The Role of Expectancies and Personality Factors in the Formation of Alcohol and
Marijuana Use Motives among College Students

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Abstract

Undergraduates at Virginia Polytechnic Institute and State University ($N = 306$) were
surveyed to investigate the formation of alcohol and marijuana use motives. Based upon
a hypothesized path model effect expectancies, use motives, use frequencies, and use-
related problems for alcohol and marijuana were assessed via self-report. Personality
factors of sensation-seeking, sociability, and neuroticism-anxiety were also assessed
during this single session. Many of the hypothesized pathways were confirmed via
multiple regression methods for path analysis. The findings indicated that use motives
are related to theoretically more distal influences such as related personality factors and
drug effect expectancies. Motives were found to consistently account for substantial
variation in use and the development of problems related to alcohol and marijuana in the
sample. In some cases these motives not only predicted use, but also appeared to mediate
the influences of personality factors and expectancies. Finally, specific motives were
found to account for significant variation in the development of substance-related
problems even after controlling for the frequency of use.

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In the field of addiction research cognitive predictions about the outcomes of

drinking behavior have long been investigated as predictors of levels of alcohol

consumption and related problems (Marlatt, Demming & Reid, 1973; Brown,

Christiansen & Goldman, 1987). These cognitive predictions are commonly referred to

as *effect expectancies* in the addictions literature. Alcohol effect expectancies are the

result of both personal and vicarious experiences with alcohol that give rise to an

associational memory system (Brown, 1993). Goldman, Brown & Christiansen (1987)

generally define expectancies as, "the anticipation of a systematic relationship between

events or objects in an upcoming situation." The motivation to engage in drinking

behavior associated with the achievement of valued outcomes is amplified by the

probability of attainment (Pervin, 1996). Choices are made based upon an individual's

belief that their actions will serves as a means of satisfying specific needs or achieving

otherwise valued outcomes (e.g., tension reduction, social facilitation).

The vast majority of expectancy research has focused on alcohol, but more recent

work has extended expectancy research to drugs other than alcohol including marijuana

(Schafer & Brown, 1991). Although the literature supports this extension of the

expectancy theory to marijuana, Schafer & Brown (1991) found that the effect

expectancies for marijuana displayed a factor structure distinct from the domains

typically found in alcohol research. Their findings indicate that individuals expect

distinct effects across different types of drugs

Although expectancies have been shown to be predictive of substance use and use

related problems, both theory and research indicate that they are not synonymous with

motives for using drugs nor are they sufficient to solely account for substance use

(Cooper, 1994). Similarly, Leigh (1990) found that holding appropriate beliefs regarding

a drug's effect (alcohol in this case) is a necessary but not sufficient condition for using

to achieve that desired effect. The literature suggests that individuals choose to engage in

drug-taking behavior based on more immediate drug use motives intended to result in

explicit valued outcomes. Thus, expectancies may be antecedents of drug use motives,

which are then the "critical determinant of the likelihood that an individual will engage in any purposive behavior" (p. 991; Cooper, Frone, Russell & Mudar, 1995).

In response to these assertions there has been a somewhat parallel investigation of motivational models of alcohol use in the addictions literature (Cox & Klinger, 1988; Cooper et al., 1995; McCarty & Kaye, 1984). Researchers in this area have made a clear distinction between alcohol expectancies and use motives, arguing that the latter are the more proximal factor in predicting alcohol use and abuse (Cooper, 1994; Cox & Klinger, 1988). Like alcohol expectancies, alcohol use motives have been shown to predict levels of consumption and related problems (Cooper, 1994; Carey & Correia, 1997; Cooper, Russell, Skinner & Windle, 1992). Similarly, research on alcohol use motives has shown distinct domains of valued outcomes that often theoretically map onto those factors found in expectancy research including: physical enhancement, social facilitation, and tension reduction (Cox & Klinger, 1988; Cooper et al., 1992). Cooper et al. (1995) proposed that drinking behavior, "is not a unitary phenomenon but instead represents multiple *psychologically distinct* behaviors defined by the different underlying functions they serve (p. 990; emphasis in original)."

Virtually all of the research in the area of use motives has been done on alcohol but it would appear theoretically sound to apply the same principles to the use of other drugs including marijuana. There is some evidence that enhancement, coping, and social motives for marijuana use are all predictive of consumption and marijuana related problems (Simons, Correia, Carey & Borsari, 1998; Newcomb, Chou, Bentler & Huba, 1988). Unfortunately there is a dearth of research on other drugs and relatively few researchers have examined drug use motives specific to marijuana or the predictive validity of those motives on use and problems (Simons et al., 1998; Simons, Correia, & Carey, 2000; Newcomb et al., 1988; Comeau, Stewart & Loba, 2001; Stacy, Newcomb & Bentler, 1991).

In the addictions literature it is not clear the extent to which motives vary across drugs, with evidence being found for both divergence (Simons et al., 2000; Schafer & Brown, 1991) and convergence (Newcomb et al., 1988). Some researchers have argued that drug use motives show *functional specificity* across drugs and across various contexts (Cooper et al., 1995; Shafer & Brown, 1991). An example of functional specificity

would be a single individual that reported using alcohol for purpose *x* and marijuana for purpose *y* independently. Simons et al. (2000) posited the existence of functional specificity across drugs among experienced users of both alcohol and marijuana. They theorized that any convergence of motives across drugs would most likely be due to a common reinforcement property of all drugs or an underlying personality variable. However, their findings supported the existence of intra-individual motivational differences among college students experienced in using both marijuana and alcohol. This finding, in combination with the low correlation between recent alcohol and marijuana use led Simons and his colleagues to conclude that participants are capable of assessing their motives for using each of the drugs separately.

Clarity in this area is of great value given that specific types of drinking motives have been shown to contribute directly to the development of alcohol-related problems, regardless of frequency of consumption (Cooper, 1994; Carey & Correia, 1997). Cooper (1994) found that among adolescents, drinking to conform socially, drinking to enhance positive affect, and drinking to cope with negative affect all predicted drinking problems directly in addition to indirect effects on problems mediated by levels of consumption. Carey & Correia (1997) reported similar finding among college students with regards to drinking to enhance positive affect and drinking to cope with negative affect. Due to the paucity of research on marijuana motives it is unclear if these same findings hold. Of the few studies completed, using marijuana to be social or to cope with negative affect have both been shown to significantly predict marijuana-related problems when frequency of use is controlled for (Newcomb et al., 1988: Simons et al., 1998). However, these findings have yet to be replicated and should be interpreted cautiously.

Motives to use drugs are depicted as the proximal determinants of consumption that mediate more distal influences (Cooper et al., 1995). However, there is little consensus regarding what these particular distal influences are and how they might interact to produce specific types of motives to use drugs. Amongst the various theories in the addiction literature on the nature of this relationship, the most commonly proposed examples of mediated distal influences are expectancies (Cox & Klinger, 1988; Cooper, 1994) and personality factors (Sher, 1991). Three examples of personality factors theorized to influence alcohol and marijuana use through use motives that are

consistently found in the literature are *sensation seeking* (Comeau et al., 2001; Sher, Trull, Bartholow & Vieth, 1999; Stacy, 1997; Read, Wood, Kahler, Maddock & Palfai, 2003; Kahler, Read, Wood & Palfai, 2003), *neuroticism/anxiety* (Read et al., 2003; Comeau et al., 2001; Sher et al., 1999; Cooper et al., 1995) and *sociability/extraversion* (Sher et al., 1999; Read et al., 2003).

Despite these assertions there is no clear consensus in the literature about the explicit nature of the relationship between expectancies, personality factors and drug use motives. In a 1988 article Cox & Klinger proposed that personality variables like impulsivity and negative affect moderate the impact of expectancies and other psychosocial variables on an individual's motivation to drink. Ames, Zogg & Stacy (2002) found that expectancies mediated the predictive effects of sensation seeking on marijuana motives and thereby levels of use. Read et al. (2003) found evidence for the mediational role of drinking motives in the relationship between psychosocial variables (e.g., expectancies and personality) and drinking levels and outcomes. They found a number of distinct relationships through structured equation modeling including: (1) tension reduction expectancies and negative affect interacting to predict coping motives and (2) social lubrication expectancies and impulsivity/sensation seeking to predict enhancement motives.

The purpose of this study is to determine if an individual's expectancies about the results of using alcohol or marijuana interact with distinct personality factors to produce drug-specific motives to use. If a coupling of expectancies and personality factors is shown to predict consumption and problems through drug use motives, then the study will attempt to more clearly delineate the nature of this interaction. Furthermore, this study will investigate how these drug-specific motives are related to the frequency of consumption and the development of use-related problems above and beyond the influence of personality factors and expectancies. To that end, the following hypotheses are offered:

1) Specific personality characteristics and drug effect expectancies will interact to produce drug-specific use motives for both alcohol and marijuana:

    a) The trait of sensation seeking will interact with drug effect enhancement expectancies to produce enhancement drug use motives.

b) The trait of neuroticism/anxiety will interact with drug effect relaxation/tension reduction expectancies to produce coping drug use motives.

c) The trait of sociability will interact with drug effect social facilitation expectancies to produce social drug use motives.

2) Drug use motives will predict frequency of use for alcohol and marijuana:

a) Endorsement of enhancement drug use motives will predict the frequency of use.

b) Endorsement of coping drug use motives will predict the frequency of use.

c) Endorsement of social drug use motives will predict the frequency of use.

3) Further, these drug use motives will mediate the relationship between the two types of distal variables (i.e. drug effect expectancies and personality) and frequency of use

4) Certain drug-specific motives for use will directly predict related problems, even when frequency of use is controlled for:

a) Coping motives for alcohol use will directly predict alcohol related problems.

b) Enhancement motives for alcohol use will directly predict alcohol related problems.

5) Given these hypotheses and the extant literature discussed above the following general path model is proposed to be tested for each drug and respective use motive via path analysis (Fig. 1):

Method

Participants

The sample consisted of 306 undergraduate psychology students at Virginia Polytechnic Institute & State University who received extra credit for participating in research. Recruitment for the study was conducted on-line via Sona Experiment Management System (EMS) software. The sample was 51% female and participants ranged in age from 18 to 26 ($M = 19.7$, $SD = 1.26$). 75% were Caucasian, 11% Asian, 7% African-American, 2% Hispanic, and 5% other.

Procedure

Questionnaires were administered in single sessions to groups of no more than twenty participants at a time. Prior to the session, each set of questionnaires was assigned a random unique number (U#) for tracking data. Participants were seated apart

from one another to insure the confidentiality of responses. In the beginning of the session the study was explained to participants in the context of signing the Consent Form (Appendix A) which were then collected. Prior to collection the anonymity of responses was discussed to encourage truthful reporting. The assessments were administered in four distinct orders to allow for the later analyses of any administration order effects. Participants will completed the measures in either order 1 (Use Assessment, RAPI, MPI, AEQ-A, DMM, MEEQ, MMM, ZKPQ III), order 2 (Use Assessment, MPI, RAPI, MEEQ, MMM, AEQ-A, DMM, ZKPQ III), order 3 (AEQ-A, DMM, MEEQ, MMM, Use Assessment, RAPI, MPI, ZKPQ III) or order 4 (MEEQ, MMM, AEQ-A, DMM, Use Assessment, MPI, RAPI, ZKPQ III). Participants who had never used alcohol or marijuana were instructed not to complete the DMM or MMM, respectively.

Measures

Demographic Information. A demographic questionnaire (Appendix B) will be completed by participants prior to the other measures to gather background information on the participant's sex, age, race, and academic status.

Personality Factors. Impulsivity-Sensation Seeking, Sociability, and Neuroticism-Anxiety will be assessed using the respective subscales of the Zuckerman-Kuhlman Personality Questionnaire, 3rd revision [ZKPQ III] (Zuckerman, Kuhlman, Joireman, Teta & Kraft, 1993; Appendix C). The ZKPQ III is a 99-item self-report questionnaire that utilizes a True-False format to measure five basic dimensions of personality. Subscales are created by simply calculating the sum of all the items endorsed within that subscale

The *Impulsivity-Sensation Seeking* subscale (*ImpSS*, 19 items; $\alpha = .77$) actually contains two internal factors. The impulsivity items describe a lack of planning and a tendency to act impulsively without thinking. The sensation seeking items describe a general need for thrills and excitement, a preference for unpredictable situations and friends and the need for change and novelty. The ImpSS subscale will be used to measure the personality construct of sensation seeking. Unlike earlier sensation seeking scales there is no mention of specific activities like drinking or drug use. The *Neuroticism-Anxiety* subscale (*N*-Anx, 19 items; $\alpha = .83$) describes emotional upset,

tension, worry, fearfulness, obsessive indecision, lack of self-confidence, and sensitivity to criticism. It will be used to measure the personality construct of neuroticism and anxiety. The *Sociability* subscale (*Sy*, 17 items; α = .78) describes two internal factors: one of liking big parties, interacting at parties and having many friends, and another which indicates intolerance for social isolation in extraverts and a liking for solitary activities in introverts. This subscale will be used to measure the personality construct of sociability. In addition to the subscales of interest described above the ZKPQ III also measures the personality dimensions of Aggression/Hostility and Activity, and contains ten *Infrequency* items designed to eliminate subjects who carelessly respond to items without regard for truth.

> *Alcohol Expectancies.* Alcohol effect expectancies will be assessed via the Alcohol Expectancy Questionnaire-Adult form [AEQ-A] (Brown, Christiansen, & Goldman, 1987; Brown, Goldman & Christiansen, 1985; Appendix D). The AEQ-A contains 120 items rated on a 5-point Likert scale ranging from 1 (disagree strongly) to 5 (agree strongly) and measures six types of alcohol expectancies: (a) Global Positive Change, (b) Enhanced Sexual Experience/Performance, (c) Physical & Social Pleasure, (d) Increased Social Assertiveness, (e) Relaxation & Tension Reduction, and (f) Arousal & Power. Subscale scores are equal to the number of items within that subscale answered affirmatively. The AEQ has been shown to have sound psychometric properties with college populations including good internal consistency (α = .84) and moderate test-retest reliability (r = .64, p< .01; Brown, Goldman & Christiansen, 1985).

