

Outcome and Efficacy Expectancies

In College Student Drinking

By

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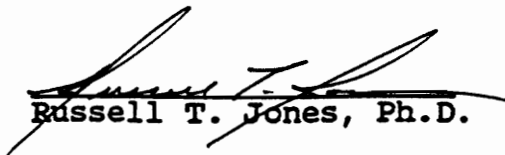
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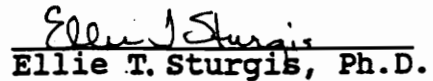
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(ABSTRACT)

The goals of this study were to modify efficacy and outcome expectancies related to moderate alcohol consumption through written communications and determine subsequent changes in behavioral intentions to consume alcohol. Furthermore, two theoretical models which have attempted to conceptualize the relationships between efficacy and outcome expectancies with regards to their predictive utility were evaluated. The results indicated that outcome and efficacy expectancies related to moderate alcohol use were affected by information specifically targeting them. The results did not find support for the hypothesis that negative and positive outcome information would significantly effect perceived efficacy. Nor were main effects found for efficacy information on either positive or negative outcome expectancies. However, a two-way interaction of negative outcome by efficacy on negative interpersonal outcome expectancies were observed. Subjects who were exposed to low efficacy and low negative outcome information indicated

higher expectations that negative outcomes would happen to them if they drank in moderation relative to individuals exposed to high efficacy and low negative outcome information. The study found no support for effects of expectancy information on any of the intentions to drink indices. However, post hoc analyses indicated partial support for the hypothesis that past alcohol use moderates the effects of expectancy information on intentions to consume alcohol. In testing the relative utility of outcome and efficacy expectancies in predicting different indices of alcohol use it was found that efficacy expectancies consistently predicted a significant proportion of variance in subject's future drinks per occasion and future frequency of heavy drinking occasions. Outcome expectancies were unable to add to the prediction of future drinks per occasion or future frequency of heavy drinking occasions. Several of the drinking indices assessed in this study were individualized for each subject. The utility of this approach is discussed in the paper. The study's results are interpreted in relation to different theorists conceptualizations of the relationship between outcome and efficacy expectancies and directions for future research are discussed.

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Introduction

Over 380,000 people were treated in the United States for alcohol abuse or dependence, during a 1 year period ending on September 30, 1989 (Alcohol and Health, 1990). It has been found across a wide variety of treatment settings that the goals of treatment are typically not met, with relapse rates as high as 65% reported within the first three months after treatment (Hunt, Barnett, L.W. & Branch, L.G., 1971; Tims, F.M., and Leukefeld, C.G. 1986). Therefore, it is essential to continue to identify factors that will help predict successful changes in drinking behavior and maintenance of these changes. Recently, there has been a good deal of interest in the application of Albert Bandura's self-efficacy theory (1977) to the area of alcohol abuse and dependence (Annis & Davis, 1988; Fromme, Kivlahan, & Marlatt, 1986; Rollnick & Heather 1982; Solomon & Annis, 1990).

Bandura's (1977, 1989) self-efficacy theory maintains that efficacy expectations are the central cognitive processes involved in the initiation and maintenance of behavior change. Within this theory, efficacy expectations are sharply distinguished from outcome expectancies. An outcome expectancy is defined as a person's estimate that a given behavior will lead to certain outcomes. An efficacy expectancy is a belief about one's ability to successfully perform a specific behavior. Bandura (1977) maintains that

"outcome and efficacy expectancies are two distinct concepts. For instance, an individual can believe that a particular performance will produce certain outcomes, however, if he or she holds serious doubts about whether he or she can perform the necessary behaviors outcome expectancies will not influence his or her behavior" (p. 193).

Bandura (1989) postulates that because people see many outcomes as contingent on the adequacy of their performance, and care about those outcomes, they rely on self-judged efficacy in deciding which course of action to pursue and how long to continue a chosen course. Therefore, Bandura (1989, 1991) concludes that expected outcomes may not add much on their own to the prediction of behavior. In most social, intellectual, and physical pursuits, outcome expectancies may be highly dependent on quality of performance. For example, if an individual is attempting to pass a licensing examination to become a lawyer, the types of outcomes she or he envisions are largely based on her or his performance expectations. If the individual is confident that she or he has the skills needed to pass the examination then she or he will envision positive outcomes such as job opportunities and social praise. However, if the individual is not confident that she or he has the prerequisite skills to pass the examination, then the types of

outcomes that she or he will envision will be negative. Therefore, in these pursuits the types of outcomes that an individual envisions are largely based on her or his appraisal or efficacy expectancies of being able to perform at a certain level in a given situation.

While Bandura asserts that outcome expectancies add little information to the prediction of behavior beyond that explained by efficacy expectations, other investigators disagree. Kazdin (1978) hypothesizes that there is a reciprocal nature between the two concepts. While increases in self-efficacy will probably demonstrate to an individual that negative consequences do not have to occur in a situation, demonstrations that outcomes are not harmful may increase self-efficacy. The importance of each of these expectancies is a function of the clients specific problem according to Kazdin. For example, Kazdin believes that in the case of some phobic behaviors, individuals may well be able to perform many approach responses (eg. going on a ship, petting a dog) because they are trivial. The difficulty these subjects have derives from their belief that negative things will happen to them as a consequence of performing the behavior in question.

Similarly, Maddux (1991) proposes that efficacy and outcome expectancies always work together in influencing our decision about what behaviors to attempt. He maintains that

no matter what behavior is in question, we always hold some expectations about what the outcomes might be, and how competent we are at performing the behavior. Furthermore, he indicates that both of these expectancies must be fairly high for us to want to attempt the behavior. Eastman and Marzillier (1984) reason along the same lines as Kazdin and Maddux. They assert that self-efficacy theory oversimplifies the variables involved in behavior change. Specifically, they believe that Bandura has failed to credit the importance of outcome expectancies in his analyses. Eastman and Marziller (1984) maintain that people's estimation of their ability to cope with a situation is strongly affected by their concern about the consequences of these acts. Bandura (1984) disagrees with this proposition and replies that individuals can judge their capabilities in certain activities quite apart from the rewards their performance might bring them.

Research has demonstrated the importance of efficacy expectancies in predicting behavior across a wide range of situations including phobias (e.g Bandura 1977; Williams, Turner, Peer, 1985; William, Kinney, and Falbo 1989), smoking cessation (eg. Condiotte and Lichtenstein, 1981; McIntrye, Lichentein, and Mermelstein, 1983), post-treatment alcohol consumption (eg. Solomon and Annis 1990), preventive dental health behavior (eg. Beck and Lund, 1981) and school

achievement (eg. Bandura and Schunk, 1981). Furthermore, studies that have looked at the predictive utility of efficacy expectancies and outcome expectancies have generally found that efficacy expectancies are better predictors of behavior relative to outcome expectancies. These results have been found across several situations including smoking cessation (eg. Godding & Glasgow, 1985), and phobias (eg. Williams et al., 1989; Arnow, et al., 1985; William, Turner, and Peer 1985). In a study which involved a snake handling task (Lee 1984a) and another which consisted of a simulated assertiveness task (Lee 1984b) it was found that efficacy expectancies were better predictors of behavior than outcome expectancies. However, while efficacy expectancies were found to be better predictors of behavior compared to outcome expectancies the two were highly correlated in Lee's two studies. High correlations have also been found between the two types of expectancies in a phobia study (e.g. Kirsch, Tennen, Wickless, Saccone, and Cody, 1983). More recently, Solomon and Annis (1989) have found in a sample of outpatients receiving treatment for alcohol abuse that these constructs were minimally correlated. The mixed results indicate the need to further study efficacy and outcome expectancies in order to test their independence and determine parameters that moderate their relationships.

In the past Bandura (1977, 1986) has stated that outcome expectancies may add little to the prediction of behavior relative to self-efficacy expectancies. More recently, Bandura (1989) has introduced a statement on the hypothesized relationship between the two concepts across various activities. He contends that their relationship falls on a continuum. On one end of the continuum are activities whose outcomes are highly contingent on performance and efficacy expectancies account for most of the variance in outcome expectancies in these situations. On the other end of this continuum are outcome expectancies which are independent of efficacy expectancies because contingencies are restrictively structured so that no level of performance can produce desired outcomes.

Because this relationship falls on a continuum, we may also find efficacy expectancies which account for only part of the variance in outcome expectancies when outcomes are not completely controlled by quality of performance. An example of a behavior which may fall into this category is when a college student is attempting to change her or his drinking patterns. Research has demonstrated that college students feel pressured to conform to the drinking standards of their peers (Sherry & Stolberg, 1987; Shore & Rivers 1985). Therefore, the types of outcomes that will occur will not be contingent on the individual's performance alone

because environmental factors, such as how the individual's peers react to this refusal to drink, may also in part determine the types of outcomes that occur. Of course, outcomes may still be partially dependent on the quality of the individual's skill in refusing drinks. Thus, these outcome expectancies are partially determined by performance.

This hypothesized distinction may have an important implication in regards to the application of self-efficacy theory to alcohol research. Contrary to Bandura's (1977) original formulation of self-efficacy theory, outcome expectancies may be expected to account for a unique amount of variance in drinking behavior beyond efficacy expectancies. This suggests that there may be utility in measuring both self-efficacy and outcome expectancies in individuals who are attempting to change or wish to change their drinking behaviors. Different treatment components may be related to each of these concepts differentially. For example, to change an individual's expectancies related to the reduction of his or her drinking behavior an educational approach may have to be used where information about the actual pharmacological effects of alcohol are provided to the individual to challenge dysfunctional beliefs about alcohol's effects. On the other hand, skills training in areas which the individual has low perceived

efficacy may be used to help increase efficacy expectancies in regards to successfully moderating her or his drinking behavior.

Unfortunately, there are few empirical studies that have applied Bandura's self-efficacy theory to the study of changes in drinking behavior. The few studies that have focused for the most part solely on efficacy expectancies and these studies have demonstrated mixed results. While some researchers have found that efficacy expectancy is a significant predictor of post-treatment drinking behavior (Solomon & Annis, 1990; Annis & Davis, 1988), others have not found efficacy expectancy to be useful in the prediction of post-treatment drinking (Fromme, Kivlahan, and Marlatt 1986; Burling, 1989).

One study (Solomon & Annis, 1990) did look at self-efficacy and outcome expectancies simultaneously in a group of moderately alcohol dependent individuals, who averaged 12 drinks per day at intake. In this sample, intake self-efficacy expectancy ratings accounted for 16% of the variance in average daily consumption at follow-up in those who had relapsed. However, self-efficacy scores failed to predict abstinence at follow-up. Outcome expectancies at intake did not predict the level of consumption on any of the drinking measures at follow-up in this study.

