. Finally, the participants answered 7 open-ended items. The items included:

- 1) Which module(s) did you find most helpful?
- 2) Which module(s) did you find least helpful?
- 3) Which module(s) were difficult to understand?
- 4) What aspects did you like most and what aspects did you like least about the program?
- 5) What, if any, change(s) would you make to the program?

- 6) How would you rate this program in comparison to other similar programs you may have participated in and why?
- 7) What else would you like to tell the program creators?

Comments elicited from students were overall quite positive. Criticisms centered on the use of an avatar that many students felt made the program seem “juvenile” and “childish.” They also noted that two animations in particular, which were designed to convey scientific content, were “excessively long” and “slow.” Finally, students felt some of the content was “repetitive.” On a broad scale, students reported, “It is a good program and actually helpful,” “It was cool and informative,” “The videos and interactive features were great and I enjoyed them,” and “The presentation was nicely done and should be shared with more students.” When asked to compare this program to others that they have participated in, students responded, “It was the best one I’ve seen. It was easy to understand,” “This has been the best because it’s very interactive,” and “I enjoyed the level of interaction and diversity of topics.”

This pilot study demonstrates that with some scaffolding of language by the facilitator, the electronic version of the Expectancy Challenge Alcohol Literacy Curriculum is appropriate for high-school aged students. The data also support that expectancies can be changed using the ECALC for high school students in ways consistent with those demonstrated by previous (and the present) evaluations with college students. Further, a study by Cruz and Dunn (2003) demonstrated that expectancies are both already present and malleable in elementary school children, so it was expected that similar observations could be made in high school students.

It is hypothesized that the reductions in positive expectancies are the mechanism by which drinking behavior is reduced. Thus, a full trial with high school students which assesses

drinking behavior would be useful in determining the full extent to which the intervention impacts high school students' actual consumption.

Hypotheses

Based on evaluations with other groups and pilot testing results, the following is hypothesized:

1) Participants in the ECALC (treatment) condition will demonstrate a significant decrease in positive alcohol expectancies from pre- to post-test in comparison to participants in the attention-matched control group.

2) Participants in the ECALC (treatment) condition will consume less alcohol from baseline assessment to one-month follow-up in comparison to participants in the attention-matched control group. As alcohol use behaviors, beliefs and attitudes are shifting and evolving during high school years, success can only be measured accurately relative to those who do not receive the program. This can be observed in a number of scenarios:

- A. Consumption by the treatment group decreases while consumption by the control group remains the same as compared to baseline.
- B. Consumption by the treatment group decreases while consumption by the control group increases as compared to baseline.
- C. Consumption by both groups increases, but to a lesser degree by the treatment group as compared to baseline.
- D. Consumption by the treatment group does not change while consumption by the control group increases as compared to baseline.

E. Consumption by both groups decreases from baseline, but with the treatment condition decreasing significantly greater.

CHAPTER 3: METHOD

Participants

Participants were recruited from two public high schools within the Orange County Public Schools district. 180 high school juniors and seniors enrolled in 20 different class periods participated in the evaluation during the Spring 2014 semester. The intervention was delivered during the students' regularly scheduled government or economics course. The sample was 57% female and 62% of the sample identified as White, 18.9% identified as Black, 4.4% as Asian or Southeast Asian, 2.7% as Hawaiian/Pacific Islander, 1.7% as American Indian or Alaskan Native, and 10% as Biracial or other; 27% of participants indicated that they were Hispanic.

Measures

Demographic Information Participants provided relevant demographic information including sex, age, race, ethnicity, weight (for calculation of blood alcohol content variables), and class standing.

Timeline Follow-Back (TLFB; Sobell & Sobell, 1992). The Time-Line Follow-Back is a calendar-based method that employs detailed instructions to establish anchors (i.e., special events, holidays) to maximize accuracy for recall of drinking behavior over the last 30 days. From the data entered (number of standard drinks for each day, number of hours spent consuming alcohol for each day, biological sex, and weight) a number of drinking behavior variables can be calculated. For the purposes of this study, mean blood alcohol content, peak blood alcohol content, average drinks per sitting, and peak drinks per sitting were the main variables of interest.

Comprehensive Effects of Alcohol (CEOA; Fromme, Stroot, & Kaplan, 1993), The CEOA is a self-report measure that assesses for beliefs and subjective evaluation about the effects of alcohol. It consists of 38 items, each of which are rated on a 4-point scale to assess expectancies (disagree, slightly disagree, slightly agree, agree). The CEOA consists of 7 factors, 4 positive and 3 negative. The positive expectancy subscales include Liquid Courage, Sociability, Sexuality, Tension Reduction, and the negative expectancy subscales include Cognitive and Behavioral Impairment, Risk and Aggression, and Self-Perception..

It is noteworthy that 4 items that load exclusively on to the Sexual Enhancement subscale were removed at the request of the Orange County Office of Accountability, Research, and Assessment. Specific items include “I would be a better lover,” “I would enjoy sex more,” “I would be better able to act out my fantasies,” and “I would feel more sexy.” Despite this adjustment to the measure, it was selected over the Alcohol Expectancies Questionnaire for Adolescents (AEQ-A) because the CEOA better accounts for the variance in quantity (28%) and an equal amount of variance in frequency (15%) of alcohol use (Fromme and D’Amico, 2000). The CEOA also measures negative expectancies, is shorter length, and is dimensional in nature (i.e., the AEQ-A uses a true/false response format). Overall, psychometric properties for the CEOA are solid. Adequate internal consistency, temporal stability, and construct validity have been reported (range of $r=0.53-0.81$ for the different factors; Fromme et al., 1993).

Procedure

A 2x2 time by condition time design was used. Expectancies and alcohol use were measured immediately preceding the intervention or time-and-attention matched wait-list control condition (a body image presentation) and 30 days following. The author and four other trained

facilitators (i.e., other graduate students and advanced research assistants) delivered the presentations. Trained intervention deliverers were required to demonstrate proficiency in the delivery of the intervention and collection of assessment measures prior to administering. Specifically, a score of 90% on a fidelity measure was prerequisite. The fidelity measure was created by the primary author and assessed whether key points and concepts were explained adequately. Intervention deliverers were also evaluated for program fidelity during the actual administration. The lowest fidelity score observed was 92%.