> *Marijuana Expectancies.* The Marijuana Effect Expectancy Questionnaire [MEEQ] (Schafer & Brown, 1991; Appendix E), like the AEQ-A contains 78 items describing the effects of marijuana on which subjects are asked to rate their agreement or disagreement on a 1-5 Likert scale according to their own experiences. The MEEQ measures expectancies on 6 scales: (a) Cognitive and Behavioral Impairment, (b) Relaxation and Tension Reduction, (c) Social and Sexual Facilitation, (d) Perceptual and Cognitive Enhancement, (d) Global Negative Effects, and (e) Craving and Physical Effects. The subscales of the MEEQ are created in the same fashion as the AEQ-A. The MEEQ has shown generally good internal consistency with adults (α = .72 to .64; Schafer & Brown, 1991) and moderate test-retest reliability (r = .38 to .50, p < .01).

Alcohol Use Motives. Specific motives for using alcohol will be assessed using the Drinking Motives Measure [DMM] originally developed by Cooper (1994; Appendix F). The original DMM is a 20-item questionnaire that assesses four motives for drinking alcohol: Enhancement (e.g. I drink to get high), Coping (e.g. I drink to forget my worries), Social (e.g. I drink to be sociable), and Conformity (e.g. I drink so that others won't kind me about not drinking). This study will be using the 25-item variation of the DMM developed by Simons, Correia, Carey, & Borsari (1998) that contains 5 additional items assessing a fifth scale of Expansion motives (e.g. I use alcohol so I can expand my awareness). Each item has a 5-point Likert response option, ranging from (1) Almost never/never to (5) Almost always/always. Participants are instructed to consider all the times they have drunk alcohol and to indicate how often they have drunk alcohol for each reason. Subscale scores are formulated by calculating the mean of the five responses within each subscale. Previous research with college populations has shown that the enhancement and social motives subscales are highly correlated (Cooper, 1994), and that these items tend to load onto a single factor (Simons et al., 1998). Factor analyses will be completed to confirm or disconfirm the phenomenon in this population. The DMM has shown good internal consistency with adult populations (α = .84 to .94; Simons et al, 1998).

Marijuana Use Motives. The Marijuana Motives Measure [MMM] (Simons, et al, 1998; Appendix G) is a modification of the 25-item version of Cooper's Drinking Motives Measure described in the paragraph above. It contains the same five subscales as the DMM as they apply to motives for using marijuana. The DMM was adapted for marijuana by substituting the words "use marijuana" for "drink". Participants are instructed to consider all the times they used marijuana and to indicate how often they have used it for each reason. In all other respects the MMM is administered and scored identically to the DMM. It has shown internal consistency with adult populations similar to that of the DMM (α = .84 to .94; Simons et al, 1998).

Problem Measures. Alcohol problems was assessed using the using the Rutgers Alcohol Problem Index [RAPI] (White & Labouvie, 1989; Appendix H). The RAPI consists of 23 items assessing presence or absence of specified problems occurring across an individual's lifetime [RAPI-L] or during the last 30 days [RAPI-30]. Each item has a

5-point Likert response option, ranging from (1) "Never" to (5) "More than 10 times." A parallel version of the RAPI will be used to assess problems with marijuana use [MPI] (Johnson & White, 1989; Appendix I) by substituting "marijuana" for "alcohol," "smoking" for "drinking," and "high" for "drunk." As with the RAPI, participants will complete a lifetime version (MPI-L) and a 30 day version (MPI-30). Both measures are scored by summing the responses. Both the RAPI and the MPI have shown good internal consistency in previous research with Cronbach's alphas of .89 and .86, respectively (Simons et al., 1998)

  Alcohol and Marijuana Use. Substance use behavior was assessed by self-report. Participants were asked to provide information on the frequency of their use during their lifetime, in the last six months, and the in the past 30 days. Both alcohol and marijuana use in the past six months were assessed with a 9-point anchored rating scales: 0 (*no use*), 1 (*less than once a month but at least once in the last 6 months*), 2 (*once a month*), 3 (*2–3 times per month*), 4 (*once or twice per week*), 5 (*3–4 times per week*), 6 (*nearly every day*), 7 (*once a day*), and 8 (*more than once a day*). Lifetime experience using marijuana and alcohol were also assessed by 9-point anchored rating scales (one for each drug): 0 (*no use*), 1 (*1–5 times*), 2 (*6–9 times*), 3 (*10–19 times*), 4 (*20–39 times*), 5 (*40–59 times*), 6 (*60–79 times*), 7 (*80–99 times*), and 8 (*100 or more times*). For further information regarding substance use in the past 30 days, participants were asked to estimate the number of days out of 30 in which they had used each of the following: marijuana, alcohol (any use at all), alcohol (to intoxication), and any other illicit drugs. A copy of the use assessment is included in Appendix J.

Results

Substance Use Patterns

   In the full sample lifetime use of alcohol was nearly ubiquitous and marijuana use was quite common. Ninety-five percent (n = 291) had tried alcohol in their lifetimes, 91% (n = 279) had used in the last 6 months, 86% (n = 263) had used in the last 30 days, and 64% (n = 194) reported using alcohol to intoxication in the last 30 days. Fifty-four percent (n = 166) had tried marijuana in their lifetimes, 42% (n = 127) had used in the last 6 months, and 28% (n = 84) had used in the last 30 days. One hundred percent of those who reported using marijuana in their lifetimes also reported using alcohol in their lifetimes.

Factor Structure of the Motive Measures

   Principal components analysis (PCA) was conducted on both drug use motive measures to ensure the reliability of subscales developed in previous research for use in this analysis. Only participants who had used each drug were included in the analysis. Factors were retained based upon eigenvalues > 1 and visual inspection of the scree plot. For the Drinking Motives Measure (DMM) the PCA yielded a four factor solution. The eigenvalues for the first 4 unrotated factors were 8.45, 3.70, 2.54, 1.84, accounting for 26%, 14%, 13%, and 13% respectively. After Varimax rotation the four factor solution resulted in enhancement-social, coping, conformity, and expansion motives very similar to those found by Simons et al. (1998). As noted in the measures section above, previous researchers studying college populations with the DMM have found that the enhancement and social motives tend to load on onto one factor. Also in keeping with previous research, Item 15 ("I use alcohol because it helps me feel more self confident and sure of myself") loaded onto the enhancement-social motives items. Thusly the final factor structure consisted of a 4-item coping scale (α = .90), an 11-item enhancement-social scale (α = .93), and 5 items for both the conformity (α = .84) and expansion scales (α = .88).

   Similar principal component analysis of the Marijuana Motives Measure yielded a five factor solution. In accordance with the alcohol factor loadings, Item 15 again loaded

with the social items rather than with the coping items. After Varimax rotation the five factor solution was consistent with previous research by Simons et al (1998), consisting of a 6-item social scale ($\alpha = .88$), a 4-item coping scale ($\alpha = .89$), and 5 items each for the enhancement ($\alpha = .94$), conformity ($\alpha = .79$), and expansion scales ($\alpha = .87$). Table 1 below contains a summary of the means, standard deviations, and correlations for the motive scales as well as the substance use and problem indices.

Hypothesis 1: Interaction of Personality and Expectancies in the Production of Drug Use Motives

The first proposed hypothesis posited that specific personality characteristics and drug effect expectancies would interact to produce drug-specific use motives for both alcohol and marijuana. The corollaries of this hypothesis were all tested by similar hierarchical regression analyses, i.e. drug use motives were regressed onto personality scores, effect expectancy scores, and interaction product scores created by multiplying the above personality and effect expectancy scores. On the recommendation of the test's originators, participants with ZKPQ-III Infrequency scores greater than 3 were excluded due to a potentially invalid personality profile (Zuckerman et al., 1993). As a result 22 participants were excluded from the analysis for alcohol group and 14 were excluded from the marijuana using group. Personality factors and expectancies were entered in Block 1 and the interaction term was entered in Block 2. Support for the first hypothesis would be evidenced by a significant t-test for the interaction term added in Block 2.

In the alcohol using group hypothesis 1 was not supported (Table 1). In the prediction of the enhancement/social motive, impulsivity/sensation seeking and the expectancy of physical and social enhancement were both significant predictors, but the interaction term was not. However, in Block 2 of the regression the addition of the interaction term resulted in the β for impulsivity/sensation seeking dropping below significance ($\beta = -.03$, $p = .87$) while the physical and social enhancement expectancy was maintained as a significant predictor ($\beta = .53$, $p < .001$). The regression to test for the interaction of neuroticism-anxiety and the relaxation and tension reduction expectancy to produce the coping motive for alcohol use yielded similar results. Both were found to be significant predictors of the coping motive when entered simultaneously

in Block 1 (Table 2). The interaction term entered in Block 2 was not significant (β = .07, p = .74), but again the predictive power of the personality factor (neuroticism anxiety in this case) dropped below significance (β = .25, p = .14).

Similar analyses run on the marijuana using group also found a lack of support for hypothesis 1 but with a different pattern of outcomes. In the prediction of the enhancement motive (Table 3), the perceptual and cognitive enhancement expectancy was a significant predictor (β = .50, p < .001) while impulsivity/sensation seeking was not (β = .03, p = .67). With the addition of the non-significant interaction term in Block 2 (β = .05, p = .17) the predictive power of the enhancement expectancy also dropped slightly below significance (β = .47, p = .053). The test for prediction of the social marijuana use motive yielded similar results (Table 4). The social and sexual facilitation expectancy was a significant predictor (β = .56, p < .001) when entered simultaneously into the regression with the sociability personality factor (β = -.01, p = .91) but dropped below significance with the addition of the non-significant interaction term (β = .17, p = .53) in Block 2. In the test of the prediction of the coping marijuana use motive (Table 5) both neuroticism-anxiety (β = .36, p < .001) and the relaxation and tension reduction expectancy (β = .24, p < .01) were significant predictors. The interaction term entered in Block 2 was again non-significant (β = .17, p = .57) and reduced the β's of both previously significant predictors from Block 1 below significance.

In all five cases of analyses there was not sufficient evidence for significant interactions between personality factors and expectancies in the prediction of use motives. Furthermore, in many cases the addition of the interaction term substantially reduced the predictive power of its constituent parts by tapping into their shared variance. Given these findings only the individual personality factors and expectancies (and not their interaction terms) were used in the subsequent analyses of the remaining hypotheses.

Hypothesis 2: Drug Use Motives Predict Frequency of Use for Alcohol and Marijuana

The second series of hypotheses, that endorsement of specific drug use motives directly predicts the frequency of use, was tested by calculating simple bivariate correlations between each drug-specific use motive and the frequency of use of that drug.

These correlations (summarized in Table 6) provide support for the hypothesis that the endorsement of specific types of drug use motives is significantly related to the frequency of consumption while other types of motives are not.

In the alcohol using group endorsement of enhancement-social motives and coping motives significantly predicted all reports of frequency of use including lifetime alcohol and use in the past 30 days. Conformity and expansion motives did not significantly predict frequency of alcohol use with one exception – expansion motives significantly predicted the frequency of alcohol use during the last 6 months ($r = .19$, $p <$ .01). In the marijuana using group zero-order correlations indicated that endorsement of enhancement, social, expansion, and coping motives significantly predicted higher frequency of marijuana lifetime use, use in the past 6 months, and use in the last 30 days (all p's < .01). Endorsement of conformity motives showed a significant negative correlation with frequency of marijuana use in the past 6 months ($r = -.27$, $p = .001$) and the past 30 days ($r = -.17$, $p = .03$).

Hypothesis 3: Mediation of the Relationship between Distal Predictors and Frequency of Use by Drug Use Motives

The hierarchical regression approach for testing mediated effects demands that four conditions be met: (1) the predictor must be significantly correlated with the hypothesized mediator, (2) the predictor must be significantly correlated with the dependent variable, (3) the hypothesized mediator must be significantly correlated with the dependent variable, and (4) the effect of the predictor on the dependent variable is significantly diminished after controlling for the mediator (Baron & Kenny, 1986; Holmbeck, 1997).

Given the findings regarding the previous hypotheses it became apparent that although personality factors did not directly interact with effect expectancies to produce motives, both types of factors were nevertheless significant predictors of frequency of use in many cases (Table 7). For example, impulsivity-sensation seeking was predictive of higher frequencies of both alcohol and marijuana use (p's < .01). Therefore a series of hierarchical regressions was used to test the proposed drug use motives mediation model (i.e. the influence of personality factors and expectancies on frequency of use is mediated

by related drug use motives). In each analysis related expectancies and personality factors were entered in Block 1 followed by their theoretically linked drug use motives entered in Block 2. The primary outcome variables in these analyses were 30 day and lifetime reports of frequency of use.

Based upon the analyses of the alcohol using group, the enhancement-social motive appeared to only mediate the influence of the physical and social enhancement expectancy on lifetime alcohol use. The β for the expectancy was substantially reduced when the motive was entered into the regression (.43 to .16) although it was still statistically significant (Table 8). Additionally, the enhancement-social motive also appeared to mediate the influence of the expectancy on 30 day alcohol use when added to the regression, significantly reducing it's β from .37 to .12 . Impulsivity-sensation seeking did not appear to be mediated but was not a significant predictor in either step of the regression. There was less dramatic evidence for mediation of related personality factors and expectancies' influence on alcohol use by the coping motive (Table 9). The addition of the coping motive failed to significantly reduce the β's of either of the more distal predictors but the relaxation and tension reduction expectancy did show a promising reduction in predictive power.