The scarcity of alcohol studies which have applied Bandura's self-efficacy theory to their designs suggests a need to continue to test the utility of this theory within this area. The current study attempted this by studying a sample of college students. This sample allowed for an assessment of how self-efficacy theory behaved in a less abusive population compared to the population studied by Solomon and Annis (1990). This study attempted to modify efficacy and outcome expectancies related to moderate alcohol consumption, and determine subsequent changes in behavioral intentions to consume alcohol. Furthermore, two theoretical models that have attempted to conceptualize the relationships between outcome and efficacy expectancies and their roles in the prediction of behavior were tested. The design for this study was based on research by Maddux and his colleagues (1982, 1983). In the past, they have been successful in manipulating subject's outcome and efficacy expectancies related to smoking and assertive behaviors (1982, 1983). Their designs have used verbal persuasion in the form of written essays as the method to change these expectancies. This is one of the four sources of information which Bandura (1977) has indicated as useful in modifying expectancies. In the current study a between-subjects 2 (Efficacy: low versus high) X 2 (Positive Outcome: low versus high) X 2 (Negative Outcome: low versus

high) X 2 (Order of efficacy and outcome information presentation in the essays: Efficacy first versus Outcome First) factorial design was used. The factors were operationalized as essays describing research findings related to students' abilities to drink in moderation (Efficacy) and the likelihood of various outcomes (Positive and Negative) following moderate alcohol use. There was a high and low probability condition for each of these factors.

Hypotheses Expectancies by Condition

The following hypotheses test the ability of efficacy and outcome expectancies to be modified with information that is specific to each expectancy. It is hypothesized that subjects in the high efficacy condition will indicate greater efficacy in drinking in moderation compared to subjects in the low efficacy condition. Subjects in the high positive outcome condition will indicate that there is a greater likelihood that positive intrapersonal outcomes will occur if they drink moderately compared to those in the low positive outcome condition. Subjects assigned to the high negative outcome condition will indicate that there is a greater likelihood that negative interpersonal outcomes will occur if they drink moderately compared to subjects in the low negative outcome condition.

Subjects assigned to the low negative outcome condition will indicate greater efficacy concerning their ability to drink moderately in social situations compared to subjects who are assigned to the high negative outcome condition. Second, subjects assigned to the high positive outcome condition will indicate greater efficacy in their ability to drink in moderation in social situations compared to subjects assigned to the low positive outcome condition.

These two hypotheses are based on the conceptualization of the relationship between outcome and efficacy expectancies by several theorists (Eastman and Marzillier, 1984; Kazdin, 1978). They indicate that information that would influence outcome expectancies would also impact efficacy expectancies. This occurs because people's estimation of their ability to cope with a situation is strongly affected by their concern about the consequences of these acts. Thus, when making judgments of our perceived ability we consider the consequences of our behavior.

Subjects assigned to the high efficacy condition will indicate greater expectations that positive intrapersonal outcomes will occur if they drink in moderation as compared to subjects assigned to the low efficacy condition. Second, subjects assigned to the high efficacy condition will indicate that it is less likely that negative interpersonal

outcomes will occur if they drink moderately compared to subjects assigned to the low efficacy condition.

The above two hypotheses are based on Bandura's (1977,1989) conceptualization of the relationship between outcome and efficacy expectancies. Bandura states that because we place great importance on outcomes we look to our perceived ability to guide us in our actions. Individuals who perceive themselves as competent will envision positive outcomes. On the other hand, those who lack confidence will expect negative outcomes. Therefore, in these pursuits the types of outcomes that an individual envisions are largely based on her or his appraisal or efficacy expectancies of being able to perform at a certain level in a given situation.

Hypotheses Behavioral Intentions by Condition

Subjects in the low negative outcome condition will indicate intentions to drink less alcohol in the future compared to subjects in the high negative outcome condition. Second, subjects in the high positive outcome condition will indicate intentions to drink less alcohol in the future compared to subjects in the low positive outcome condition. Third, subjects in the high efficacy condition will indicate intentions to drink less alcohol in the future compared to subjects in the low efficacy condition.

Hypothesis Predictive Utility of Efficacy and Outcome Expectancies

Two theoretical models which have attempted to conceptualize the relationships between efficacy and outcome expectancies in regards to their predictive utility will be tested. First, Bandura (1989) proposes that outcome expectancies will follow from efficacy expectancies and therefore efficacy expectancies will be a better predictor of behavioral intentions to consume alcohol. Outcome expectancies will not add significantly to the prediction of behavioral intentions to consume alcohol beyond efficacy expectancies contribution.

Alternately, Eastman and Marzillier (1984) propose that both efficacy expectancies and outcome expectancies will be significant predictors of behavioral intentions to consume alcohol and that outcome expectancies will add to the prediction of behavioral intentions beyond efficacy expectancies.

Method

Subjects

A total of 80 subjects participated in the study in groups ranging from five to twenty. Subjects were undergraduate college students recruited through the introductory psychology pool. Students who typically consumed at least 2 drinks per drinking occasion

and outcome information in the essays was counterbalanced with some subjects receiving efficacy information first and others receiving outcome information first. Subjects were randomly assigned to the sixteen different conditions with 5 subjects per cell. The dependent variables assessed in the study were efficacy expectancy, positive intrapersonal outcome expectancy, negative interpersonal outcome expectancy, future frequency of moderate and heavy drinking occasions, future average drinks per occasion.

Procedure

Upon arriving, subjects were given an informed consent form (see Appendix A pgs. 61-63). The contents of the consent form were reviewed orally with the subjects by the experimenter. Subjects were asked to sign the consent form and a duplicate copy of the consent form was offered to the subjects. Subjects were then asked several single-item quantity-frequency questions related to their current alcohol use (see Appendix B pgs. 64-66). Next, subjects were given a definition of moderate drinking which helped orient them to single-item questions which assessed their recent moderate and heavy drinking, the essay on moderate alcohol use, and to several questionnaires related to moderate alcohol consumption. Blood Alcohol Level (BAL), which is the ratio of alcohol to blood in the bloodstream, was used as an operational definition of

participated in this study. One drink was defined as 12 oz. of beer, 4 oz. of wine, or one standard cocktail containing 1 oz. of 86 proof liquor. The sample's composition was 73.8% women, with a mean age of 19.5 (SD = 1.19). Subjects reported on average drinking 7.98 days (SD = 4.22) over the previous 30 days. On each drinking occasion they consumed on average 4.94 drinks (SD = 2.80). Subjects drank alcohol over a 4 hour period without exceeding a blood alcohol level of .05% (alcohol per part blood) on average 3.70 (S.D. = 3.18) times over the previous 30 days. Subjects reported drinking enough alcohol to have a blood alcohol level of .10% or above over a 4 hour period on average 4.16 (S.D. = 3.62) times over the past 30 days.

Design

A between-subjects 2 (Efficacy: low versus high) X 2 (Positive Outcome: low versus high) X 2 (Negative Outcome: low versus high) X 2 (Order of efficacy and outcome information presentation in the essays: Efficacy first versus Outcome first) factorial design was used in this study. The factors were operationalized as essays describing research findings related to students' abilities to drink in moderation (Efficacy) and the likelihood of various outcomes (Positive and Negative) following moderate alcohol use. There was a high and low probability condition for each of these factors. The presentation of the efficacy

moderate drinking. BAL is determined by calculating the milligrams of alcohol per 100 millimeters of blood. BAL is typically reported as a percentage (e.g., .10% = 100 mg = one part alcohol for every thousand parts of blood). Using a BAL conversion table (see Appendix C pgs. 67-69), subjects were instructed on how to determine the number of standard drinks that they could consume over a 4 hour period so as to maintain a BAL of .05% or below. Furthermore, they used BAL conversion tables to determine the number of standard drinks they would have to drink in order to obtain a BAL of .10% or higher. Subjects inserted these values into questions assessing their recent moderate and immoderate alcohol use and into the blanks on the dependent measures of future frequency of moderate and immoderate drinking occasions. Next subjects inserted into the blanks of the expectancy measures their idiosyncratic values for moderate alcohol use. The use of alcohol and expectancy measure conceptualized on blood alcohol levels standardized the dependent drinking and expectancy measures across subjects.

Following the completion of these measures a timeline follow-back technique (Sobell, Sobell, Klajner, Pavan, & Basian 1986) was used to obtain evidence of the reliability of the single-item measures of alcohol consumption (see Appendix D pg. 70-73). The timeline follow-back technique presented subjects with a calendar and asked them to provide

retrospective estimates of their drinking over a 30 day period.

After the alcohol use questionnaires were collected, subjects read an essay which they were told was for use in a more comprehensive educational program on alcohol and college students. The essay they read was based on their assignment to one of the sixteen experimental conditions. The essays varied in content on the dimensions of efficacy, positive and negative outcomes related to moderate alcohol use, and the order in which they received efficacy and outcome information in the essays. There was a high and low probability condition for the efficacy, positive and negative outcome factors. For example, in the efficacy high condition (see Appendix E pgs. 74-76) subjects were told that students have been successful in avoiding drinking beyond moderate levels by using such coping behaviors as keeping track of the number of drinks they consumed and by avoiding drinking with those who pressured them to drink. In the efficacy low condition (see Appendix F pgs. 77-79) subjects were told that it is quite difficult for students to use these coping behaviors in order to drink moderately. In the positive outcome high condition (see Appendix G pgs.80-82) subjects were told that positive intrapersonal outcomes such as having more energy and feeling healthier were very likely to occur when college students reduced

their drinking to moderate levels. On the other hand, subjects in the positive outcome low condition (see Appendix H pgs. 83-84) were told that the likelihood of these positive intrapersonal outcomes occurring was low. Similar manipulations were used for the negative outcome high (see Appendix I pgs. 85-86) and low conditions (see Appendix J pgs. 87-88). For example, subjects in the negative outcome high condition were told that it was likely that negative interpersonal outcomes such as being pressured to drink and feeling left out when others are drinking would occur if college students drank in moderation. Subjects in the negative outcome low condition were told that there was a low probability that these negative interpersonal outcomes would occur following moderate alcohol use. In each condition some fictitious studies were cited in order to accentuate the likelihood of the outcomes or ability differences. This was done because there is a paucity of information in the literature on the extent to which students can drink in moderation and the types of outcomes that are related to moderate alcohol use. Thus, in order to convey a convincing message fictitious information was used in the essays. During debriefing this deception was made clear to each subject through written and verbal communications.

After reading the essay, subjects completed three questionnaires which assessed outcome (see Appendix K pgs 89-91) and efficacy expectancies (see Appendix L pgs 92-94) related to moderate alcohol consumption. Subjects then answered questions assessing the amount they planned to drink in social situations in the future (e.g. on average how many drinks will you consume in social situations in the next month). (see Appendix M pgs 95-96), and the clarity and believability of the essay (see Appendix N pg. 97-98).

The questionnaires were collected and debriefing occurred. Subjects were given a verbal and written statement (see Appendix O pgs 99-101) of the true purpose of the study. Any misinformation given to manipulate the dependent variables and accurate information was communicated to the subjects. The floor was opened for any questions subjects had related to the study. At that time, the opportunity to ask questions about the study was offered to the subjects, and they were given a phone number to contact the experimenter if they wished to find out the results of this study or if they had anymore questions they wanted answered. Subjects were then asked to refrain from discusssing the true purpose of this study, so as not to bias future subjects.

Measures

Drinking Measures. In order to establish subjects' recent alcohol consumption patterns single-item quantity-frequency measures were completed by the subjects. The single-item measures assessed average drinks per day, over the past 30 days, frequency of alcohol use over the past 30 days, total drinks consumed over the past 30 days, and frequency of moderate alcohol use and frequency of heavy alcohol use over the past 30 days.

