

Testing Theoretical Relationships among Alcohol Use, Drinking to Cope, Mood Regulation
Expectancies, and Depression

Dissertation

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Abstract

Participants (N = 164) completed measures of depression, negative mood regulation expectancies, coping motives for alcohol use, alcohol use, and alcohol-related problems allowing for cross-sectional and prospective examinations of theoretically derived hypotheses regarding motivational models for alcohol use and related problems in a college population. Using hierarchical linear regression techniques, 3 hypotheses were examined. The hypothesis that lower levels of depression and higher levels of negative mood regulations expectancies would interact to predict drinking to cope was not supported. The hypothesis that drinking to cope would be predictive of alcohol-related problems even when alcohol consumption was controlled for was supported. The creation of two subscales intended to measure objective and subjective alcohol-related problems is explained. There was mixed support for the hypothesis that drinking to cope is more predictive of subjective alcohol-related problems compared to objective alcohol-related problems. Findings from the current study provide support for social learning theory and have implications for alcohol intervention programs on college campuses.

Table of Contents

| | |
|------------------------|-----|
| Abstract | ii |
| Table of Contents | iii |
| List of Tables/Figures | iv |
| Introduction | 1 |
| Hypotheses | 5 |
| Method | 6 |
| Participants | 6 |
| Measures | 7 |
| Procedures | 9 |
| Analytic Strategy | 11 |
| Results | 12 |
| Descriptive Statistics | 12 |
| Primary Hypotheses | 13 |
| Hypothesis 1 | 13 |
| Hypothesis 2 | 15 |
| Hypothesis 3 | 17 |
| Discussion | 20 |
| References | 26 |
| Tables | 30 |
| Figure | 38 |
| Appendices | 39 |
| Curriculum Vita | 84 |

List of Tables/Figures

| | |
|--|----|
| Table 1: Means and Standard Deviations for Main Outcome Variables at Baseline and Follow-Up | 30 |
| Table 2: Intercorrelations of Concurrently Measured Outcome Variables at Baseline | 31 |
| Table 3: Intercorrelations of Baseline and Follow-Up Outcome Variable | 32 |
| Table 4: Regression Analyses for Interaction of Depression Severity and NMR Expectancies in Prediction of Drinking to Cope | 33 |
| Table 5: Cross-Sectional Regression Analysis for Mediation of the Relationship Between Drinking to Cope and Alcohol-Related Problems by Alcohol Use Variables at Baseline | 34 |
| Table 6: Prospective Regression Analysis for Mediation of the Relationship Between Drinking to Cope and Alcohol-Related Problems by Alcohol Use Variables | 35 |
| Table 7: Regression Analysis for Mediation of the Relationship Between Drinking to Cope and Subjective Alcohol-Related Problems by Binge Drinking Days Per Week | 36 |
| Table 8: Regression Analysis for Mediation of the Relationship Between Drinking to Cope and Objective Alcohol-Related Problems by Binge Drinking Days Per Week | 37 |
| Figure 1: A Conceptual Model of Negative Mood Regulation Expectancies and Depression Severity's, Relationship to Drinking to Cope and Drinking to Cope's Relationship to Alcohol-Related Problems. | 38 |

Testing Theoretical Relationships among Alcohol Use, Drinking to Cope, Mood Regulation Expectancies, and Depression

Introduction

A growing area of interest in alcohol research literature seeks to identify emotional and social factors that precipitate drinking. Numerous constructs, including alcohol expectancies and motives, anxiety and depression levels, self-efficacy, and coping styles, have been explored in order to better understand addictive behaviors. Social learning theorists view addictive behaviors, such as alcohol abuse, as maladaptive coping strategies that develop over time as a result of poor coping skills interacting with certain types of beliefs and expectancies surrounding alcohol use (Bandura, 1969; Longabaugh and Morgenstern, 1999; Marlatt & Gordon, 1985; Monti, Kadden, Rohsenow, Cooney, & Abrams 2002). A central tenet of social learning explanations of substance abuse is that the immediate reinforcing effects of substance use may interact with psychological or behavioral coping deficits in certain individuals to produce escalation of substance use and eventually dependence (Maisto, Carey, & Bradizza, 1999).

It is thought that clients who suffer from both negative affect and alcohol use problems lack knowledge of or practice with more adaptive coping skills (Lewinsohn & Arconad, 1981) and therefore tend to utilize the more maladaptive strategies such as using alcohol to deal with negative mood states. Social learning theory posits that negative affect leads individuals to search for ways to cope and relieve their distress. If substance use has worked in the past to relieve these negative affect states, it may be relied on in the future. Negative affect and depression, specifically, have been shown to be risk factors in the development of alcohol problems (Holahan, Moos, Holahan, Cronkite, & Randall, 2004; Weitzman, 2004). Research has also shown that negative affect such as depression is associated with reports of drinking as a way to cope with negative mood states and that drinking to cope is predictive of increased levels of alcohol-related problems (Carey & Correia, 1997; Carpenter & Hasin, 1999; Carpenter & Hasin, 1998; Cooper, Russell, & George, 1988; Holahan et al. 2004).

Motives for alcohol use have also been shown to be a valuable predictor of alcohol-related problems, regardless of the level of alcohol consumption (Carey & Correia, 1997). Alcohol motives, which can be defined as the reasons why people engage in the consumption of alcohol, are thought to be the proximal predictive factor for predicting alcohol use. Alternatively, alcohol expectancies, defined as the anticipated physical, psychological, or behavioral effects of

alcohol consumption (Marlatt & Gordon, 1985, p. 136), are considered to be precursors of alcohol motives (Cooper, Frone, Russell, & Mudar, 1995). Once someone has an expectancy for what will happen when he or she consumes alcohol, he or she can then be motivated to use alcohol to obtain the expected outcome.

Types of motives for alcohol use that have been explored in the literature include coping motives, social motives, conformity motives, and enhancement motives (Cooper, Russell, Skinner, & Windle, 1992; Cooper, 1994; Cox & Klinger, 1988). Carey and Correia (1997) found that motives for drinking alcohol contributed significantly to alcohol-related problems, even after the amount of alcohol consumed was controlled for, and that drinking to cope accounted for more of the variance in alcohol problems than did positive motives. Perkins (1999) found that young adults who drink to relieve stress experienced more alcohol-related problems than people who endorsed other types of drinking motives. It has also been shown that drinking to cope is predictive of symptoms of abusive drinking, such as social and occupational dysfunction (Cooper et al. 1992; Cooper, 1994; Cooper et al. 1995). It is clear from the literature that negative affect such as a depression often leads to using alcohol in an attempt to cope, which in turn contributes to the prediction of alcohol-related problems. In addition, it is thought that individuals who drink to cope may impede their ability to utilize more positive coping skills, thereby increasing psychological dependence on alcohol in situations that require coping with negative affect (Cooper et al., 1995).

While depression is predictive of drinking to cope and drinking to cope is predictive of alcohol-related problems, not all people with negative affect such as depression drink to cope or have alcohol-related problems. This observation leaves two important questions unanswered. First, what is different about the subset of depressed individuals often identified in research who drink to cope? Second, why do individuals who drink to cope report more alcohol-related problems above and beyond drinking level? In response, possible reasons for both of these questions are addressed.

Individuals who are depressed and drink to cope may be different in that they do not have confidence in their ability to handle negative affect in an adaptive manner. In this instance, negative mood regulation expectancies may play an important role, although they have only begun to be explored in relation to drinking outcomes (Kassel, Jackson, & Unrod, 2000). People who have low confidence in their ability to handle negative mood states adaptively may be more

likely to engage in drinking behaviors as a way of coping. Self-efficacy is defined as the level of confidence one has in his or her ability to perform a specific behavior (Bandura, 1977). Negative mood regulation expectancies can be viewed as the level of self-efficacy that one has for dealing with negative affective states adaptively. A person who does not believe he or she can cope adaptively might be more likely to cope in a maladaptive manner, such as consuming alcohol.

Only one study to date has examined negative mood regulation expectancies in relation to drinking behaviors (Kassel et al., 2000), and this research suggests that negative mood regulation expectancies tap into a vulnerability that makes individuals more likely to drink to cope. Kassel and colleagues found that negative mood regulation expectancies added significantly to the prediction of alcohol-related problems even after alcohol consumption was controlled for. They also showed that negative mood regulation expectancies were predictive of alcohol-related problems when affective distress was controlled for. However, the Kassel et al. study was limited by its cross-sectional design and because it did not test for an interaction between depression and negative mood regulation expectancies in predicting drinking to cope. In addition, while drinking to cope has been shown to be predictive of alcohol problems, few studies have examined determinants of drinking to cope. Holahan et al. (2004) were able to show that negative life events and lower levels of family support were linked to drinking to cope, but individual differences in response to these stressors were not examined. The current study hypothesized that lower negative mood regulation expectancies are predictive of drinking to cope and that negative mood regulation expectancies would moderate the relationship between negative affect (depression in this case) and drinking to cope, such that negative affect is more strongly related to drinking to cope when mood regulation expectancies are lower.

In response to why individuals who endorse higher rates of drinking to cope have higher levels of alcohol-related problems, several plausible explanations exist. First, it is possible that individuals who drink to cope have more alcohol-related problems because they use alcohol in a more hazardous way (Cooper, 1994). However, endorsement of coping motives has not consistently been found to be associated with increased alcohol consumption (Cooper et al., 1992; Cooper et al., 1995). Cooper et al. (1992) examined the relationship between drinking to cope and alcohol-related problems and found that drinking to cope predicted alcohol-related problems almost equally as well alone as it did when the average number of drinks consumed per day during the last year was included as a mediator. Carey and Correia (1997) found that

drinking to cope had both a direct and an indirect effect on the prediction of alcohol-related problems in that drinking to cope contributed to the prediction of a higher number of maximum drinks in one day, and that drinking to cope was also able to predict alcohol-related problems above and beyond the higher number of drinks consumed. Cooper (1994) found that drinking to cope was predictive of heavy alcohol consumption (quantity and frequency) and that drinking to cope was found to be a stronger predictor of alcohol-related problems than enhancement motives. Cooper et al. (1988) found that individuals who endorse drinking to cope are more likely to experience alcohol-related problems, regardless of their level of alcohol consumption (quantity and frequency). Finally, Cooper et al. (1995) found that adolescents who endorsed drinking to cope drank significantly less (based on measures of quantity, frequency, and binge drinking frequency) than adolescents with other motives, but still endorsed higher rates of alcohol-related problems.

Based on the research reviewed here, it does not appear that drinking to cope always leads to more hazardous drinking as measured by frequency of alcohol consumption, quantity of alcohol consumption, highest number of drinks consumed in one day, or frequency of binge drinking. Therefore, it remains unclear why people who endorse higher levels of drinking to cope would have a greater number of alcohol related-problems. A second possibility for the relationship between drinking to cope and higher rates of alcohol-related problems is that individuals who report drinking to cope are actually no different from other individuals when objective measures of alcohol-related problems are considered; instead, the individuals endorse higher rates of subjective alcohol-related problems. It may be that the high level of problems endorsed by this subset of people is an artifact of differential reporting of subjective problems. Cognitive theories of depression (e.g., Beck, Rush, Shaw, & Emery, 1979) posit that depressed individuals suffer from characteristic ways of interpreting negative events and are more likely to attribute negative events to their own internal attributes or characteristics. In a similar manner, information processing research has shown that depressed individuals experience cognitive misrepresentations in which they interpret negative information as self-relevant more so than non-depressed individuals (Bargh & Tota, 1988). Therefore, it is likely that higher levels of depressive symptoms, which are found to be related to the endorsement of drinking to cope, also contribute to biased responses that lead these individuals to view their alcohol use as more negative, more problematic, and more directly related to their alcohol-related problems. The

current study addressed this possibility by examining whether individuals who endorse drinking to cope will endorse a greater number of subjective, rather than objective, measures of alcohol-related problems.

The current study examined theoretical relationships among depression and negative mood regulation expectancies, motives for alcohol use, alcohol use, and alcohol-related problems prospectively in a college population. Depression and alcohol use are both common in college populations, and research has shown that nearly half of all college students are binge drinkers and that one-fifth of students binge drink frequently (Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994). In addition, research has found that college students binge drink significantly more than their non-student peers (Dawson, Grant, Stinson, & Chou, 2004). Furr, Westefeld, McConnell, and Jenkins (2001) reported that 53% of college students stated that they had experienced depression since the beginning of college. In the National Comorbidity Study (Kessler & Walters, 1998), respondents ages 15-24 were found to have thirty-day rates of 5.8% for major depression and 2.1% for minor depression.

In summary, this study was intended to replicate and extend findings in the area of motivational models for alcohol use. Two methodological limitations in the current literature were improved upon, including both the inclusion of a more thorough and sensitive assessment of drinking behaviors and a longitudinal design with the ability to examine predictive ability of constructs. In addition, relationships that have not previously been explored were examined, including a test of the interaction between depression and negative mood regulation expectancies in its ability to predict drinking to cope, as well as an exploration of whether the higher number of alcohol problems endorsed by people who endorse higher rates of drinking to cope is due to the higher number of subjective alcohol-related problems endorsed by these individuals. Finally, the role of negative mood regulation expectancies in relation to alcohol use was examined from a more theoretical and conceptual standpoint than in previous studies (Kassel et al. 2000). To that end, the following hypotheses were tested:

Hypotheses

- 1) Depression and negative mood regulation expectancies will interact to predict drinking to cope such that individuals with more severe depression and lower negative mood regulation expectancies will have the highest endorsement of drinking to cope.

- 2) Drinking to cope will be predictive of higher levels of total alcohol-related problems, even when levels of alcohol consumption are controlled.
- 3) Drinking to cope, after controlling for alcohol consumption, will be more predictive of higher levels of subjective alcohol-related problems than objective alcohol-related problems.

Figure 1 depicts the interaction between depression severity and low negative mood regulation expectancies in the prediction of drinking to cope (Hypothesis 1) and the proposed partially-mediated relationship between drinking to cope and alcohol related problems (Hypothesis 2).