The analyses of mediation in the marijuana using group offered clearer results. The enhancement motive for marijuana use showed strong evidence for mediating the influence of the perceptual and cognitive enhancement expectancy on both lifetime and 30 day marijuana use, substantially reducing the β for the expectancy to non-significant levels in both cases (Table 10). Mediation of the impulsivity-sensation seeking factor could not be tested given that it was not a significant predictor of marijuana use at any step in the regression analyses. The social use motive also appeared to mediate the influence of the social and sexual facilitation expectancy on lifetime marijuana use, accounting for nearly all of its prior influence by reducing the β for the expectancy from .16 (p < .05) to .003 (p = .97) in the final model (Table 11). Lack of significant prediction in either step of the regression made it impossible to test mediation of the sociability factor's influence on either lifetime or 30 day marijuana use. The coping use motive also showed strong evidence for mediation of the relaxation and tension reduction expectancy's influence on 30 day use, reducing the β for the expectancy from .25 (p <

.01) to .14 (p = .10) (Table 12). The coping motive showed a similar effect on the expectancy's influence on lifetime marijuana use although it was still a significant predictor in the final model. The β's for the neuroticism-anxiety were also not tested due to a lack of significance in the initial step of each regression.

Evidence for mediation across these analyses was mixed and often differential based on the motive being tested and the specific frequency of use dependent variable. Nevertheless, in all cases the drug use motives added in the final block of the regression were significant predictors of the frequency of use when controlling for the other more distal predictors. In many cases the personality factor was not significantly correlated with either the dependent variable or the proposed mediator, effectively rendering any test of mediation inapplicable.

Hypothesis 4: Prediction of Use Related Problems by Certain Drug Use Motives while Controlling for Personality Factors, Expectancies, and Frequency of Use

The fourth and final hypothesis was also tested via a series of hierarchical multiple regression analyses. To control for short term fluctuations in use and problems and to increase the global applicability of these specific findings, lifetime reports of use-related problems were designated as the primary dependent variables as opposed to 30 day reports. Accordingly, lifetime use frequencies were used as the predictors in each model. In the hierarchical regressions personality factors and expectancies were entered first, followed by frequency of lifetime use indices, and finally drug use motives in the final block. The results for the alcohol using sample (Table 13) indicate consistently that both enhancement-social and coping drinking motives significantly predicted lifetime alcohol related problems when controlling for personality factors, expectancies, and frequency of use (p's < .001). In the marijuana using sample (Table 14) the social (β = .18, p < .02) and coping (β = .16, p < .03) motives were both significant predictors of marijuana related problems when controlling for personality factors, expectancies, and frequency of use, but the enhancement use motive did not significantly predict use-related problems directly.

Proposed Path Models for Alcohol and Marijuana

Based upon the series of analyses carried out to test the four main hypotheses it is possible to test the hypothesized path models for each drug and for each type of related use motive. The findings of the hierarchical regressions are summarized by the path coefficients contained in Figures 2-6. In each of these figures the β's from each regression analysis are indicated upon pathways between each variable. Solid arrows indicate significant relationships while dotted arrows indicate those relationships not reaching statistical significance. These path diagrams are intended to comprehensively present the results of the analyses in a graphic and succinct fashion.

Discussion

The present study sought to investigate the formation of motives for using alcohol and marijuana among college students and the influence of these motives on levels of use and the development of use-related problems. A sample of self-reported data from college students was gathered and analyzed to this end. The findings indicated that use motives are related to theoretically more distal influences such as related personality factors and drug effect expectancies. These motives were found to consistently account for substantial variation in use and the development of problems related to alcohol and marijuana in the sample. In some cases these motives not only predicted use, but also appeared to mediate the influences of personality factors and expectancies. Finally, specific motives were found to account for significant variation in the development of substance-related problems even after controlling for the frequency of use.

It was initially hypothesized that certain theoretically linked combinations of personality factors and expectancies would interact to produce related drug use motives. The personality dimension of impulsivity/sensation seeking was positively related to enhancement/social motives for alcohol use but not enhancement motives for marijuana use. The sociability personality dimension also showed no relationship with social motives for marijuana use. Neuroticism-Anxiety predicted greater coping motives for using both alcohol and marijuana.   In the alcohol group expectancies for physical and social enhancement and relaxation and tension reduction were positively related to enhancement/social and coping motives, respectively. Similarly expectancies in the

marijuana group for perceptual and cognitive enhancement, social and sexual facilitation, and relaxation and tension reduction all positively related to their respective motives (i.e., enhancement, social, and coping). The findings indicate that while both distal factors often substantially predict the use motive, there was no evidence that they interact in order to do so. Rather, their influence on the development of use motives appears to be additive as opposed to multiplicative, each adding their share to the strength of the overall prediction independently.

Nevertheless, each of the motives being examined appeared to confirm the second hypothesis that use motives would predict the frequency of drug use. Motives for enhancing sensations, increasing social enjoyment, and coping with negative emotions all showed substantial relationships with how frequently participants consumed alcohol or marijuana.

As noted above, use motives appeared to mediate the influence of distal factors (primarily effect expectancies) on frequency of use in many cases. There was evidence that enhancement-social motives for alcohol use mediated the influence of an expectation for perceptual and cognitive enhancement on alcohol use in the last 30 days. Marijuana motives for physical enhancement and social purposes more clearly mediated the influence of their respective expectancies on both lifetime and 30 day use of marijuana. The coping motive for marijuana also showed a similar trend for 30 day use.

Finally, both of the alcohol motives and all but one of the marijuana motives being investigated were related to the development of problems, even when controlling for the influence of use frequency. Frequency of use is commonly accepted in the substance abuse literature as the strongest predictor of developing use-related problems (Stacy, 1997). This begs the question – why would an individual's motive for using alone impact the development of problems? Although the answer to this question is elusive it warrants some speculation. Perhaps the endorsement of a specific motive, coping for example, is indicative of a fundamentally problematic means for dealing with negative emotions; one that tends to lead the individual down a path of substance abuse. Drinking or drug use to cope may be related to different amounts, patterns, or situational determinants of use that are more likely to be associated with problems. Or consider that the individual who drinks to enhance their physical or social experience is possibly

lacking alternative means to that same end. Such an individual might continue to use alcohol (despite developing problems) in order to achieve that desired enhancement. If such an interpretation was shown to be valid then differentially understanding drug use motives has significant implications for harm-reduction approaches – techniques that seek to aid individuals to develop alternative means for obtaining goals previously only sought through drug use.

Many previous researchers have focused only on expectancies (Brown, 1993) or personality characteristics such as sensation seeking (Kopstein et al., 2001) as the primary determinants of use problems. The findings from this study would indicate that use motives are playing an important role in the development of problems that is going largely unappreciated by many substance abuse researchers. The fact that use motives mediate much of the effect of these more distal variables argues for increased focus. Use motives get directly to the reasons for use whereas expectancies and personality factors only establish conditions that may or may not increase the likelihood of use for those reasons.

This study demonstrates that use motives are helpful and viable constructs for understanding the use of certain drugs and their consequences. These findings are consistent with previous research on alcohol (e.g., Cooper et al., 1995; Cox & Klinger, 1988) and marijuana (e.g., Simons et al., 1998) insofar as they support the notion that motives differ from drug to drug not only in frequency of endorsement, but also in their relative influence on use and the development of problems. For instance, the additional motive for expansion of awareness was predictive of marijuana use but not of alcohol use. This is not surprising given than marijuana is often regarded as a "mind-expanding drug" while alcohol is not.

Theoretically-derived causal models such as the one proposed here are potentially useful in future attempts to integrate different influences on drug use into a more comprehensive understanding of why and how persons engage in drug-taking behavior. In this sense, the aspiration of this study is not so audacious as to claim to understand all the influences in the process, but rather is intended to spur further investigation into the origins and outcomes of motives to use drugs. The late personality psychologist David McClelland upheld that in order to understand human behavior one must focus on three

types of variables: traits, beliefs, and motives (1981). In this study personality factors, expectancies, and use motives served as placeholders for these three types of variables. Of the three, motivational behavior is most often portrayed as flexible with regards to different valued outcomes; i.e. individuals behave differently in different contexts based upon motives specific to that goal and employ varied strategies to obtain those goals accordingly (Cantor & Zirkel, 1990). In this sense motives are distinct from traits, those aspects of personality that are enduring and pervasive. It is this very distinction from apparently immutable internal processes that provides clinicians with an opportunity to work effectively with substance abusing clients and hopefully evoke change in their drug-taking behavior. This study is intended as one of the early steps to a better understanding of drug use motives in order to inform the development of better techniques for assessing and treating clients with drug-related problems. Extrapolating the findings of this study, it becomes clear that targeting not just motivations in general, but specific types of motives might be critical in attempts to treat or prevent drug related problems.

Motivational explanations are invaluable when attempting to understand any behavior because they address the question of *why* – a question of particular importance in addictions research. In the field of behavioral interventions for addictions there is a growing emphasis on assessing an individual's motivation to change their use of drugs and incorporating these motives into the intervention. The developers of motivational interviewing for substance use have consistently advocated that motives for drinking alcohol and using other drugs be assessed directly for effective interventions to take place (Miller & Rollnick, 1991).

Nevertheless, it is evident that there are certain practical and theoretical limitations to this study. There is definitely an issue concerning the generalizability of the findings given that the data was gathered from a college student sample. It is very possible that the relationships observed in this study could appear different, or even nonexistent in another population. This is especially applicable to the findings regarding marijuana motives given the paucity of research in this specific area (and on marijuana in general). Future studies could seek to confirm these findings with larger more diverse populations.

Arguably our understanding is also limited by the choice in this study to designate overall frequency as the sole indicator of use. Other indices such as the quantity of use in a single sitting (e.g., binging) or other types of abusive consumption might better illuminate the connection between specific motives, types of drugs, and related problems. This limitation could easily be rectified in future studies by soliciting these types of information along with use frequencies.

There are also a number of statistical limitations inherent in this study. Many of the variables investigated in this study are perhaps better represented as latent constructs that are difficult to measure accurately (e.g., personality factors). Measurement error is unavoidable when utilizing single measures to assess latent constructs. Future research might circumvent this difficulty by utilizing more sophisticated statistical methods such as Structural Equation Modeling that better tap latent variables.

Finally, there is the issue of assigning causality. As is always the case with nonexperimental techniques, we are severely limited in our ability to draw causal inferences. Keith (1988) described the dangers of the causality inference in path analysis and noted three requirements for inferring causality in nonexperimental research: (a) establishment of prior time precedence, (b) relation between the variables, and (c) avoiding the misspecification of variables. The cross-sectional design of this study does not allow for observing the development of the constructs being measured. Nonetheless, there is some theoretical time precedence inherent in the design of the study and the proposed path models. If personality is regarded as stable across the lifespan and relatively fixed early in life then it can be perceived as preeminent to the development of expectancies and motives as well as actual drug use. Brown (1993) proposed that expectancies themselves partially develop prior to actual drug use based upon vicarious experiences and education. The second requirement of relation between the variables in this study has been verified in most cases by the statistical analyses, but there is always the possibility that the variables have been specified incorrectly or incompletely. It is virtually assured that there are other valid predictors of drug use and problems, but this is the nature of exploratory research. Future research might be able to better address the limitations of causal inference in nonexperimental research by employing longitudinal

methods and considering the inclusion of previously unspecified variables that are derived through careful examination of the existing research literature and theory.

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Tables

Table 1
Summary of Hierarchical Regression Analysis for Interaction of Impulsivity/Sensation-Seeking and Physical & Social Enhancement Expectancy in Predicting Alcohol Use Motives

Variables	B	SE B	β
ENHANCEMENT/SOCIAL MOTIVE (N = 262)			
Block 1 (R^2 = .42, p < .001)			
Physical and Social Enhancement Expectancy	.32	.03	.62***
Impulsivity/Sensation Seeking	.03	.01	.11*
Block 2 (ΔR^2 = .00, p = .36)			
Physical and Social Enhancement Expectancy	.27	.06	.53***
Impulsivity/Sensation Seeking	-.01	.04	-.03
Product Interaction Term	.01	.01	.18

Note. *p < .05; ***p < .001

Table 2
Summary of Hierarchical Regression Analysis for Interaction of Neuroticism-Anxiety and Relaxation and Tension Reduction Expectancy in Predicting Alcohol Use Motives

Variables	B	SE B	β
COPING MOTIVE (N = 267)			
Block 1 (R^2 = .46, p < .001)			
Relaxation and Tension Reduction Expectancy	.14	.02	.34***
Neuroticism-Anxiety	.06	.01	.30***
Block 2 (ΔR^2 = .00, p = .79)			
Relaxation and Tension Reduction Expectancy	.13	.05	.31**
Neuroticism-Anxiety	.05	.03	.25
Product Interaction Term	.01	.01	.07

Note **p < .01; ***p < .001

Table 3

Summary of Hierarchical Regression Analysis for Interaction of Impulsivity/Sensation-Seeking and Perceptual and Cognitive Enhancement Expectancy in Predicting Marijuana Enhancement Use Motives

Variables	B	SE B	β
ENHANCEMENT MOTIVE (N = 146)			
Block 1 (R^2 = .26, p < .001)			
Perceptual and Cognitive Enhancement Expectancy	.29	.04	.50[***]
Impulsivity/Sensation Seeking	.01	.03	.03
Block 2 (ΔR^2 = .00, p = .89)			
Perceptual and Cognitive Enhancement Expectancy	.27	.14	.47
Impulsivity/Sensation Seeking	.003	.06	.01
Product Interaction Term	.002	.01	.05

Note. [***]p < .001

Table 4

Summary of Hierarchical Regression Analysis for Interaction of Sociability and Social and Sexual Facilitation Expectancy in Predicting Marijuana Social Use Motives

Variables	B	SE B	β
SOCIAL MOTIVE (N = 148)			
Block 1 (R^2 = .31, p < .001)			
Social and Sexual Facilitation Expectancy	.22	.03	.56***
Sociability	-.002	.02	-.01
Block 2 (ΔR^2 = .00, p = .53)			
Social and Sexual Facilitation Expectancy	.16	.09	.41
Sociability	-.02	.04	-.08
Product Interaction Term	.01	.01	.17

Note. ***p < .001

Table 5

Summary of Hierarchical Regression Analysis for Interaction of Neuroticism-Anxiety and Relaxation and Tension Reduction Expectancy in Predicting Marijuana Coping Use Motives