In order to assess the reliability of the single-item alcohol measures the timeline follow-back technique was completed by the subjects. The timeline follow-back technique (Sobell, Sobell, Klajner, Pavan, & Basian, 1986) presented subjects with a calendar and asked them to provide retrospective estimates of their drinking over a specified period, in this case a 30 day period was assessed. Subjects were prompted to use memory aides to help them recall their drinking, including listing key dates on the calendar (e.g. dates of parties, when bands played, and test dates), using appointment books to recall drinking occasions, and converting quantities of various beverages to a common alcohol unit using a standard drink conversion table. The time-line follow-back technique has been shown to demonstrate high test-retest reliability across various populations including college students (Sobell & Sobell,

1991). Furthermore, Sobell and Sobell (1991) indicated that drinking variables derived from the timeline follow-back technique have been shown to be significantly positively correlated with two established measures of alcohol related problems (Alcohol Dependence Scale: Skinner & Allen, 1982; Short Michigan Alcohol Screening Test: Selzer, Vinokur, & Van Rooijen, 1975). These findings suggested that the timeline follow-back technique was an appropriate measure to use in order to evaluate the reliability of single-item quantity-frequency measures.

The flexibility of the timeline follow-back technique allowed for the construction of three drinking indices which were comparable to those assessed using single-items. First, average drinks per day assessed the average number of drinks each subject consumed on each day over the past 30 days. Second, frequency of alcohol use assessed the number of days over the last 30 days that a subject consumed alcohol. Third, total quantity of alcohol consumed assessed the total number of drinks that subjects consumed over the previous 30 days. The correlation coefficient between the index of average drinks per day assessed with the timeline follow-back technique and the index of average drinks per day assessed with a single-item question was found to be .85. The correlation between the index of frequency of alcohol use assessed with the timeline follow-back method

and the index of frequency of alcohol use assessed by the single item question was .98. The correlation coefficient between the index of total drinks consumed assessed with the timeline follow-back technique and the index of total drinks consumed assessed with the single item question was .93. The high correlations found between the two different methods used to assess the recent drinking indices suggest that the single-item drinking measures used in this study were reliable.

Single-item questions which were similar to the items used to assess subjects' past alcohol use were used to assess subjects' intentions to drink alcohol in the next 30 days. First, future number of drinks per occasion assessed the average number of drinks each subject intended to consume during drinking episodes over the next 30 day period. Second, future frequency of moderate drinking occasions, which was individually defined, assessed the number of times that a subject intended in the next 30 days to drink alcohol over at least a 4 hour period but not exceed a blood alcohol level of .05%. Third, future frequency of heavy drinking occasions assessed the number of times over the next 30 days that a subject intended to consume enough alcohol to reach a blood alcohol level of .10% or higher over at least a 4 hour period. These 3 drinking variables served as primary dependent measures.

To explore if subjects' past alcohol consumption patterns moderate efficacy and outcome expectancy information effects on efficacy and outcome expectancies, and intentions to drink alcohol an index of heavy drinking was constructed from the timeline follow-back data. For each subject the number of drinks he or she would have to consume in order to obtain a BAL of .10% or higher was identified. The number of days subjects reported drinking this number of drinks or higher over the past 30 days was counted. This value was defined as each subject's frequency of heavy drinking days. Subsequently, subjects' heavy drinking days served as a factor when the data was re-analyzed to test for possible interaction effects of past heavy drinking and expectancy information on the dependent measures.

Outcome expectancy measure. (See Appendix K pgs. 89-91) which was adapted from Solomon and Annis' (1989) outcome expectancy scale assessed how strongly an individual expected certain consequences to happen to him or her if he or she refrained from drinking above moderate levels. Several items related to outcomes which are specific to college students were added to the original scale to make it more applicable to college students (e.g. I would have less conversations when I am in social situations, I would do better in school). On a likert scale ranging from 1-5 where

1 is equivalent to strongly disagree and 5 is equivalent to strongly agree, subjects rated the likelihood that certain events would occur if they refrained from drinking above moderate levels. Factor analysis from a pilot study with college students suggested two subscales. One subscale assessed how strongly a person expected positive outcomes to happen to him or her if they refrained from drinking above moderate levels. For the purpose of the current study ten items related to positive intrapersonal outcomes were retained on the scale (eg. I would have more energy to do things, I would feel better about myself). The alpha coefficient of reliability for this subscale was .71. The second subscale assessed how strongly a person expected certain negative outcomes to happen to her or him if she or he refrained from drinking above moderate levels. For the purpose of the current study nine items related to negative interpersonal outcomes were retained on the scale (eg. I would feel pressured more often by friends to drink, I would feel more awkward in social situations). The alpha coefficient for the second subscale was found to be .81. For each of these subscales, scores were computed for subjects by summing items on the specific scale. This yielded indices of each subject's beliefs related to the outcomes that would occur if they drank moderately. On the first scale the range of possible scores were from 0 to 50.

The range of possible scores on the second subscale were from 0 to 45. Higher scores reflected stronger beliefs that specific outcomes would occur if they refrained from drinking above moderate levels.

Self-efficacy scale. (see Appendix L pgs. 92-94) which was adapted from the Situational Confidence Questionnaire (Annis and Graham, 1988) assessed an individual's perceived ability to avoid drinking above moderate levels in various social situations where alcohol was being served. Several items related to situations in which students may drink (e.g. fraternity party, happy hour) were added to the scale. Factor analysis in a separate college student sample suggested that the self-efficacy scale was a unitary scale tapping into students' abilities to drink in moderation in social situations. This scale consisted of 14 items and its alpha coefficient was .92. Subjects indicated on a scale ranging from 0-100 how confident they were that they could drink in moderation in specific social situations where higher scores reflected a higher degree of confidence in their ability to drink in moderation in each situation. For this scale, total scale scores were computed by adding subject's scores for each individual item on the scale, this total was then divided by the number of items on the scale. This yielded an index ranging from 0-100 where higher scores

reflected greater confidence in refraining from drinking above moderate levels in social situations.

Manipulation Check. Subjects were asked several questions which assessed how interesting the essay was, the clarity of the essay, believability of the essay, ability of the essay to influence drinking behavior and beliefs about alcohol use. On a likert scale ranging from 1-5 where 1 is equivalent to strongly disagree and 5 is equivalent to strongly agree, subjects rated these non-specific qualities of the essays (e.g. the information in the essay was believable, the information in the essay was interesting)

Results

Order Effects

A 2 (Efficacy : Low versus High) X 2 (Negative Outcome: Low versus High) X 2 (Positive Outcome: Low versus High) X 2 (Order of efficacy and outcome information presentation in essays: Efficacy first versus Outcome first) multivariate analysis of variance (MANOVA) was performed on scales representing outcome expectancy, efficacy expectancy, future drinks per occasion, future frequency of moderate drinking occasions, and future frequency of heavy drinking occasions. This was done in order to test for possible effects of the order in which subjects received outcome expectancy and efficacy expectancy information on their subsequent ratings of their outcome expectancy, efficacy expectancy and

intentions to drink alcohol measures. The analysis revealed no significant multivariate effects on subjects ratings on their outcome expectancy, self-efficacy expectancy, and future alcohol use measures. This suggests that the order in which they received outcome and efficacy expectancy information in the essays did not effect their rating of their expectancies or intentions to drink measures. Since no order effects were found in this analysis the order factor was removed from further analyses in the study.

Randomization Check

A 2 (Efficacy : Low versus High) X 2 (Negative Outcome: Low versus High) X 2 (Positive Outcome: Low versus High) multivariate analysis of variance (MANOVA) was performed on measures of average quantity of alcohol consumed per occasion, frequency of moderate alcohol use, and frequency of heavy alcohol use in order to determine if there were differences in subjects' past drinking history based on their assignment to the various expectancy conditions. The results indicated no significant multivariate differences in past alcohol use based on subjects' assignments to the various efficacy and outcome expectancy conditions. This finding suggests that random assignment of subjects to the different expectancy conditions was successful.

Manipulation Check

MANOVA was used to test for effects of expectancy conditions on subjects' evaluations of the essays on measures of how interesting the essay was, the clarity of the essay, believability of the essay, ability of the essay to influence drinking behavior and beliefs about alcohol use. No significant effects were found. Therefore, essays appeared to be comparable in terms of the nonspecific qualities of interest, clarity, believability, and influence.

Dependent Measures

Data were analyzed using 2 (Efficacy: Low versus High) X 2 (Positive Outcome: Low versus High) X 2 (Negative Outcome: Low versus High versus) analysis of variance (ANOVA) on scales representing self-efficacy expectancy, positive intrapersonal outcome expectancy, and negative interpersonal outcome expectancy. The analyses were run in order to determine if the expectancy conditions impacted expectancies in the expected direction. The Student Newman-Keuls multiple range test was used to explore further the pattern of findings following significant interaction of two or more factors.

A main effect of efficacy, $F(1,72) = 5.86, p < .05$, on the self-efficacy measure indicated that subjects who were assigned to the efficacy high condition reported greater

efficacy in drinking in moderation with a mean of 66.74 (SD = 17.39) compared to subjects assigned to the efficacy low condition with a mean of 55.75 (SD = 22.10). No main effects of the positive outcome or negative outcome manipulations on efficacy expectancies were found. Furthermore, there were no interaction effects revealed on the efficacy expectancy measure.

A main effect of positive outcome, $F(1,72) = 5.84, p < .05$, on the positive outcome expectancy scale revealed that subjects who were assigned to the positive outcome high condition indicated a greater likelihood that positive outcomes would occur if they drank moderately with a mean of 35.60 (SD = 6.01) compared to those assigned to the positive outcome low condition with a mean of 32.37 (SD = 5.80). No significant negative outcome or efficacy main effects on positive intrapersonal outcome expectancies were revealed. Furthermore, no interaction effects on positive intrapersonal outcome expectancies were found.

A main effect of negative outcome, $F(1,72) = 27.62, p < .001$, was observed on the negative outcome expectancy scale. Subjects in the negative outcome high condition indicated that there was a greater likelihood that negative interpersonal outcomes would occur if they drank moderately with a mean of 27.25 (SD = 6.20) compared to those assigned

to the negative outcome low condition with a mean of 19.25 (SD = 6.45).

The main effect of negative outcome level, however, was qualified by a two-way interaction of negative outcome by efficacy, $F(1,72) = 5.14, p < .05$. As shown in table 1 subjects exposed to high probability negative outcome information did not vary on the measure of negative interpersonal outcomes as a function of the efficacy condition. However, given low probability of negative outcome subjects' measures of negative interpersonal outcomes were significantly different depending on the level of efficacy information given to them. Under low probability of negative outcome conditions subjects who received high efficacy information expected less negative outcomes to occur.

Similar ANOVAs were performed on measures of future drinks per occasion, future frequency of moderate drinking occasions, and future frequency of heavy drinking occasions (see Table 2) in order to assess possible expectancy condition effects on intentions to drink alcohol over the next 30 days. The results indicated no significant main effects or interaction effects of expectancy conditions on any of the future drinking indices.

Outcome expectancies can be conceptualized as being based on an individual's learning history for a particular

Table 1.

Subjects' Negative Interpersonal Expectancies by Negative Outcome and Efficacy

Condition	Negative Outcome Low	Negative Outcome High
Efficacy Low		
<u>M</u>	22.05	26.20
<u>SD</u>	7.20	4.58
Efficacy High		
<u>M</u>	17.85	28.30
<u>SD</u>	4.91	7.45

Student Newman-Keuls Post Hoc Comparisons, $p < .05$

28.30 > 17.85

26.20 > 17.85

22.05 > 17.85

26.21 > 22.05

28.32 > 22.05

Note. M = mean; SD = Standard Deviation.