Methods

Participants

Participants were 164 undergraduate students that were enrolled in a psychology course at the time of the baseline assessment and completed the informed consent process (Appendix A). The majority of participants were female (54%). Ages of the participants ranged from 18 to 24 years with a mean age of 19.34 ($SD = 1.25$). Thirty-eight percent identified themselves as freshman, 31% as sophomores, 20% as juniors, and 11% as seniors. Eighty-seven percent of the sample was white, while 5% identified themselves as black, 4% as Asian or Pacific Islander, and 2% as “other”.

Recruitment for this study was conducted on-line via Sona Experiment Management System (EMS) software. Psychology students interested in earning extra credit for classes logged onto the website, read a description of the study, and signed up on-line for an in-person experiment session. There were several sessions held at various times per week. In order to reduce demand characteristics, the study was entitled “Alcohol Use: Related Behaviors and Thoughts.” Both male and female students, 18 years and older, who had used alcohol on at least four separate occasions, including at least one occasion where the student binge drank (defined as 4 drinks on one occasion for females, and 5 drinks on one occasion for males) during the previous month were eligible to participate in the study. Due to the higher number of females that signed up for the study, the last week of enrollment was restricted only to males in an attempt to obtain a more representative sample of college students.

All students received extra credit for their participation in the baseline assessment. One hundred twenty-five participants (76%) also completed the follow-up assessment approximately

four months after the baseline assessment. Participants that were enrolled in a psychology class at the time of the follow-up received additional extra credit for participating ($n = 37$). In addition, those who completed the follow-up were also entered into a lottery with four chances of winning \$50 (chances of winning were approximately 1 in 31).

Measures

Demographic Information. (Appendix B) Demographic information was collected from each participant in the study. Information included items such as age, gender, race, marital status, and academic status.

Contact and Locator Information. (Appendix C) The Contact and Locator Information was completed by the participants prior to the assessment measures. The participants were asked to provide an e-mail address, a phone number, and a home address at which they could be contacted. In addition, they were asked to provide the name and contact information of one other person who could provide updated contact information for the participant if necessary.

Alcohol Use. (Appendix D) A self-administered version of the Timeline Followback (TLFB; Sobell & Sobell, 1996) was used to obtain information about the participants' quantity and frequency of alcohol use during the past 60 days, as well as measures of binge drinking. Participants were provided with calendars and encouraged to record memory prompts such as birthdays, parties, and holidays on it. They were then asked to record their alcohol use during the past 60 days. Participants were informed that one standard drink was defined as one 12-ounce beer, 1.5 ounces liquor, or one 5-ounce drink of wine. Several studies have indicated that the TLFB has sound psychometric properties (see Sobell & Sobell, 1996 for a review). In a study with a college population, test-retest reliability was $\geq .92$ (Sobell, Sobell, Klajner, Pavan, & Basian, 1986). The TLFB also demonstrates good validity when compared with urine screens and collateral informants' reports (see Sobell & Sobell, 1996 for a review). The following quantity and frequency information was calculated for the purpose of data analyses: 1) percentage of days of alcohol use, 2) drinks per drinking day, and 3) average number of binges per week. Binge drinking was defined as the consumption of 5 or more drinks for men or 4 or more drinks for women, as is common in the alcohol literature (Wechsler et al., 1994; Wechsler, Lee, Kuo, & Lee, 2000). Several studies have found this cutoff to be a good predictor of alcohol related-problems (Lee, Jones-Webb, Short, & Wagennar, 1997; Wechsler et al., 1994; Wechsler & Nelson, 2001).

Modified Rutgers Alcohol Problem Index. (Appendix E) Alcohol problems were assessed using a 60-day version of the Rutgers Alcohol Problem Index [RAPI-60] (White & Labouvie, 1989) that had been modified by adding 10 items to increase the number of objective consequences assessed (MRAPI-60). The MRAPI-60 measured problems that had occurred during the last 60 days as a result of alcohol use. Thirty-three self-report questions asked the respondent to indicate problems related to alcohol use, such as “Went to work or school high or drunk,” “Felt that you had a problem with alcohol,” and “Kept drinking when you promised yourself not to.” Each item had a 5-point Likert response option, ranging from (1) “Never” to (5) “More than 10 times.” For the 23 items from the original RAPI-60, the obtained alpha coefficients were .73 and .76 at baseline and follow-up respectively. For the 33 item MRAPI-60 the alpha coefficients were .75 at baseline and .80 at flow-up.

Drinking Motives Questionnaire. (Appendix F) The Drinking Motives Questionnaire (DMQ; Cooper et al., 1992) is a 15-item, three-dimensional measure of drinking motives and was used to measure motives for using alcohol. The measure assesses coping motives, social motives, and enhancement motives for alcohol use. For the purposes of the present study only the coping motives scale was used. This scale consists of 5 items such as “How often do you drink because it helps when you feel depressed or nervous” and “How often do you drink to forget your worries?” that are rated on a scale of 1 (almost never/never) to 4 (almost always). Cooper et al. (1992) report good predictive validity in respect to alcohol use and abuse for this measure. In the current study, the obtained alpha coefficient at baseline was .72 for the coping subscale. At follow-up, the obtained alpha coefficient was .65 for the coping scale.

Negative Mood Regulation Expectancies. (Appendix G) The Negative Mood Regulation (NMR) Expectancies Scale (Catanzaro and Mearns, 1990) contains 30-items that measure expectancies that individuals have in their ability to alleviate a state of affective distress. All questions begin with the stem, “When I’m upset, I believe that I can...,” and are followed by items such as “I can usually find some way to cheer myself up” and “I won't be able to get myself to do anything about it” that are rated on a scale from 1 = strongly disagree to 5 = strongly agree. Fifteen items required reverse coding before the average score for each participant could be computed such that higher scores indicated stronger belief in one’s ability to alleviate negative moods. The obtained alpha coefficients for this measure were .91 at baseline and .92 at follow-up.

Diagnostic Inventory for Depression. (Appendix H) The Diagnostic Inventory for Depression (DID; Zimmerman, Sheeran, & Young, 2004) is a 38-item self-administered questionnaire intended to diagnose major depressive disorder based on *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition (DSM-IV; American Psychiatric Association, 1994) criteria. The DID is an updated version of the Inventory to Diagnose Depression (IDD, Zimmerman, Coryell, Corenthal, & Wilson, 1986) that was based on the criteria of the *Diagnostic and Statistical Manual of Mental Disorders*, third edition (DSM-III; American Psychiatric Association, 1987) used in the Kassel et al. (2000) study. This instrument can also be used to create a total score indicative of the level of depression severity, as was done in the current study. In addition, the DID shows good discriminant validity when compared to measures of non-depressive symptoms domains and good convergent validity when compared to other measures of depression. In the current sample, Cronbach's alpha was .78 at baseline and .83 at follow-up for the depression severity subscale.

Procedures

Once participants were recruited, they attended a group or individual session during which they were asked to complete a consent form, demographic information, and a series of self-report questionnaires about their alcohol consumption, alcohol motives, depressive symptoms, negative mood regulation expectancies, and alcohol-related problems. They were asked to return to another group or individual experimental session approximately 4 months later during which they completed a subset of the same questionnaire measures.

Baseline assessment. Participants were seated apart from one another to insure the confidentiality of responses. At the beginning of the session, the study was explained to the participants in the context of signing the Consent Form. Prior to collection of the consent form, the confidentiality of responses was also discussed to encourage truthful reporting. The limitation to confidentiality based on endorsement of items that indicated suicidal intention was also highlighted for the participants. Questionnaires were administered to individuals or groups of no more than 15 participants at a time by a trained research assistant. When each participant had received his or her questionnaires, the group was given verbal instructions on filling out the questionnaires. Participants were asked to complete a series of questionnaires examining demographic information, alcohol consumption, alcohol motives, negative mood regulation expectancies, depression, and alcohol-related problems.

When the questionnaires were submitted, the member of the research team presiding over the session checked the questionnaires for completion and asked the participants if they had any questions. In addition, participants were reminded that in approximately four months from the date they completed the above measures, that they would be contacted for a follow-up assessment. They were informed that the follow-up assessment would consist of a similar, but somewhat shorter battery of instruments.

There were two different orders of administration of the measures. The first order consisted of: 1) the Consent Form, 2) Demographic information, 3) Contact and Locator information, 4) alcohol use, 5) alcohol-related problems, 6) alcohol motives, 7) negative mood regulation expectancies, and 8) depression. The second order was exactly the same, with the exception that the depression measure was filled out prior to the negative mood regulation expectancies measure. The different orders of administration allowed for an examination of differential reporting due to the possibility that the experience of completing the depression measure could influence answers on the negative mood regulation expectancy measure and vice versa.

Follow-Up Assessment. The follow-up assessment took place approximately four months following the baseline assessment. The mean number of days between assessments was 125.70 with a standard deviation of 6.60 days. The follow-up consisted of the same battery of measures that were completed at the baseline assessment, with the exception of the Consent Form, Demographic Information measure, and the Contact and Locator Information measure. For the 125 participants that completed the follow-up, 74% of them completed it individually or in groups of no more than 15 participants. An additional 26% completed the assessment by mail because they were no longer on campus or stated they were unable to attend an in-person session.

Analyses were conducted in order to examine if there were differences between those participants that did and did not complete the follow-up assessment. The only significant difference ($\chi^2(1) = 5.15, p < .05$) was that there was a higher percentage of enrolled males that did not complete the follow-up (32%) compared to females (17%). There were no significant differences in the percentage of white versus minorities ($\chi^2(1) = 0.12, p > .05$), or in the percentage of freshman and sophomores versus juniors and seniors ($\chi^2(1) = 0.73, p > .05$) who did not complete the follow-up. In addition, there were no significant differences in attrition by

age ($t(162) = 0.28, p > .05$) or by percentage of days of alcohol use at baseline ($t(162) = 0.81, p > .05$).

Analytic Strategy

In order to examine whether previously reported bivariate relationships among depression, drinking to cope, negative mood regulation expectations, alcohol use, and alcohol-related problems were replicated in the current sample, correlational analyses were conducted for all primary variables, including alcohol consumption, depressive symptoms, NMR expectancies, drinking to cope, and alcohol-related problems. For each of the three primary hypotheses, two different sets of analyses were conducted. First, less conservative analyses of cross-sectional relationships at baseline were examined. Second, prospective tests of hypotheses, increasing the ability to draw causal inference about the relationships among the constructs, were conducted. The three primary hypotheses were analyzed via sets of regression analyses that are described in more detail below. While analyses were also examined cross-sectionally at follow-up, the results are not presented here. The findings for the cross-sectional analyses at follow-up are similar to those presented below on the cross-sectional analyses at baseline, with the baseline findings being slightly more robust.

One person was excluded from all analyses due to a high number of missing items on both a primary outcome variable at baseline and another primary outcome variable at follow-up. Also, all of the primary outcome variables were examined for both univariate and multivariate outliers. Eleven people were excluded for having at least one primary outcome variable that qualified as a univariate outlier (greater than 3 *SDs* away from the mean). In addition, four of those 11 people also qualified as multivariate outliers as evidence by the calculated Mahalanobis distance, using a conservative estimate of $p < .001$ as recommended by Tabachnick and Fidell (1989). This resulted in a remaining sample of 152 participants at baseline and 115 participants at follow-up. It should be noted that analyses for the 3 primary hypotheses were conducted with and without outliers and the results were comparable. Therefore, only the analyses with outliers removed are presented in this paper.

All of the primary outcome variables were also examined for skewness and kurtosis. All variables were found to be in violation of normality assumptions and therefore several transformations were explored. For positively skewed variables, three transformations were explored including square root transformations, log transformations, and reciprocal

transformations. For negatively skewed distributions a new variable equal to the largest score plus one was created and then the value for each individual participant was subtracted from that number and both the square root and the log of the number was computed. The calculation that most improved the normality of the data was chosen for analytical purposes. Descriptive data is presented in untransformed form in order to increase comparability to previous research and so that the means and *SDs* retain their scale score meaning. All regression analyses for the three primary hypotheses that are presented here were conducted on transformed data. It should be noted that these analyses were conducted on both the raw data and the transformed data with comparable findings and therefore only the results based on the transformed data are presented in this paper.

Results

Descriptive Statistics

Means and standard deviations for all primary outcomes variables are presented in Table 1. On average at baseline, participants drank 29% ($SD = 13\%$) of the days out of the last 60, reported drinking an average of 5.90 ($SD = 2.65$) drinks per drinking day, and binge drank 1.47 ($SD = 0.99$) days a week on average. Correlation matrices of all the primary variables, with relationships among variables in the expected directions, are provided for baseline data (see Table 2) and for the prospective relationship of baseline to follow-up variables (see Table 3).

Not surprisingly, the highest correlations are between the drinking indices with the highest correlations both cross-sectionally and prospectively being between percentage of days of alcohol use and binge drinking days per week. Significant correlations among main outcome variables were similar when examined cross-sectionally and prospectively. Percentage of days of alcohol use and binge drinking days per week showed a stronger relationship with drinking to coping than did drinks per drinking day. Drinking indices were not significantly correlated with NMR expectancies or depression severity with the exception of drinks per drinking day being negatively correlated with depression severity at baseline. Drinking to cope was significantly correlated with NMR expectancies and depression severity at baseline, follow-up, and prospectively.

As noted above, there were two different orders of administration for the measures. In the first order, the NMR Expectancies measure preceded the DID scale. In the second order of administration these two measures were reversed in their order so that the NMR Expectancies

was completed after the DID. Once the person with a large quantity of missing data was removed along with the outliers as described above, t-tests were conducted on both the depression severity subscale and the NMR Expectancies scale by order of administration at baseline. For the depression severity subscale of the DID, scores were significantly higher ($t(150) = 3.91, p < .01$) for those who completed the NMR Expectancies first ($M = 10.53, SD = 5.73$) whereas those who completed the DID first had an average depression severity score of 7.09 ($SD = 5.11$). There was also a significant difference on the NMR Expectancies scale based on the order of administration ($t(150) = -2.13, p < .05$). Those who completed the NMR Expectancies scale first had an average score of 3.64 ($SD = 0.48$) whereas those who completed the DID first had an average score of 3.81 ($SD = 0.49$).