Variables	B	SE B	β
COPING MOTIVE (N = 150)			
Block 1 (R^2 = .21, p < .001)			
Relaxation and Tension Reduction Expectancy	.14	.03	.36***
Neuroticism-Anxiety	.05	.02	.24**
Block 2 (ΔR^2 = .00, p = .57)			
Relaxation and Tension Reduction Expectancy	.11	.06	.28
Neuroticism-Anxiety	.02	.05	.10
Product Interaction Term	.004	.01	.17

Note. **p < .01; ***p < .001

Table 6
Means, Standard Deviations, and Correlations for Motive Scales, Use indices, and Problem Indices

Variables	M	SD	1	2	3	4	5	6	7	8
ALCOHOL [a]										
1. Enhancement-Social	3.19	1.00								
2. Conformity	1.54	.69	.16*							
3. Expansion	1.37	.55	.33*	.25*						
4. Coping	1.91	.96	.47*	.21*	.41*					
5. Alcohol Use (lifetime)	4.14	1.43	.59*	-.11	.08	.29*				
6. Alcohol Use (6 months)	3.48	1.44	.66*	-.01	.19*	.42*	.76*			
7. Alcohol Use (30 days)	6.95	6.05	.51*	-.05	.10	.39*	.66*	.78*		
8. Alcohol to Intox. (30 days)	4.06	4.86	.52*	-.06	.09	.34*	.60*	.66*	.76*	
9. RAPI lifetime	36.88	13.22	.50*	.07	.18*	.44*	.60*	.56*	.59*	.56*
MARIJUANA [b]										
1. Enhancement	3.06	1.37								
2. Social	1.88	.91	.59*							
3. Expansion	1.60	.84	.44*	.40*						
4. Conformity	1.41	.61	-.12	.08	-.06					
5. Coping	1.77	.93	.47*	.54*	.39*	.08				
6. Marijuana Use (lifetime)	3.22	1.61	.57*	.31*	.33*	-.12	.37*			
7. Marijuana Use (6 months)	2.02	1.93	.58*	.41*	.38*	-.27*	.42*	.70*		
8. Marijuana Use (30 days)	3.68	6.59	.39*	.28*	.26*	-.17**	.30*	.61*	.85*	
9. MPI lifetime	32.77	12.85	.41*	.34*	.25*	.07	.34*	.64*	.52*	.44*

Note. *p < .01, **p < .05
[a]N = 291, [b]N = 166

Table 7
Zero-order Correlations between Personality Factors and Frequency of Use Variables

Variables	1	2	3	4	5	6	7
ALCOHOL [a]							
1. Impulsivity-Sensation Seeking							
2. Sociability	.17**						
3. Neuroticism-Anxiety	-.08	-.16*					
4. Alcohol Use (lifetime)	.28**	.35**	-.06				
5. Alcohol Use (6 months)	.26**	.37**	.01	.78**			
6. Alcohol Use (30 days)	.17**	.30**	.08	.67**	.79**		
7. Alcohol to Intox. (30 days)	.14**	.33**	-.01	.61**	.68**	.77**	
MARIJUANA [b]							
1. Impulsivity-Sensation Seeking							
2. Sociability	-.01						
3. Neuroticism-Anxiety	.11	-.02					
4. Marijuana Use (lifetime)	.19*	.04	-.02				
5. Marijuana Use (6 months)	.20*	.08	-.01	.72**			
6. Marijuana Use (30 days)	.15	.03	.06	.62**	.86**		

Note. Participants with ZKPQ-III Infrequency scores greater than 3 excluded from analyses
**$p < .01$, *$p < .05$
[a]$N = 264$, [b]$N = 146$

Table 8

Summary of Hierarchical Regression Analyses for Hypothesis 3: Mediation of Relationship Between Impulsivity-Sensation Seeking and Physical and Social Enhancement Expectancies and Frequency of Alcohol Use by Enhancement/Social Motives

Variables	B	SE B	β
REGRESSION 1			
ENHANCEMENT /SOCIAL MOTIVE ON LIFETIME ALCOHOL USE (N = 261)			
Block 1 (R^2 = .25, p < .001)			
Impulsivity-Sensation Seeking	.07	.02	.19***
Physical and Social Enhancement Expectancy	.31	.04	.43***
Block 2 (ΔR^2 = .11, p < .001)			
Impulsivity-Sensation Seeking	.05	.02	.15**
Physical and Social Enhancement Expectancy	.12	.05	.16*
Enhancement-Social Use Motive	.61	.09	.43***
REGRESSION 2			
ENHANCEMENT /SOCIAL MOTIVE ON 30 DAY ALCOHOL USE (N = 261)			
Block 1 (ΔR^2 = .16, p < .001)			
Impulsivity-Sensation Seeking	.14	.08	.10
Physical and Social Enhancement Expectancy	1.16	.18	.37***
Block 2 (ΔR^2 = .10, p < .001)			
Impulsivity-Sensation Seeking	.08	.08	.05
Physical and Social Enhancement Expectancy	.36	.22	.12
Enhancement-Social Use Motive	2.52	.43	.41***

Note. *p < .05; **p < .01; ***p < .001

Table 9

Summary of Hierarchical Regression Analyses for Hypothesis 3: Mediation of Relationship Between Neuroticism-Anxiety and Relaxation and Tension Reduction Expectancies and Frequency of Alcohol Use by Coping Motives

Variables	B	SE B	β
REGRESSION 1			
COPING MOTIVE ON LIFETIME ALCOHOL USE (N = 266)			
Block 1 (R^2 = .18, p < .001)			
Neuroticism-Anxiety	-.03	.02	-.09
Relaxation and Tension Reduction Expectancy	.26	.04	.42***
Block 2 (ΔR^2 = .04, p < .005)			
Neuroticism-Anxiety	-.05	.02	-.15**
Relaxation and Tension Reduction Expectancy	.22	.04	.35***
Coping Use Motive	.31	.09	.21**
REGRESSION 2			
COPING MOTIVE ON 30 ALCOHOL USE (N = 266)			
Block 1 (R^2 = ., p < .)			
Neuroticism-Anxiety	.07	.08	.05
Relaxation and Tension Reduction Expectancy	.94	.15	.35***
Block 2 (ΔR^2 = ., p < .)			
Neuroticism-Anxiety	-.06	.08	-.05
Relaxation and Tension Reduction Expectancy	.64	.16	.24***
Coping Use Motive	2.08	.39	.33***

Note. *p < .05; **p < .01; ***p < .001

Table 10

Summary of Hierarchical Regression Analyses for Hypothesis 3: Mediation of Relationship Between Impulsivity-Sensation Seeking and Perceptual and Cognitive Enhancement Expectancies and Frequency of Marijuana Use by Enhancement Motives

Variables	B	SE B	β
REGRESSION 1			
ENHANCEMENT MOTIVE ON LIFETIME MARIJUANA USE (N = 146)			
Block 1 (R^2 = .16, p < .001)			
Impulsivity-Sensation Seeking	.05	.03	.12
Perceptual and Cognitive Enhancement Expectancy	.25	.05	.37***
Block 2 (ΔR^2 = .22, p < .001)			
Impulsivity-Sensation Seeking	.04	.03	.10
Perceptual and Cognitive Enhancement Expectancy	.07	.05	.10
Enhancement Use Motive	.63	.09	.55***
REGRESSION 2			
ENHANCEMENT MOTIVE ON 30 DAY MARIJUANA USE (N = 146)			
Block 1 (R^2 = .07, p < .01)			
Impulsivity-Sensation Seeking	.18	.14	.11
Perceptual and Cognitive Enhancement Expectancy	.62	.22	.23**
Block 2 (ΔR^2 = .13, p < .001)			
Impulsivity-Sensation Seeking	.16	.13	.09
Perceptual and Cognitive Enhancement Expectancy	.04	.24	.01
Enhancement Use Motive	2.00	.41	.42***

Note. *p < .05; **p < .01; ***p < .001

Table 11

Summary of Hierarchical Regression Analyses for Hypothesis 3: Mediation of Relationship Between Sociability and Social and Sexual Facilitation Expectancies and Frequency of Marijuana Use by Social Motives

Variables	B	SE B	β
REGRESSION 1			
SOCIAL MOTIVE ON LIFETIME MARIJUANA USE (N = 148)			
Block 1 (R^2 = .03, p = .13)			
Sociability	.004	.04	.01
Social and Sexual Facilitation Expectancy	.11	.06	.16[*]
Block 2 (ΔR^2 = .06, p < .01)			
Sociability	.004	.04	.01
Social and Sexual Facilitation Expectancy	.002	.07	.003
Social Use Motive	.52	.18	.29[**]
REGRESSION 2			
SOCIAL MOTIVE ON 30 DAY MARIJUANA USE (N = 148)			
Block 1 (R^2 = .02, p = .27)			
Sociability	.02	.15	.01
Social and Sexual Facilitation Expectancy	.36	.22	.13
Block 2 (ΔR^2 = .06, p < .01)			
Sociability	.02	.14	.01
Social and Sexual Facilitation Expectancy	-.08	.26	-.03
Social Use Motive	2.03	.67	.29[**]

Note. [*]p < .05; [**]p < .01; [***]p < .001

Table 12

Summary of Hierarchical Regression Analyses for Hypothesis 3: Mediation of Relationship Between Neuroticism-Anxiety and Relaxation and Tension Reduction Expectancies and Frequency of Marijuana Use by Coping Motives

Variables	B	SE B	β
REGRESSION 1			
COPING MOTIVE ON LIFETIME MARIJUANA USE (N = 150)			
Block 1 (ΔR^2 = .13, p < .001)			
Neuroticism-Anxiety	-.03	.03	-.09
Relaxation and Tension Reduction Expectancy	.24	.05	.37***
Block 2 (ΔR^2 = .07, p < .001)			
Neuroticism-Anxiety	-.05	.03	-.16
Relaxation and Tension Reduction Expectancy	.17	.05	.26**
Coping Use Motive	.51	.14	.30***
REGRESSION 2			
COPING MOTIVE ON 30 DAY MARIJUANA USE (N = 150)			
Block 1 (ΔR^2 = .07, p < .01)			
Neuroticism-Anxiety	.03	.11	.02
Relaxation and Tension Reduction Expectancy	.69	.21	.26**
Block 2 (ΔR^2 = .07, p < .005)			
Neuroticism-Anxiety	-.07	.11	-.05
Relaxation and Tension Reduction Expectancy	.39	.22	.15
Coping Use Motive	2.09	.60	.30***

Note. *p < .05; **p < .01; ***p < .001

Table 13

Summary of Hierarchical Regression Analyses for Hypothesis 4: Prediction of Lifetime Alcohol Related Problems by Motives while Controlling for Personality Factors, Expectancies, and Frequency of Use

Variables	B	SE B	β
ENHANCEMENT /SOCIAL MOTIVE ON LIFETIME ALCOHOL PROBLEMS [a]			
Block 1 (ΔR^2 = .22, p < .001)			
Impulsivity-Sensation Seeking	.57	.17	.18[**]
Physical and Social Enhancement Expectancy	2.65	.37	.40[***]
Block 2 (ΔR^2 = .19, p < .001)			
Impulsivity-Sensation Seeking	.27	.15	.09
Physical and Social Enhancement Expectancy	1.25	.36	.19[**]
Alcohol Use (lifetime)	4.57	.51	.50[***]
Block 3 (ΔR^2 = .02, p < .01)			
Impulsivity-Sensation Seeking	.24	.15	.08
Physical and Social Enhancement Expectancy	.63	.42	.10
Alcohol Use (lifetime)	3.99	.54	.44[***]
Enhancement-Social Use Motive	2.50	.87	.19[**]
COPING MOTIVE ON LIFETIME ALCOHOL PROBLEMS [b]			
Block 1 (ΔR^2 = .16, p < .001)			
Neuroticism-Anxiety	.26	.16	.09
Relaxation and Tension Reduction Expectancy	2.22	.33	.38[***]
Block 2 (ΔR^2 = .25, p < .001)			
Neuroticism-Anxiety	.39	.14	.14[**]
Relaxation and Tension Reduction Expectancy	.85	.31	.15[**]
Alcohol Use (lifetime)	5.21	.49	.56[***]
Block 3 (ΔR^2 = .06, p < .001)			
Neuroticism-Anxiety	.14	.14	.05
Relaxation and Tension Reduction Expectancy	.46	.30	.08
Alcohol Use (lifetime)	4.70	.48	.50[***]
Coping Use Motive	3.91	.75	.28[***]

Note. [*]p < .05; [**]p < .01; [***]p < .001
[a]N = 279, [b]N = 285

Table 14

*Summary of Hierarchical Regression Analyses for Hypothesis 4: Prediction of Lifetime
Marijuana Related Problems by Motives while Controlling for Personality Factors,
Expectancies, and Frequency of Use*