Table 2.

Future Alcohol Use Indices Means and Standard Deviations

Drinking Index	Mean	Standard Deviation
Future drinks per occasion	4.65	2.40
Future frequency of moderate drinking	3.51	2.90
Future frequency of heavy drinking	3.83	3.23

event. Thus, one's past experiences are evaluated in determining the likelihood of potential outcomes. Furthermore, Bandura (1978) has indicated that the source of information that most strongly influences one's self-efficacy is personal experience. In the case of intentions to consume alcohol you would then expect past alcohol use to play a major role in determining how efficacy and outcome expectancy information influences efficacy and outcome expectancies, and intentions to drink alcohol. Thus, in order to explore these relationships a factor was constructed based on recent frequency of heavy drinking occasions. The measure of frequency of heavy drinking occasions was submitted to a median split and subjects were blocked into two groups. Subjects with more occasions of drinking at a .10% BAL level or higher over the last 30 days were placed in one group labeled high heavy drinking ($\bar{M} = 7.29$; $SD = 2.77$), subjects with lower values on this index were placed in a second group termed low heavy drinking ($\bar{M} = 1.33$; $SD = 1.05$). Data were then re-analyzed using 2 (Efficacy: Low versus High) X 2 (Positive Outcome: Low versus High) X 2 (Efficacy: Low versus High) X 2 (Heavy Drinking: Low versus High) analysis of variance on the efficacy expectancy, positive intrapersonal outcome expectancy, negative interpersonal outcome expectancy, and intentions to drink alcohol measures.

A main effect of heavy drinking on positive outcome expectancies, $F(1,64) = 4.01, p < .05$, revealed that subjects who drank heavily reported that it was less likely that positive outcomes would happen to them if they drank in moderation with a mean of 32.55 ($SD = 5.08$) compared to subjects in the study who drank heavily on fewer occasions with a mean of 35.28 ($SD = 4.39$). Furthermore, a main effect of heavy drinking $F(1,64) = 5.40, p < .01$, indicated that subjects who drank heavily reported less confidence in their ability to drink in moderation with a mean of 55.00 ($SD = 19.09$) compared to subjects who drank heavily on fewer occasions with a mean of 66.80 ($SD = 20.38$). No main effects were found for heavy drinking on negative interpersonal outcome expectancy. Results demonstrated no significant interaction effects on any of the expectancy variables.

A 2 (Efficacy: Low versus High) X 2 (Positive Outcome: Low versus High) X 2 (Negative Outcome: Low versus High) X (Heavy Drinking: Low versus High) analysis of variance on future frequency of heavy drinking occasions revealed a two-way interaction of efficacy by heavy drinking $F(1,64) = 4.69, p < .05$ (see Table 3). Heavy drinking subjects who were exposed to the efficacy low condition reported greater intentions of drinking heavy in the next 30 days compared to

Table 3.

Subjects' Future Frequency of Heaving Drinking by Efficacy Level and Heavy Drinking Frequency

Condition	Heavy Drinking High Frequency	Heavy Drinking Low Frequency
Efficacy High		
<u>M</u>	5.27	2.28
<u>SD</u>	2.33	2.14
Efficacy Low		
<u>M</u>	7.00	1.58
<u>SD</u>	3.35	2.04

Student Newman-Keuls Post Hoc Comparisons, $p < .05$

7.00 > 1.58

7.00 > 2.27

7.00 > 5.27

5.27 > 1.58

5.27 > 2.27

Note. M = mean; SD = standard deviation

heavy drinking subjects who were exposed to the efficacy high condition. Efficacy information did not affect light drinkers intentions to drink heavy. No main effects or interaction effects were found on future drinks per occasion or future frequency of moderate drinking occasions.

Predictive Utility of Expectancies

The relative utility of outcome and efficacy expectancies in predicting different indices of drinking were compared by using regression analyses. Each measure of drinking was regressed hierarchically on efficacy expectancy followed by the two outcome expectancy scales entered as a block. The regression was performed again, first entering outcome expectancies as a block, and then adding efficacy expectancy to the equation. Comparison of the amount of variation in drinking behavior explained by each construct after controlling for the other construct allowed for an assessment of their relative utility.

Results indicated that efficacy expectancies was unable to predict a significant amount of variance in future frequency of moderate drinking occasions when efficacy expectancy was entered first into the regression equation (see Table 4). Outcome expectancy was then entered into the equation it did not contribute significantly to the prediction of future frequency of moderate drinking occasions beyond efficacy expectancy. When this procedure

Table 4.

Prediction of Future Frequency of Moderate Drinking Occasions

Step Number	Moderate Use Predictor	Change R Square	Sig of F
Step 1	Efficacy Expectancies	.0409	.072
Step 2	Outcome Expectancies	.0079	.730

Step Number	Moderate Use Predictor	Change R Square	Sig of F
Step 1	Outcome Expectancies	.0003	.988
Step 2	Efficacy Expectancies	.0484	.053

was reversed with outcome expectancy entered first and efficacy expectancy entered second neither variable was able to predict future frequency of moderate drinking occasions significantly.

In terms of future drinks per occasion efficacy expectancy explained 10% of the variance when it was entered into the regression equation first, outcome expectancy did not add to the prediction of future drinks per occasion beyond efficacy expectancy's contribution (see Table 5). When outcome expectancy was entered into the equation first it explained 9% of the variance in future drinks per occasion. Efficacy expectancy was then able to explain 5% of variance in future drinks per occasion beyond outcome expectancy's contribution.

Results of the regression analysis on future frequency of heavy drinking occasions revealed a pattern similar to the results obtained for future drinks per occasion (see Table 6). Efficacy expectancy explained 19% of the variance in future frequency of heavy drinking occasions when entered into the regression equation first, outcome expectancy was then unable to contribute to the prediction of future frequency of heavy drinking occasions beyond efficacy expectancy's contribution. However, when outcome expectancy was entered first into the equation it explained 9% of the

Table 6.

Prediction of Future Frequency of Heavy Drinking Occasions

Step Number	Moderate Use Predictor	Change R Square	Sig of F Change
Step 1	Efficacy Expectancies	.1897	.0001
Step 2	Outcome Expectancies	.0241	.317

Step Number	Heavy Use Predictor	Change R Square	Sig Of F Change
Step 1	Outcome Expectancies	.0910	.025
Step 2	Efficacy Expectancies	.1228	.0009

variance in future frequency of heavy drinking occasions, efficacy expectancy was then entered into equation and predicted an additional 12% of the variance in heavy alcohol use. This pattern of findings supports Bandura's contention that self-efficacy expectancy subsumes most of the predictive power of outcome expectancy. Thus, outcome expectancy does not add uniquely to the prediction of behavior beyond efficacy expectancy.

Discussion

The goals of this study were to attempt to modify efficacy and outcome expectancies related to moderate alcohol consumption, and determine subsequent changes in behavioral intentions to consume alcohol. Furthermore, two theoretical models which have attempted to conceptualize the relationships between efficacy and outcome expectancies with regards to their predictive utility were evaluated.

The results indicated that outcome and efficacy expectancies related to moderate alcohol use were affected by information specifically targeting them. First, subjects who were told that college students have the ability and have been successful at drinking in moderation indicated greater confidence in their ability to drink in moderation compared to subjects who were told that college students lack the ability to drink in moderation and are usually

unsuccessful in their attempts at drinking in moderation. This finding supports Bandura's (1977) hypothesis that verbal persuasion is useful in modifying people's efficacy expectancies. Second, subjects who were told that there was a high probability that positive intrapersonal outcomes would happen to college students who drank in moderation indicated that it was more likely that positive intrapersonal outcomes would happen to them if they drank in moderation compared to subjects who were told that there was a low probability that positive intrapersonal outcomes happen to college student who drank in moderation. Third, subjects who were told that there was a high probability that negative interpersonal outcomes happen to college students when they drank in moderation indicated a greater likelihood that negative interpersonal outcomes would happen to them if they drank in moderation compared to subjects who were told that there was a low probability that negative interpersonal outcomes would happen to college students when they drank in moderation.

The results did not find support for the hypothesis that negative and positive outcome information would significantly effect perceived efficacy. This hypothesis was based on the conceptualization of the relationship between outcome and efficacy expectancies put forth by several theorists (Eastman and Marzillier, 1984; Kazdin,

1978). They indicated that information that would influence outcome expectancies would also impact efficacy expectancies, presumably, because people's estimation of their ability to cope with a situation is strongly affected by their concern about the consequences of the acts. The lack of support for this hypothesis may be explained by Bandura's conceptualization. He believes that people can make judgements of their capabilities quite apart from the outcomes their performance may bring them. Perhaps when subjects in this study were asked to indicate their confidence in drinking in moderation in social situations they did not reflect on potential consequences of this behavior rather they focused on information about their past drinking experiences and other student's experiences with drinking in moderation. This interpretation is consistent with the pattern of results which found no effects of outcome information on student's efficacy expectancies and effects of efficacy information on student's efficacy expectancies.

No main effects were found for efficacy information on either positive or negative outcome expectancies. However, a two-way interaction of negative outcome by efficacy on negative interpersonal outcome expectancies was observed. Subjects who were exposed to low efficacy and low negative outcome information indicated higher expectations that

negative outcomes would happen to them if they drank in moderation relative to individuals exposed to high efficacy and low probability negative outcome information. These results go beyond Bandura's original conceptualization of efficacy and outcome expectancies. Bandura states that people look to their efficacy expectancy in evaluating the types of outcomes that would occur if they perform a given behavior. He believes that information related to the probability of outcomes is overshadowed by information related to peoples' estimation of their ability to perform a given behavior. For example, if a person perceives himself or herself as lacking the ability to drink in moderation then they would envision negative outcomes. However, the results of the study found that in some instances students consider both outcome and efficacy information when estimating the likelihood of various negative interpersonal outcomes related to moderate alcohol use. This finding tends to support Eastman & Marzillier's (1984) conceptualization of the relationships between outcome and efficacy expectancies. They believe that there is an interaction between outcome and efficacy information. Information related to a person's self-efficacy may suggest to that person that negative outcomes need not occur, information related to the probability of negative outcomes may also add equally to the person's appraisal of the

likelihood of various negative outcomes. Thus, people will consider both sources of information when estimating the likelihood of potential outcomes.

Several future drinking indices were used in exploring the relationship between the impact of outcome and efficacy information on future alcohol use. The drinking indices used were future drinks per occasion, future frequency of heavy drinking occasions, and future frequency of moderate drinking occasions. The results of the study found no support for any of the hypotheses which had outlined how expectancy information would effect future drinking intentions. First, subjects told that there was a low probability that negative interpersonal outcomes would occur if they drank in moderation did not indicate intentions to drink less alcohol in the future compared to subjects told that there was a high probability that negative interpersonal outcomes would occur if they drank in moderation. Second, subjects who were told that there was a high probability that positive intrapersonal outcomes would occur if they drank in moderation did not indicate intentions to drink less alcohol in the future compared to subjects who were told that there was a low probability that positive intrapersonal outcomes would occur if they drank in moderation. Third, subjects who were told that students have the ability and are successful at drinking in

moderation did not indicate intentions to drink less alcohol in the future compared to subjects who were told that it is very difficult for students to drink in moderation and that student attempts at this goal often fail.