These significant differences indicate that individuals that completed the NMR Expectancies Scale prior to the DID had higher ratings of depression severity and lower NMR expectancies than those who completed them in the reverse order. Due to this significant difference, the order of administration at baseline was maintained at follow-up for each individual so that change in scores from baseline to follow-up could be tested in a way that was not influenced by a change in the order of administration.

At follow-up, there was no longer a significant difference in depression severity scores based on the order of administration ($t(113) = 1.51, p = .13$). However, the means remained in the same direction with those who completed the NMR Expectancies Scale first having a higher depression severity score ($M = 8.55, SD = 6.00$) whereas those who completed the DID first had an average depression severity score of 6.89 ($SD = 5.77$). There continued to be a significant difference on the NMR Expectancies score based on the order of administration ($t(113) = -2.31, p < .05$). Those who completed the NMR Expectancies scale first had an average score of 3.61 ($SD = 0.56$) whereas those who completed the DID first had an average score of 3.83 ($SD = 0.49$).

Primary Hypotheses

Hypothesis 1. The first hypothesis posited that negative mood regulation expectancies and depression severity would interact to predict drinking to cope. As explained above, the all of the outcome variables were transformed in order to increase the normality of the data. For the NMR Expectancies measure, the average scores for participants were negatively skewed. In order to increase the normality of the data, the square root of the highest score for the sample

plus one minus the participant's actual score was used at baseline (e.g., square root of $(k-x)$, where k = the highest score in the sample plus one and x = each participant's average score for the measure). At follow-up, the data was transformed such that the log of the highest score for the sample plus one minus the participant's actual score was used at follow-up (e.g., log of $(k-x)$, where k = the highest score in the sample plus one and x = each participant's average score for the measure). These transformations resulted in the relationship between NMR Expectancies and drinking to cope to become inverted, such that the β s presented in Table 4 are positive, rather than negative as they would have been if the data has not been transformed. Prior to conducting analyses for this hypothesis, the transformed data was also centered by subtracting the grand mean from the value for each participant for both the predictor variables. Holmbeck (2002) recommends this centering procedure in order to reduce multicollinearity between the predictors and their interaction term.

In the cross-sectional analysis, hypothesis 1 was tested by regressing baseline drinking to cope on baseline depressive severity and negative mood regulation expectancies, and their interaction (created by multiplying centered scores on the depression inventory with scores for negative mood regulations expectancies) (see Table 4). In Block 1 depression severity ($\beta = .27, p < .01$) and NMR expectancies ($\beta = .22, p < .01$) were significant predictors of drinking to cope. When the interaction term was added in Block 2, it was not significant ($\beta = .08, p = .26$), and both depression severity ($\beta = .27, p < .01$) and NMR expectancies ($\beta = .22, p < .01$) remained significant predictors of drinking to cope. The lack of a significant effect for the interaction term failed to support the hypothesis.

In the prospective analysis, hypothesis 1 was not supported (see Table 4). In Block 1, both depression severity ($\beta = .22, p < .05$) and NMR expectancies ($\beta = .29, p < .01$) at baseline were significant predictors of drinking to cope at follow-up. When the interaction term was added in Block 2, it was not significant ($\beta = .14, p = .11$), and both depression severity ($\beta = .21, p < .05$) and NMR expectancies ($\beta = .28, p < .01$) remained significant predictors of drinking to cope.

Order Effects. Due to the significant differences found based on order of administration, hypothesis 1 was also examined separately for the subset of the sample that completed the NMR Expectancies Scale prior to the DID and for the subset that completed the DID prior to the NMR Expectancies measure. The pattern of findings for each order was similar to the overall results,

although the smaller sample sizes meant that betas for the main effects of the DID an NMR were not always significant. The test for moderation was not significant for either of the orders of administration at baseline or prospectively.

Hypothesis 2. The second hypothesis posited that drinking to cope would be predictive of higher levels of alcohol-related problems even when measures of alcohol consumption were controlled for. In order to test this hypothesis, mediational analyses (Holmbeck, 2002, Baron & Kenny, 1986) were performed. For the purpose of this analysis, drinking to cope was considered the independent variable, alcohol consumption was considered the mediator variable, and alcohol-related problems was considered the outcome variable. For all analyses involving hypothesis 2, if all of the criteria for mediational analyses were met (as recommended by Baron & Kenny, 1986; Holmbeck, 2002), the Aroian version of the Sobel test was used to test the significance of the influence of the mediator. Analyses were conducted separately for percentage of days of alcohol use, binge drinking days per week, and drinks per drinking day as the mediating variable. Again, the analyses were performed cross-sectionally at baseline and then prospectively with baseline levels of drinking to cope predicting alcohol-related problems at follow-up.

For each set of regression analyses, first there was a test of the relationship between the outcome variable, alcohol-related problems, which was regressed on the independent variable, drinking to cope. Secondly, alcohol-related problems were regressed on alcohol consumption. Third, alcohol consumption was regressed on coping motives. Finally, alcohol-related problems were regressed on both coping motives and alcohol consumption.

In the cross-sectional analysis at baseline, both percentage of days of alcohol use and binge drinking days per week met the first three criteria for mediation and therefore the analyses where alcohol-related problems were regressed on both coping motives and alcohol consumption were conducted for those two mediating variables. The β for drinking to cope was reduced when percentage of days of alcohol use was entered into the regression (.36 to .24). Based on the Aroian version of the Sobel test, the effect was significant ($z = 3.10, p < .01$) and indicates that the percentage of days of alcohol use partially mediates the influence of drinking to cope on alcohol-related problems. In this medational analysis, the percentage of days that alcohol was consumed accounted for 32.7% of the variance between drinking to cope and alcohol-related problems. However, hypothesis 2 was supported in that drinking to cope remained a significant

predictor of alcohol-related problems when percentage of days of alcohol use was controlled for (see Table 5).

For number of binge drinking days per week, a similar pattern was discovered. The β for drinking to cope was reduced when the number of binge drinking days per week was entered into the regression (.36 to .27) and the influence of binges per week was found to be significant ($z = 2.63, p < .01$). In this analysis, binge drinking days per week accounted for 25.4% of the variance between drinking to cope and alcohol-related problems. Again hypothesis 2 was supported because drinking to cope remained a significant predictor of alcohol related problems when binge drinking days per week was controlled (see Table 5).

When drinks per drinking day was regressed on coping motives, the result was nonsignificant ($\beta = .08, p = .33$), indicating that drinking to cope was not a significant predictor of drinks per drinking day and therefore the last step of the mediational analysis was not conducted.

In the prospective analysis, baseline drinking to cope was the independent variable, while follow-up levels of alcohol consumption and alcohol-related problems served as the mediator variable and the dependent variable respectively. The analyses involving percentage of days of alcohol use did not technically meet criteria for conducting mediational analyses. Drinking to cope and percentage of days of alcohol use were not significantly related ($\beta = .18, p = .056$) as required for the mediation analysis. Since the other two criteria were met and this result was close to significant, the mediational analysis was conducted in order for comparison to the two cross-sectional analyses (see Table 6). The percentage of days of alcohol use accounted for 30.2% of the variance between percentage of days of alcohol use and alcohol-related problems, however, the Aronian version of the Sobel test did not quite reach significance ($z = 1.82, p = .07$).

The analyses that included binge drinking days per week met the first three criteria for mediation and therefore the analyses where alcohol-related problems were regressed on both coping motives and alcohol consumption was conducted. The β for drinking to cope was reduced when binge drinking days per week was entered into the regression (.29 to .19). In this prospective test of hypothesis 2, binge drinking days per week accounted for 33.7% of the variance between drinking to cope and alcohol-related problems. The β for drinking to cope was significantly ($z = 2.01, p < .05$) reduced when the number of binge drinking days per week was

entered into the regression and again hypothesis 2 was supported because drinking to cope remained a significant predictor of alcohol related problems when binge drinking days per week was controlled for (see Table 6).

As with the cross-sectional analysis, when drinks per drinking day was regressed on coping motives, the result was nonsignificant ($\beta = .11, p = .26$), indicating that drinking to cope was not a significant predictor of drinks per drinking day and therefore the last step of the mediational analysis was not conducted.

Hypothesis 3. In order to examine the third hypotheses regarding objective versus subjective alcohol-related problems, a separate sample of 114 undergraduate psychology students were asked to rate how subjective or objective they thought each of the 33 items on the MRAPI measure were, using the 7-point Likert scale (Appendix I). A lower rating indicated that a participant thought the item was more subjective in nature while a higher rating indicated that the participant thought that the item was more objective in nature. Prior to filling out their ratings, participants were given definitions of the words “objective” and “subjective” in written format. The definitions were also read aloud by either the principal investigator or a trained research assistant. Objective was defined as, “When something is objective it has actual existence in reality. Objective information is uninfluenced by emotions or personal prejudices. Objective information is based on observable phenomena. It is independent of individual’s thought and perceptible by all...”. Subjective was defined as, “When something is subjective it proceeds from or takes place in a person’s mind rather than the external world... Often time it is objective information that has been modified within the mind by individual bias.”

The average score for each item based on the 114 participants that completed the measure was computed. There were 11 items that were rated with an average of < 3.5 and 11 items that were rated with an average of > 4.5 . There were 11 items that fell between the range of 3.5 and 4.5 indicating that people were more likely to rate these items as being neither objective nor subjective, or that there was disagreement among people when rating these items. These items that were not rated as more objective or more subjective in nature were dropped from consideration for the subscales being created. These results were largely consistent with a priori ratings by the investigator.

The data from the 114 undergraduates was factor analyzed via a principal component analysis with varimax rotation in order to explore if this technique could help identify items as

either objective or subjective. In a forced 2-factor solution, the 11 items rated as more subjective all loaded on one factor at .39 or above and did not load on the objective factor in a meaningful way. The 11 items rated as more objective all loaded on the second factor at .25 or higher. The item that loaded on the objective factor at .25 was dropped because this loading was unacceptably low. In addition, another item that loaded on the objective factor at .35 was dropped because it also loaded on the subjective factor at .29, indicating little discrimination between the two factors. This left 9 items on the objective factor, all of them loading at .55 or higher.

At this point, 11 items remained for the subjective scale while 9 items remained for the objective scale. Frequencies were then run on the MRAPI that was completed by participants in the main study at baseline. Items that were endorsed by no one or only one person in the sample were also dropped. This resulted in three additional items being dropped from the objective scale (“Was in trouble with the law”, “Was hospitalized”, and “Lost a job”). It is assumed that these types of problems were not applicable to the current sample and that the lack of variation in scores would have interfered in analyses. Therefore, the subjective scale score that was created used 11 items (“Felt you were worthless”, “Felt you were going crazy”, “Felt guilty”, “Had a bad time”, “Felt that you had a problem with alcohol”, “Felt that you needed more alcohol than you used to in order to get the same effect”, “Didn’t take care of yourself”, “Caused shame or embarrassment to someone”, “Kept drinking when you promised yourself not to”, and “Noticed a change in your personality”), whereas the objective scale score was created using 6 items (“Was physically injured by falling, tripping, or some other type of accident”, “Was told by a friend or neighbor to stop or cut down drinking”, “Passed out or fainted suddenly”, “Engaged in unprotected sex”, “Missed a day (or part of a day) of school or work”, and “Went to school high or drunk”). At baseline, the mean endorsement rate for the subjective items was 0.14 ($SD = 0.20$) while the mean endorsement rate for the objective items was 0.12 ($SD = .24$). At follow-up, the mean endorsement rate for the subjective items was 0.10 ($SD = 0.16$) while the mean endorsement rate for the objective items was 0.08 ($SD = 0.16$).

In order to examine the third hypothesis that drinking to cope predicts subjective alcohol-related problems more than objective alcohol-related problems, the same series of mediational analyses described above was repeated separately for subjective alcohol-related problems and then for objective alcohol-related problems. The analyses presented here include the alcohol use

summary variable that involves binge drinking days per week. Here, it was expected that alcohol consumption would account for a larger amount of the variance between drinking to cope and objective alcohol-related problems than it would between drinking to cope and subjective alcohol-related problems.

Subjective Alcohol-Related Problems. In the cross-sectional analysis at baseline, binge drinking days per week met the first three criteria for mediation and therefore the analysis where subjective alcohol-related problems were regressed on both coping motives and binge drinking days per week was conducted. The β for drinking to cope was reduced when the number of binge drinking days per week was entered into the regression (.32 to .29), but the influence of binges per week was not significant ($z = 1.10, p = .27$). In this analysis, binge drinking days per week accounted for only 7.6% of the variance between drinking to cope and alcohol-related problems. Drinking to cope remained a significant predictor of subjective alcohol-related problems and when both drinking to cope and binge drinking days per week were included in the model, only drinking to cope remained significant (See Table 7).

In the prospective analysis, baseline drinking to cope was the independent variable, while follow-up levels of binge drinking days per week and subjective alcohol-related problems served as the mediator variable and the dependent variable respectively. The analyses that included binge drinking days per week met the first three criteria for mediation and therefore the analysis where subjective alcohol-related problems were regressed on both coping motives and alcohol consumption was conducted. The β for drinking to cope was reduced when the number of binge drinking days per week was entered into the regression (.19 to .12). Binge drinking days per week accounted for 36.2% of the variance between drinking to cope and alcohol-related problems. The β for drinking to cope was not significantly ($z = 1.86, p = .06$) reduced when the number of binge drinking days per week was entered into the regression, although a significant trend was present. In this prospective analysis, drinking to cope did not remain a significant predictor of subjective alcohol related problems when binge drinking days per week was added to the model (see Table 7).