Variables	B	SE B	β
ENHANCEMENT MOTIVE ON LIFETIME MARIJUANA PROBLEMS [a]			
Block 1 (R^2 = .11, p < .001)			
Impulsivity-Sensation Seeking	.54	.27	.16[*]
Perceptual and Cognitive Enhancement Expectancy	1.47	.44	.27[**]
Block 2 (ΔR^2 = .33, p < .001)			
Impulsivity-Sensation Seeking	.30	.22	.09
Perceptual and Cognitive Enhancement Expectancy	.21	.38	.04
Marijuana Use (lifetime)	5.11	.57	.62[***]
Block 3 (ΔR^2 = .001, p = .70)			
Impulsivity-Sensation Seeking	.30	.21	.09
Perceptual and Cognitive Enhancement Expectancy	.15	.42	.03
Marijuana Use (lifetime)	4.98	.66	.61[***]
Enhancement Use Motive	.31	.82	.03
SOCIAL MOTIVE ON LIFETIME MARIJUANA PROBLEMS [b]			
Block 1 (R^2 = .04, p = .05)			
Sociability	-.23	.31	-.06
Social and Sexual Facilitation Expectancy	1.11	.47	.20[*]
Block 2 (ΔR^2 = .39, p < .001)			
Sociability	-.23	.24	-.06
Social and Sexual Facilitation Expectancy	.50	.36	.09
Marijuana Use (lifetime)	5.22	.53	.63[***]
Block 3 (ΔR^2 = .02, p < .05)			
Sociability	-.22	.23	-.06
Social and Sexual Facilitation Expectancy	-.05	.43	-.01
Marijuana Use (lifetime)	4.91	.54	.60[***]
Social Use Motive	2.70	1.14	.18[*]
COPING MOTIVE ON LIFETIME MARIJUANA PROBLEMS [c]			
Block 1 (R^2 = .07, p < .01)			
Neuroticism-Anxiety	-.20	.23	-.07
Relaxation and Tension Reduction Expectancy	1.43	.44	.26[**]
Block 2 (ΔR^2 = .35, p < .001)			
Neuroticism-Anxiety	-.04	.18	-.01
Relaxation and Tension Reduction Expectancy	.18	.37	.04
Marijuana Use (lifetime)	5.20	.56	.64[***]
Block 3 (ΔR^2 = .02, p < .05)			
Neuroticism-Anxiety	-.15	.19	-.05
Relaxation and Tension Reduction Expectancy	-.04	.38	-.01
Marijuana Use (lifetime)	4.84	.57	.59[***]
Coping Use Motive	2.26	1.03	.16[*]

Note. [*]p < .05; [**]p < .01; [***]p < .001
[a]N = 144, [b]N = 146, [c]N = 148

Figures

Figure 1. Hypothesized general path model for the direct and indirect effects of personality, expectancies, and motives on drug use and use related problems. Direct effects hypothesized to be mediated by drug use motives are shown as dashed lines

Figure 2. Alcohol Group Diagram 1 (Enhancement-Social) with significant paths shown in solid lines and non-significant paths shown in dashed lines; all path coefficients are β's from hierarchical regressions unless otherwise noted. *p < .05; **p < .01; ***p < .001

Figure 3. Alcohol Group Diagram 2 (Coping) with significant paths shown in solid lines and non-significant paths shown in dashed lines; all path coefficients are β's from hierarchical regressions unless otherwise noted. *p < .05; **p < .01; ***p < .001

Figure 4. Marijuana Group Diagram 1 (Enhancement) with significant paths shown in solid lines and non-significant paths shown in dashed lines; all path coefficients are β's from hierarchical regressions unless otherwise noted. *p < .05; **p < .01; ***p < .001

Figure 5. Marijuana Group Diagram 2 (Social) with significant paths shown in solid lines and non-significant paths shown in dashed lines; all path coefficients are β's from hierarchical regressions unless otherwise noted. *p < .05; **p < .01; ***p < .001
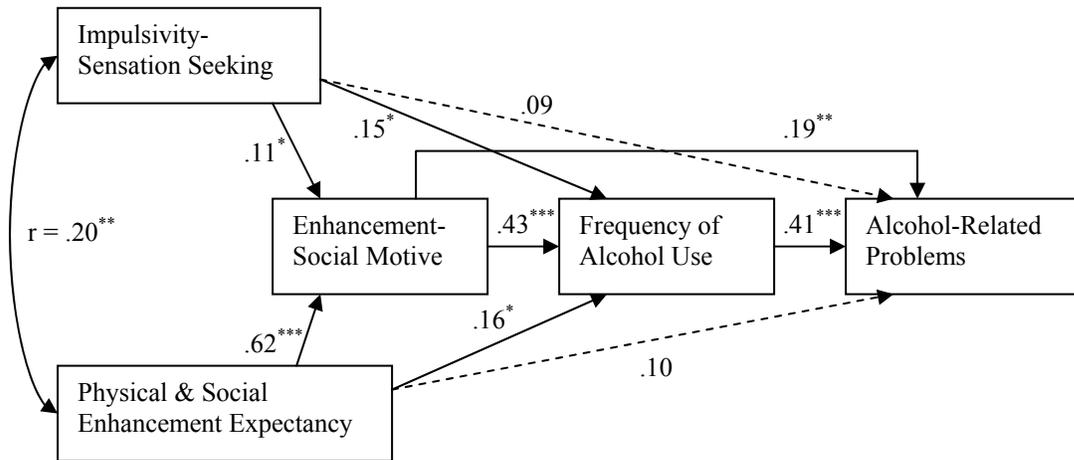
Figure 6. Marijuana Group Diagram 3 (Coping) with significant paths shown in solid lines and non-significant paths shown in dashed lines; all path coefficients are β's from hierarchical regressions unless otherwise noted. *p < .05; **p < .01; ***p < .001
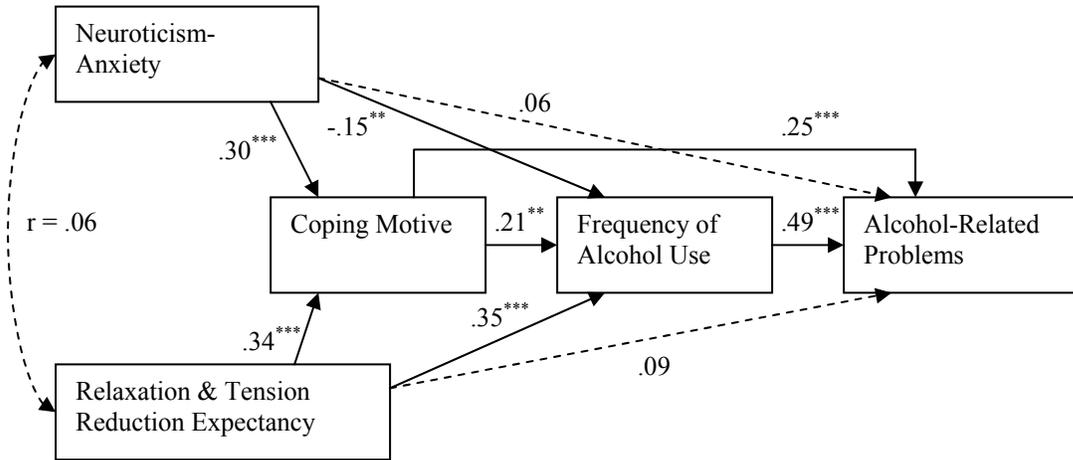
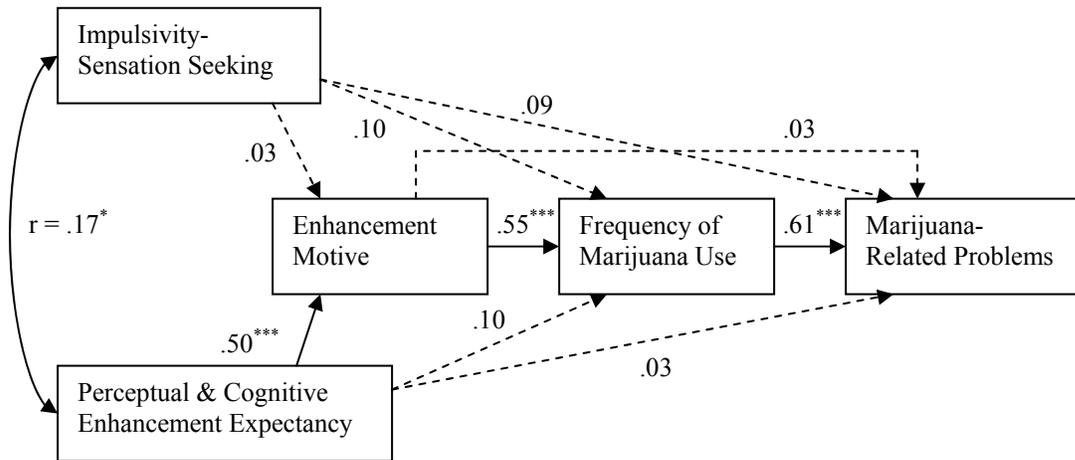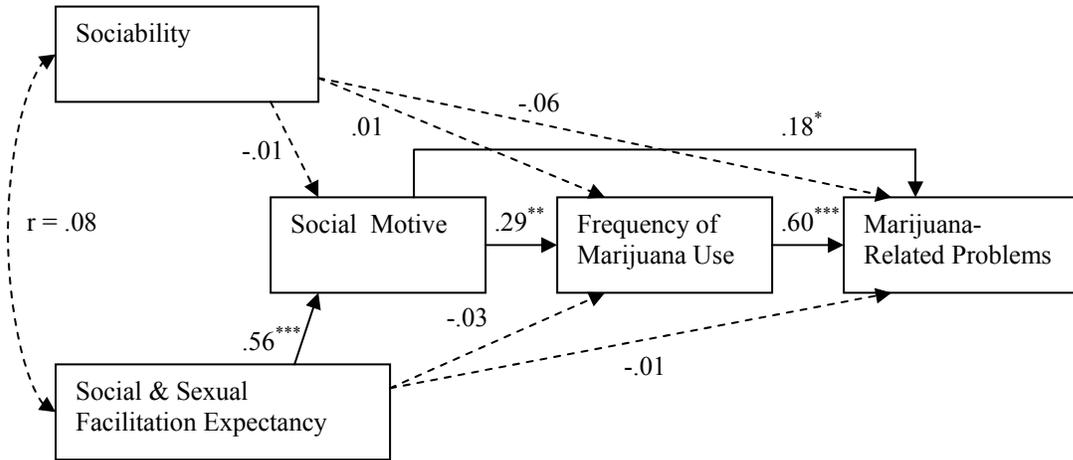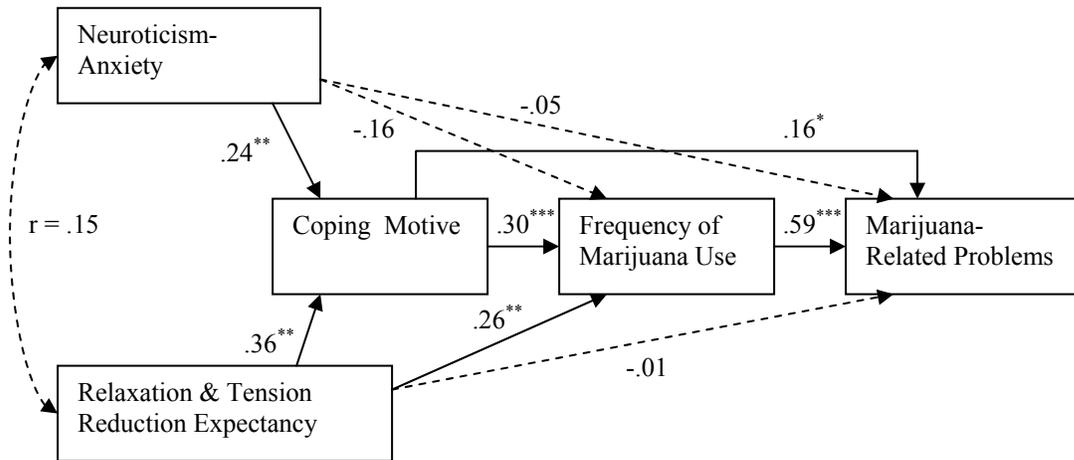**Appendix A**
Informed Consent Form

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

Title of Project: Individual Differences and Alcohol and Marijuana Use Among College Students

Investigators: Mark E. Jones, M.A.
Robert S. Stephens, Ph.D.

I.   The Purpose of this Project
   The purpose of this project is to examine beliefs about using alcohol and marijuana in relation to individual differences in people.

II.   Procedures
   Everyone will be asked to complete several questionnaires that ask about your use of alcohol and marijuana, your beliefs about these drugs and why you do or do not use them. You will also be asked to complete a questionnaire that asks some general questions about how you might describe yourself. All the questionnaires will be completed in a single session today.

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 anonymity of your responses today.*

V.   Extent of Anonymity and Confidentiality
   All responses will be kept strictly anonymous. Your name will not be linked or stored with any of the data we obtain from you. The consent form 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 two extra credit points towards your psychology grade for participation in this study.

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 (IRB # 03-563), 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 and marijuana, my beliefs about these drugs and why I do or do not use them, as well as a questionnaire that asks some general questions about how I might describe myself.

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:
Mark E. Jones, M.A.   231-7631   majones1@vt.edu
Robert S. Stephens, Ph.D.   231-6304   stephens@vt.edu
IRB Representatives:
David Harrison, Ph.D.   231-4422   Dr. David Moore   231-4991
Chair, Psychology Human   dwh@vt.edu   Chair, IRB   moored@vt.edu
Subjects Committee   CVM Phase II

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

Title of Project: Individual Differences and Alcohol and Marijuana Use Among College Students

Investigators: Mark E. Jones, M.A.
Robert S. Stephens, Ph.D.

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 and marijuana, my beliefs about these drugs and why I do or do not use them, as well as a questionnaire that asks some general questions about how I might describe myself.

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

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 Fall 0f 2004.

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

Appendix B
Demographic Information

Demographic Information

Please mark appropriate area or fill in the blank with the appropriate response.

1. Sex (*check one*): ____male   ____female

2. Age: _____

3. Race (*check one)*: ____African-American   ____Caucasian

   ____American Indian/Alaska Native ____Hispanic

   ____Asian   ____Other

4. Academic Status (*check one)*:   ____Freshman

   ____Sophomore

   ____Junior

   ____Senior

   ____Graduate

Appendix C
ZKPQ III

ZKPQ

DIRECTIONS: On The following pages you will find a series of statements that persons might use to describe themselves. Read each statement and decide whether or not it describes you. Then indicate your answer by circling **T** or **F**.

If you agree with a statement or decide that it describes you answer TRUE by circling the **T** next to the statement. If you disagree with a statement or feel that it is not descriptive of you, answer FALSE by circling the **F** next to the statement. <u>Answer every statement</u> either True or False even if you are not entirely sure of your answer.