The lack of support for effects of expectancy information on drinking indices may be related to the method in which expectancy information was communicated to the study's subjects. Bandura proposes that there are four sources in which people arrive determine their self-efficacy. The four sources are personal experience, vicarious learning, verbal persuasion, and affective states. These various sources of information not only influence efficacy expectancy but they also effect peoples' outcome expectancies. The most powerful source of expectancy information is personal experience. However, verbal persuasion the method used in this study is considered a relatively weak source of expectancy information compared to other sources. Furthermore, both outcome and efficacy expectancies are thought to mediate behavior change (Bandura, 1989; Eastman & Marzillier, 1984; Kazdin, 1978). Thus, if a person is presented with a weak source of expectancy information then the impact on expectancies may be weak and subsequently the mediating effects of expectancies on behavior change may also be weak, as in the case of this study's findings. In terms of

applied implications the findings do suggest that more powerful methods of disseminating expectancy information may be needed if we wish to impact on college students' drinking behaviors. As suggested by Bandura's theorizing, an intervention which focuses on changing college students' expectancies through personal experience may be found to result in the largest mediating effects on students' drinking behavior.

A second possible explanation for the lack of effects of expectancy information on future alcohol use may be that the subjects past alcohol use moderated the effects of expectancy information on future alcohol use. Both outcome and efficacy expectancy can be thought to be influenced by a person's learning history for a particular event. Thus, one's past experiences are considered when estimating the likelihood of potential outcomes and one's perceived efficacy. In the case of intentions to consume alcohol you would then expect past alcohol use to play a role in determining how efficacy and outcome expectancy information influence intentions to drink alcohol. This hypothesis was explored through post hoc analyses that indicated partial support for the hypothesis that past alcohol use moderates the effects of expectancy information on intentions to consume alcohol. A two-way interaction between efficacy expectancy information and past heavy alcohol use on future

heavy alcohol use was observed. Subjects who reported more occasions of heavy alcohol use over the last month, and were exposed to low efficacy information reported greater intentions of drinking heavily in the next 30 days compared to subjects who drank heavily during the previous 30 days and who were exposed to high efficacy information. The finding that the study was able to modify heavy drinkers intentions to drink heavy is promising since they are at risk for having more problems following alcohol use compared to their peers. This effect may have only been found with heavy drinking subjects because subjects who drank heavily less often probably have more experiences with drinking in moderation than heavily, thus, they may not have been influenced by information that communicated to them that drinking in moderation was difficult. However, heavy drinking subjects may have had fewer experiences with moderate alcohol use, thus, they may have considered the efficacy information communicated in the essays when estimating the number of occasions they intended to drink heavily.

The relative utility of outcome and efficacy expectancies in predicting different indices of alcohol use were explored in this study. Two competing hypothesis put forth in the literature were tested (Bandura, 1989 ; Eastman & Marzillier, 1984). The results indicated that efficacy

expectancies consistently predicted a significant proportion of variance in subject's future drinks per occasion and future frequency of heavy drinking occasions. Outcome expectancies were unable to add to the prediction of future drinks per occasion or future frequency of heavy drinking occasions beyond efficacy expectancy's contribution. This pattern of results support Bandura's contention that efficacy expectancy subsumes most of the predictive power of outcome expectancy. Thus, outcome expectancy does not add uniquely to the prediction of behavior beyond efficacy expectancy as hypothesized by Eastman & Marzillier (1987).

The results also indicated that neither outcome or efficacy expectancies were able to predict intentions to drink moderately. This is somewhat surprising since the expectancy measures were conceptualized around moderate drinking. In the case of efficacy expectancies, it may be that when students are asked to appraise their ability to drink in moderation they recall past heavy alcohol use occasions more easily than moderate use. Heavy drinking occasions may be more salient events compared to moderate drinking episodes. Thus, students may actually be rating their ability to not drink heavy rather than their ability to drink in moderation. This explanation is consistent with the finding that an efficacy expectancy measure based on

moderate alcohol use was able to predict intentions to drink heavy.

Several of the drinking indices assessed in the current study were individualized for each subject. That is, blood alcohol level, which is the ratio of alcohol to blood in the bloodstream, was used to construct operational definitions for heavy and moderate drinking. The same is true for the outcome and efficacy expectancy measures which assessed these constructs in the context of moderate drinking. This aspect of the study is a unique contribution to the alcohol literature. In the past outcome and efficacy expectancies of subjects' have been given no specific definition of heavy or moderate drinking (Annis & Davis, 1988; Solomon & Annis, 1990). Instead it has been left up to subjects to interpret what they consider heavy or moderate drinking. By giving subjects objective definitions of moderate and heavy drinking it allows for a more standardized evaluation of how outcome and efficacy expectancies are related to specific levels of alcohol use. Most of the research on college students which attempts to outline the amount of heavy and moderate drinking in this population has failed to consider factors such as the duration of a given drinking episode, the sex of the subject, and the body weight of the subject. These factors contribute to the blood alcohol level (BAL) that a person will achieve after drinking, blood alcohol

level has been shown to be related to the types of effects people feel after they drink and the types of behaviors they exhibit. Thus, in many studies, equivalent amounts of alcohol consumed by different subjects are considered to have the same effects. Traditionally binge drinking has been defined as consuming 5 or more drinks on a single occasion regardless of other factors. However, if a 220 pound man consumes 5 drinks over a 4 hour period his approximate BAL would be .005%. This BAL level by most standards would not be considered dangerous, however, if the same amount is consumed by a 120 pound women over a 5 hour period her BAL would be approximately .11%. Driving with a BAL of .11% would be high enough to have either a female or male arrested for driving while intoxicated. This example illustrates how assessment of drinking behavior, which is conceptualized on blood alcohol levels is a better method of assessing maladaptive drinking patterns compared to assessment techniques which assume that the effects of alcohol are homogeneous across individuals. Thus, future studies which attempt to delineate problematic drinking in college students should consider assessing alcohol use with indices that are based on BAL rather than measures that do not consider factors that may modify alcohol's effects on different individuals.

General Conclusions

The results indicate that outcome and efficacy expectancies related to moderate alcohol use were affected by information specifically targeting them. The results did not find support for the hypothesis that negative and positive outcome information would significantly effect perceived efficacy. The lack of support for this hypothesis was explained in the context of Bandura's conceptualization. Bandura indicates that people can make judgements of their abilities separate from the outcomes their performance may bring them. Thus, when asked to indicate their confidence in drinking in moderation subjects focused on information about their past drinking experiences and other students' experiences rather than the types of outcomes that would occur if they drank in moderation. Partial support was found for Eastman and Marzillier's (1984) conceptualization of the relationships between outcome and efficacy expectancies. They believe that there is an interaction between outcome and efficacy information. The study found that subjects' considered both efficacy and outcome information when evaluating the likelihood of negative interpersonal outcomes.

The results of the study found no support for effects of expectancy information on any of the future drinking indices. Two, explanations were given for this finding. First, subjects past alcohol use may have moderated the

effects of expectancy information on future alcohol use. This hypothesis was partially supported in the study where efficacy information affected heavy future heavy drinking for heavy drinkers but not for light drinkers. A second explanation was that written communications are a weak source of expectancy information and thus their impact on expectancies may be weak, subsequently, the mediating effects of expectancies on behavior change may also be weak. This explanation suggested that in order to impact on students' drinking behavior a more powerful source of expectancy information might be needed such as personal experience. In the future it may be beneficial to develop and evaluate interventions which focus on changing students' expectancies through personal experiences. For example, in order to change students' outcome expectancies related to moderate alcohol use students may be asked to keep a diary and record events that occur during moderate and immoderate drinking episodes. This may demonstrate to students that fewer negative consequences (e.g. arguments, blackouts, illnesses) occur if they refrain from drinking above moderate levels. Furthermore, it may also demonstrate to students that by drinking moderately they can still obtain the benefits associated with alcohol use such as tension reduction and social enjoyment. A second method that could be used to change student outcome expectancies related to

moderate alcohol use is to have students participate in social situations in the lab where they are given moderate amounts of alcohol to drink but believe they are drinking heavy amounts of alcohol. This may demonstrate to students that the effects they wish to obtain from alcohol may be obtained at moderate blood alcohol levels rather than high blood alcohol levels. In order to increase students efficacy in relation to drinking in moderation students could be taught coping skills such as drink refusal skills, and how to monitor their blood alcohol levels to avoid drinking above moderate levels. Increasing students efficacy in relation to moderate drinking through skills training may lead to decreases in maladaptive drinking behavior.

The contents of the essays in this study were similar to the information found in alcohol abuse prevention programs on college campuses. Typically, in these programs information on alcohol's effects is disseminated to students in written or oral form. The findings of this study suggest that this type of intervention may not be successful in reducing abusive drinking in college students. More experiential based interventions were proposed in this paper. Consistent with social learning principles these interventions may be found to have a more positive impact on maladaptive college student drinking behaviors than

interventions that focus on the provision of alcohol information. It is important for clinicians and researchers to explore these methods of changing college students maladaptive drinking behaviors. Thus, experiential based interventions should be implemented and evaluated to determine if they impact expectancies and drinking behaviors as proposed by Bandura's social learning theory (1977).

The relative utility of outcome and efficacy expectancies in predicting different indices of alcohol use were explored in this study. Support was found for Bandura's hypothesis which states that efficacy expectancy subsumes most of the predictive power of outcome expectancy, this was observed in terms of predicting future frequency of heavy drinking occasions, and future drinks per occasion. The study assessed students' intentions to drink, thus, the findings related to the predictive utility of efficacy and outcome expectancies need to be replicated in longitudinal studies that assess actual drinking behavior. This would allow for a more complete examination of the predictive utility of these two constructs.

References

- Alcohol and Health (1990, January). Seventh special report to the U.S. Congress. U.S. Department of Health and Human Services, Rockville, Maryland.
- Annis, H.M. & Davis, C.S. (1988). Self-efficacy and the prevention of alcoholic relapse: initial findings from a treatment trial, in T.B. Baker & D. Cannon (Eds) Assessment and Treatment of Addictive Disorders, pp. 88-112. New York, Praeger.
- Annis, H.M. & Graham, J.M. (1988) Situational Confidence Questionnaire (SCQ-39) User's Guide (Toronto, Addiction Research Foundation).
- Arnold, B.A., Taylor, C.B., Agras, W.S., & Telch, M.J. (1985). Enhancing agoraphobia treatment outcome by changing couple communication patterns. Behavior Therapy, vol. 16, 452-457.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. Psychological Review, vol. 84, 191-215.
- Bandura, A. (1984). Recycling misconceptions of perceived self-efficacy. Cognitive Therapy and Research, vol. 8(3), 231-255.
- Bandura, A. (1989). Human Agency in social cognitive theory. American Psychologist, vol. 44, 1175-1184.
- Bandura, A. (1991). Human Agency: The rhetoric and the reality. American Psychologist, vol. 46(2), 157-162.