Classrooms were randomly assigned to intervention or attention-matched control conditions. Consent forms were distributed approximately one week prior to data collection. All students received the presentations, but only those with completed consent forms were permitted to participate in survey measures.

Phase 1. After collecting consent and assent, the trained facilitators guided students through completing a code page that guaranteed anonymity to the student. The student answered a variety of non-identifying questions that established a unique code identifier, eliminating the need to collect names or other identifying information while also reducing the burden on the participant (i.e., they need not keep track of an identification number or code). The items for which data were collected include zodiac sign, height, number of biological siblings (specified to not include step-siblings), first letter of mother's first name, and first letter of father's first name. The resulting outcome is a code such as "ARIES540AC."

Subsequent to the completion of the code page, the facilitators verbally coached participants through the remaining measures detailed above. Finally, the intervention was delivered. The intervention lasted 30-40 minutes and included interactive games about alcohol's

biological effects, standard drink definitions, and information about expectancies. Immediately following the intervention, students completed a post-intervention expectancy measure to evaluate whether expectancies were modified.

The time and attention matched control presentation was very similar in structure to the ECALC presentation. However, material about alcohol was replaced with body image material. The purpose of the body image presentation was to teach students to be critical of messages they receive from the media and advertisers, but with special attention given to techniques employed to sell health and beauty products.

Phase 2. Approximately 4 weeks subsequent to the initial delivery, facilitators returned to deliver the alternate presentation to participants. Follow-up packets consisting of the code page, demographics form, CEOA, and 30-day TLFB were administered. Upon completion of the follow-up packet students received the alternate presentation.

CHAPTER 4: RESULTS

Of the 323 students who provided consent and completed the initial baseline measure, 190 (59%) completed follow-up measures and provided code information that could be matched to completed baseline packets. An additional 10 completed packets were excluded from the analysis because they came from a school that had below a 4% completion rate. In addition, these 10 participants were enrolled in the 9th grade, while the other 180 participants represented juniors and seniors between 2 different schools. Thus, the researcher chose to omit those cases due to a likely selection bias. Therefore, analyses were conducted on 180 complete packets matched from 302 initial baseline packets, or 60% of the initiated sample from two high schools. Though the completion rate appears low, estimates from the county indicate a chronic absence rate (absent 21 or more school days) of approximately 20%-30% in Orange County High Schools; one in eight students is absent on any given day. Leaders also indicate that absenteeism spikes during the last few weeks of school, which is when the follow-up period occurred. In addition, students were aware of the dates that follow-up visits were planned. It is possible that they were intentionally absent from class because lack of attendance would not impact their course grades. Analyses of between group equivalence did not detect significant differences between completers and non-completers on any drinking variable or expectancy subscale.

Because random assignment occurred at the group level (i.e., a classroom of students, and not an individual student), class was the unit of assignment for the present evaluation and thus clustering of students within groups was addressed statically (Hedges, 2007). Conventional analyses inflate type one error, and the problem increases as the heterogeneity across clusters

increases (Walsh, 1947). Because this was a multi-site evaluation, it was imperative that attempts were made to account for heterogeneity of the clusters. As such, a Mixed Model application of General Linear Modeling was used. This method allows for the use of a covariate while accounting for the nested design (i.e., classes within schools). Mixed Model Analyses are also ideal because they allow for missing data. In addition, several assumptions for ANOVA or ANCOVA are often violated by this research design; mixed model analyses is not subject to the same restraints.

Analyses of Baseline Data

Chi-square and one-way ANOVA tests were conducted to determine whether groups were equivalent on demographic variables (sex, age, grade, race, and ethnicity), baseline expectancies (sociability [$F(1,179)=1.03, p=0.31$]; liquid courage [$F(1,179)=0.67, p=0.41$]; tension reduction [$F(1,179)=0.46, p=0.50$]; cognitive/behavioral impairment [$F(1,179)=2.70, p=0.10$]; risk and aggression $F(1,179)= 0.06, p=0.81$]; and self-perception [$F(1,179)=2.30., p=0.13$]); and baseline alcohol consumption (as measured by mean BAC [$F(1,179)=2.49, p=0.12$]; peak BAC [$F(1,179)=1.09, p=0.30$]; peak drinks per sitting [$F(1,179)=1.29, p=0.26$]; and average drinks per sitting [$F(1,179)=2.26, p=0.14$]; and number of drinking days [$F(1,178)=0.58, p=0.45$]). No significant differences between groups were identified (Table 2).

Analyses of Program Effects

Expectancies: A Mixed-Model application of GLM, using baseline expectancy values as a covariate, was used to analyze between group differences on post-test expectancy beliefs. The fixed effect was study condition (ECALC or control) and the random effect was class section nested within school. The dependent variables in each analysis were the ratings given by

participants on six CEOA subscales (sociability, tension reduction, liquid courage, cognitive/behavioral impairment, risk and aggression, and self-perception). No significant changes in expectancy beliefs were detected (Table 3).

Alcohol Use: A minor percentage of responses appear to have been overestimated, i.e., calculated BACs were greater than 0.40, which exceeds the fatal level for most humans (Berger, 2000). However, the pattern of responses does not suggest intentional exaggeration or carelessness, but rather a likely systematic over-estimation of the number of standard drinks and/or an under-estimation of the time spent consuming the beverages. In order to avoid losing meaningful data from the heaviest consumers in the data set, BACs that deviated greater than 3 standard deviations from the mean were incrementally recoded to one unit above the next lowest value (Tabachnick & Fidell, 2001; Borsari et al., 2007). This procedure was used to adjust BACs for 10 participants (6 in the experimental group and 4 in the control group).

A mixed-model analysis GLM procedure (with baseline alcohol consumption covaried) was used to analyze between group differences on follow-up drinking variables. The fixed effect was study condition (ECALC or control) and the random effect was a class section nested within school. The dependent variables were mean blood alcohol concentration (BAC), peak blood alcohol concentration, mean number of drinks consumed per week, mean number of drinks per sitting, and peak number of drinks per sitting. There were no significant changes in self-reported alcohol consumption (Table 4).