Objective Alcohol-Related Problems. In the cross-sectional analysis at baseline, binge drinking days per week met the first three criteria for mediation and therefore the analyses where objective alcohol-related problems were regressed on both coping motives and binge drinking days per week was conducted. The β for drinking to cope was reduced when the number of binge

drinking days per week was entered into the regression (.24 to .15) and the influence of binges per week was found to be significant ($z = 2.58, p < .01$). In this analysis, binge drinking days per week accounted for 38.6% of the variance between drinking to cope and alcohol-related problems. Additionally, when binge drinking days per week was entered into the model, drinking to cope was no longer a significant predictor of objective alcohol-related problems ($p = .06$, see Table 8) although a significant trend remained present.

In the prospective analysis, the portion of the mediational analysis where objective alcohol-related problems were regressed on drinking to cope was not significant ($p = .10$). It is not recommended that a mediational analysis be conducted in this instance, but in order to illustrate the difference between this analysis concerning objective alcohol problems versus the previously reported analysis based on subjective alcohol-related problems the results are summarized in Table 8. The Aronian version of the Sobel test was not significant ($z = 1.94, p = .052$) and binge drinking per days accounted for 53.2% of the variance between drinking to cope and objective alcohol-related problems.

Comparing the average amount of variance that binge drinking days per week accounted for in the relationship between drinking to cope and objective versus subjective alcohol-related problems across baseline and prospective analyses, it is apparent that binge drinking days per week accounted for more the variance in objective alcohol-related problems than subjective alcohol-related problems. Averaging across the baseline and prospective analyses, binge drinking days per week accounted for 45.9% of the variance between drinking to cope and objective alcohol-related problems. Comparatively, for the subjective alcohol-related problems, binge drinking days per week accounted 20.2% of the variance. However, when the differences in drinking to cope's ability to predict objective versus subjective alcohol-related problems was examined (as recommended by Cohen & Cohen, 1983), the test was not significant at baseline ($z = 1.02, p > .05$) or prospectively ($z = 0.39, p > .05$). While these tests were not significant, descriptively the differences were in the predicted direction with drinking to cope being a stronger predictor of subjective alcohol-related problems compared to objective alcohol-related problems.

Discussion

This study replicated and extended findings in the area of motivational models for alcohol use and provides support for hypotheses consistent with social learning theory (Marlatt

& Gordon, 1985). The first hypothesis that lower levels of depression and higher levels of negative mood regulations expectancies would interact to predict drinking to cope was not supported. The second hypothesis that drinking to cope would be predictive of alcohol-related problems even when alcohol consumption was controlled was supported. Finally, there was mixed support for the hypothesis that drinking to cope is more predictive of subjective alcohol-related problems compared to objective alcohol-related problems.

While the role of depressive symptoms and NMR expectancies in predicting drinking to cope has been examined before (Kassel et al. 2000), this was the first study to examine whether their interaction would add to the prediction of drinking to cope such that participants with higher level of depression and lower levels of NMR expectancies would be the most likely to endorse drinking to cope. Surprisingly, this hypothesis was not supported in the current sample. Both higher depression and lower NMR expectancies predicted drinking to cope, but their interaction did not significantly add to prediction of drinking to cope. Based on the findings of the current study, it appears that depression severity and NMR expectancies are predictive of drinking to cope in an additive fashion, but that their relationship may not have a multiplicative relationship in the prediction of drinking to cope. The fact that NMR expectancies add to the prediction of drinking to cope beyond depressive symptoms indicates a broader context of the effects of this construct. Perceived inability to regulate mood likely extends to affects other than depression and therefore captures variance in drinking to cope attributable to other negative mood states (e.g., stress, anxiety, anger, etc.).

It is unclear why NMR expectancies and depression did not interact to produce higher levels of drinking to cope. The finding of only main effects suggests that some people who are depressed drink to cope in the absence of deficient mood regulation expectancies and that some with low NMR expectancies drink in the absence of depression. Apparently, the combination of both vulnerabilities does not heighten the likelihood of drinking to cope beyond these additive effects. Another possibility for the lack of interaction effects may be due to the sample used in the current study. The sample consisted of college undergraduates, a relatively highly functioning group, with relatively low levels of depression. Based on guidelines provided by Zimmerman et al. (2004), the mean level of depression in the current sample would qualify as “nondepressed”. It is possible that if this study was conducted with a sample with a greater range of depressive symptoms that the predicted relationships would have been stronger. It is possible

that the interaction does exist for persons with more severe depressive symptomology and that the relationship therefore could not be detected in the current sample.

The second hypothesis was supported and this is consistent with previous research on coping motives for alcohol use (e.g., (Carey & Correia, 1997; Kassel et al., 2000) insofar as it supports the notion drinking to cope is predictive of higher levels of alcohol-related problems even when measures of alcohol consumption are controlled. While both percentage of days of alcohol use and binge drinking days per week were significant partial mediators, drinking to cope remained a significant predictor of alcohol-related problems even when these alcohol consumption variables were controlled. This was the case not only with the cross-sectional data at baseline, but also prospectively. While this cross-sectional relationship has been found in previous studies, the findings from the prospective analyses in the current study lends credence to the notion that drinking to cope may be causally related to the prediction of alcohol-related problems in the future.

The third hypothesis was unique to the literature and explored one possible reason for the repeated finding in the literature that drinking to cope predicts alcohol-related problems above and beyond what levels of alcohol consumption can predict. The hypothesis examined whether the higher number of alcohol problems endorsed by people who endorse higher rates of drinking to cope is due to the higher number of subjective alcohol-related problems endorsed by these individuals. The idea behind this hypothesis was that it would make sense that objective alcohol-related problems would be accounted for by the amount of alcohol consumed, whereas subjective alcohol-related problems would have less to do with alcohol consumed and more to do with cognitive bias in assessing and attributing problems to alcohol.

There was mixed support for hypothesis 3 in this study. There was stronger support evident in the cross-sectional analyses at baseline in that drinking to cope remained a significant predictor of subjective alcohol-related problems after binge drinking days per week was controlled. In addition, in this examination of the prediction of subjective alcohol-related problems, binge drinking days per week was not a significant predictor of subjective alcohol-related problems when drinking to cope was included in the model. Conversely, for objective-alcohol related problems, when both drinking to cope and binge drinking days per week were included in the model, only binge drinking days per week was a significant predictor of objective-alcohol related problems. However, support for the predicted relationships was not as

strong in the prospective analyses where binge drinking days per week was a significant predictor of both objective and subjective alcohol-related problems when drinking to cope was included in the respective models and in neither case was drinking to cope a significant predictor. It should be noted that in the prospective analyses without binge drinking days per week accounted for, drinking to cope was never a significant predictor of objective alcohol-related problems while it was a significant predictor of subjective alcohol-related problems.

Additional support for this hypothesis comes from the analyses of the magnitude of the mediational effect. At both time points binge drinking days per week accounted for less of the relationship between drinking to cope and subjective alcohol-related problems than it did for the objective alcohol-related problems. While tests examining differences in the ability of drinking to cope to predict subjective versus objective alcohol-related problems were not statistically significant, descriptively the findings were supportive of this difference in that betas for the effect of drinking to cope for subjective alcohol-related problems were systematically higher than there were for the prediction of objective alcohol-related problems. These findings suggest that persons who drink to cope may not actually drink in a more hazardous way as has been suggested (Cooper, 1994), but it may be that the higher level of problems endorsed by this subset of persons is potentially an artifact of differential reporting of subjective problems.

Both the current study and previous research (Kassel et al., 2000) have found that depressive symptoms predict drinking to cope. As noted in the introduction, both cognitive theories of depression (e.g., Beck, Rush, Shaw, & Emery, 1979) and information processing research (Bargh & Tota, 1988) posit that depressed individuals suffer from characteristic ways of interpreting/processing negative information as more self-relevant than non-depressed individuals and are more likely to attribute negative information to their own internal attributes or characteristics. Therefore, it may be that higher levels of depressive symptoms, which were found to be predictive of drinking to cope, contributed to bias responding that in turn led these individuals to view their alcohol use as more negative, more problematic, and more directly related to their alcohol-related problems.

The inclusion of a measure of alcohol consumption that allowed for several drinking indices to be computed and utilized in the examination of the hypotheses is a strength of the current study. Binge drinking days per week, percentage of days of alcohol use, and drinks per drinking day were examined separately for the second and third hypotheses. It was discovered

that the results differed depending on the drinking index utilized. In the current study, frequency of binge drinking was the strongest predictor of alcohol-related problems, followed by percentage of days of alcohol use. When the average number of drinks per drinking day was examined, this measure of alcohol use was of little value in the prediction of alcohol-related problems. These findings make sense in that binge drinking tends to be thought of as a more problematic way of drinking and has been consistently found to be predictive of higher levels of alcohol-related problems (Carey & Correia, 1997). Due to the nature of the variable, the average number of drinks consumed per drinking day does not necessarily capture heavier, more problematic patterns of alcohol consumption. For example, if a person consumes alcohol 7 days a week, but only 2 of those days are binge drinking days, not only is it likely that the binge drinking would not be captured by this variable, but the frequency of use would not be accounted for.

Future studies examining the role of coping motives in the prediction of alcohol-related problems may benefit from the inclusion of a measure of attribution style or cognitive bias that could also prove to be useful in the further disentanglement of whether or not the increased number of alcohol-related problems that are reported by persons more likely to endorse coping motives for drinking are actually the result of biased attribution or exaggeration of problems. While the inclusion of a more dispositional measure of coping styles might also aid in the exploration of whether persons with more chronically deficient coping styles encounter additional problems because of a sole reliance on drinking to cope as a method for dealing with negative affective states, Kassel and colleagues (2000) did include examine this construct and when drinking to cope motives, coping styles, alcohol consumption, and NMR expectancies were all entered into the same model predicting alcohol-related problems, coping style was the only variable that was not a significant predictor, suggesting this not be a construct worth further examination in the model explored in the current study.

The above findings replicated those of previous research in college samples (Carey & Correia, 1997, Kassel et al., 2000) and extended research in the area of motivational models of alcohol use by allowing for a prospective examination of both the role of NMR expectancies and depressive symptoms in the prediction of coping motives, and the role of coping motives in the prediction of alcohol use and alcohol-related problems. In addition, the above findings have implications for alcohol-related coping liabilities and provide support for hypotheses derived

from social learning theory. As social learning theory would predict, individuals with higher level of negative affect and lower self-efficacy for dealing adaptively with negative mood states endorsed higher rates of drinking to cope. If alcohol use has successfully relieved depressive symptoms in the past, the use of alcohol for this purpose has been reinforced and it makes sense that it would be relied on in the future, possibly contributing to reduced acquisition of more adaptive coping skills. The finding that alcohol consumption accounts for less of the variance between drinking to cope and subjective alcohol-related problems compared to objective alcohol-related problems suggests that persons who report higher levels of drinking to cope represent a unique group of individuals and that coping deficits and possibly negative affective states such as depression contribute to the increased reporting of alcohol-related problems.

These findings also have implications for the design and implementation of alcohol use prevention and intervention programs on college campuses. Such programs are wide spread and their efficacy is being examined (Baer, Kivlahan, Blume, McKnight, & Marlatt, 2001; Clapp et al., 2004; Kypri et al, 2004). The National Institute on Alcohol Abuse and Alcoholism (2002) has noted the importance of integrating research in to alcohol program planning. Findings from the current study have implications for the design of such programs, indicating that a focus on increasing self-efficacy for dealing adaptively with negative mood states and decreasing depressive symptoms may lead to a decrease coping motive for alcohol use that could in turn lead to lower levels of alcohol consumption and related problems. In addition, the findings suggest that teaching alternative types of coping skills to persons who endorse higher level of drinking to cope might also lead to a reduction in alcohol consumption and related problems.

In addition to having implications for theory and practice, two methodological limitations in the current literature were improved upon, one being the inclusion of a more thorough and sensitive assessment of drinking behaviors. The other, the longitudinal design of the study, allowed for an examination of the predictive ability of several constructs including depression, NMR expectancies, and drinking to cope in the role of alcohol use and alcohol-related problems. While it is impossible to infer causality on the basis of correlational relationships among variables, the findings of the current study are theoretically consistent with the notion of a causal model that has been supported cross-sectionally in previous studies.

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Table 1

Means and Standard Deviations for Main Outcome Variables at Baseline and Follow-Up

| | Baseline (n = 152) | | Follow-Up (n = 115) | |
|-------------------------|--------------------|--------|---------------------|--------|
| | Mean | SD | Mean | SD |
| % of days alcohol used | 0.29 | (0.13) | 0.26 | (0.14) |
| Drinks per drinking day | 5.90 | (2.65) | 5.65 | (2.76) |
| Binge days per week | 1.47 | (0.99) | 1.24 | (0.99) |
| MRAPI 33 items | 0.13 | (0.15) | 0.09 | (0.13) |
| Subjective MRAPI items | 0.14 | (0.20) | 0.12 | (0.24) |
| Objective MRAPI items | 0.10 | (0.16) | 0.08 | (0.16) |
| DMQ coping | 1.70 | (0.51) | 1.58 | (0.43) |
| NMR Expectancies | 3.73 | (0.49) | 3.71 | (0.54) |
| Depression Severity | 8.76 | (5.67) | 7.76 | (5.92) |

Note. MRAPI = Modified Rutgers Alcohol Problem Index, DMQ = Drinking Motives Questionnaire, NMR

= Negative Mood Regulation

Table 2

Intercorrelations of Concurrently Measured Outcome Variables at Baseline

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---------------------------|------|--------|--------|--------|--------|--------|--------|---------|---------|
| (N= 152) | | | | | | | | | |
| 1. % Days Alcohol Use | 1.00 | .492** | .859** | .454** | .250** | .373** | .264** | -.041 | .061 |
| 2. Drinks/Drinking Day | 1.00 | 1.00 | .752** | .354** | .119 | .363** | .054 | .113 | -.228** |
| 3. Binge Days/Week | 1.00 | 1.00 | 1.00 | .435** | .166* | .430** | .277** | .001 | -.074 |
| 4. MRAPI: 33 Items | 1.00 | 1.00 | 1.00 | 1.00 | .780** | .707** | .345** | -.134 | .227** |
| 5. Subjective MRAPI items | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | .297** | .317** | -.199* | .189* |
| 6. Objective MRAPI items | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | .244** | -.068 | .167* |
| 7. DMQ: Coping | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | -.348** | .398** |
| 8. NMR Expectancies | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | -.446** |
| 9. Depression Severity | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Note. MRAPI = Modified Rutgers Alcohol Problem Index, DMQ = Drinking Motives Questionnaire, NMR = Negative Mood

Regulation

* $p < .05$. ** $p < .01$.