- Bandura, A., and Schunk, D.H. (1981). Cultivating competence, self-efficacy, and intrinsic interest through proximal self-motivation. Journal of Personality and Social Psychology, vol. 41(3), 586-598.
- Beck, K.H., Lund, A.K. (1981). The effects of health threat seriousness and personal efficacy upon intentions and behavior. Journal of Applied Social Psychology, vol. 11 (5), 401-415.
- Burling, T.A., T.A., Reilly, P.M., Moltzen, & Ziff, D.C. (1989). Self-efficacy and relapse among inpatient drug and alcohol abusers: A predictor of outcome* Journal of Studies on Alcohol, vol. 50(4), 354-360.
- Condiotte, M.M., and Lichtenstein, E. (1981). Self-efficacy and relapse in smoking cessation programs. Journal of Consulting and Clinical Psychology, vol. 49(5) 648-658.
- Eastman, C., and Marzillier, J.S. (1984). Theoretical and methodological difficulties in Bandura's self-efficacy theory. Cognitive Therapy and Research, vol. 8(3), 213-229.
- Fromme, K. Kivlahan, D.R., and Marlatt, G.A. (1986). Alcohol expectancies, risk identification, and secondary prevention with problem drinkers. Advances in Behavior Research and Therapy, vol. 1, 1977-185.

- Godding, P.R., and Glasgow, R.E. (1985). Self-efficacy and outcome expectations as predictors of controlled smoking status. Cognitive Therapy and Research, vol. 9(5), 583-590.
- Hunt, W.A., Barnett, L.W., and Branch, L.G. (1971). Relapse rates in addiction programs. Journal of Clinical Psychology, vol 7, 455-456.
- Kazdin, A.E. (1978). Conceptual and assessment issues raised by self-efficacy theory. Advances in Behavior Research and Therapy, vol. 1, 177-185.
- Kirsch, I., Tennen, H., Wickless, C., Saccone, A.J., and Cody, S. (1983). The role of expectancy in fear reduction. Behavior Therapy, vol. 14, 520-533.
- Lee, C. (1984a). Accuracy of efficacy and outcome expectancies in predicting performance in a simulated assertiveness task. Cognitive Therapy and Research, vol. 8(1), 37-48.
- Lee, C. (1984b). Efficacy expectations and outcome expectations as predictors of performance in a snake-handling task. Cognitive Therapy and Research, vol. 8(5), 509-5-6.
- Maddux, J.E. Personal Efficacy. In Valerian J. Derlega, Barbara, A. Winstead, and Warren H.Jones (Eds), Personality: Contemporary Theory and Research (pp. 231-260). Chicago, Illinois: Nelson-Hall Publishers, 1991.

- Maddux, J.E., Sherer., and Rogers, R.W. (1982). Self-efficacy expectancy and outcome expectancy: Their relationship and their effects on behavioral intentions. Cognitive Therapy and Research, vol. 6(2), 207-211
- Maddux, J.E., and Rogers, R.W. (1983). Protection motivation and self-efficacy : A revised theory of fear appeals and attitude change. Journal of Experimental Social Psychology, vol. 19, 469-479.
- McIntyre, K.O, Lichtestein, E., and Mermelstein, R.J. (1983). Self-efficacy and relapse in smoking cessation: A replication and extension. Journal of Consulting and Clinical Psychology, vol. 51(4), 632-633.
- Rollnick, S., & Heather, N. (1982). The applicatation of Bandura's self-efficacy theory to abstinence-oriented alcoholism treatment. Addictive Behaviors, vol. 8, 121-127.
- Selzer, M.L., Vinokur, A., & van Rooijen, L. (1975). A self-administered Short Michigan Alcoholism Screening Test (SMAST). Journal of Studies on Alcohol, 36, 117-126.

- Sherry, P. & Stolberg, V. (1987). Factors affecting alcohol use by college students. Journal of College Student Personnel, vol. 28(4), 350-355.
- Shore, E.R. & Rivers, P.C. (1985). Peer pressure to drink: Implications for university administration and planning. Journal of Alcohol and Drug Education, vol. 30(3), 22-31.
- Skinner, H.A. & Allen, B.A. (1982). Alcohol dependence syndrome: Measurement and validation. Journal of Abnormal Psychology, 91, 199-209.
- Sobell, L.C., Sobell, M.B. (1991). Timeline follow-back: A technique for assessing self-reported alcohol consumption. In press in: Litten & J. Allen, (Eds.), Measuring alcohol consumption: Psychosocial and Biological Methods. New Jersey: Humana Press.
- Sobell, M.B., Sobell, L.C., Klajner, F., Pavan, D., and Basian, E. (1986). The reliability of a timeline method for assessing normal drinker college student's recent drinking history: Utility for alcohol research. Addictive Behaviors, vol. 11, 149-161.
- Solomon, K.E., and Annis, H.M. (1989). Development of a scale to measure outcome expectancy in alcoholics. Cognitive Therapy and Research, vol. 13(5), 409-421.

Solomon, K.E., and Annis, H.M. (1990). Outcome and efficacy expectancy in the prediction of post-treatment drinking behavior. British Journal of Addiction, vol. 85, 659-665.

Williams, S.M., Kinney, P.J. and Falbo, J. (1989). Generalization of therapeutic changes in agoraphobia: The role of perceived self-efficacy. Journal of Consulting and Clinical Psychology, vol. 57(3), 436-442.

Williams, S.M., Turner, S.M. & Peer, D.F. (1985). Guided mastery and performance desensitization treatments for severe acrophobia. Journal of Consulting and Clinical Psychology, vol. 53(2), 237-247.

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College Student Alcohol Project

CONSENT FORM

We are interested in your opinion about materials which we are planning to use as part of a comprehensive educational program on alcohol for college students. We are also interested in your beliefs and attitudes about the consequences of use of alcohol. The information gained will be important in increasing our understanding of college student drinking, so that education and prevention programs can be constructed to better meet the needs of the college student population. Participating in this study will take approximately one hour and you will receive one extra credit point for your psychology class.

If you agree to participate, you will be asked to read an essay related to alcohol use and college students, complete several questionnaires that assess your beliefs about the effects of alcohol, and your perceived ability to make changes in your alcohol consumption. You may refrain from answering any question.

All of your responses will be kept completely confidential and your name will be linked with your response only through a code number that appears at the top of this consent form and on the questionnaire. The signed consent form will be stored in a separate locked file cabinet from your responses on the questionnaires and only research staff who have signed oaths of confidentiality will have access to your data.

The only risk associated with participation in the study is the personal discomfort you may feel when answering questions about your beliefs and attitudes toward the use of alcohol. You may benefit from participation in this study by learning how research is conducted, by learning the

questions of the study, and how they are answered by the design and procedures. You will also have the opportunity to contact the experimenter if you wish to find out the results of the study and to ask questions regarding the study.

Your rights are as follows: a) You may refrain from answering any questions during the study. b) You are free to withdraw from the study at anytime, after a short debriefing, without penalty. If you decide not to participate, let the experimenter know immediately. The experimenter will explain the experiment in full and discuss it with you before you leave. c) If you feel discomfort as a result of your participation, appropriate referral for assistance will be made. d) The full rationale of the study will be explained to you in a debriefing session following the experiment.

The project has been approved by the Human Subjects Research Committee and the Institutional Review Board. Any questions may be addressed to the investigator, Curtis Greaves, at 231-7631 or 951-8140, the faculty sponsor, Dr. Robert Stephens, at 231-6304, or Helen Crawford, chair of the Human Subjects Committee, at 231-6581. You may also contact Ernest Stout, chair of Virginia Tech's Institutional Review Board, at 231-9359.

I hereby agree to voluntarily participate in the research project described above and under the conditions described above.

Name

Date

Student I.D. Number

APPENDIX B

1. Please indicate your sex. (1)___Female (2)___Male
2. Please put your age in the blank. ___ years
3. Please indicate which student status fits you best.
 - (1)___Freshman
 - (2)___Sophomore
 - (3)___Junior
 - (4)___Senior
 - (5)___Special Student

The following items ask about your recent use of alcohol. For items related to the number of drinks you consume, one drink is equal to 12 oz. of beer or 4 oz. of wine or one standard cocktail containing 1 oz. of 86 proof liquor (e.g. If you drank three 12 oz. can of beer and also had two 1 oz. shots of whiskey during the course of the evening this would be equivalent to 5 drinks).

4. We are interested in how frequently you drink alcohol beverages. In general over the past month, how many days did you have any drink containing alcohol, whether it was wine, beer, hard liquor or any other alcohol beverage? Please indicate your answer in the space provided.

___ number of days in last month

5. Think of all the times you drank over the past month. On average how many drinks did you consume on each occasion. By one drink we mean one 12 ounce drink of beer, one standard cocktail containing 1 ounce of 86 proof liquor, or one 4 ounce drink of wine. Please indicate your response in the space provided?

___ average number of drinks per drinking occasion.

6. Over the last month how many hours did you spend drinking on average during each drinking occasion?

___ average number of hours spent drinking during each drinking occasion

(NOTE: WAIT FOR THE EXPERIMENTER'S INSTRUCTIONS BEFORE YOU CONTINUE)

7. Over the last month how many times did you consume _____ or less drinks (But not 0 drinks) during a 4 hour period?

_____ number of occasions

8. Over the last month how many times did you consume _____ or more drinks during a 4 hour period

_____ number of occasions

APPENDIX C

What is Blood Alcohol Level (BAL)? BAL is the ratio of alcohol to blood in the bloodstream. BAL can typically be predicted from the amount of alcohol that is in an individual's bloodstream when that person's sex and weight are known. Throughout the essay and questionnaires we will refer to the term moderate drinking. Following this point on moderate drinking will be defined as maintaining a BAL of .050 or below during a 4 hour period. Below is the number of drinks it would take males and females, depending on their body weights, to achieve a BAL of .05 over a 4 hour period. (Note one drink is equal to 12. oz of beer or 4 oz. of wine or one standard cocktail containing 1 oz. of 86 proof liquor)

**For several of the questionnaires you will be asked to refer back to this chart. If you have any questions about how to interpret it please ask the experimenter.

BAL = .05 over a four hour period

Males		Females	
Number of Drinks		Number of Drinks	
< 110 LBS	3	<90 LBS.	2
110-129 LBS	4	90-109 LBS.	2
130-149 LBS	5	110-129 LBS.	3
150-169 LBS	5	130-149 LBS.	4
170-189 LBS	6	150-169 LBS.	5
190-209 LBS	7	170-189 LBS.	5
210-229 LBS.	7	190-LBS or more	6
230 LBS or more	8		

For several questions you will be asked to refer to the chart below in order to calculate the number of drinks you would have to consume in order to have at least a BAL of .10 during a 4 period.

BAL = .10 or above during a 4 hour period

Males

Females

Number of Drinks

Number of Drinks

< 110 LBS	4
110-129 LBS	5
130-149 LBS	6
150-169 LBS	7
170-189 LBS	8
190-209 LBS	9
210-229 LBS.	10
230 or more	11

<90 LBS.	3
90-109 LBS.	3
110-129 LBS.	4
130-149 LBS.	5
150-169 LBS.	6
170-189 LBS.	7
190-LBS or more	8

APPENDIX D

INSTRUCTIONS FOR COMPLETING THE TIMELINE CALENDAR

USING THE CALENDAR WHICH FOLLOWS, WE WOULD LIKE YOU TO RECALL YOUR DRINKING. THIS IS REALLY NOT A DIFFICULT TASK, ESPECIALLY WHEN YOU USE THE CALENDAR FOR REFERENCE. WE HAVE FOUND CALENDARS VERY USEFUL IN HELPING PEOPLE RECALL THEIR DRINKING. THE FOLLOWING ARE INSTRUCTIONS AND TIPS FOR COMPLETING THE CALENDAR.