Post-Hoc Analyses

Sex Differences

Subsequent to the completion of hypothesis testing, additional exploratory analyses were conducted in order to investigate whether differences between groups could be detected. Past

research has indicated that a gender effect may be present in expectancy challenge interventions (Darkes & Goldman, 1993, 1998; Schriener, 2010). Thus, a GLM Mixed Modeling procedure was conducted to determine whether significant differences were observed between males and females, but the results were non-significant.

Prom

Follow-up data collection also included both schools' senior prom. Due to the proximity of the intervention, analyses were conducted to determine whether an effect on BAC or number of drinks was observed between the two groups. The results of both analyses were non-significant.

Baseline Expectancies

A plausible explanation for the lack of expectancy changes is that this samples' expectancies were already consistent with the pharmacological effects of alcohol. Because no published norms exist, a series of effect sizes (Cohen's d) were calculated which compared the pre-test expectancy values of the sample with both pre-test (to determine *a priori* differences) and post-test values (to compare baseline of this sample to successfully reduced expectancies) of high school (Sivasimpatharam, 2011) and first-year college students (Schriener, 2014). Results indicated that the baseline expectancies were significantly lower for Sociability ($d=1.25$), Tension Reduction ($d=0.42$), and Liquid Courage ($d=0.25$) and significantly higher for Self Perception ($d=0.34$) compared to the high school sample. Compared to first year college students, baseline expectancy subscales were higher for Sociability ($d=0.87$) and Cognitive Behavioral Impairment ($d=0.47$).

In order to further examine this relationship, post-test scores of the previous high school and college samples were compared to baseline scores of the present sample to evaluate how this

sample's baseline expectancies compare to reduced expectancies at follow-up. Less than small effect sizes were observed on the post-test scores of the high school sample on Liquid Courage ($d=0.18$) and Self Perception ($d=0.08$) subscales only, indicating that all 6 subscales at baseline fell between demographically comparable samples' baseline and post-intervention scores. These results suggest that statistically significant changes in expectancies would be more difficult to elicit.

Drinkers compared to Non-Drinkers

One possible explanation for the lack of overall effects is that the effectiveness of the expectancy challenge in this age group may be limited to those participants who are consuming alcohol regularly. In support of this hypothesis, other evaluations (e.g., Cruz, 2007) identified significant effects for males who reported that they consumed alcohol during the baseline period. Thus, the GLM Mixed Modeling procedure was applied to examine whether the intervention results in expectancy and drinking changes for those who indicated consuming at least one standard drink in the preceding 30 days. Significant changes on the Sociability [$F(1,14.80)=9.15, p<0.01, d=0.51$] and Risk and Aggression [$F(1,75)=9.04, p<0.01, d=0.26$] subscales were observed. Given that the extant literature supports gender effects, an additional GLM mixed modeling procedure was performed to examine whether changes occurred differently for male and female drinkers. Results revealed significant reductions on the Sociability [$F(1,26.65)=8.98, p<0.01, d=0.79$] and Risk and Aggression [$F(1,27)=4.70, p=0.04, d=0.29$] scale for males, which mirrors the combined drinking group effect, and female drinkers' scores on Sociability [$F(1,5.40)=5.39, p=0.03, d=0.31$] and Risk and Aggression [$F(1,44)=3.98, p=0.05, d=0.15$] also changed. In a departure from the combined drinkers group, Liquid Courage [$F(1,14.72)=5.86, p=0.03, d=0.17$] was also significant for female drinkers only. Despite these

changes in expectancies, no changes on any of the drinking variables were detected in the combined drinkers group, but when examined by sex, female drinkers' peak BAC [$F(1,42)=4.14, p=0.05, d=0.20$] was significantly reduced. Mean BAC for females approached significance [$F(1,29)=3.07, p=0.09$]. Additional analyses performed on those who had consumed alcohol on one or more occasion, suggesting a pattern of regular use, did not differ from those with at least one drinking occasion.

CHAPTER 5: DISCUSSION

The present study adds the current body of validation studies for the ECALC. An earlier (non-digitized) version of the ECALC was evaluated with high school students in Orange County using students from alternative schools who were more likely to use alcohol and to use alcohol in a higher risk way (Sivasithamparam, 2008). One study with general population college students detected changes in expectancies and reductions in alcohol use among students beginning college in the fall semester (Schriener, 2014), and two others detected both changes in expectancies and alcohol consumption with college-aged participants who were associated with elevated risk, i.e., fraternity or sorority members and students mandated to participate in an intervention, respectively (Fried & Dunn, 2012; Fried, 2013). The trend in these findings is that positive effects of the ECALC are more likely to be found in heavier drinking and higher risk groups.

Approximately 39.4% of the present sample reported consuming at least one standard drink in the last 30 days. Monitoring the Future (2013) reported that 26% of 10th graders and 39% of 12th graders reported consuming alcohol in the 30-day prior period. These rates reflect historic lows over the 38-year duration of the Monitoring the Future survey data. Despite alcohol consumption consistent with national patterns, several expectancy subscales were significantly lower than those reported in one high school and one first-year college freshman sample. These findings help explain mostly non-significant results because research has shown that a pattern of high positive expectancy beliefs and low negative expectancy beliefs is most strongly associated with increased risk drinking. Compared to the other high school sample, this sample held lower

positive expectancy beliefs and higher negative expectancy beliefs, which is associated with less alcohol consumption. Thus, it would be more difficult to demonstrate significant changes in expectancy processes and subsequent reductions in drinking.

Given the extant ECALC literature, it is noteworthy that among females, the Liquid Courage subscale decreased significantly along with a significant reduction in their peak BAC. Previous work has typically found that expectancy interventions result in drinking changes for males but not females (or a weaker effect for females; Darkes & Goldman, 1993, 1998; Cruz, 2007; Fried, 2010; Schriener, 2010). This finding suggests that changes in expectancies associated with the Liquid Courage subscale account for a meaningful amount of variance in drinking behavior. In addition, the latest version of the digital ECALC evaluated in the present study may be more effective than other expectancy-based programs in changing key expectancies among females and reducing their alcohol use.