T	**F**	1. I tend to begin a new job without much planning on how I will do it.
T	**F**	2. I do not worry about unimportant things.
T	**F**	3. I enjoy seeing someone I don't care for humiliated before other people.
T	**F**	4. I never met a person that I didn't like.
T	**F**	5. I do not like to waste time just sitting around and relaxing.
T	**F**	6. I usually think about what I am going to do before doing it.
T	**F**	7. I am not very confident about myself or my abilities.
T	**F**	8. When I get mad, I say ugly things.
T	**F**	9. I tend to start conversations at parties.
T	**F**	10. I have always told the truth.
T	**F**	11. It's natural for me to curse when I get mad.
T	**F**	12. I do not mind going out alone and usually prefer it to being out in a large group.
T	**F**	13. I lead a busier life than most people.
T	**F**	14. I often do things on impulse.
T	**F**	15. I often feel restless for no apparent reason.
T	**F**	16. I almost never litter in the streets.
T	**F**	17. I would not mind being alone in a place for some days without any human contacts.
T	**F**	18. I like complicated jobs that require a lot of effort and concentration.
T	**F**	19. I very seldom spend much time on the details of planning ahead.
T	**F**	20. I sometimes feel edgy and tense.
T	**F**	21. I almost never feel like I would like to hit someone.
T	**F**	22. I spend as much time with my friends as I can.
T	**F**	23. I do not have a great deal of energy for life's more demanding tasks.
T	**F**	24. I like to have new and exciting experiences and sensations even if they are a little frightening.
T	**F**	25. My body often feels all tightened up for no apparent reason.
T	**F**	26. I always win at games.
T	**F**	27. I often find myself being "the life of the party."
T	**F**	28. I like a challenging task much more than a routine one.
T	**F**	29. Before I begin a complicated job, I make careful plans.
T	**F**	30. I frequently get emotionally upset.
T	**F**	31. If someone offends me, I just try not to think about it.

T	F	32. I have never been bored.
T	F	33. I like to be doing things all of the time.
T	F	34. I would like to take off on a trip with no preplanned or definite routes or timetables.
T	F	35. I tend to be oversensitive and easily hurt by thoughtless remarks and actions of others.
T	F	36. In many stores you just cannot get served unless you push yourself in front of other people.
T	F	37. I do not need a large number of casual friends.
T	F	38. I can enjoy myself just lying around and not doing anything active.
T	F	39. I enjoy getting into new situations where you can't predict how things will turn out.
T	F	40. I never get lost, even in unfamiliar places.
T	F	41. I am easily frightened.
T	F	42. If people annoy me I do not hesitate to tell them so.
T	F	43. I tend to be uncomfortable at big parties.
T	F	44. I do not feel the need to be doing things all of the time.
T	F	45. I like doing things just for the thrill of it.
T	F	46. I sometimes feel panicky.
T	F	47. When I am angry with people I do not try to hide it from them.
T	F	48. At parties, I enjoy mingling with many people whether I already know them or not.
T	F	49. I would like a job that provided a maximum of leisure time.
T	F	50. I tend to change interests frequently.
T	F	51. I often think people I meet are better than I am.
T	F	52. I never get annoyed when people cut ahead of me in line.
T	F	53. I tend to start my social weekends on Thursdays.
T	F	54. I usually seem to be in a hurry.
T	F	55. I sometimes like to do things that are a little frightening.
T	F	56. Sometimes when emotionally upset, I suddenly feel as if my legs are unsteady.
T	F	57. I generally do not use strong curse words even when I am angry.
T	F	58. I would rather "hang out" with friends rather than work on something by myself.
T	F	59. When on vacation I like to engage in active sports rather than just lie around.
T	F	60. I'll try anything once.
T	F	61. I often feel unsure of myself.
T	F	62. I can easily forgive people who have insulted me or hurt my feelings.
T	F	63. I would not mind being socially isolated in some place for some period of time.
T	F	64. I like to wear myself out with hard work or exercise.
T	F	65. I would like the kind of life where one is on the move and traveling a lot, with lots of change and excitement.

T	**F**	66. I often worry about things that other people think are unimportant.
T	**F**	67. When people disagree with me I cannot help getting into an argument with them.
T	**F**	68. Generally, I like to be alone so I can do things I want to do without social distractions.
T	**F**	69. I never have any trouble understanding anything I read the first time I read it.
T	**F**	70. I sometimes do "crazy" things just for fun.
T	**F**	71. I often have trouble trying to make choices.
T	**F**	72. I have a very strong temper.
T	**F**	73. I have never lost anything.
T	**F**	74. I like to be active as soon as I wake up in the morning.
T	**F**	75. I like to explore a strange city or section of town by myself, even if it means getting lost.
T	**F**	76. My muscles are so tense that I feel tired much of the time.
T	**F**	77. I can't help being a little rude to people I do not like.
T	**F**	78. I am a very sociable person.
T	**F**	79. I prefer friends who are excitingly unpredictable.
T	**F**	80. I often feel like crying sometimes without a reason.
T	**F**	81. No matter how hot or cold it gets, I am always quite comfortable.
T	**F**	82. I need to feel that I am a vital part of a group.
T	**F**	83. I like to keep busy all the time.
T	**F**	84. I often get so carried away by new and exciting things and ideas that I never think of possible complications.
T	**F**	85. I don't let a lot of trivial things irritate me.
T	**F**	86. I am always patient with others even when they are irritating.
T	**F**	87. I usually prefer to do things alone.
T	**F**	88. I can enjoy routine activities that do not require much concentration or effort.
T	**F**	89. I am an impulsive person.
T	**F**	90. I often feel uncomfortable and ill at ease for no real reason.
T	**F**	91. I often quarrel with others.
T	**F**	92. I probably spend more time than I should socializing with friends.
T	**F**	93. It doesn't bother me if someone takes advantage of me.
T	**F**	94. When I do things, I do them with lots of energy.
T	**F**	95. I like "wild" uninhibited parties.
T	**F**	96. After buying something I often worry about having made the wrong choice.
T	**F**	97. When people shout at me, I shout back.
T	**F**	98. I have more friends than most people do.
T	**F**	99. Other people often urge me to "take it easy."

Appendix D
AEQ-A

ALCOHOL EXPECTANCY QUESTIONNAIRE, REVISED
[120-item rev.9/94) Page 1
30 YR
(iaq.sav)

44209

Date: ☐☐ / ☐☐ / ☐☐

The following pages contain statements about the effects of alcohol. Read each statement carefully and respond according to your own personal thoughts, feelings and beliefs about alcohol now. We are interested in what you think about alcohol, regardless of what other people might think.

When the statements refer to drinking alcohol, you may think in terms of drinking any alcoholic beverage, such as beer, wine, whiskey, liquor, rum, scotch, vodka, gin, or various alcoholic mixed drinks. Whether or not you have had actual drinking experiences yourself, you are to answer in terms of your beliefs about alcohol. It is important that you respond to every question.

PLEASE BE HONEST. REMEMBER, YOUR ANSWERS ARE CONFIDENTIAL. Please answer every item. RESPOND TO THESE ITEMS ACCORDING TO WHAT YOU PERSONALLY BELIEVE TO BE TRUE ABOUT ALCOHOL. Fill in the circle which shows how much you agree or disagree with each item:

PLEASE USE A BLACK PEN
Shade circles like this: ●
Not like this: ✗ ✓

1	2	3	4	5
DISAGREE STRONGLY	DISAGREE SOMEWHAT	UNCERTAIN	AGREE SOMEWHAT	AGREE STRONGLY

1. Alcohol can transform my personality.
2. Drinking helps me feel whatever way I want to feel.
3. Some alcohol has a pleasant, cleansing, tingly taste.
4. Alcohol makes me feel happy.
5. Drinking adds a certain warmth to social occasions.

6. Sweet, mixed drinks taste good.
7. When I am drinking, it is easier to open up and express my feelings.
8. Time passes quickly when I am drinking.
9. When they drink, women become more sexually relaxed.
10. Drinking makes me feel flushed.

11. I feel powerful when I drink, as if I can really influence others to do as I want.
12. Drinking increases male aggressiveness.
13. Alcohol lets my fantasies flow more easily.
14. Drinking gives me more confidence in myself.
15. Drinking makes me feel good.

16. I feel more creative after I have been drinking.
17. Having a few drinks is a nice way to celebrate special occasions.
18. After a few drinks, it is easier to pick a fight.
19. When I am drinking I feel free to be myself and to do whatever I want.
20. Drinking makes it easier to concentrate on the good feelings I have at the time.

21. Alcohol allows me to be more assertive.
22. When I feel "high" from drinking, everything seems to feel better.
23. At times, drinking is like permission to forget problems.
24. If I am nervous about having sex, alcohol makes me feel better.
25. Drinking relieves boredom.

CONTINUE ON BACK OF PAGE →

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44209

ALCOHOL EXPECTANCY QUESTIONNAIRE, REVISED
[120-item; ADULT; rev.9/94) Page 2

PLEASE USE A BLACK PEN Shade circles like this: ● Not like this: ✗ ✓	1 DISAGREE STRONGLY	2 DISAGREE SOMEWHAT	3 UNCERTAIN	4 AGREE SOMEWHAT	5 AGREE STRONGLY

1 2 3 4 5	
iaq26 ○ ○ ○ ○ ○	26. I find that conversing with members of the opposite sex is easier for me after I have had a few drinks.
○ ○ ○ ○ ○	27. After a few drinks, I feel less sexually inhibited.
○ ○ ○ ○ ○	28. Drinking is pleasurable because it is enjoyable to join in with people who are enjoying themselves.
○ ○ ○ ○ ○	29. I like the taste of some alcoholic beverages.
○ ○ ○ ○ ○	30. If I am feeling restricted in any way, a few drinks make me feel better.
○ ○ ○ ○ ○	31. Men are friendlier when they drink.
○ ○ ○ ○ ○	32. It is easier for me to meet new people if I've been drinking.
○ ○ ○ ○ ○	33. I can discuss or argue a point more forcefully after I have had a drink or two.
○ ○ ○ ○ ○	34. Alcohol can eliminate feelings of inferiority.
○ ○ ○ ○ ○	35. Alcohol makes women more sensuous.
○ ○ ○ ○ ○	36. If I have a couple of drinks, it is easier to express my feelings.
○ ○ ○ ○ ○	37. I feel less bothered by physical ills after a few drinks.
○ ○ ○ ○ ○	38. Alcohol makes me need less attention from others than I usually do.
○ ○ ○ ○ ○	39. A drink or two makes the humorous side of me come out.
○ ○ ○ ○ ○	40. After a few drinks, I feel more self-reliant than usual.
○ ○ ○ ○ ○	41. After a few drinks, I don't worry as much about what other people think of me.
○ ○ ○ ○ ○	42. When drinking, I do not consider myself totally accountable or responsible for my behavior.
○ ○ ○ ○ ○	43. Alcohol enables me to have a better time at parties.
○ ○ ○ ○ ○	44. Anything which requires a relaxed style can be facilitated by alcohol.
○ ○ ○ ○ ○	45. Drinking makes the future seem brighter.
○ ○ ○ ○ ○	46. I am not as tense if I am drinking.
○ ○ ○ ○ ○	47. I often feel sexier after I have had a couple of drinks.
○ ○ ○ ○ ○	48. Having a few drinks helps me relax in a social situation.
○ ○ ○ ○ ○	49. I drink when I am feeling mad.
○ ○ ○ ○ ○	50. Drinking alone or with one other person makes me feel calm and serene.
○ ○ ○ ○ ○	51. After a few drinks, I feel brave and more capable of fighting.
○ ○ ○ ○ ○	52. Drinking can make me more satisfied with myself.
○ ○ ○ ○ ○	53. There is more camaraderie in a group of people who have been drinking.
○ ○ ○ ○ ○	54. My feelings of isolation and alienation decrease when I drink.
○ ○ ○ ○ ○	55. A few drinks make me feel less in touch with what is going on around me.
○ ○ ○ ○ ○	56. Alcohol makes me more tolerant of people I do not enjoy.
○ ○ ○ ○ ○	57. Alcohol helps me sleep better.
○ ○ ○ ○ ○	58. Alcohol makes me more outspoken or opinionated.
○ ○ ○ ○ ○	59. I am a better lover after a few drinks.
iaq60 ○ ○ ○ ○ ○	60. Women talk more after they have had a few drinks.