- 1) It is important that for each day on the calendar, that you list the number of drinks you consumed. Remember by one drink we mean one 12 ounce drink of beer, one standard cocktail containing 1 ounce of 86 proof liquor, or one 4 ounce drink of wine.
- 2) On any day that you did consume an alcoholic beverage, write in the number of Drinks for each day. This includes days of combined beverage use. For example, on one day if you drank a 4 oz. glass of wine with dinner and a 12 oz. beer, you would count that as 2 drinks.
- 3) On all days that you did not drink any alcoholic beverage write "0". The important thing is to make sure that something is filled in for each day.
- 4) While some people have felt uncomfortable filling out the calendar at first, it is usually because they are concerned they can't give a precise day-by-day account of their drinking. While this would be nice, what we want you to do is use a daily estimation method which is your best recall or guess of what your drinking was like. Put down your best estimate.
- 5) In filling out the calendar, we would like you to be as accurate as possible. However, if you can't recall whether you consumed an alcoholic beverage on a Monday or Thursday of a certain week, or whether it was the week of November 9th or the week of November 16th, give it your best shot.

HELPFUL HINTS:

1. Write down days that are specific to yourself, such as birthdays, test dates, parties, band dates, etc. Marking down these special days can aid in your recall of when and how much you drank.
2. If you have a planner or appointment book available, you can use it to aid in your recall your drinking.

3. Sometimes people have certain patterns to their drinking and this can help you in filling out the calendar. For example, if you usually go out with friends Friday or Saturday nights, you might recall that you would have had a certain number of drinks on those evenings, or you may have a weekend change in your drinking, or your drinking may be different depending on the season or semester.

APPENDIX E

Efficacy High Condition

Whatever your decision about drinking moderately, you need to keep in mind that drinking moderately is not as difficult as you probably heard. Numerous studies have demonstrated that college students have the ability and are frequently successful in their attempts to drink moderately (Clark and Demonte 1991; Porter 1988). Drinking beyond moderate levels is a behavior which is learned like any other behavior, such as driving a car or exercising daily. Drinking moderately is a goal that with persistence can be achieved and has been achieved by many students like yourselves.

The way that many students achieve this goal of moderation is through the use of various behavioral strategies. Werch and Gorman (1988) studied 410 college students and found that self-control behavioral strategies were used naturally by these students to drink moderately. Student drinkers were extremely successful at using these strategies which included purposively taking slow sips, avoiding playing drinking games, avoiding drinking after stressful activities, and selecting drinks lower in alcohol content. Furthermore, students also limited their drinking to moderate levels by using body sensations to help them slow down their drinking when they began to feel intoxicated and by avoiding drinking with those who pressured them to drink.

A second study by Lee (1990) found similar results as Werch and Gorman's study (1988). In Lee's study students were found to have successfully used behavioral strategies such as keeping track of the number of drinks they consumed and substituting other means for feeling sociable. The strategies that students naturally use to successfully drink moderately are the same strategies taught to them. This occurs when students wish to learn more about their drinking or change their drinking behavior. For example, at the University of Michigan the Alcohol Skills Training program (Chambers et al 1991) recommends the use of various behavioral strategies. Recommendations such as setting time limits for how long they drink, selecting drinks lower in alcohol, and avoiding drinking in places they overdrink are made to students. In one study conducted by this group (Kivlahan et. al 1988) students in this program were found to be extremely competent at reducing their drinking. A 38.5% reduction in the number of drinks per week occurred in this group of students. Similar results have been found by Lane and her colleagues (1988). Thus, the above studies indicate that students are highly capable at refraining from

drinking above moderate levels and one way they achieve this goal is by using various behavior strategies.

APPENDIX F

Efficacy Low Condition

Whatever your decision about drinking moderately, you need to keep in mind that drinking moderately is a difficult task. Numerous studies have demonstrated that college students lack the ability and are frequently unsuccessful in their attempts to drink moderately (Clark and Demonte 1991; Porter 1988, Chambers, 1988). Drinking beyond moderate levels is a behavior which is a learned like any other behavior, such as driving a car or walking to class by the same route each day. Unlike learning a new route to class which is easy, drinking moderately is difficult. Even with great persistence most students fail at their attempts to drink moderately.

The way that many students attempt to reach this goal of moderation is through the use of various behavioral strategies. Werch and Gorman (1988) studied 410 college students and found that self-control behavioral strategies were used naturally by these students when attempting to drink moderately. Student drinkers were unsuccessful at using these strategies which included purposely taking slow sips, avoiding playing drinking games, avoiding drinking after stressful events, and selecting drinks lower in alcohol content. Furthermore, students were unable to limit their drinking to moderate levels by using body sensations to help them slow down their drinking and they were unable to avoid drinking with those who pressured them to drink beyond moderate levels.

A second study by Lee (1990) found similar results as Werch and Gorman's study (1988). In Lee's study students were not competent at using behavioral strategies. The strategies they attempted to use included keeping track of the number of drinks they consumed, and substituting other means for feeling good. Even when students are taught by professionals to use these behavioral strategies they can not drink moderately. For example, at the University of Michigan the Alcohol Skills Training Program (Morgan et al 1991) recommends the use of various behavioral strategies. Students are recommended to use such strategies as setting time limits for how long they drink, selecting drinks lower in alcohol, and avoiding drinking in places they overdrink. The results from this program have not been promising, in one study conducted by this group (Cardinelli et al. 1988) students in this program actually increased the amount they drank when they attempted to drink moderately. They found a 23% increase in the total number of drinks students consumed per week. Similar results have been found by Simon and Dantor (1990).

Thus, the above studies indicate that students have a great deal of difficulty in refraining from drinking above moderate levels. This occurs even when they attempt to use behavioral strategies and when they are taught by professionals to drink moderately.

APPENDIX G

Positive Outcome High Condition

Some things you may not know about college students and alcohol consumption.

Evidence shows that there are clear benefits to be obtained for college students who refrain from drinking above moderate levels. A recent study of 606 college students was conducted by O'Hare (1990). He found that students who reduced their alcohol intake from heavy to moderate amounts reported feeling more energetic, happier, and healthier. This finding can be explained in terms of the bi-phasic effects of alcohol and a drinker's Blood Alcohol Level (Baer et al. 1991). Blood Alcohol Level (BAL) is a ratio of alcohol to blood in the bloodstream. Alcohol consumption leads typically to different effects over time. At first people typically feel positive effects when their BAL is low and rising. Over time as your BAL falls, these more stimulating effects shift to more negative, depressant effects. People become less aroused when their BAL is decreasing, this is usually experienced as fatigue, being slowed down, or uncoordinated. A return to the initial stimulating state is desired, so individuals may have another drink. Unfortunately, the more someone drinks, the more profound the negative effects of the second phase. As your BAL begins to fall increasing the amount you drink makes things worse and you actually end up feeling more tired and sluggish in the long run. Continued drinking leads to passing out or unconsciousness which is an extreme form of the depressant effect. Thus, the negative effects of drowsiness, loss of energy, and uncoordination can be minimized by drinking moderately, and not building up a high BAL.

Researchers (Hall, 1989; Randall, 1988) have also found that students obtain other benefits when they drink moderately compared to heavily. College students report feeling better about themselves and more in control of things when they reduce the amount they drink from heavy to moderate levels. When reviewing students' grades in school, researchers (Hall, 1989; Piel 1990) have found that students who reduce their drinking to moderate levels subsequently increase their academic performance. These college students also reported missing fewer days of class due to their drinking with this reduction of high to moderate drinking. Furthermore, laboratory studies (Lewis, 1990; Edwards, 1989) have demonstrated that students who reduce their drinking to moderate levels perform better on several problem solving tasks compared to when they drank heavily in the past.

The studies presented have indicated that there is a high probability that many benefits will be obtained from

drinking moderately. The bi-phasic effects of alcohol as well as research on the effects of consuming high dosages of alcohol help explain why it is very likely that several positive outcomes will occur when you drink moderately compared to heavily.

APPENDIX H

Positive Outcome Low Condition

Some things you may not know about college students and alcohol consumption.

In the past some school administrators have stated that reductions in alcohol consumption would lead to clear benefits for college students who refrain from drinking above moderate levels. However, several studies have indicated that this is not the case (Sinclair, 1990; Conrad, 1989). O'Hare (1990) studied 606 college students. He found that college students who reduced their alcohol intake from heavy to moderate amounts reported that they did not feel happier, more energetic, or healthier after this change. This finding can be explained in terms of the bi-phasic effects of alcohol (Baer et al. 1991). Alcohol consumption leads typically to different effects over time. The initial positive effects usually occur a half-hour after consumption. However, overtime these more stimulating positive effects shift to more negative, depressant effects. People become less aroused, this is usually experienced as fatigue, being "slowed down" or uncoordinated. Regardless of if a subject drinks moderate or heavily these negative effects will still occur. There is no escaping feeling tired and sluggish from drinking this is due to the physiological properties of alcohol. Thus, the negative effects related to alcohol consumption is not related to the amount you drink, it is related to the fact that alcohol has been consumed and the body is attempting to metabolize it.

Similarly, researchers (Hall, 1989; Randall, 1988) have found that students probably will not obtain other benefits which were thought to be related to drinking moderately. For example, college students do not report that they feel better about themselves or in more control of things when they reduce the amount they drink from high to moderate levels. When reviewing college students grades in school, researchers (Armstrong 1990; Hall 1989) have found that students who reduce their drinking to moderate levels did not perform better in school. These students also reported that they missed as many classes as when they were drinking moderately. Furthermore, laboratory studies (Lewis, 1990; Edwards, 1989) have demonstrated that there are no significant differences on students' performance on several problems solving tasks after they reduce their drinking from heavy to moderate levels. The studies presented have indicated that the effects of drinking moderately compared to drinking heavy are negligible. The bi-phasic effects of alcohol as well as research on the effects of consuming alcohol at high dosages helps explain why there are probably few benefits to drinking moderately compared to heavily.

APPENDIX I

Negative Outcome High Condition

While there is a high (low) probability that certain positive outcomes will happen to you when you reduce your drinking from high to moderate levels, there is also (however) a high probability that other negative outcomes will occur because of this change. Specifically, it has been found that when students reduce their drinking from high to moderate levels there is a high probability that they will suffer from several negative social outcomes. They report feeling awkward in social situations, left out when others are drinking, and pressured to drink by their friends.

One way of understanding why there is a high probability that negative outcome social outcomes will occur is through Borke's Theory of Social Sensitivity (1987). When a student reduces the amount he or she drinks and refuses unwanted drinks, those people around him or her feel that this individual does not want to be part of the group. After he or she refuses drinks several times the people around stop interacting with him or her because they feel embarrassed and rejected by this person's refusal. Subsequently, that person feels more left out and lonely because people are not interacting with him or her. Borke's theory has been supported both in laboratory and naturalistic studies. In a naturalistic study (Hill 1990) students were observed drinking at a fraternity party. Subjects were asked to reduce their drinking rates to moderate levels. When they did this it was observed that these subjects were often isolated from the rest of the party. These students were surprised at how limited their interactions were in these situations and how lonely and rejected they had felt at that time. One week later these same subjects were sent back out to a party at the same fraternity house and they were told to not reduce their drinking from high to moderate levels. These subjects had more people initiate conversations with them during this party than the week before.