Table 4

Regression Analyses for Interaction of Depression Severity and NMR Expectancies in Prediction of Drinking to Cope

| | <i>B</i> | <i>SE B</i> | β |
|--|----------|-------------|---------|
| <u>Cross-Sectional at Baseline (N = 152)</u> | | | |
| Block 1 ($R^2 = .18^{***}$) | | | |
| Depression Severity | .02 | .01 | .27** |
| NMR Expectancies | .11 | .04 | .22** |
| Block 2 ($\Delta R^2 = .01, p = .26$) | | | |
| Depression Severity | .02 | .01 | .27** |
| NMR Expectancies | .11 | .04 | .22** |
| Depression Severity x NMR Expectancies | .04 | .03 | .08 |
| <u>Prospective Baseline to Follow-Up (N = 115)</u> | | | |
| Block 1 ($R^2 = .19^{***}$) | | | |
| Depression Severity | .02 | .01 | .22* |
| NMR Expectancies | .12 | .04 | .29** |
| Block 2 ($\Delta R^2 = .02, p = .107$) | | | |
| Depression Severity | .01 | .01 | .21* |
| NMR Expectancies | .12 | .04 | .28** |
| Depression Severity x NMR Expectancies | .05 | .03 | .14 |

Note. NMR = Negative Mood Regulation

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 5

Cross-Sectional Regression Analysis for Mediation of the Relationship Between Drinking to Cope and Alcohol-Related Problems by Alcohol Use Variables at Baseline

| | <i>B</i> | <i>SE B</i> | β |
|--|----------|-------------|---------|
| <u>Percentage of Days of Alcohol Use (N = 152)</u> | | | |
| Block 1 ($R^2 = .13^{***}$) | | | |
| Drinking to Cope | 5.22 | 1.10 | .36*** |
| Block 2 ($\Delta R^2 = .14^{***}$) | | | |
| Drinking to Cope | 3.51 | 1.06 | .24** |
| Percentage of Days of Alcohol Use | 3.53 | .65 | .40*** |
| <u>Binge Drinking Days Per Week (N = 152)</u> | | | |
| Block 1 ($R^2 = .13^{***}$) | | | |
| Drinking to Cope | 5.22 | 1.10 | .36*** |
| Block 2 ($\Delta R^2 = .13^{***}$) | | | |
| Drinking to Cope | 3.89 | 1.05 | .27*** |
| Binge Drinking Days Per Week | .92 | .18 | .37*** |

** $p < .01$, *** $p < .001$

Table 6

Prospective Regression Analysis for Mediation of the Relationship Between Drinking to Cope and Alcohol-Related Problems by Alcohol Use Variables

| | <i>B</i> | <i>SE B</i> | β |
|--|----------|-------------|--------------------|
| <u>Percentage of Days of Alcohol Use (N = 115)</u> | | | |
| Block 1 ($R^2 = .08^{**}$) | | | |
| Drinking to Cope | 1.33 | .42 | .29 ^{**} |
| Block 2 ($\Delta R^2 = .23^{***}$) | | | |
| Drinking to Cope | .93 | .37 | .20 [*] |
| Percentage of Days of Alcohol Use | 1.21 | .20 | .48 ^{***} |
| <u>Binge Drinking Days Per Week (N = 115)</u> | | | |
| Block 1 ($R^2 = .08^{**}$) | | | |
| Drinking to Cope | 1.33 | .42 | .29 ^{**} |
| Block 2 ($\Delta R^2 = .22^{***}$) | | | |
| Drinking to Cope | .88 | .38 | .19 [*] |
| Binge Drinking Days Per Week | .35 | .06 | .48 ^{***} |

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 7

Regression Analysis for Mediation of the Relationship Between Drinking to Cope and Subjective Alcohol-Related Problems by Binge Drinking Days Per Week

| | <i>B</i> | <i>SE B</i> | β |
|--|----------|-------------|---------|
| <u>Cross-Sectional at Baseline (N = 152)</u> | | | |
| Block 1 ($R^2 = .10^{***}$) | | | |
| Drinking to Cope | .80 | .20 | .32*** |
| Block 2 ($\Delta R^2 = .01^*$) | | | |
| Drinking to Cope | .74 | .20 | .29*** |
| Binge Drinking Days Per Week | .04 | .03 | .10 |
| <u>Prospective Baseline to Follow-Up (N = 115)</u> | | | |
| Block 1 ($R^2 = .04^*$) | | | |
| Drinking to Cope | .39 | .19 | .19* |
| Block 2 ($\Delta R^2 = .12^{***}$) | | | |
| Drinking to Cope | .25 | .18 | .12 |
| Binge Drinking Days Per Week | .11 | .03 | .35*** |

* $p < .05$, ** $p < .01$, *** $p < .001$

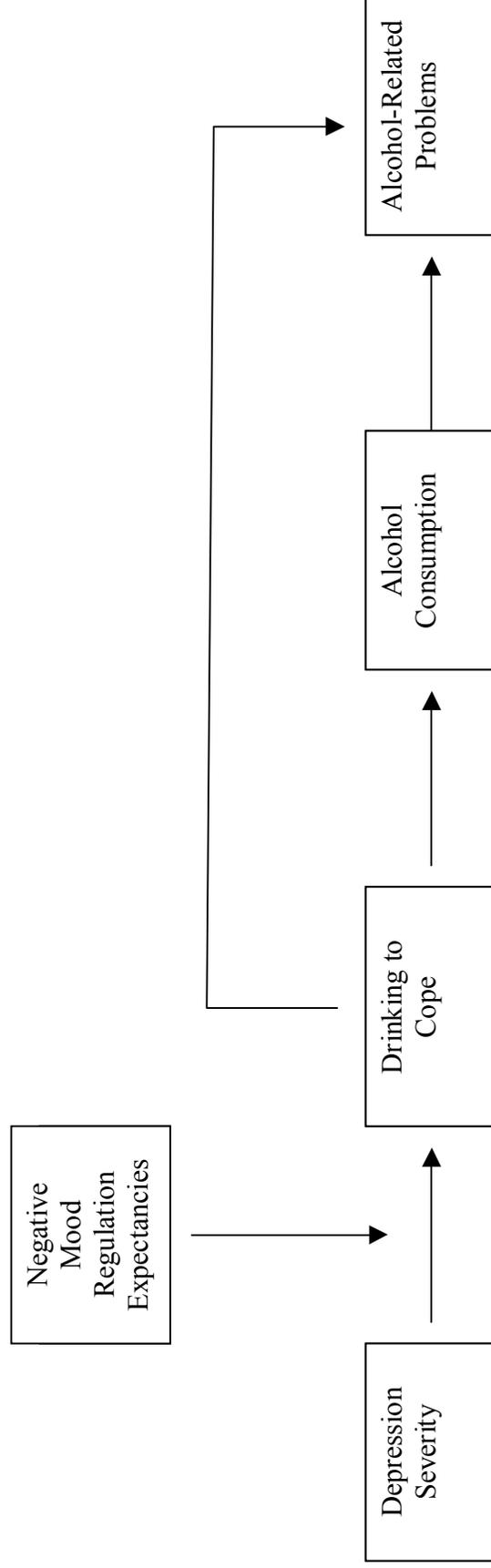
Table 8

Regression Analysis for Mediation of the Relationship Between Drinking to Cope and Objective Alcohol-Related Problems by Binge Drinking Days Per Week

| | <i>B</i> | <i>SE B</i> | β |
|--|----------|-------------|--------------------|
| <u>Cross Sectional at Baseline (N = 152)</u> | | | |
| Block 1 ($R^2 = .06^{**}$) | | | |
| Drinking to Cope | .71 | .24 | .24 ^{**} |
| Block 2 ($\Delta R^2 = .13^{***}$) | | | |
| Drinking to Cope | .43 | .23 | .15 |
| Binge Drinking Days Per Week | .19 | .04 | .37 ^{***} |
| <u>Prospective Baseline to Follow-Up (N = 115)</u> | | | |
| Block 1 ($R^2 = .02^*$) | | | |
| Drinking to Cope | .32 | .19 | .16 |
| Block 2 ($\Delta R^2 = .16^{***}$) | | | |
| Drinking to Cope | .15 | .18 | .07 |
| Binge Drinking Days Per Week | .13 | .03 | .41 ^{***} |

* $p < .05$, ** $p < .01$, *** $p < .001$

Figure 1. *A Conceptual Model of Negative Mood Regulation Expectancies and Depression Severity's, Relationship to Drinking to Cope and Alcohol-Related Problems.*



Appendix A
Informed Consent Form

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
Informed Consent for Participants of Investigative Projects

Title of Project: Alcohol Use: Related Behaviors and Thoughts

Investigators: Josephine M. DeMarce, M.S.
 Robert S. Stephens, Ph.D.

I. The Purpose of this Project

The purpose of this project is to understand the relationship between alcohol use, moods, beliefs, and experiences.

II. Procedures

You will be asked to complete questionnaires containing many items pertaining to your alcohol use, moods, beliefs, and experiences. All the questionnaires necessary to earn extra credit will be completed in a single session today. You will be contacted again in approximately 5 months and be asked to complete a similar set of questionnaires.

III. Risks

Few risks are involved with participation in this study. If there are any questions that make you feel uncomfortable, you may refuse to answer those questions or discontinue your participation in the study without penalty.

IV. Benefits of this Project

You may benefit from participating in this study by learning how psychological research is conducted. If you are interested in receiving information on the results of this study following its completion please indicate so in the box at the end of the next page and provide an e-mail address where you would like to receive this information. *Agreeing to receive this information will in no way affect the confidentiality of your responses today.*

V. Extent of Anonymity and Confidentiality

All responses will be kept strictly confidential. **There is one exception to confidentiality and that is if your responses indicate that you are at risk for harming yourself.** The consent form, demographic information, and contact and locator information will be labeled with the same unique code number on your questionnaire responses but the identifying information will be stored separately from your responses in a locked cabinet that is accessible only to members of the research team.

VI. Compensation

You will receive one extra credit point towards your psychology grade for completion of the questionnaire today. In addition, when you complete the follow-up five months from now you will be entered into a lottery and will have a chance to win one of four \$50 prizes. Because less than 200 individuals are expected to participate in the follow-up assessment, your odds of winning are better than one in fifty.

VII. Freedom to Withdraw

If at any time during the study you become uncomfortable, you are free to withdraw your participation without penalty. You will still receive credit for participating up to the point you withdrew. You may also choose not to answer specific questions without penalty.

VIII. Approval of Research

This research project has been approved (04-501), as required, by the Institutional Review Board for Research Involving Human Subjects at Virginia Polytechnic Institute and State University and by the Human Subjects Committee of the Department of Psychology.

IX. Participant's Responsibilities

I voluntarily agree to participate in this study. I will be responsible for completing several questionnaires that ask about my use of alcohol, moods, beliefs, and experiences.

X. Participant's Permission

I have read and understand the Informed Consent and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent for participation in this project. If I participate, I may withdraw at any time without penalty. I agree to abide by the rules of this project.

Printed Name

Signature

Date

Should I have any questions about this research or its conduct, I may contact:

| | | |
|----------------------------|----------|-----------------|
| Josephine M. DeMarce, M.S. | 231-5628 | jdemarce@vt.edu |
| Robert S. Stephens, Ph.D. | 231-6304 | stephens@vt.edu |

IRB Representatives:

| | |
|-------------------------|------------|
| David Harrison, Ph.D. | 231-4422 |
| Chair, Psychology Human | dwh@vt.edu |
| Subjects Committee | |

| | |
|-----------------|---------------|
| Dr. David Moore | 231-4991 |
| Chair, IRB | moored@vt.edu |
| CVM Phase II | |

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
Informed Consent for Participants of Investigative Projects

Title of Project: Examining the Relationship between Alcohol Use and Depression in a College
Sample: Testing Cognitive-Behavioral Hypotheses

Investigators: Josephine M. DeMarce, M.S.
Robert S. Stephens, Ph.D.

Participant's Responsibilities

I voluntarily agree to participate in this study. I will be responsible for completing several questionnaires that ask about my use of alcohol, moods, beliefs, and experiences.

Participant's Permission

I have read and understand the Informed Consent and conditions of this project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent for participation in this project. If I participate, I may withdraw at any time without penalty. I agree to abide by the rules of this project.

Printed Name

Signature

Date

If you are interested in receiving information on the results of this study please check the box below and provide an e-mail address. This information will be sent out when the study is completed – expect to receive an e-mail sometime in the Spring of 2006.

Yes, I would like to receive this information at the following e-mail address:

Appendix B
Demographic Information

JDPID ____/____/____

DATE: Month _____ Day _____ Year _____

IID ____/____

DE ____ V ____

Demographic Information Form

1. What is your sex?

 (0) Female (1) Male

2. To which ethnic or racial group do you belong?

 (0) White, not of Hispanic origin (1) Black, not of Hispanic origin (2) Hispanic (3) Asian or Pacific Islander (4) American Indian / Alaskan Native (5) Other _____

3. What is your academic status?

 (0) Freshman (1) Sophomore (2) Junior (3) Senior

4. What is your age?

 years old

Appendix C
Contact and Locator Information

Contact and Locator Information

| | |
|----------------------|--|
| JDPID ____/____/____ | DATE: Month _____ Day _____ Year _____ |
| IID ____/____ | DE ____ V ____ |

Your Name: _____

An email address you can be reached at in approximately five months: _____

Address: _____

City: _____ State: _____

Telephone: (Home or Cell) _____

How would you prefer to be contacted (please check all that apply)?