Given the pattern of results obtained, the present findings suggest that the extensive revision and technological upgrades to the ECALC have created a program that is likely to be effective as a form of prevention/early intervention for high school aged students who have already begun consuming alcohol, and possibly effective as a prevention strategy for those who have not. That is, the strongest changes corresponding with effect sizes in the small and medium ranges per Cohen's (1988) guidelines in this and previous studies were detected in populations associated with higher risk, but an extended term follow-up has yet to occur. It is conceivable that the ECALC works best among a targeted population with participants who have drinking experiences because the ECALC functions by challenging existing beliefs and contrasting them with known physiological effects of alcohol. If a participant has minimal experience with alcohol

use, their beliefs may not be as strongly held and thus less impacted by the intervention. However, if and when the participant begins drinking, they may be more likely to drink in a reduced risk manner.

With regard to sample characteristics, students were enrolled in the same grade at the same high schools in a general education course that all students are required to take. It is possible that treatment contamination occurred and students discussed what they learned with their friends (which is consistent with the observed statistically non-significant decreases on several expectancy scales in both conditions). In addition, though over 680 consent forms were initially administered, 323 participants returned them and completed baseline measures, and only 180 completed packets were retained, for an observed completion rate of approximately 26%. It is possible that students who chose not to provide consent and assent or baseline measures were students who could have most benefited from the intervention. To be specific, students were told that the study involved a program about alcohol. Though they were assured that the program was likely different than other information they had received, it is plausible that students who consume alcohol on a regular basis elected to not participate in the study as they did not want to be “lectured to.” This sentiment was reported commonly in the pilot test of the project; several students indicated that the ECALC was different from other programs they have received in that they expected to be “lectured to” and “told what to do.” To this end, selection bias is a major problem that plagues implementation research, particularly when focused on highly stigmatized or illegal behavior, such as underage alcohol consumption (Crowley, Coffman, Feinberg, Greenberg, & Spoth, 2013). While Crowley and colleagues suggest some corrective methods, they would require additional compliance from the parent, teacher, schools, and district (e.g.,

providing extensive data on SES, attendance rates, parent age, educational attainment, parental perceptions on numerous variables such as teen problem behaviors and perceived value of interventions), which introduces a new level of selection bias.

A final consideration is that the author also observed a few students referring back to their baseline responses when completing their post-test measures. The author immediately provided corrective feedback and instructed other presenters to do the same, but the proportion of the sample that engaged in this method is unknown. Finally, despite the best efforts to be engaging, participants may simply have not been paying attention to the presentation and thus did not benefit from the intervention. While an attempt at a manipulation check was made (e.g., the last item of the survey packet asked which presentation was received) many students left the item blank. Future studies should include multiple manipulation checks throughout the survey to ensure that participants were attending to the information presented.

Finally, it is noteworthy that a single 45-50 minute interactive session was successful in reducing peak BACs among female drinkers. Reductions in peak BAC indicate that participants are either consuming less drinks, spacing them out over a larger period of time, or both. Changes in this measure correspond with reduced risk for a number of directly related consequences such as the reduced likelihood of experiencing a black-out. This finding is also remarkable because most expectancy challenge interventions have been unsuccessful or less successful at reducing females' expectancies and related drinking behavior. This suggests that this evolution of the ECALC is targeting key expectancy processes which reduce risk.

Finally, the present report lends support to the concept that the ECALC can be delivered by non-expert trained facilitators. Four facilitators, in addition to the author, delivered the

presentation and were able to demonstrate high program fidelity ratings both prior to and during the evaluation. Fidelity program ratings ranged from 92-97% and were obtained after approximately 10 hours of experiential face-to-face group training.

Limitations

There are some methodological limitations that may account for the null findings in the overall sample. To begin, though the analysis selected was chosen due to its improvement of power, *a priori* power analyses indicated that approximately 220 cases were needed for adequate power.

In addition, given the drinking patterns discussed above, it is conceivable that not enough time or drinking opportunities had passed for the intervention to work as follow-up data was collected approximately 30 days after the intervention. An extended follow-up period would elucidate whether the ECALC has an inoculation effect on those who have not yet started to drink alcohol.

These and other limitations make it evident that applied research within a school system presents many unique challenges. Though the initial recruitment plan included students across 3 schools, one school was removed from the study after the consent form return rate was below 2% despite incentives for returning the form (e.g., a pizza party for every class that returned 80% of their consent forms). There is great difficulty associated with sending home consent forms to be completed by parents, even with the support of the school administration. Thus, the final sample size was significantly lower than initial projections. Timing (end of semester) and scheduling (AP exams, end of course exams, teacher schedule inflexibility) made collecting useful data from additional participants implausible. Thus, analyses were underpowered and Type II errors may

have occurred. Collection in another school semester was also not desirable, as it presented a significant threat to external validity and cohort effects could also have been introduced.

Similarly, due to schedule changes implemented in the schools, a follow-up period of greater than 30 days was not feasible. Finally, the school system IRB did not permit measures about alcohol-related harms and sexuality related expectancies; the collection of such information would have added another dimension to the present findings.

Future Directions

Given the observations and proposed explanations outlined above, there are several potential avenues for further research. First, future research should be conducted on a larger sample to ensure that type II error is not occurring due to low power. The complexities of conducting applied research in a public high school setting are many. Thus, future research should take care in ensuring that a sample size substantially larger than the minimum needed is recruited. Based on the present evaluation, researchers should recruit at least four times the number of participants they will need for sufficient power.

Second, it is possible that the intervention has an inoculation effect, i.e., while immediate reductions in drinking are not observed, students may manifest reduced drinking over time, particularly as they have a chance to “test out” their new knowledge with first-hand experience if and when they begin to consume alcohol. Future research could adopt a longitudinal approach and apply growth modeling to observe whether students manifest changes in expectancies and drinking behavior later.

Finally, it is conceivable that the ECALC is less effective for high school students despite showing promise in some groups of college students due to differing environmental,

motivational, and skill-related factors. Future research could seek to elucidate potential differences and incorporate findings into the curriculum in order to provide the most impactful and relevant intervention for the population. Further research should explore whether the integration of behavioral skills training would benefit this age group as they are not likely to have learned how to measure or count drinks, fine tune refusal skills, or use other strategies associated with reduced risk drinking.