In an attempt to further understand why students are socially isolated when reducing their drinking from heavy to moderate levels Mitchell and Forster (1987) studied college student drinkers in a laboratory setting. Their results indicated that subjects were rejected by their peers when they drank at moderate levels. This laboratory study lends support for Borke's Theory of Social Sensitivity. It further demonstrates that there are negative social effects that occur when students drink moderately. Thus, there is growing support from laboratory studies, naturalistic studies, and from student self-reports that the probability is very high that negative social outcomes will happen to college students when they drink moderately.

APPENDIX J

Negative Outcome Low Condition

While there is a high (low) probability that positive personal outcomes will happen to you when you reduce your drinking from high to moderate levels, there is also (however) a low probability that negative social outcomes will occur because of this change. Specifically, it has been found that when students reduce their drinking from high to moderate levels they do not suffer from negative social outcomes. Contrary to what many students might believe, students who reduce their drinking to moderate levels do not report feeling awkward in social situations, pressured to drink by their friends or left out when others are drinking. In a recent study Kline and Gifford (1991) found that students who reduced their drinking to moderate levels had just as many friends after this reduction as compared to before this change was made. Decreasing the amount a student drank did not effect how often students were invited to parties or other social events.

One way of understanding what is occurring here is through Borke's Theory of Social Sensitivity (1987). When a student reduces the amount he or she drinks and refuses unwanted drinks, those people around him or her are likely to feel that this person wants to be accepted as he or she is. Because that person refuses drinks several times, the people around him or her feel that this person is socially skillful. Thus, she or he is admired by this group and positive social interactions between this person and other people are numerous.

Borke's theory has been supported both in laboratory and naturalistic studies. In a naturalistic study (Parks 1989), students were observed drinking at a fraternity party. Subjects were asked to reduce their drinking rates to moderate levels. When they did this it was found that these subjects were able to interact with others at the party. These students were surprised that their social interactions were similar to the ones they had when they drank at higher dosages a week before. Students reported that they felt accepted by their peers even though they had reduced their drinking to moderate levels. Mitchell (1989) has also demonstrated in a laboratory study that the probability is low that students would be rejected by their peers if they drank at moderate amounts. Thus, there is growing support from laboratory studies, naturalistic studies, and from student self-reports that the probability is very low that negative social outcomes will happen to students when they drink moderately.

APPENDIX K

Listed on this page are a number of consequences which people report happening to them when they limit their drinking to moderate levels in social situations (e.g. bars and parties). Indicate whether you agree or disagree that each of the following consequences would happen to you in these social situations if you limit the amount you drink to no more than ____ drinks in these social situations (e.g. bars and parties).

If I limit my drinking to no more than ____ drinks over a 4 hour period when I am in social situations (e.g. parties, and bars).

- Strongly Disagree - 1
- Disagree Somewhat - 2
- Neither Disagree or Agree - 3
- Agree Somewhat - 4
- Strongly Agree - 5

1. I would have less conversations when I'm in social situations (eg. parties or bars).	1	2	3	4	5
2. I would have more energy to do things.	1	2	3	4	5
3. I would be happier	1	2	3	4	5
4. I would be steadier on my feet.	1	2	3	4	5
5. I would be more self-confident.	1	2	3	4	5
6. I would feel pressured more often by friends to drink.	1	2	3	4	5
7. I would feel in more control of things	1	2	3	4	5
8. I would feel awkward when my friends offer me drinks.	1	2	3	4	5
9. I would be healthier.	1	2	3	4	5
10. I would feel more awkward in social situations.	1	2	3	4	5
11. The world would look better to me.	1	2	3	4	5
12. I would have more self-respect.	1	2	3	4	5
13. Some of my drinking friends would avoid me.	1	2	3	4	5

Strongly Disagree - 1
 Disagree Somewhat - 2
 Neither Disagree or Agree - 3
 Agree Somewhat - 4
 Strongly Agree - 5

14. I would feel more left out when others are drinking.	1	2	3	4	5
15. I would do better in school.	1	2	3	4	5
16. I would feel better about myself.	1	2	3	4	5
17. I would be rejected by others more often in social situations.	1	2	3	4	5
18. I would be offered drinks more often by my friends.	1	2	3	4	5

APPENDIX L

Listed below are a number of situations in which some people experience difficulty drinking moderately in. Imagine yourself in each of these situations. Indicate on the scale provided how confident you are that you would be able to limit your drinking to no more than ____ drinks over a 4 hour period.

	not at all confident					extremely confident
1. If I were out with friends and they stopped by a bar for drinks.	0	20	40	60	80	100
2. If I were at happy hour with a group of friends.	0	20	40	60	80	100
3. If I were enjoying myself at a party and wanted to feel even better.	0	20	40	60	80	100
4. If I were at a friends's place and they were playing drinking games.	0	20	40	60	80	100
5. If I were at a party and other people were drinking.	0	20	40	60	80	100
6. If I were out on a date and my date was drinking.	0	20	40	60	80	100
7. If I were at a fraternity party.	0	20	40	60	80	100
8. If I wanted to celebrate with a friend.	0	20	40	60	80	100
9. If I were in a restaurant and the people with me ordered pitchers of beer and mixed drinks.	0	20	40	60	80	100
10. If I were on a date and my date was drinking heavily.	0	20	40	60	80	100
11. If I were out with friends on the town and wanted to increase my enjoyment.	0	20	40	60	80	100
12. If I met a friend and he/she suggested that we have drinks together.	0	20	40	60	80	100

	not at all confident					extremely confident
13. If I were at a bar and the people around me were laughing and dancing.	0	20	40	60	80	100
14. If my friends were pressuring me to drink.	0	20	40	60	80	100

APPENDIX M

Questions 1-4 refer to your drinking behavior over the next 30 days

1. In the next 30 days how many days do you intend to consume any drink containing alcohol, whether it is wine, beer, or hard liquor in social situations (e.g. parties and bars)

_____ number of days in the next 30 days

2. In the next 30 days when you consume alcohol in social situations (e.g. parties or bars) how many drinks do you plan to consume on average.

_____ average number of drinks each occasion

3. Imagine yourself in drinking occasions that you will encounter in the next 30 days. In drinking occasions that will last at least 4 hours how many occasions do you intend to consume _____ or less drinks? (But not 0 drinks)

_____ number of occasions

4. Imagine yourself in drinking occasion that you will encounter in the next 30 days. In drinking occasions that will last at least 4 hours how many occasion do you intend to consume _____ or more drinks?

_____ number of occasions

APPENDIX N

Please use the scale provided for items 1-6)

Strongly Disagree = 1
Disagree Somewhat = 2
Neither Disagree or Agree = 3
Agree Somewhat = 4
Strongly Agree = 5

- | | | | | | |
|--|---|---|---|---|---|
| 1. The information in the essay was clear and understable. | 1 | 2 | 3 | 4 | 5 |
| 2. The information in this essay made sense. | 1 | 2 | 3 | 4 | 5 |
| 3. The information in this essay was interesting. | 1 | 2 | 3 | 4 | 5 |
| 4. The information in this essay influenced your beliefs about alcohol. | 1 | 2 | 3 | 4 | 5 |
| 5. The information in this essay made you want to change your drinking habits. | 1 | 2 | 3 | 4 | 5 |
| 6. The information in this essay was believable. | 1 | 2 | 3 | 4 | 5 |

APPENDIX O

Debriefing Statement

The purpose of this study was to investigate how two cognitive concepts behave in various situations. The constructs studied were efficacy and outcome expectancies. These constructs come from Albert Bandura's Social Learning Theory. In this study efficacy expectancies were defined as an individual's perceived ability to control his or her drinking behavior. Individual's who have high efficacy expectancies would be expected to control their drinking in high risk situations. Outcome expectancies were defined in this study as a person's estimate that drinking alcohol will lead to certain outcomes. These expectancies may also lend in the prediction of drinking behavior.

Misinformation was used in this study in an attempt to manipulate peoples' efficacy and outcome expectancies related to alcohol consumption. The essay you read was fictitious to some degree depending upon the condition you were assigned. In these essays you were given the following information: 1) that it was either very easy to limit your drinking to moderate levels or very difficult to obtain this goal; 2) that there was either a high probability that certain positive outcomes (e.g. feeling happier, more energetic) would happen to you if you reduced your drinking to moderate levels or that there was a low probability that these outcomes would occur with this change; 3) and that there was either a high probability that certain negative social outcomes (e.g. friends avoiding you) would happen to you if you reduced your drinking to moderate levels or that there was a low probability that these outcomes would occur with such a change. The results obtained from this study will help identify under which conditions efficacy and outcome expectancies can be modified.

In order to correct any misconceptions that may have been created by the use of fictitious information, please read the following points carefully:

1) There is no definite proof to date that indicates that changing one's drinking to moderate levels is a difficult task. In fact, studies have shown that the use of various coping behaviors (e.g. purposively taking slow sips on one's drink) similar to the ones discussed in the essay have been identified as useful by college students who wish to drink moderately.

2) The types of outcomes that were identified as negative consequences of reducing one's drinking to moderate levels are fictitious. Contrary to these statements it has been shown that students who drink moderately as compared to

heavily report fewer problems in school, drinking and driving, and illnesses related to their drinking.

VITA

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BIOGRAPHY

Birth Date:	May 24, 1966
Birth Place:	Brooklyn, New York
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EDUCATION

Pennsylvania State University,
University Park, PA 1988-1990

Major Area: Psychology
Degree: Bachelor of Science
Honors: Graduate with Distinction

Virginia Polytechnic Institute
and State University
Blacksburg, Virginia 1990-present

Graduate Student
Major Area: Clinical Psychology

CLINICAL POSITIONS

Virginia Polytechnic Institute
and State University
Counseling Center
Blacksburg, Virginia
Externship, 480 hours 1992-1993

Inpatient assessment and individual and
group treatment of adults
Supervisor: R. Miller, Ph.D.

Psychological Services Center, Virginia Tech
Blacksburg, Virginia
Practicum, 330 hours

1991-1992

Outpatient assessment of treatment of adults
Supervisors: R. Jones, Ph.D.; R. Stephens, Ph.D.
Outpatient group treatment of adults
Supervisors: R. Stephens

Psychological Services Center, Virginia Tech
Blacksburg, Virginia
Practicum, 180 hours

Outpatient assessment and treatment of children and adults
Supervisors: R. Stephens, Ph.D.; C. Pickett, Ph.D.

MEMBERSHIP IN PROFESSIONAL ASSOCIATIONS

American Psychological Association
(Student Member)

Association for the Advancement of Behavior Therapy
(Student Member)

GOALS

To complete the requirements for the Doctoral degree in clinical psychology at Virginia Polytechnic Institute and State University specializing in adult psychopathology. Furthermore, obtain a position at a research oriented facility and continue to carry out research on substance abuse.

Signature

Curtis Greaves

Curtis K. Greaves