By email

By phone

By letter

If we happen to lose touch with you because of a change of email address or change in other information, we will still want to be able to locate in order to schedule your follow-up assessment. Even if you haven't moved or changed your phone number, if we are unable to get in touch with you we would like to telephone someone who can help us to contact you. For these reasons, we would like to have the name of someone who might be able to help us locate you. This person should be someone who does not live with you and who has lived at the same address for a long time (e.g., two or more years). This person could be a relative such as a brother, sister, parent, aunt, uncle, or grandparent, or could be a close friend. Importantly, we will only contact the locator in the event we cannot contact you through other means, and we will not disclose any of the information you provided for this study to the locator. Also, the locator information you provide will not be stored with your data and will be kept in a locked filing cabinet.

Able to provide locator Yes No

Locator Name: _____

Email: _____

Address: _____

City: _____ State: _____

Telephone: (Home) _____

Relationship to participant: _____

Special instructions for telephoning/contacting locator: _____

Appendix D
TimeLine FollowBack

Timeline Followback

We would like you to recall your drinking over the past **60 days**. This may sound hard to do, but it actually is not difficult, especially when you use a calendar for a reference. Calendars have been found to be very useful in helping people recall their drinking. Listed below are instructions and hints for using the calendar.

Instructions:

This and the following page contain directions that refer to writing on a calendar that is provided. The calendars are located directly after the two direction pages. While reading through the directions, please flip to the calendar sheets and write on them as necessary. You'll see that some days on the calendars have been crossed through. You only need to mark on the days that have not been crossed out.

Filling in the Calendar

1. First mark events on the calendar provided. Marking events will help you remember what has been going on in your life which will then help you remember times that you might have drank alcohol. The following is a list of hints or suggestions for marking events on the calendar:
 - a. Mark days on the calendar that are specific to you, such as days you had tests, went to a party, birthdays, trips, doctor's appointments, when you were sick, etc.
 - b. Sometimes people have certain patterns to their life, such as always studying on certain nights or always going out with friends on certain nights. Marking these patterns may also help you recall your drinking.
 - c. If you have a planner or appointment book, you may use it to help you recall events that have occurred over the past month.

*Many people find it's easier to fill out the calendar starting with yesterday and then work their way backwards from there.

Recording Your Alcohol Use

2. Now that you have the events marked on the calendar, you can use them to recall if you drank on certain days. While a precise day-by-day account of your drinking would be great, all we expect you to do is estimate how much you've consumed daily. So if you're not sure how much you drank on a certain day, use your best estimate.
3. For each day on the calendar, please write in the number of drinks you consumed. Our definition of one drink is **one 12 ounce beer, one 5 ounce wine, or 1 ½ ounces of liquor** (straight or in a drink).
4. On any day in which you drank, write the total number of drinks you had, which means adding across different types of drinks. For example, if you had two 12-ounce beers and a drink with 1 ½ ounces of liquor, you would list that as 3 drinks.
5. On days you did not drink, please write in a "**0**".

An example of the calendars that will be used in this study follows on the next page.

November 2004

| Monday Nov 1st | Tuesday Nov 2 nd Election Day | Wednesday Nov 3 rd | Thursday Nov 4 th | Friday Nov 5 th | Saturday Nov 6 th |
|-----------------------------|---|-------------------------------|---|---|------------------------------|
| Sunday Nov 7 th | Monday Nov 8 th | Tuesday Nov 9 th | Wednesday Nov 10 th Veteran's Day | Thursday Nov 11 th | Friday Nov 12 th |
| Sunday Nov 14 th | Monday Nov 15 th | Tuesday Nov 16 th | Wednesday Nov 17 th | Thursday Nov 18 th | Friday Nov 19 th |
| Sunday Nov 21 st | Monday Nov 22 nd | Tuesday Nov 23 rd | Wednesday Nov 24 th | Thursday Nov 25 th Thanksgiving Day | Friday Nov 26 th |
| Sunday Nov 28 th | Monday Nov 29 th | Tuesday Nov 30 th | | | |

JDPID ___/___/___ Date ___/___/___ IID ___/___ Session ___(1)___(2) DE ___ VER ___
 (M) (D) (Y) (BL) (F/U)

Appendix E
Modified Rutgers Alcohol Problem Index-60

| | |
|----------------------|--|
| JDPID ____/____/____ | DATE: Month _____ Day _____ Year _____ |
| IID ____/____ | SESSION ____ (1) BL ____ (2) F/U |
| DE ____ V ____ | |

RAPI-60

Different things happen to people while they are drinking ALCOHOL or as a result of their ALCOHOL use. Some of these things are listed below. Please indicate how many times each has happened to you during the last 60 days while you were drinking alcohol or as the result of your alcohol use. Your options will be as follows: Never, 1-2 times, 3-5 times, 6-10 times, More than 10 times. How many times did the following things happen to you while you were drinking alcohol or because of your alcohol use during the past 60 days?

- 1 = Never**
- 2 = 1-2 times**
- 3 = 3-5 times**
- 4 = 6-10 times**
- 5 = more than 10 times**

1. Got into fights, acted bad or did mean things

- ___ 1) Never
- ___ 2) 1-2 times
- ___ 3) 3-5 times
- ___ 4) 6-10 times
- ___ 5) More than 10 times

2. Not able to do your homework or study for a test

- ___ 1) Never
- ___ 2) 1-2 times
- ___ 3) 3-5 times
- ___ 4) 6-10 times
- ___ 5) More than 10 times

3. Missed out on other things because you spent too much money on alcohol

- ___ 1) Never
- ___ 2) 1-2 times
- ___ 3) 3-5 times
- ___ 4) 6-10 times
- ___ 5) More than 10 times

4. Went to work or school high or drunk

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

5. Caused shame or embarrassment to someone

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

6. Neglected your responsibilities

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

7. Relatives avoided you

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

8. Felt that you needed more alcohol than you used to use in order to get the same effect

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

9. Tried to control your drinking by trying to drink only at certain times of the day or certain places

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

10. Had withdrawal symptoms, that is, felt sick because you stopped or cut down on drinking

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

11. Noticed a change in your personality

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

12. Felt that you had a problem with alcohol

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

13. Missed a day (or part of a day) of school or work

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

14. Tried to cut down or quit drinking

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

15. Suddenly found yourself in a place that you could not remember getting to

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

16. Passed out or fainted suddenly

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

17. Had a fight, argument or bad feelings with a friend

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

18. Had a fight, argument or bad feelings with a family member

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

19. Kept drinking when you promised yourself not to

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

20. Felt you were going crazy

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

21. Had a bad time

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

22. Felt physically or psychologically dependent on alcohol

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

23. Was told by a friend or neighbor to stop or cut down drinking

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

24. Was physically injured by falling, tripping, or some other type of accident

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

25. Was in trouble with the law

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

26. Was hospitalized

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

27. Engaged in unprotected sex

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

28. Felt you were worthless

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

29. Lost a job

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

30. Experienced sexual dysfunction

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

31. Felt guilty

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

32. Didn't take care of yourself

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

33. Had stomach problems

- 1) Never
- 2) 1-2 times
- 3) 3-5 times
- 4) 6-10 times
- 5) More than 10 times

Appendix F
Drinking Motives Questionnaire

DMQ

| | |
|----------------------|--|
| JDPID ____/____/____ | DATE: Month _____ Day _____ Year _____ |
| IID ____/____ | SESSION ____ (1) BL ____ (2) F/U |
| DE ____ V ____ | |

Instructions:

Here is a list of reasons people give for drinking alcoholic beverages. Using the categories below, circle the response that indicates how often you drink for each of the following reasons.

How often do you drink for each of these reasons?"

Response Options:

- 1 = Almost never/never
- 2 = Sometimes
- 3 = Often
- 4 = Almost always

1. How often do you drink because it helps when you feel depressed or nervous?

- 1 = Almost never/never
- 2 = Sometimes
- 3 = Often
- 4 = Almost always

2. How often do you drink because it makes a social gathering more enjoyable?

- 1 = Almost never/never
- 2 = Sometimes
- 3 = Often
- 4 = Almost always

3. How often do you drink to forget your worries?

- 1 = Almost never/never
- 2 = Sometimes
- 3 = Often
- 4 = Almost always

4. How often do you drink to be sociable?

- 1 = Almost never/never
- 2 = Sometimes
- 3 = Often
- 4 = Almost always

5. How often do you drink to get high?

- 1 = Almost never/never
- 2 = Sometimes
- 3 = Often
- 4 = Almost always

6. How often do you drink because it's fun?

- 1 = Almost never/never
- 2 = Sometimes
- 3 = Often
- 4 = Almost always

7. How often do you drink because you like the feeling?

- 1 = Almost never/never
- 2 = Sometimes
- 3 = Often
- 4 = Almost always

8. How often do you drink because it makes you feel good?

- 1 = Almost never/never
- 2 = Sometimes
- 3 = Often
- 4 = Almost always

9. How often do you drink because it is customary on special occasions?

- 1 = Almost never/never
- 2 = Sometimes
- 3 = Often
- 4 = Almost always

10. How often do you drink to relax?

- 1 = Almost never/never
- 2 = Sometimes
- 3 = Often
- 4 = Almost always

11. How often do you drink as a way to celebrate?

- 1 = Almost never/never
- 2 = Sometimes
- 3 = Often
- 4 = Almost always

12. How often do you drink because it is what most of your friends do when you get together?

- 1 = Almost never/never
- 2 = Sometimes
- 3 = Often
- 4 = Almost always

13. How often do you drink because you feel more self-confident or sure of yourself?

- 1 = Almost never/never
- 2 = Sometimes
- 3 = Often
- 4 = Almost always

14. How often do you drink to cheer up when you're in a bad mood?

- 1 = Almost never/never
- 2 = Sometimes
- 3 = Often
- 4 = Almost always

15. How often do you drink because it is exciting?

- 1 = Almost never/never
- 2 = Sometimes
- 3 = Often
- 4 = Almost always

Appendix G
Negative Mood Regulation Expectancies

| | |
|----------------------|--|
| JDPID ____/____/____ | DATE: Month _____ Day _____ Year _____ |
| IID ____/____ | SESSION ____ (1) BL ____ (2) F/U |
| DE ____ V ____ | |

NMRE

This is a questionnaire to find out what people believe they can do about upsetting emotions or feelings. Please answer the statements by giving as true a picture of your own beliefs as possible. Of course, there are no right or wrong answers. Remember, the questionnaire is about what you believe you can do, not about what you actually or usually do.

Be sure to read each item carefully and show your beliefs by circling the appropriate number.

If you strongly disagree with an item, circle "1". Circle "2" if you mildly disagree with the item. That is, circle a "2" if you think the item is more generally untrue than true, according to your beliefs. Circle "3" in the space if you feel the item is about as equally true as untrue. Circle "4" in the space if you mildly agree with the item. That is, circle a "4" if you think the item is more true than untrue. If you strongly agree with an item circle a "5".

When I'm upset, I believe that...

1. I can usually find some way to cheer myself up.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

2. I can do something to feel better.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

3. Wallowing in it is all I can do.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

When I'm upset, I believe that...

4. I'll feel okay if I think about more pleasant times.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

5. Being with other people will be a drag.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

6. I can feel better by treating myself to something I like.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

7. I'll feel better when I understand why I feel bad.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

8. I won't be able to get myself to do anything about it.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

9. I won't feel much better by trying to find something good about the situation.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

10. It won't be long before I can calm myself down.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

When I'm upset, I believe that...**11. It will be hard to find someone who really understands.**

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

12. Telling myself it will pass will help me calm down.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

13. Doing something nice for someone else will cheer me up.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

14. I'll probably end up feeling really depressed.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

15. Planning how I'll deal with things will help.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

16. I can forget about what's upsetting me pretty easily.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

17. Catching up with my work will help me calm down.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

18. The advice friends give won't help me feel better.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

When I'm upset, I believe that...

19. I won't be able to enjoy things I usually enjoy.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

20. I can find a way to relax.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

21. Trying to work the problem out in my head will only make it seem worse.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

22. Seeing a movie won't help me feel better.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

23. Going out to dinner with friends will help.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

24. I'll be upset for a long time.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

25. I won't be able to put it out of my mind.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

26. I can feel better by doing something creative.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

When I'm upset, I believe that...

27. I'll start to feel really down about myself.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

28. Thinking that things will eventually be better won't help me feel any better.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

29. I can find some humor in the situation and feel better.

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

30. If I'm with a group of people, I'll feel "alone in a crowd."

| | | | | |
|----------------------|--------------------|-------------------------------|-----------------|-------------------|
| 1..... | 2..... | 3..... | 4..... | 5..... |
| Strongly disagree | Mildly disagree | Agree and disagree equally | Mildly agree | Strongly agree |

Appendix H
Diagnostic Inventory for Depression

DID

| | |
|----------------------|--|
| JDPID ____/____/____ | DATE: Month _____ Day _____ Year _____ |
| IID ____/____ | SESSION ____ (1) BL ____ (2) F/U |
| DE ____ V ____ | |

INSTRUCTIONS: This questionnaire is about how you have been feeling **during the past week**. After each question there are 5 statements (numbered 0– 4). Read all 5 statements carefully. Then decide which one best describes how you have been feeling. Choose only one statement per group. If more than one statement in a group applies to you, choose the one with the higher number.