APPENDIX A
TABLES AND FIGURES

Table 1. Changes in Alcohol Expectancy Subscales of the CEOA from Pilot Study

| Scale | Pre-Mean | Post-Mean | df | F | Sig. |
|--------------------|----------|-----------|----|-------|--------|
| Sociability | 3.23 | 2.07 | 1 | 30.26 | <0.001 |
| Tension Reduction | 2.29 | 2.04 | 1 | 1.72 | 0.197 |
| Liquid Courage | 2.86 | 1.95 | 1 | 14.34 | <0.001 |
| Positive Sum | 2.77 | 2.02 | 1 | 14.75 | <0.001 |
| Cog-Beh Impairment | 3.54 | 2.92 | 1 | 6.25 | 0.016 |
| Risk & Aggression | 2.94 | 2.04 | 1 | 23.15 | <0.001 |
| Self-Perception | 2.50 | 1.79 | 1 | 14.23 | <0.001 |
| Negative Sum | 2.96 | 2.25 | 1 | 13.86 | 0.001 |

Table 2. Group comparisons for Experimental (n=76) and Control (n=104) at Baseline

| | Experimental | Control | χ^2/F | <i>p</i> |
|------------------------------|--------------|--------------|-------------|----------|
| Male | 33 (43.4%) | 44 (42.3%) | $\chi^2(1)$ | 0.88 |
| Female | 43 (56.6%) | 60 (57.7%) | | |
| Age | 17.44 (0.44) | 17.76 (0.43) | 0.08 | 0.79 |
| Grade | 11.99 (0.12) | 11.99 (0.10) | 0.04 | 0.84 |
| Race | | | $\chi^2(5)$ | 0.82 |
| Caucasian | 46 (60.5%) | 66 (63.5%) | | |
| African American | 13 (17.1%) | 21 (20.2%) | | |
| Asian/S.E. Asian | 5 (6.6%) | 3 (2.9%) | | |
| Hawaiian/Pacific Islander | 2 (2.6%) | 3 (2.9%) | | |
| American | 1 (1.3%) | 2 (1.9%) | | |
| Indian/Alaskan Native | | | | |
| Multi-Racial or Other | 9 (11.8%) | 9 (8.7%) | | |
| Ethnicity | | | $\chi^2(1)$ | 0.97 |
| Hispanic | 21 (27.6%) | 29 (27.9%) | | |
| Non-Hispanic | 55 (72.4%) | 75 (72.1%) | | |

*Significant at alpha level .05

Table 3. Alcohol Expectancy Changes Across Experimental and Control

*Significant at alpha level .007

| | Experimental (<i>n</i> =76) | | Control (<i>n</i> =104) | | <i>df</i> | <i>F</i> | <i>p</i> |
|-------------------------------|------------------------------|--------------|--------------------------|--------------|-----------|----------|----------|
| | <i>M</i> (<i>SD</i>) | | <i>M</i> (<i>SD</i>) | | | | |
| | Baseline | Post-Test | Baseline | Post-Test | | | |
| Sociability | 22.32 (3.99) | 21.64 (5.76) | 22.91 (4.15) | 21.08 (6.47) | 1, 15.63 | 0.14 | 0.71 |
| Tension Reduction | 8.01 (2.35) | 8.05 (2.64) | 8.32 (2.52) | 7.88 (2.94) | 1, 176.31 | 0.13 | 0.72 |
| Liquid Courage | 13.85 (4.04) | 13.85 (4.87) | 14.41 (4.11) | 13.78 (5.00) | 1, 176.53 | 0.01 | 0.93 |
| Risk & Aggr. | 12.92 (3.63) | 12.40 (4.53) | 13.11 (3.62) | 12.66 (4.46) | 1, 176.21 | 0.20 | 0.66 |
| Cognitive/ Behavioral Imp. | 26.32 (5.45) | 27.29 (6.12) | 27.77 (5.71) | 29.02 (6.03) | 1, 15.56 | 3.58 | 0.08 |
| Self-Perception | 9.09 (3.01) | 9.32 (3.20) | 8.48 (3.07) | 9.16 (3.58) | 1, 177.0 | 0.91 | 0.76 |

Table 4. Alcohol Use Across Experimental and Control

| | Experimental (<i>n</i> =76) | | Control (<i>n</i> =104) | | <i>df</i> | <i>F</i> | <i>p</i> |
|----------|------------------------------|-------------|--------------------------|-------------|-----------|----------|----------|
| | <i>M (SD)</i> | | <i>M (SD)</i> | | | | |
| | Baseline | 1-mth | Baseline | 1-mth | | | |
| Mean BAC | 0.04 (0.07) | 0.04 (0.07) | 0.04 (0.06) | 0.03 (0.06) | 1, 13.94 | 0.03 | 0.88 |
| Peak BAC | 0.06 (0.10) | 0.05 (0.09) | 0.04 (0.09) | 0.05 (0.08) | 1, 12.25 | 0.01 | 0.92 |
| AvDPS | 2.27 (3.33) | 2.55 (3.81) | 1.59 (3.09) | 2.04 (3.21) | 1, 15.75 | 0.60 | 0.45 |
| PDPS | 3.40 (5.13) | 3.27 (5.02) | 2.48 (5.08) | 2.65 (4.33) | 1, 14.853 | 0.33 | 0.57 |
| Wk pBAC | 0.02 (0.05) | 0.02 (0.04) | 0.02 (0.05) | 0.03 (0.06) | 1, 16.56 | 0.17 | 0.69 |
| Wk PDPS | 1.36 (2.82) | 0.99 (1.94) | 1.35 (2.38) | 1.44 (2.74) | 1, 16.18 | 0.42 | 0.52 |

Note: AvDPS = average drinks per sitting, PDPS= peak drinks per sitting, Wk pBAC= weekly peak BAC, Wk PDPS= weekly peak drinks per sitting