NEXT PAGE ⟶

0 1 2 3 4 5 6 7 8 9
○○○○○○○○○○
○○○○○○○○○○
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ALCOHOL EXPECTANCY QUESTIONNAIRE, REVISED
[120-item; ADULT; rev.9/94) Page 3

44209

	1 DISAGREE STRONGLY	2 DISAGREE SOMEWHAT	3 UNCERTAIN	4 AGREE SOMEWHAT	5 AGREE STRONGLY

PLEASE USE A BLACK PEN
Shade circles like this: ●
Not like this: ✗ ✓

1 2 3 4 5		
○ ○ ○ ○ ○	61.	Alcohol decreases muscular tension.
○ ○ ○ ○ ○	62.	Alcohol makes me worry less.
○ ○ ○ ○ ○	63.	A few drinks make it easier to talk to people.
○ ○ ○ ○ ○	64.	After a few drinks I am usually in a better mood.
○ ○ ○ ○ ○	65.	Alcohol seems like magic.
○ ○ ○ ○ ○	66.	Women can have orgasms more easily if they have been drinking.
○ ○ ○ ○ ○	67.	Drinking increases female aggressiveness.
○ ○ ○ ○ ○	68.	Drinking helps me get out of a depressed mood.
○ ○ ○ ○ ○	69.	After I have had a couple of drinks, I feel I am more of a caring, sharing person.
○ ○ ○ ○ ○	70.	Alcohol decreases my feeling of guilt about not working.
○ ○ ○ ○ ○	71.	I feel more coordinated after I drink.
○ ○ ○ ○ ○	72.	Alcohol makes me more interesting.
○ ○ ○ ○ ○	73.	A few drinks make me feel less shy.
○ ○ ○ ○ ○	74.	If I am tense or anxious, having a few drinks makes me feel better.
○ ○ ○ ○ ○	75.	Alcohol enables me to fall asleep more easily.
○ ○ ○ ○ ○	76.	If I am feeling afraid, alcohol decreases my fears.
○ ○ ○ ○ ○	77.	A couple of drinks makes me more aroused or physiologically excited.
○ ○ ○ ○ ○	78.	Alcohol can act as an anesthetic; that is, it can deaden pain.
○ ○ ○ ○ ○	79.	I enjoy having sex more if I have had some alcohol.
○ ○ ○ ○ ○	80.	I am more romantic when I drink.
○ ○ ○ ○ ○	81.	I feel more masculine/feminine after a few drinks.
○ ○ ○ ○ ○	82.	When I am feeling antisocial, drinking makes me more gregarious.
○ ○ ○ ○ ○	83.	Alcohol makes me feel better physically.
○ ○ ○ ○ ○	84.	Sometimes when I drink alone or with one other person it is easy to feel cozy and romantic.
○ ○ ○ ○ ○	85.	I feel like more of a happy-go-lucky person when I drink.
○ ○ ○ ○ ○	86.	Drinking makes get-togethers more fun.
○ ○ ○ ○ ○	87.	Alcohol makes it easier to forget bad feelings.
○ ○ ○ ○ ○	88.	After a few drinks, I am more sexually responsive.
○ ○ ○ ○ ○	89.	If I am cold, having a few drinks will give me a sense of warmth.
○ ○ ○ ○ ○	90.	It is easier to act on my feelings after I have had a few drinks.
○ ○ ○ ○ ○	91.	I become lustful when I drink.
○ ○ ○ ○ ○	92.	A couple of drinks makes me more outgoing.
○ ○ ○ ○ ○	93.	A drink or two can make me feel more wide awake.
○ ○ ○ ○ ○	94.	Alcohol makes me feel closer to people.
○ ○ ○ ○ ○	95.	Women are friendlier after they have had a few drinks.

iaq61 ... iaq95

CONTINUE ON BACK OF PAGE ⟶

0 1 2 3 4 5 6 7 8 9
○ ○ ○ ○ ○ ○ ○ ○ ○ ○
○ ○ ○ ○ ○ ○ ○ ○ ○ ○
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44209

ALCOHOL EXPECTANCY QUESTIONNAIRE, REVISED
[120-item; ADULT; rev.9/94) Page 4

44209

PLEASE USE A BLACK PEN	1 DISAGREE STRONGLY	2 DISAGREE SOMEWHAT	3 UNCERTAIN	4 AGREE SOMEWHAT	5 AGREE STRONGLY

Shade circles like this: ● Not like this: ✗ ✗

96. I tend to be less self-critical when I have something alcoholic to drink.
97. I find that conversing with members of the opposite sex is easier for me after I have had a few drinks.
98. Drinking makes me feel flushed.
99. It is easier to remember funny stories or jokes if I have been drinking.
100. After a few drinks I am less submissive to those in positions of authority.

101. Alcohol makes me more talkative.
102. I am more romantic when I drink.
103. Men can have orgasms more easily if they have had a drink.
104. A drink or two is really refreshing after strenuous physical activity.
105. Alcohol enables me to have a better time at parties.

106. I can be more persuasive if I have had a few drinks.
107. Drinking makes people feel more at ease in social situations.
108. Alcohol helps me sleep better.
109. After a drink or two, things like muscle aches and pains do not hurt as much.
110. Alcohol decreases my hostilities.

111. Alcohol makes me worry less.
112. Alcohol makes it easier to act impulsively or make decisions quickly.
113. Alcohol makes me feel less shy.
114. Alcohol makes me more tolerant of people I do not enjoy.
115. Alcohol makes me need less attention from others than I usually do.

116. A drink or two can slow me down, so I do not feel so rushed or pressured for time.
117. I feel more sexual after a few drinks.
118. Alcohol makes me feel better physically.
119. Having a drink in my hand can make me feel secure in a difficult social situation.
120. Things seem funnier when I have been drinking or at least I laugh more.

0 1 2 3 4 5 6 7 8 9

44209

Appendix E
MEEQ

MARIJUANA EXPECTANCY QUESTIONNAIRE   **Date:** ☐☐ / ☐☐ / ☐☐

[rev. 10/26/94] 30 yr Page 1
(imeq.sav)

The following pages contain statements about the effects of marijuana. Read each statement carefully and respond according to your own personal thoughts, feelings and beliefs about marijuana now. We are interested in what you think about marijuana, regardless of what other people might think.

<u>Whether or not you have had actual marijuana experiences yourself</u>, you are to answer in terms of your beliefs about marijuana. It is important that you respond to every question. There are no right or wrong answers.

PLEASE BE HONEST. REMEMBER, YOUR ANSWERS ARE CONFIDENTIAL. RESPOND TO THESE ITEMS ACCORDING TO WHAT YOU PERSONALLY BELIEVE TO BE TRUE ABOUT A MODERATE AMOUNT OF MARIJUANA -- HOWEVER YOU DEFINE MODERATE.

Fill in the circle which shows how much you agree or disagree with each item:

PLEASE USE A BLACK PEN	1	2	3	4	5
Shade circles like this: ●	DISAGREE	DISAGREE	UNCERTAIN	AGREE	AGREE
Not like this: ⊗ ⊘	STRONGLY	SOMEWHAT		SOMEWHAT	STRONGLY

1 2 3 4 5

○○○○○ imeq1 1. Marijuana does not make me sleepy and tired.
○○○○○ 2. Marijuana makes small things seem intensely interesting.
○○○○○ 3. Smoking marijuana makes me hungry.
○○○○○ 4. Marijuana gives me a mellow feeling.
○○○○○ 5. Smoking marijuana increases my craving for things.

○○○○○ 6. I get a sense of relaxation from smoking marijuana.
○○○○○ 7. Marijuana disrupts my attention and I get easily distracted.
○○○○○ 8. Smoking marijuana makes me less tense or relieves anxiety; it helps me to unwind.
○○○○○ 9. Marijuana makes me carefree and I do not care about my problems as much.
○○○○○ 10. Smoking marijuana makes me feel agitated.

○○○○○ 11. I am not concerned about how others evaluate me when I am on marijuana.
○○○○○ 12. Smoking marijuana makes me feel like hiding in a corner.
○○○○○ 13. Marijuana makes me talk more than usual.
○○○○○ 14. After smoking marijuana, I become more quiet and tend not to socialize.
○○○○○ 15. I feel like I can focus on one thing better when I smoke marijuana.

○○○○○ 16. When I smoke marijuana I do not feel insecure.
○○○○○ 17. I have a better time at parties if I am smoking marijuana.
○○○○○ 18. Smoking marijuana does not make me thirsty.
○○○○○ 19. Marijuana makes me say things I do not mean.
○○○○○ 20. I am more sociable when I smoke marijuana.

○○○○○ 21. Marijuana makes me paranoid.
○○○○○ 22. Smoking marijuana makes me feel like part of the group.
○○○○○ 23. If I have been smoking marijuana, it is harder for me to concentrate and understand the meaning of what is being said.
○○○○○ 24. Marijuana slows thinking and actions.
○○○○○ 25. I become more creative or imaginative on marijuana.

○○○○○ 26. If I have been smoking marijuana it is harder to remember things.
○○○○○ 27. Marijuana makes time seem to slow down.
○○○○○ 28. I withdraw in social situations when I am on marijuana.
○○○○○ 29. Marijuana does not cause you to think less clearly.
○○○○○ 30. Marijuana makes reaction times slower.

imeq30

CONTINUE ON BACK OF PAGE ⟶

0 1 2 3 4 5 6 7 8 9
○○○○○○○○○○
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○○○○○○○○○○
○○○○○○○○○○

MARIJUANA EXPECTANCY QUESTIONNAIRE
[rev. 10/26/94] 30yr Page 2

RESPOND TO THESE ITEMS ACCORDING TO A MODERATE AMOUNT OF MARIJUANA -- HOWEVER YOU DEFINE MODERATE:

PLEASE USE A BLACK PEN Shade circles like this: ● Not like this: ✗ ✓	1 DISAGREE STRONGLY	2 DISAGREE SOMEWHAT	3 UNCERTAIN	4 AGREE SOMEWHAT	5 AGREE STRONGLY

1 2 3 4 5

31. Things seem unreal and I feel out of touch with what is going on around me when I smoke marijuana.
32. My eyes do not become red and sore when I smoke marijuana.
33. Marijuana does not change the way I view things.
34. When I smoke marijuana it changes my vision or can make me have hallucinations.
35. I feel warm when I smoke marijuana.

36. When I smoke marijuana it helps me escape reality.
37. Marijuana changes the way my body feels; for example, light-headedness, tingly or dizzy sensations.
38. Marijuana makes me giggly and laugh a lot.
39. When I smoke marijuana I feel like I have heavy feet and no coordination.
40. Marijuana does not cause lung problems.

41. Music sounds different when I smoke marijuana.
42. Marijuana tastes and smells bad.
43. Marijuana does not make me uninhibited (unrestrained).
44. I am more willing to do things that I normally would not do when I smoke marijuana.
45. Things seem funny and less serious to me when I smoke marijuana.

46. I have a happy, good feeling when I smoke marijuana.
47. Marijuana causes me to lose control and become careless.
48. Marijuana makes it easier to escape from problems and responsibilities.
49. Smoking marijuana causes me to act pretty much the same.
50. I am less motivated when I smoke marijuana.

51. Marijuana can cause me to become depressed and disappointed with myself.
52. Marijuana causes euphoria (strong sense of well-being).
53. Marijuana can make my feelings change from happy to sad.
54. I act excited when I smoke marijuana.
55. Smoking marijuana is similar to being "high" from drinking alcohol.

56. Marijuana does not make me feel more romantic or attracted to members of the opposite sex.
57. After smoking marijuana my eyelids feel heavy and I become drowsy.
58. Marijuana can make me angry and possibly violent.
59. After the "high" of smoking marijuana, I feel down.
60. Marijuana does not alter my personality.

61. I feel sexy or more interested in sex after smoking marijuana.
62. Marijuana impairs my functioning, especially in school.
63. Marijuana makes me critical and short-tempered.
64. I get the "munchies" (craving for snacks) when I smoke marijuana.
65. It is difficult for me to express my thoughts clearly if I have been smoking marijuana.

66. Marijuana makes my mouth seem dry.
67. Marijuana makes me calm.
68. Marijuana changes my perception of time and distance.
69. I become anxious or uneasy on marijuana.
70. I am more relaxed in social situations if I have been smoking marijuana.

NEXT PAGE ⟶

imeq70

MARIJUANA EXPECTANCY QUESTIONNAIRE
[rev. 10/26/94]30 yr Page 3

RESPOND TO THESE ITEMS ACCORDING TO A MODERATE AMOUNT OF MARIJUANA -- HOWEVER YOU DEFINE MODERATE:

PLEASE USE A BLACK PEN Shade circles like this: ● Not like this: ⊗ ⊘	1 DISAGREE STRONGLY	2 DISAGREE SOMEWHAT	3 UNCERTAIN	4 AGREE SOMEWHAT	5 AGREE STRONGLY

1 2 3 4 5

○○○○○ 71. Marijuana does not make me sleepy and tired.
○○○○○ 72. Smoking marijuana makes me feel agitated.
○○○○○ 73. I am more sociable when I smoke marijuana.
○○○○○ 74. Marijuana makes reaction times slower.
○○○○○ 75. Marijuana does not cause lung problems.

○○○○○ 76. I am less motivated when I smoke marijuana.
○○○○○ 77. Marijuana does not alter my personality.
○○○○○ 78. I am more relaxed in social situations if I have been smoking marijuana.

imeq71

imeq78

Appendix F
DMM

If you have <u>never</u> drunk an alcoholic beverage, check here and skip to the next page _____

DRINKING QUESTIONNAIRE

The following is a list of reasons people sometimes give for drinking alcohol. Thinking of all the times you drink, **how often** would you say that you drink for each of the following reasons? (Please circle your answer)

1 = Almost never/never   **4 = Most of the time**
2 = Some of the time   **5 = Almost always/always**
3 = Half of the time

1. I drink to forget my worries.	1	2	3	4	5
2. I drink because my friends pressure me to drink.	1	2	3	4	5
3. I drink because it helps me enjoy a party.	1	2	3	4	5
4. I drink because it helps me when I feel depressed or nervous.	1	2	3	4	5
5. I drink to be sociable.	1	2	3	4	5
6. I drink to cheer up when I am in a bad mood.	1	2	3	4	5
7. I drink because I like the feeling.	1	2	3	4	5
8. I drink so that others won't kid me about *not* drinking.	1	2	3	4	5
9. I drink because it's exciting.	1	2	3	4	5
10. I drink to get high or drunk.	1	2	3	4	5
11. I drink because it makes social gatherings more fun.	1	2	3	4	5
12. I drink to fit in with a group I like.	1	2	3	4	5
13. I drink because it gives me a pleasant feeling.	1	2	3	4	5
14. I drink because it improves parties and celebrations.	1	2	3	4	5
15. I drink because I feel more confident and sure of myself.	1	2	3	4	5
16. I drink to celebrate a special occasion with friends.	1	2	3	4	5
17. I drink to forget my problems.	1	2	3	4	5
18. I drink because it's fun.	1	2	3	4	5
19. I drink to be liked.	1	2	3	4	5
20. I drink so I won't feel left out.	1	2	3	4	5
21. I drink so I can know myself better.	1	2	3	4	5
22. I drink because it helps me to be more creative and original.	1	2	3	4	5
23. I drink so I can understand things differently.	1	2	3	4	5
24. I drink so I can expand my awareness.	1	2	3	4	5
25. I drink to be more open to experiences.	1	2	3	4	5

Go on to the next page

Appendix G
MMM

If you have <u>never</u> tried marijuana, check here and skip to the next page _____

MARIJUANA QUESTIONNAIRE

The following is a list of reasons people sometimes give for using marijuana. Thinking of all the times you use marijuana, **how often** would you say that you use marijuana for each of the following reasons? (Please circle your answer)

1 = Almost never/never   **4 = Most of the time**
2 = Some of the time   **5 = Almost always/always**
3 = Half of the time

1. I use marijuana to forget my worries.	1	2	3	4	5
2. I use marijuana because my friends pressure me to use marijuana.	1	2	3	4	5
3. I use marijuana because it helps me enjoy a party.	1	2	3	4	5
4. I use marijuana because it helps me when I feel depressed or nervous.	1	2	3	4	5
5. I use marijuana to be sociable.	1	2	3	4	5
6. I use marijuana to cheer up when I am in a bad mood.	1	2	3	4	5
7. I use marijuana because I like the feeling.	1	2	3	4	5
8. I use marijuana so that others won't kid me about *not* using marijuana.	1	2	3	4	5
9. I use marijuana because it's exciting.	1	2	3	4	5
10. I use marijuana to get high.	1	2	3	4	5
11. I use marijuana because it makes social gatherings more fun.	1	2	3	4	5
12. I use marijuana to fit in with a group I like.	1	2	3	4	5
13. I use marijuana because it gives me a pleasant feeling.	1	2	3	4	5
14. I use marijuana because it improves parties and celebrations.	1	2	3	4	5
15. I use marijuana because I feel more confident and sure of myself.	1	2	3	4	5
16. I use marijuana to celebrate a special occasion with friends.	1	2	3	4	5
17. I use marijuana to forget my problems.	1	2	3	4	5
18. I use marijuana because it's fun.	1	2	3	4	5
19. I use marijuana to be liked.	1	2	3	4	5
20. I use marijuana so I won't feel left out.	1	2	3	4	5
21. I use marijuana so I can know myself better.	1	2	3	4	5
22. I use marijuana because it helps me to be more creative and original.	1	2	3	4	5
23. I use marijuana so I can understand things differently.	1	2	3	4	5
24. I use marijuana so I can expand my awareness.	1	2	3	4	5
25. I use marijuana to be more open to experiences.	1	2	3	4	5

Go on to the next page

Appendix H
RAPI

RAPI-Lifetime

Instructions: Circle a number to indicate how often the following have happened **in your lifetime** while you were **drinking alcohol** or because of your using **alcohol**.