- (1) **During the past week, have you been feeling sad or depressed?**
- 0) No, not at all.
 - 1) Yes, a little bit.
 - 2) Yes, I have felt sad or depressed most of the time.
 - 3) Yes, I have been very sad or depressed nearly all the time.
 - 4) Yes, I have been extremely depressed nearly all the time.
- (2) **How many days in the past 2 weeks have you been feeling sad or depressed?**
- 0) No days
 - 1) A few days
 - 2) About half the days
 - 3) Nearly every day
 - 4) Every day
- (3) **Which of the following best describes your level of interest in your usual activities during the past week?**
- 0) I have not lost interest in my usual activities.
 - 1) I have been less interested in 1 or 2 of my usual activities.
 - 2) I have been less interested in several of my usual activities.
 - 3) I have lost most of my interest in almost all of my usual activities.
 - 4) I have lost all interest in all of my usual activities.
- (4) **How many days in the past 2 weeks have you been less interested in your usual activities?**
- 0) No days
 - 1) A few days
 - 2) About half the days
 - 3) Nearly every day
 - 4) Every day

- (5) **Which of the following best describes the amount of pleasure you have gotten from your usual activities during the past week?**
- 0) I have gotten as much pleasure as usual.
 - 1) I have gotten a little less pleasure from 1 or 2 of my usual activities.
 - 2) I have gotten less pleasure from several of my usual activities.
 - 3) I have gotten almost no pleasure from most of the activities that I usually enjoy.
 - 4) I have gotten no pleasure from any of the activities that I usually enjoy.
- (6) **How many days in the past 2 weeks have you gotten less pleasure from your usual activities?**
- 0) No days
 - 1) A few days
 - 2) About half the days
 - 3) Nearly every day
 - 4) Every day
- (7) **During the past week, has your energy level been low?**
- 0) No, not at all.
 - 1) Yes, my energy level has occasionally been a little lower than it normally is.
 - 2) Yes, I have clearly had less energy than I normally do.
 - 3) Yes, I have had much less energy than I normally have.
 - 4) Yes, I have felt exhausted almost all of the time.
- (8) **Which of the following best describes your level of physical restlessness during the past week?**
- 0) I have not been more restless and fidgety than usual.
 - 1) I have been a little more restless and fidgety than usual.
 - 2) I have been very fidgety, and it has been somewhat difficult to sit still.
 - 3) I have been extremely fidgety, and I have been pacing a little bit almost every day.
 - 4) I have been pacing more than an hour a day, and I have been unable to sit still.
- (9) **Which of the following best describes your physical activity level during the past week?**
- 0) I have not been moving more slowly than usual.
 - 1) I have been moving a little more slowly than usual.
 - 2) I have been moving more slowly than usual, and it takes me longer than usual to do most activities.
 - 3) Normal activities are difficult because it has been tough to start moving.
 - 4) I have been feeling extremely slowed down physically, like I am stuck in mud.

- (10) **During the past week, have you been bothered by feelings of guilt?**
- 0) No, not at all.
 - 1) Yes, I have occasionally felt a little guilty.
 - 2) Yes, I have often been bothered by feelings of guilt.
 - 3) Yes, I have often been bothered by strong feelings of guilt.
 - 4) Yes, I have been feeling extremely guilty.
- (11) **During the past week, what has your self esteem been like?**
- 0) My self-esteem has not been low.
 - 1) Once in a while, my opinion of myself has been a little low.
 - 2) I often think I am a failure.
 - 3) I almost always think I am a failure.
 - 4) I have been thinking I am a totally useless and worthless person.
- (12) **During the past week, have you been thinking about death or dying?**
- 0) No, not at all.
 - 1) Yes, I have occasionally thought that life is not worth living.
 - 2) Yes, I have frequently thought about dying in passive ways (such as going to sleep and not waking up).
 - 3) Yes, I have frequently thought about death, and that others would be better off if I were dead.
 - 4) Yes, I have been wishing I were dead.
- (13) **During the past week, have you been thinking about killing yourself?**
- 0) No, not at all.
 - 1) Yes, I had a fleeting thought about killing myself.
 - 2) Yes, several times I thought about killing myself, but I would not act on these thoughts.
 - 3) Yes, I have been seriously thinking about killing myself.
 - 4) Yes, I have thought of a specific plan for killing myself.
- (14) **Which of the following best describes your ability to concentrate during the past week?**
- 0) I have been able to concentrate as well as usual.
 - 1) My ability to concentrate has been slightly worse than usual.
 - 2) My attention span has not been as good as usual and I have had difficulty collecting my thoughts, but this hasn't caused any serious problems.
 - 3) I have frequently had trouble concentrating, and it has interfered with my usual activities.
 - 4) It has been so hard to concentrate that even simple things are hard to do.

- (15) **During the past week, have you had trouble making decisions?**
- 0) No, not at all.
 - 1) Yes, making decisions has been slightly more difficult than usual.
 - 2) Yes, it has been harder and has taken longer to make decisions, but I have been making them.
 - 3) Yes, I have been unable to make some decisions that I would usually have been able to make.
 - 4) Yes, important things are not getting done because I have had trouble making decisions.
- (16) **During the past week, has your appetite been decreased?**
- 0) No, not at all.
 - 1) Yes, my appetite has been slightly decreased compared to how it normally is.
 - 2) Yes, my appetite has been clearly decreased, but I have been eating about as much as I normally do.
 - 3) Yes, my appetite has been clearly decreased, and I have been eating less than I normally do.
 - 4) Yes, my appetite has been very bad, and I have had to force myself to eat even a little.
- (17) **How much weight have you lost during the past week (not due to dieting)?**
- 0) None (or the only weight I lost was due to dieting)
 - 1) 1–2 pounds
 - 2) 3–5 pounds
 - 3) 6–10 pounds
 - 4) More than 10 pounds
- (18) **During the past week, has your appetite been increased?**
- 0) No, not at all.
 - 1) Yes, my appetite has been slightly increased compared to how it normally is.
 - 2) Yes, my appetite has clearly been increased compared to how it normally is.
 - 3) Yes, my appetite has been greatly increased compared to how it normally is.
 - 4) Yes, I have been feeling hungry all the time.
- (19) **How much weight have you gained during the past week?**
- 0) None
 - 1) 1–2 pounds
 - 2) 3–5 pounds
 - 3) 6–10 pounds
 - 4) More than 10 pounds

- (20) **During the past week, have you been sleeping less than you normally do?**
- 0) No, not at all.
 - 1) Yes, I have occasionally had slight difficulty sleeping.
 - 2) Yes, I have clearly been sleeping less than I normally do.
 - 3) Yes, I have been sleeping about half my normal amount of time.
 - 4) Yes, I have been sleeping less than 2 hours a night.
- (21) **During the past week, have you been sleeping more than you normally do?**
- 0) No, not at all.
 - 1) Yes, I have occasionally slept more than I normally do.
 - 2) Yes, I have frequently slept at least 1 hour more than I normally do.
 - 3) Yes, I have frequently slept at least 2 hours more than I normally do.
 - 4) Yes, I have frequently slept at least 3 hours more than I normally do.
- (22) **During the past week, have you been feeling pessimistic or hopeless about the future?**
- 0) No, not at all.
 - 1) Yes, I have occasionally felt a little pessimistic about the future.
 - 2) Yes, I have often felt pessimistic about the future.
 - 3) Yes, I have been feeling very pessimistic about the future most of the time.
 - 4) Yes, I have been feeling that there is no hope for the future.

Continue to the next page.....

INSTRUCTIONS

Indicate below how much symptoms of depression have interfered with, or caused difficulties in, the following areas of your life during the past week (Circle DNA [Does Not Apply] if you are not married or do not have a boyfriend/girlfriend.)

0 = no difficulty

1 = mild difficulty

2 = moderate difficulty

3 = marked difficulty

4 = extreme difficulty

During the PAST WEEK, how much difficulty have symptoms of depression caused in your. . .

23. usual daily responsibilities (at a paid job, at home, or at school).....0 1 2 3 4

24. relationship with your husband, wife, boyfriend, girlfriend, or loverDNA 0 1 2 3 4

25. relationships with close family members.....0 1 2 3 4

26. relationships with your friends0 1 2 3 4

27. participation and enjoyment in leisure and recreation activities0 1 2 3 4

28. Overall, how much have symptoms of depression interfered with or caused difficulties in your life?

0) not at all

1) a little bit

2) a moderate amount

3) quite a bit

4) extremely

29. How many days during the past week were you completely unable to perform your usual daily responsibilities (at a paid job, at home, or at school) because you were feeling depressed? (circle one)

0 days 1 day 2 days 3 days 4 days 5 days 6 days 7 days

Continue to the next page.....

INSTRUCTIONS

Indicate below your level of satisfaction with the following areas of your life (Circle DNA [Does Not Apply] if you are not married or do not have a boyfriend or girlfriend.)

0 = very satisfied

1 = mostly satisfied

2 = equally satisfied/dissatisfied

3 = mostly dissatisfied

4 = very dissatisfied

During the PAST WEEK how satisfied have you been with your. . .

30. usual daily responsibilities (at a paid job, at home, or at school).....0 1 2 3 4

31. relationship with your husband, wife, boyfriend, girlfriend, or loverDNA 0 1 2 3 4

32. relationship with close family members0 1 2 3 4

33. relationships with your friends0 1 2 3 4

34. participation and enjoyment in leisure and recreation activities0 1 2 3 4

35. mental health.....0 1 2 3 4

36. physical health0 1 2 3 4

37. In general, how satisfied have you been with your life during the past week?

0) very satisfied

1) mostly satisfied

2) equally satisfied & dissatisfied

3) mostly dissatisfied

4) very dissatisfied

38. In general, how would you rate your overall quality of life during the past week?

0) very good, my life could hardly be better

1) pretty good, most things are going well

2) the good and bad parts are about equal

3) pretty bad, most things are going poorly

4) very bad, my life could hardly be worse

This is the end of the questionnaires. Thank you for taking the time to complete them!

Appendix I

MRAPI-OS

Objective or Subjective Alcohol Problems Questionnaire

The following questionnaire is a measure of alcohol related problems that is frequently used in research on alcohol use. When used for alcohol research, individuals filling out the questionnaire are asked how often they have experienced these various problems as a result of their alcohol use.

Today this questionnaire is being used for a different purpose. We want to know whether you think the individual items on the questionnaire are objective or subjective in nature.

Please consider the following definitions of objective and subjective provided below when choosing how to rate the items.

Objective items definition: When something is objective it has actual existence in reality. Objective information is uninfluenced by emotions or personal prejudices. Objective information is based on observable phenomena. It is independent of individual's thought and perceptible by all. It is observable to persons other than the affected individual and is undistorted by emotion or personal bias.

Subjective items definition: When something is subjective it proceeds from or takes place in a person's mind rather than the external world. It is something that exists only within the experiencer's mind. Often time it is objective information that has been modified within the mind by individual bias.

We know that many of these items have both objective and subjective aspects to them, so we are not asking you to identify purely objective and subjective items. But we want to know to what degree you believe that persons answering these items would be accurately reporting real objective events rather than more subjective impressions that they might have about alcohol's effects on them.

Remember, a person using this questionnaire for its intended purpose would be answering the extent to which they had these problems as a result of their alcohol use. Keeping this in mind is important while rating how subjective or objective an item is.

Please turn to the next page to begin the questionnaire and for each item circle the number below that indicates how this items fall on a subjective-objective continuum.

JDPID ___/___/___

DATE: Month _____ Day _____ Year _____

IID ___/___

DE ___ V ___

1. Got into fights, acted bad or did mean things

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

2. Not able to do your homework or study for a test

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

3. Missed out on other things because you spent too much money on alcohol

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

4. Went to work or school high or drunk

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

5. Caused shame or embarrassment to someone

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

6. Neglected your responsibilities

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

7. Relatives avoided you

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

8. Felt that you needed more alcohol than you used to use in order to get the same effect

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

9. Tried to control your drinking by trying to drink only at certain times of the day or certain places

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

10. Had withdrawal symptoms, that is, felt sick because you stopped or cut down on drinking

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

11. Noticed a change in your personality

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

12. Felt that you had a problem with alcohol

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

13. Missed a day (or part of a day) of school or work

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

14. Tried to cut down or quit drinking

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

15. Suddenly found yourself in a place that you could not remember getting to

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

16. Passed out or fainted suddenly

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

17. Had a fight, argument or bad feelings with a friend

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

18. Had a fight, argument or bad feelings with a family member

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

19. Kept drinking when you promised yourself not to

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

20. Felt you were going crazy

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

21. Had a bad time

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

22. Felt physically or psychologically dependent on alcohol

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

23. Was told by a friend or neighbor to stop or cut down drinking

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

24. Was physically injured by falling, tripping, or some other type of accident

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

25. Was in trouble with the law

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

26. Was hospitalized

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

27. Engaged in unprotected sex

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

28. Felt you were worthless

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

29. Lost a job

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

30. Experienced sexual dysfunction

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

31. Felt guilty

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

32. Didn't take care of yourself

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

33. Had stomach problems

1.....2.....3.....4.....5.....6.....7
 Completely Subjective Neither Subjective or Objective Completely Objective

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EDUCATION

- 12/03 - present Virginia Polytechnic Institute and State University, Blacksburg, VA
Degree expected May 2006: Doctor of Philosophy in Psychology
Specialization: Adult Psychology with a focus on Substance Use Disorders.

*Dissertation title: Examining the Relationship among Alcohol Use,
Drinking to Cope, Mood Regulation Expectancies, and Depression*
- 8/01 – 12/03 Virginia Polytechnic Institute and State University, Blacksburg, VA
Master of Science in Psychology, en route to Ph.D.

*Master's thesis title: Psychological Distress and Marijuana Use Before
and After Treatment: Testing Cognitive-Behavioral Matching Hypotheses*
- 08/96 – 12/99 Oberlin College, Oberlin, Ohio
Bachelor of Arts in Biopsychology
- Summer 1999 George Mason University, Fairfax, Virginia
- Summer 1998 Davidson College, Davidson, North Carolina

PUBLICATIONS

DeMarce, J. M., Stephens, R. S., and Roffman, R. A. (2005). Psychological distress and marijuana use before and after treatment: Testing cognitive-behavioral matching hypotheses. *Addictive Behaviors*, 30, 1055-1059.