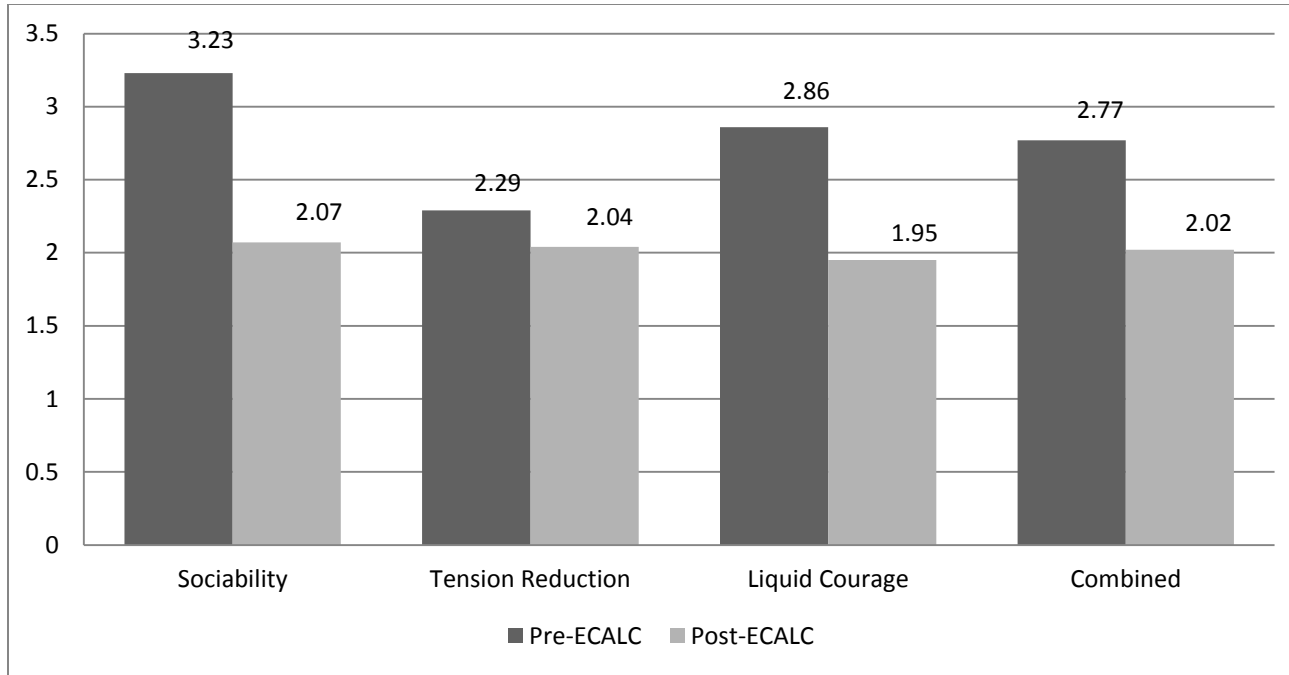


Figure 1. Pre- and Post- CEOA Subscale Scores from Pilot Study

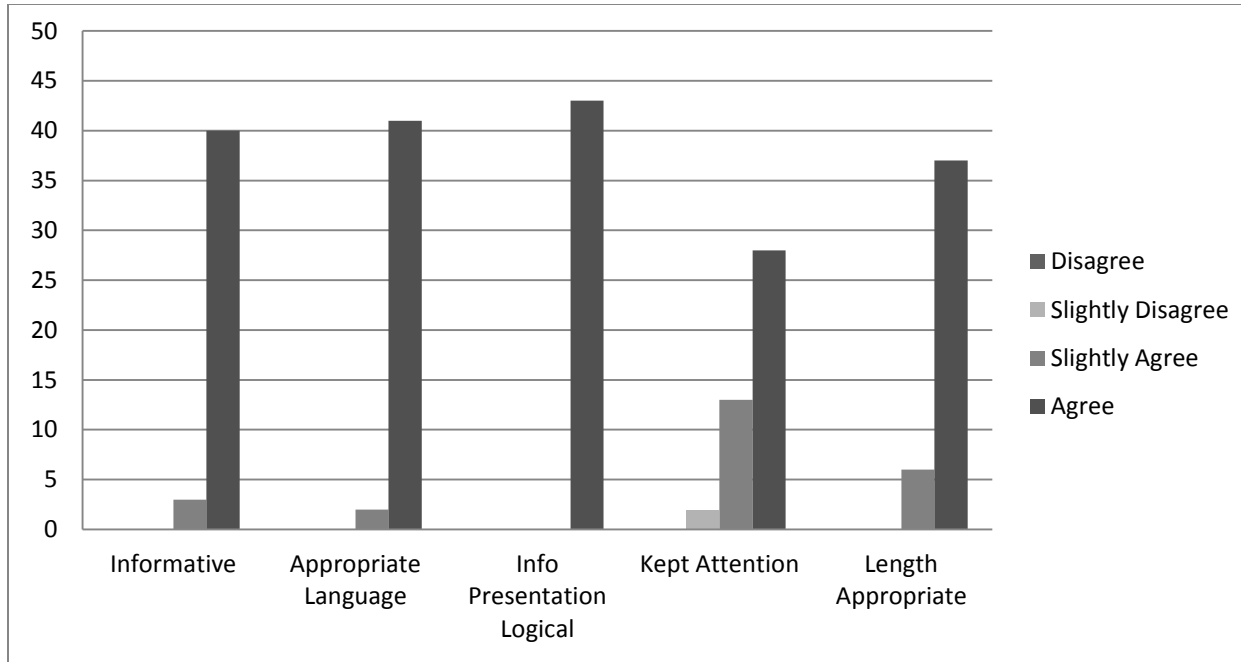


Figure 2. Breakdown of Ratings on Customer Satisfaction Items from Pilot Study

APPENDIX B
APPROVED INFORMED CONSENT FORM



High School Expectancy Challenge Alcohol Literacy Curriculum Study Informed Consent Form

Principal Investigator: Michael E Dunn, Ph.D.

Co-Investigator: Thomas Hall, LCSW Alyssa Dietz, M.S. Mona Shah, M.A.

Study Coordinator: Amy Schreiner, M.S.

Investigational Site(s): Orange County Public High Schools

How to Return this Consent Form:

The consent form can be completed and returned with your student to hand in to their Physical Education teacher. The informed consents will then be provided by the school to research personnel. All students will receive the Expectancy Challenge Alcohol Literacy Curriculum as part of their normal educational curriculum. You are being asked to review and provide consent for survey measures that will be completed by students before/after the presentation which is the research aspect of the curriculum. **Two (2) copies of the consent document will be sent to parents; a signed consent will be returned to the researcher and the parent will keep the other copy for their records.** Signed consents will be collected and stored separately from any data collection to maintain the anonymity of survey measures.

Introduction: Researchers at the University of Central Florida (UCF) study many topics. To do this we need the help of people who agree to take part in research studies. You are being asked to allow your child to take part in a research study which will include about 700 students. Your child is being invited to take part in this research study because he or she attends an Orange County Public School.

The people conducting this research include Michael E Dunn, PhD, a researcher and faculty member of the Psychology Department at UCF; Thomas V. Hall, director of the UCF Alcohol and Other Drug (AOD) Prevention and Programming Office. Alyssa Dietz, M.S., and Mona Shah, M.A. are doctoral students in the clinical psychology program, and will be delivering the presentation to your child under the supervision of Michael E Dunn, PhD.

What you should know about a research study:

Someone will explain this research study to you.

A research study is something you volunteer for.

Whether or not you take part is up to you.

You should allow your child to take part in this study only because you want to.

You can choose not to take part in the research study.

You can agree to take part now and later change your mind. Whatever you decide it will not be held against you or your child. Feel free to ask all the questions you want before you decide.

Purpose of the research study: The purpose of this study is to investigate high school students' alcohol and health/beauty product use behaviors and attitudes/beliefs about alcohol and body image. The researchers hope to learn more about how information presented to high school students about the effects of alcohol and health/beauty products and media literacy may impact these behaviors, attitudes and beliefs.

What your child will be asked to do in the study: Your child's participation will involve anonymously completing survey measures after receiving a presentation on media literacy and a summary of related research findings focused on the effects of alcohol. The presentation is being delivered as a part of your student's normal curriculum; however, the survey measures are an optional research study element in which your child can participate. In the survey measures, questions will ask about alcohol use and related attitudes and behaviors. These will be collected anonymously. Your child will be asked to complete these survey measures immediately before the presentation, immediately after, and then again 30 days following. Your student may receive the actual presentation at the beginning of the 30 day study period, or at the end of the 30 day study period. During the presentation, your child will interact with Alyssa Dietz, M.S., and/or Mona Shah, M.A. who will guide them through the information. Your child does not have to answer every question. You or your child will not lose any benefits if your child skips questions or tasks.

Location: This study will take place at your child's high school within a class.

Time required: We expect that your child will be in this research for 60 minutes for the initial presentation. The follow-up surveys they will be asked to participate 1-month from the initial presentation will take approximately 60 minutes.

Risks: There are no reasonably foreseeable risks or discomforts involved in having your child take part in this study. However, should your child have an emotional reaction to any of the material presented, or concern specific their own alcohol consumption, please notify your school's guidance counseling office for appropriate referrals.

Benefits: We cannot promise you or your child any benefits from your taking part in this research. However, possible benefits include an increased understanding of alcohol's effects on the body, understanding how the media influences our attitudes and beliefs about alcohol and body image, and potential to decrease risky alcohol use.

Compensation or payment: There is no compensation, payment, or extra credit for your child's participation.

Anonymous research: This study is anonymous. That means that no one, not even members of the research team, will know that the information your child gave came from him or her.

Study contact for questions about the study or to report a problem: If you have questions, concerns, or complaints, or think the research has hurt your child, please contact your high school principal or the following study contacts:

| <u>Principal Investigator:</u> | <u>Co-Investigator:</u> | <u>Co-Investigators</u> |
|--|---|---|
| Michael Dunn, Ph.D. Dept. of Psychology Michael.dunn@ucf.edu (407) 823-2522 | Tom Hall, MSW, LCSW Health Services Thomas.Hall@ucf.edu (407) 823-0869 | Alyssa Dietz, MS & Mona Shah, MA Dept. of Psychology Alyssa.Dietz@ucf.edu/Mona.Shah@ucf.edu (407) 823-2522 |

IRB contact about you and your child’s rights in the study or to report a complaint:

Research at the University of Central Florida involving human participants is carried out under the oversight of the Institutional Review Board (UCF IRB). This research has been reviewed and approved by the IRB. For information about the rights of people who take part in research, please contact: Institutional Review Board, University of Central Florida, Office of Research & Commercialization, 12201 Research Parkway, Suite 501, Orlando, FL 32826-3246 or by telephone at (407) 823-2901. You may also talk to them for any of the following:

Your questions, concerns, or complaints are not being answered by the research team.

You cannot reach the research team.

You want to talk to someone besides the research team.

You want to get information or provide input about this research.

Withdrawing from the study:

You may decide not to have your child continue in the research study at any time without it being held against you or your child. However, because the surveys are collected completely anonymously without any identifying information, once a survey is submitted it is impossible to determine which survey belongs to your child.

Your signature below indicates your permission for the child named below to take part in this research.

DO NOT SIGN THIS FORM AFTER THE IRB EXPIRATION DATE BELOW

Name of participant

Signature of parent or guardian

Date

Parent

Guardian (See note below)

Printed name of parent or guardian

Assent

Obtained

Note on permission by guardians: An individual may provide permission for a child only if that individual can provide a written document indicating that he or she is legally authorized to consent to the child's general medical care. Attach the documentation to the signed document.

APPENDIX C
IRB APPROVAL LETTER



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

Approval of Human Research

From: UCF Institutional Review Board #1
 FWA00000351, IRB00001138

To: Michael E. Dunn and Co-PIs: Alyssa R. Boucher, Thomas V. Hall

Date: March 18, 2013

Dear Researcher:

On 3/18/2013, the IRB approved the following minor modification to human participant research until 01/02/2014 inclusive:

Type of Review: IRB Addendum and Modification Request Form
 Modification Type: In addition to the middle schools in New Mexico, the researchers have arranged to implement the same protocol with Orange County East Area Public high schools: Timber Creek, East River, University and Winter Park. A revised Informed Consent document has been approved for use.