MANUSCRIPTS UNDER REVIEW

DeMarce, J. M., Burden, J. L., Lash, S. J., Stephens, R. S., & Grambow, S. C. (2006). Validity of the Timeline Followback for Dually Diagnosed Veteran Inpatients. *Psychology of Addictive Behaviors*.

Lash, S. L., Stephens, R. S., Burden, J. L., Grambow, S. C., **DeMarce, J. M.**, Jones, M. E., Lozano, B. E., Jeffreys, A. S., Fearer, S. A., and Horner, R. D. (2006). Contracting, Prompting and Reinforcing Substance Abuse Treatment Continuing Care: Impact on Adherence and Outcome. *Journal of Consulting and Clinical Psychology*.

MANUSCRIPTS IN PREPERATION

Stephens, R. S., **DeMarce, J. M.**, & The Marijuana Treatment Project Group (anticipated submission December 2005). Marijuana Withdrawal.

DeMarce, J. M. & Stephens, R. S., (anticipated submission Spring 2006). Examining the relationship among alcohol use, drinking to cope, mood regulations expectancies, and depression.

DeMarce, J. M., Stephens, R. S., Lash, S. L., Grambow, S. C., & Burden, J. L. (anticipated submission Spring/Summer 2006). Comorbid Psychiatric Disorders with Substance Use Disorders: Does Comorbidity Moderate Rates of Aftercare Attendance and Substance Use Outcomes?

CONFERENCE PRESENTATIONS

DeMarce, J. M., Stephens, R. S., Edmonds, G., & Sylvina, A. (2005, November). *Examining the Relationship among Alcohol Use, Drinking to Cope, Mood Regulation Expectancies, and Depression*. Poster presented at the annual meeting of the Association for Behavioral and Cognitive Therapies, Washington, D.C.

DeMarce, J. M., Stephens, R. S., Lash, S. J., & Grambow, S. C. (September, 2005). *Comorbid psychiatric disorders and substance abuse: Does Comorbidity moderate rates of aftercare attendance and substance use outcomes?* Poster presented at the Best Practices in VA Network Mental Healthcare Systems 2005: Transforming the VA Action Agenda into VISN Initiatives, Scottsdale, Arizona.

DeMarce, J., Stephens, R. S., and Lash, S. J. (2004, November). *Comorbid psychiatric disorders with substance use disorders: Does comorbidity moderate rates of aftercare attendance and substance use outcomes?* This portion of the parent symposium titled Behavioral Contracting, Prompting and Reinforcing Substance Abuse was presented at the annual meeting of the Association for the advancement of Behavioral Therapy, New Orleans, LA.

DeMarce, J., Stephens, R. S., and Roffman, R. (2004, November). *Comorbid Psychological Distress and Marijuana Use Before and After Treatment: Testing Cognitive-Behavioral Hypotheses*. Poster session presented at the annual meeting of the Association for the advancement of Behavioral Therapy, New Orleans, LA.

Burden, J. L., Lash, S. J., Stephens, R. S., Fearer, S., and **DeMarce, J.** (2004, November). *Staying engaged: The role of treatment motivation in mediating aftercare adherence and substance use outcomes*. This portion of the parent symposium titled Behavioral Contracting, Prompting and Reinforcing Substance Abuse was presented at the annual meeting of the Association for the advancement of Behavioral Therapy, New Orleans, LA.

DeMarce, J., Stephens, R. S., and Roffman, R. (2004, March). *Comorbid psychological distress and marijuana use before and after treatment: Testing cognitive-behavioral hypotheses*. Poster session presented at the 20th GSA Research Symposium and Exposition at Virginia Tech.

Lash, S. J., Stephens, R. S., Burden, J. L., Grambow, S. C., Horner, R. D., Walker, N. R., DeMarce, J., Jones, M., and Lozano, B. (2002, November). *Contracting, prompting, and reinforcing substance abuse aftercare attendance: Three month outcome of a VA HSR&D clinical trial*. Poster session presented at the annual meeting of the Association for the Advancement of Behavior Therapy, Reno, NV.

Walker, N. R., DeMarce, J., Jones, M., Lozano, B., Stephens, R. S., Lash, S. J., and Burden, J. L. (2002 November). *Development of an aftercare self-efficacy questionnaire: Validity and ability to predict aftercare attendance*. Poster session presented at the annual meeting of the Association for the Advancement of Behavior Therapy, Reno, NV.

GROUP AFFILIATIONS

2004 – present American Psychological Association, student affiliate
2003 – present Association for the Advancement of Behavior Therapy, student member

AWARDS

2004 Graduate Research Development Grant (\$500)

RESEARCH POSITIONS

08/05 – present Salem Veteran's Affairs Medical Center, Salem, VA. Psychology Intern. Six Month Research Minor. Duties: 1) Submit a first-authored publication examining the validity of the TimeLine FollowBack (Sobell & Sobell, 1992) in a dual diagnosis sample, 2) Learn how to conduct and interpret logistic regression for a manuscript examining differences in substance use and aftercare attendance outcomes in persons diagnosed with substance use disorders compared to those who are dually diagnosed with a comorbid psychiatric disorder, and 3) Write and submit a second authored manuscript examining characteristics of marijuana withdrawal. This paper is based on a longitudinal multi-site clinical trial of marijuana dependence treatments that was funded by SAMHSA.

Supervisors: Jennifer Burden, Ph.D. and Robert Stephens Ph.D.

08/01 – 07/05 Department of Psychology, Virginia Polytechnic Institute and State University, Blacksburg, VA. Research Assistant. Duties:

- Attended weekly or bi-weekly meetings for the (Teen Marijuana Check-Up 2 (TMCU2) and later the TMCU3 study, both funded by NIDA. Both studies were extensions of a previous NIDA-funded pilot study examining the effectiveness of motivational interviewing as a brief intervention for marijuana dependent adolescents. With the TMCU3, responsible for all aspects of data management 8/04-8/05; developed training manual and provided training for a cognitive-behavioral treatment (CBT) intervention used in the study; supervised implementation of the protocols for both the CBT and an education

intervention conditions. Also trained replacement in data management procedures.

- Assisted in preparation of two grant proposals:
 - Reaching and Motivating Change in Teen Marijuana Smokers (TMCU3 described above) - Roffman & Stephens: A competing renewal for a stage 2 application of a previous National Institute on Drug Abuse-funded stage 1b study examining the effectiveness of motivational interviewing as a brief in-school intervention for marijuana dependent adolescents not seeking treatment. The grant was funded and the study is in progress.
 - Reinforcement of Abstinence and Attendance in Substance Abuse Treatment (VA Study 2) - Lash & Burden: A study designed to build upon previous research (i.e., VA Study below) to increase aftercare participation in individuals who complete a 28-day residential substance abuse treatment program at the Salem VAMC by using contracts, prompts, and reinforcers of attendance and abstinence compared to treatment as usual. The grant has been funded and the study will begin summer 2006.
- Assisted in finalization of study protocol, manual, assessment battery, and creation of data entry screens; responsible for reviewing assessment tapes for quality assurance purposes; and communicated with Seattle site regarding protocols, study implementation, and recruitment strategies via weekly conference calls and e-mail for the PRN. In addition, was the primary person responsible for the data management, cleaning and outcome variable creation from 08/04-08/05. The PRN is a NIDA-funded study designed to evaluate the effectiveness of nine sessions vs. treatment as needed (PRN) in a marijuana-using sample, utilizing case management, motivational enhancement therapy, and CBT skills training.
- Assisted in data management for the Marijuana Check-Up 2 (MCU2). Communicated with Seattle site regarding protocols, study implementation, and quality assurance via weekly conference calls. MCU2 - Stephens and Roffman. A NIDA-funded study comparing the effectiveness of a two- vs. a six-session motivational enhancement therapy for marijuana dependent adults.
- Assisted in development of protocols and the assessment battery, created data entry screens, played a role in the data entry, cleaning, and analyses; responsible for quality assurance of assessment sessions, conducted approximately 150 assessments; and participated in weekly conference calls for VA study (see Lash and Stephens grant, below). Lash and Stephens. A study designed to increase aftercare participation in substance users who complete a 28-day residential substance abuse treatment program at the Salem VA hospital.

Supervisor: Robert S. Stephens, Ph.D.

10/01-5/02 Department of Psychology, Virginia Polytechnic Institute and State University, Blacksburg, VA. Dissertation Aid. Duties: Trained in the implementation of an advanced level graduate student's dissertation procedures. Ran group sessions for data collection from subjects both supervised and independently.

Supervisor: Stephanie Adams Fearer, MS

01/99 Oberlin College Neuroscience Department, Oberlin, OH. Undergraduate Research Assistant. Research area: Learning and Memory. Effect of blocking NMDA and voltage dependent calcium channels on working and reference memory as measured by using a 8-arm radial maze. Duties: assist in design of study, implement the study, care for rats, administer injections, and collect data.

Supervisor: Albert Borroni, Ph.D.

CLINICAL POSITIONS

8/05 – present Salem Veteran's Affairs Medical Center, Salem, VA. Psychology Intern. Duties: Currently completing a three month rotation in substance abuse. Conduct individual therapy, lead a substance abuse aftercare weekly group, co-lead a Seeking Safety group (for individuals with substance abuse and trauma experiences), train staff in motivational interviewing, complete psychological evaluations, attend staff meetings and training seminars, present cases, receive a minimum of four hours of supervision per week.

Supervisors: Jennifer Burden, Ph.D.
Steven Lash, Ph.D.
Stephanie Fearer, Ph.D.
Theodore Wright, Ph.D

Anticipated internship duties will include completing four month major rotation in Outpatient Psychological Services with a concentration on treatment for combat related PTSD, completing a four month major rotation in Behavioral Medicine, and completing a six month minor rotation focused on military sexual trauma.

5/05 – 7/05 Department of Psychology, Virginia Polytechnic Institute and State University, Blacksburg, VA. Graduate Supervisor. Duties: Provide supervision (6-8 hours a week, group and individual) to eight graduate students who have completed one prior year of practicum experience. Receive supervision on supervision and process practicum meetings with the primary supervisor.

Supervisor: Lee Cooper, Ph.D.

- 8/04 – 5/05 Department of Psychology, Virginia Polytechnic Institute and State University, Blacksburg, VA. Graduate Clinician. Duties: Conduct therapy and assessments for ADHD, attend supervision meetings with faculty supervisor and other clinicians.
- Supervisor: Lee Cooper, Ph.D.
- 5/03 – 12/03 Substance Abuse Rehabilitation Treatment Program for inpatients, Salem Veteran's Affairs Medical Center, Salem, VA. Extern. Duties: Conduct brief therapy, conduct assessments (screening for program admission, intake for general symptomatology, neuropsychological, cognitive, and symptom-focused (Obsessive-Compulsive Disorder, Bipolar Disorder, Posttraumatic Stress Disorder, thought disorder), attend weekly treatment team meetings, run groups (CBT relapse prevention, depression, and women's aftercare), updated mental status exam, and attend supervision meetings.
- Supervisors: Steven J. Lash, Ph.D. and Jennifer Burden, Ph.D.
- 8/02-5/03 Department of Psychology, Virginia Polytechnic Institute and State University, Blacksburg, VA. Graduate Clinician. Duties: Conduct individual and group therapy (Healthy Relationships and a general process group), complete adult assessment for ADHD and learning disabilities, and attend supervision meetings with faculty supervisor and other clinicians.
- Supervisors: Richard Eisler, Ph.D.
Lee Cooper, Ph. D. (ADHD assessment supervisor only)
Felicia Brown-Anderson, M.A
Christine Dennis, M.A.
- 5/02-8/02 Department of Psychology, Virginia Polytechnic Institute and State University, Blacksburg, VA. Graduate Clinician. Duties: Conduct therapy, and attend supervision meetings with faculty supervisor and other clinicians.
- Supervisor: Lee Cooper, Ph.D.
- 12/01 – 5/02 Department of Psychology, Virginia Polytechnic Institute and State University, Blacksburg, VA. Graduate Clinician. Duties: Conduct therapy, and attend supervision meetings with faculty supervisor and other clinicians.
- Supervisor: George Clum, Ph.D.
- 01/01 – 07/01 Pathway Homes Inc., Fairfax, VA. Mental Health Counselor/Case Manager. Duties: work in a group home setting with 8 adults males with chronic schizophrenia, attend weekly treatment team meetings, and attend weekly supervision, administration and documentation of medication, write daily progress notes, write 2 week goal updates, and

write 6 month service plans, responsible for daily care issues, provide transportation, work with case managers at social center the men attended.

Supervisor: Alison Lanham, MS, Program Director

03/00 - 09/01

Fellowship Health Resources, Arlington, VA. Mental Health Counselor. Duties: work full time in a group home setting with 4 adult women with various chronic mental disorders (schizophrenia, borderline personality disorder, dependent personality disorder), attend weekly supervision, administration and documentation of medication, write daily and monthly progress notes, responsible for daily care issues, provide transportation.

Supervisor: Lyanne Trumbull, LCSW, Program Director

05/99 - 03/00

Northern Virginia Mental Health Institute, Fairfax, VA. Psychiatric Technician. Duties: attend treatment planning meetings, escort patients to groups and medical appointments, assist with activities of daily living, assist occupational and recreational therapists, take vital signs, document patient progress and behavior, work with patients deemed Not Guilty by Reason of Insanity and become familiar with policies of the Forensic Review Board in Virginia.

Supervisors: Nancy MaGary, RN, Unit Supervisor
Bethany Dusenberry, RN, Unit Supervisor

05/98 - 08/98

Broughton Hospital, Morganton, NC. Psychology Intern. Duties: work on an adolescent unit, write a case study on a 17-year-old patient, direct an anger management group once a week, assist a licensed clinical psychologist with group therapy sessions, attend family and individual therapy sessions, supervise outings for patients, mediate issues among patients.

Supervisor: Richard Whited, Ph.D.