Project Title: Evaluation of an Expectancy Challenge Alcohol Literacy Curriculum with Middle and High School Students

Investigator: Michael E. Dunn
 IRB Number: SBE-11-08022
 Funding Agency:
 Grant Title:
 Research ID: N/A

The scientific merit of the research was considered during the IRB review. The Continuing Review Application must be submitted 30 days prior to the expiration date for studies that were previously expedited, and 60 days prior to the expiration date for research that was previously reviewed at a convened meeting. Do not make changes to the study (i.e., protocol, methodology, consent form, personnel, site, etc.) before obtaining IRB approval. A Modification 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>.

If continuing review approval is not granted before the expiration date of 01/02/2014, approval of this research expires on that date. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

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. Participants or their representatives must receive a copy of the consent form(s).

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewska, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

[%electronic_signature%]
 IRB Coordinator

**APPENDIX D
MEASURES**

Answering these questions will make a **UNIQUE CODE** for your survey. The code allows us to keep your responses **100% anonymous**. The researchers will not know your name, and will instead use this code to match these responses to those you will fill out at a later time.

What is your zodiac sign? (Bubble only one)

Like this: ● Not like this: ☑ ☒ ☑

| <u>Aquarius</u> | <u>Pisces</u> | <u>Aries</u> | <u>Taurus</u> | <u>Gemini</u> | <u>Cancer</u> | <u>Leo</u> | <u>Virgo</u> | <u>Libra</u> | <u>Scorpio</u> | <u>Sagittarius</u> | <u>Capricorn</u> |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Jan. 21 - Feb. 19 | Feb. 20 - Mar. 20 | Mar. 21 - Apr. 20 | Apr. 21 - May 21 | May 22 - Jun. 21 | Jun. 22 - July 22 | Jul. 23 - Aug. 21 | Aug. 22 - Sep. 23 | Sep. 24 - Oct. 23 | Oct. 24 - Nov. 22 | Nov. 23 - Dec. 22 | Dec. 23 - Jan. 20 |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

How tall are you? (Bubble only one)

| | | | | | | | | | | | | | | | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| ≤4'11" | 5'0" | 5'1" | 5'2" | 5'3" | 5'4" | 5'5" | 5'6" | 5'7" | 5'8" | 5'9" | 5'10" | 5'11" | 6'0" | 6'1" | 6'2" | 6'3" | 6'4" | ≥6'5" |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

How many full BIOLOGICAL SIBLINGS do you have? (not step or half)

0 1 2 3 4 5 (or more)

What is the FIRST LETTER of your MOTHER'S FIRST Name?

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

What is the FIRST LETTER of your FATHER'S FIRST Name?

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

Age

13 14 15 16 17 18 (or older)

What is your current grade level?

9 10 11 12

Biological Sex

| | | |
|-----------------------|-----------------------|-----------------------|
| Male | Female | Trans or other |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

Weight _____ (lbs)

What race do you identify with? (Bubble all that apply)

| | | | | |
|-----------------------|-----------------------|-----------------------|----------------------------------|--------------------------------|
| White | Black | Asian/Southeast Asian | Native Hawaiian/Pacific Islander | American Indian/Alaskan Native |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

What ethnicity are you?

| | |
|-----------------------|-----------------------|
| Hispanic | Non-Hispanic |
| <input type="radio"/> | <input type="radio"/> |

The following questions ask what you would expect to happen if you were under the influence of ALCOHOL. This is not a personality test. We want to know what you would 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 bubble agree as your answer unless you expected to become more emotional if you drank.

When I drink alcohol, I expect that ____: (please bubble only one rating per item)

Like this: ● Not like this: ✓ ✗ /

| | Agree | Slightly Agree | Slightly Disagree | Disagree |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| <i>I would be outgoing</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>My senses would be dulled</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would be humorous</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>My problems would seem worse</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>It would be easier to express my feelings</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>My writing would be impaired</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would have difficulty thinking</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would neglect my obligations</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would be dominant</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>My head would feel fuzzy</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would feel dizzy</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would be friendly</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would be clumsy</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would be loud, boisterous, or noisy</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would be feel peaceful</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would be brave and daring</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would feel unafraid</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would feel creative</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would be courageous</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would feel shaky or jittery the next day</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would feel energetic</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would act aggressively</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>My responses would be slow</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>My body would be relaxed</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would feel guilty</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

| | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|
| <i>I would feel calm</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would feel moody</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>It would be easier to talk to people</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would feel self-critical</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would be talkative</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would act tough</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would take risks</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| <i>I would feel powerful</i> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

*****Please wait for verbal instructions for the next part of the survey*****



APRIL/MAY 2014

| Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|---|---|---|---|---|--|---|
| | | | April 17 Std. Drinks _____ Hours _____ | April 18 Std. Drinks _____ Hours _____ | April 19 Std. Drinks _____ Hours _____ | April 20 Std. Drinks _____ Hours _____ |
| April 21 Std. Drinks _____ Hours _____ | April 22 Std. Drinks _____ Hours _____ | April 23 Std. Drinks _____ Hours _____ | April 24 Std. Drinks _____ Hours _____ | April 25 Std. Drinks _____ Hours _____ | April 26 Std. Drinks _____ Hours _____ | April 27 Std. Drinks _____ Hours _____ |
| April 28 Std. Drinks _____ Hours _____ | April 29 Std. Drinks _____ Hours _____ | April 30 Std. Drinks _____ Hours _____ | May 1 Std. Drinks _____ Hours _____ | May 2 Std. Drinks _____ Hours _____ | May 3 Std. Drinks _____ Hours _____ | May 4 Std. Drinks _____ Hours _____ |
| May 5 Std. Drinks _____ Hours _____ | May 6 Std. Drinks _____ Hours _____ | May 7 Std. Drinks _____ Hours _____ | May 8 Std. Drinks _____ Hours _____ | May 9 Std. Drinks _____ Hours _____ | **PROM** May 10 Std. Drinks _____ Hours _____ | May 11 Std. Drinks _____ Hours _____ |
| May 12 Std. Drinks _____ Hours _____ | May 13 Std. Drinks _____ Hours _____ | May 14 Std. Drinks _____ Hours _____ | May 15 Std. Drinks _____ Hours _____ | May 16 Std. Drinks _____ Hours _____ | May 17 Std. Drinks _____ Hours _____ | May 18 Std. Drinks _____ Hours _____ |

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