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

1. Not able to do your homework or study for a test	1	2	3	4	5
2. Got into fights, acted bad or did mean things	1	2	3	4	5
3. Missed out on other things because you spent too much money on alcohol	1	2	3	4	5
4. Went to work or school intoxicated or drunk		1	2	3	4	5
5. Caused shame or embarrassment to someone	1	2	3	4	5
6. Neglected your responsibilities	1	2	3	4	5
7. Relatives avoided you	1	2	3	4	5
8. Felt that you needed MORE alcohol than you used to use in order to get the same effect	1	2	3	4	5
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
10. Had withdrawal symptoms, that is felt sick because you stopped or cut down using alcohol	1	2	3	4	5
11. Noticed an ongoing or unpleasant change in your personality	1	2	3	4	5
12. Felt that you had a problem with alcohol	1	2	3	4	5
13. Missed a day (or part of a day) of school or work	1	2	3	4	5
14. Tried to cut down or quit drinking	1	2	3	4	5
15. Suddenly found yourself in a place you could not remember getting to	1	2	3	4	5
16. Passed out or fainted suddenly	1	2	3	4	5
17. Had a fight, argument, or bad feelings with a friend	1	2	3	4	5
18. Had a fight, argument, or bad feelings with a family member	1	2	3	4	5
19. Kept drinking when you promised yourself not to	1	2	3	4	5
20. Felt you were going crazy	1	2	3	4	5
21. Had a bad time	1	2	3	4	5
22. Felt physically or psychologically dependent on alcohol	1	2	3	4	5
23. Was told by a friend or neighbor to stop or cut down on drinking	1	2	3	4	5

RAPI-30 days

Instructions: Circle a number to indicate how often the following have happened **in the last 30 days** while you were **drinking alcohol** or because of your using **alcohol**.

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

1. Not able to do your homework or study for a test	1	2	3	4	5
2. Got into fights, acted bad or did mean things	1	2	3	4	5
3. Missed out on other things because you spent too much money on alcohol	1	2	3	4	5
4. Went to work or school intoxicated or drunk	1	2	3	4	5
5. Caused shame or embarrassment to someone	1	2	3	4	5
6. Neglected your responsibilities	1	2	3	4	5
7. Relatives avoided you	1	2	3	4	5
8. Felt that you needed MORE alcohol than you used to use in order to get the same effect	1	2	3	4	5
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
10. Had withdrawal symptoms, that is felt sick because you stopped or cut down using alcohol	1	2	3	4	5
11. Noticed an ongoing or unpleasant change in your personality	1	2	3	4	5
12. Felt that you had a problem with alcohol	1	2	3	4	5
13. Missed a day (or part of a day) of school or work	1	2	3	4	5
14. Tried to cut down or quit drinking	1	2	3	4	5
15. Suddenly found yourself in a place you could not remember getting to	1	2	3	4	5
16. Passed out or fainted suddenly	1	2	3	4	5
17. Had a fight, argument, or bad feelings with a friend	1	2	3	4	5
18. Had a fight, argument, or bad feelings with a family member	1	2	3	4	5
19. Kept drinking when you promised yourself not to	1	2	3	4	5
20. Felt you were going crazy	1	2	3	4	5
21. Had a bad time	1	2	3	4	5
22. Felt physically or psychologically dependent on alcohol	1	2	3	4	5
23. Was told by a friend or neighbor to stop or cut down on drinking	1	2	3	4	5

Appendix I
MPI

MPI-Lifetime

Instructions: Circle a number to indicate how often the following have happened **in your lifetime** while you were using **marijuana** or because of your **using marijuana**.

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

1. Not able to do your homework or study for a test	1	2	3	4	5
2. Got into fights, acted bad or did mean things	1	2	3	4	5
3. Missed out on other things because you spent too much money on marijuana	1	2	3	4	5
4. Went to work or school high	1	2	3	4	5
5. Caused shame or embarrassment to someone	1	2	3	4	5
6. Neglected your responsibilities	1	2	3	4	5
7. Relatives avoided you	1	2	3	4	5
8. Felt that you needed MORE marijuana than you used to use in order to get the same effect	1	2	3	4	5
9. Tried to control your marijuana use by trying to smoke only at certain times of the day or certain places	1	2	3	4	5
10. Had withdrawal symptoms, that is felt sick because you stopped or cut down using marijuana	1	2	3	4	5
11. Noticed an ongoing or unpleasant change in your personality	1	2	3	4	5
12. Felt that you had a problem with marijuana	1	2	3	4	5
13. Missed a day (or part of a day) of school or work	1	2	3	4	5
14. Tried to cut down or quit smoking marijuana	1	2	3	4	5
15. Suddenly found yourself in a place you could not remember getting to	1	2	3	4	5
16. Passed out or fainted suddenly	1	2	3	4	5
17. Had a fight, argument, or bad feelings with a friend	1	2	3	4	5
18. Had a fight, argument, or bad feelings with a family member	1	2	3	4	5
19. Kept smoking marijuana when you promised yourself not to	1	2	3	4	5
20. Felt you were going crazy	1	2	3	4	5
21. Had a bad time	1	2	3	4	5
22. Felt physically or psychologically dependent on marijuana	1	2	3	4	5
23. Was told by a friend or neighbor to stop or cut down on smoking marijuana	1	2	3	4	5

MPI-30 days (adaptation of the RAPI)

Instructions: Circle a number to indicate how often the following have happened **in the last 30 days** while you were using **marijuana** or because of your **using marijuana**.

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

1. Not able to do your homework or study for a test	1	2	3	4	5
2. Got into fights, acted bad or did mean things	1	2	3	4	5
3. Missed out on other things because you spent too much money on marijuana	1	2	3	4	5
4. Went to work or school high	1	2	3	4	5
5. Caused shame or embarrassment to someone	1	2	3	4	5
6. Neglected your responsibilities	1	2	3	4	5
7. Relatives avoided you	1	2	3	4	5
8. Felt that you needed MORE marijuana than you used to use in order to get the same effect	1	2	3	4	5
9. Tried to control your marijuana use by trying to smoke only at certain times of the day or certain places	1	2	3	4	5
10. Had withdrawal symptoms, that is felt sick because you stopped or cut down using marijuana	1	2	3	4	5
11. Noticed an ongoing or unpleasant change in your personality	1	2	3	4	5
12. Felt that you had a problem with marijuana	1	2	3	4	5
13. Missed a day (or part of a day) of school or work	1	2	3	4	5
14. Tried to cut down or quit smoking marijuana	1	2	3	4	5
15. Suddenly found yourself in a place you could not remember getting to	1	2	3	4	5
16. Passed out or fainted suddenly	1	2	3	4	5
17. Had a fight, argument, or bad feelings with a friend	1	2	3	4	5
18. Had a fight, argument, or bad feelings with a family member	1	2	3	4	5
19. Kept smoking marijuana when you promised yourself not to	1	2	3	4	5
20. Felt you were going crazy	1	2	3	4	5
21. Had a bad time	1	2	3	4	5
22. Felt physically or psychologically dependent on marijuana	1	2	3	4	5
23. Was told by a friend or neighbor to cut down on smoking marijuana	1	2	3	4	5

Appendix J
Use Assessment

USE ASSESSMENT

How often have you used **marijuana** (pot, hashish, cannabis, etc) in your **lifetime**? *(Please circle one number)*	
6	More than 300 days
5	At least 101 but not more than 300 days
4	At least 51 but not more than 100 days
3	At least 12 but not more than 50 days
2	At least 3 but not more than 11 days
1	At least 1 but not more than 2 days
0	I have never used marijuana in my life

How often have you used **alcohol** in your **lifetime**? *(Please circle one number)*	
6	More than 300 days
5	At least 101 but not more than 300 days
4	At least 51 but not more than 100 days
3	At least 12 but not more than 50 days
2	At least 3 but not more than 11 days
1	At least 1 but not more than 2 days
0	I have never used marijuana in my life

On average, how often have you used **marijuana** (pot, hashish, cannabis, etc) in the **last 6 months**? *(Please circle one number)*	
8	more than once a day
7	once a day
6	nearly every day
5	3-4 times/week
4	once or twice a week
3	2-3 times/month
2	once a month
1	less than once a month but at least once in the last 6 months
0	not at all

On average, how often have you used **alcohol** in the **last 6 months**? *(Please circle one number)*	
8	more than once a day
7	once a day
6	nearly every day
5	3-4 times/week
4	once or twice a week
3	2-3 times/month
2	once a month
1	less than once a month but at least once in the last 6 months
0	not at all

How many days in the **past 30 days** have you used… *(write in # of days between 0 and 30)*	
Marijuana (pot, hashish, cannabis, etc)	
Alcohol – any use at all	
Alcohol – to intoxication	
Other illicit drugs (or prescription drugs used without a prescription)	

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EDUCATION

2001 – Present   Virginia Polytechnic Institute and State University,
Blacksburg, Virginia.
Degree expected: Doctor of Philosophy
Program: Clinical Psychology
Specialization: Clinical-Adult Psychology

1999-2001   Universiteit van Amsterdam,
International School of Humanities and Social Sciences,
Amsterdam, The Netherlands
Master of Arts in Social Sciences

1994-1998   University of Texas @ Austin
Bachelor of Arts in Psychology (honors)
Bachelor of Arts in Philosophy

CLINICAL POSITIONS

5/03 – 8/03   Substance Abuse Rehabilitation Treatment Program for inpatients,
Salem Veteran's Affairs Medical Center, Salem, VA. Extern.
Duties: Conduct brief therapy, conduct assessments, attend weekly
treatment team meetings, run groups, and attend supervision
meetings. Special assignments included:

- Facilitator of a daily inpatient cognitive-behavioral relapse
  prevention group, consisting of between three and nine
  individuals (open enrollment)
- Co-facilitator of a weekly inpatient depression group.
- Conducted various assessments, including screening for
  program admission, intake for general symptomatology,
  neuropsychological, cognitive, and symptom-focused
  (Obsessive-Compulsive Disorder, Bipolar Disorder,
  Posttraumatic Stress Disorder, thought disorder)
- Individual therapist for 4 inpatients with concomitant
  disorders; therapy primarily focused on substance dependence

Supervisors: Jennifer Burden, Ph.D. and Steven J. Lash, Ph.D.

8/02-5/03   Department of Psychology, Virginia Polytechnic Institute and State

University, Blacksburg, VA. Graduate Clinician. Duties: Conduct therapy and attend weekly supervision meetings with faculty supervisor and other graduate clinicians. Assignments included:

- Therapist for 28 year-old female; focused on anxiety and depression.
- Therapist for 40 year-old female; focused on extreme anxiety and depression, possible overmedication issues, and parenting issues; prepared a court-ordered mental health report for custody hearing.
- Therapist for 26 year-old male; conducted 10 sessions of court mandated anger management therapy for domestic assault and battery charges
- Therapist for 22 year-old male; focused on substance abuse and bipolar symptomology
- Therapist for 33 year-old female; focused on monitoring emergent depression and/or mania, and addressing borderline personality issues.
- Observed and co-facilitated general process group therapy at the Virginia Tech Cook Counseling Center

Supervisors: Richard Eisler, Ph.D., Brian Warren, Ph.D., Chris Dula M.S.

5/02 – 8/02   Department of Psychology, Virginia Polytechnic Institute and State University, Blacksburg, VA. Graduate Clinician. Duties: Conduct therapy and attend weekly supervision meetings with faculty supervisor and other graduate clinicians. Assignments included:

- Therapist for 28 year-old female; focused on anxiety and depression.
- Therapist for 24 year-old male; focused on procrastination and anxiety related to school performance
- Therapist for 21 year-old male; conducted 10 sessions of court mandated anger management therapy for domestic assault and battery charges
- Therapist for 40 year-old male; focused on coping with divorce (also met with the entire family to discuss divorce with 6 and 8 year-old children)
- Therapist for 22 year-old male; focused on substance abuse and bipolar symptomology

Supervisor: Lee Cooper, Ph.D.

| 8/01 – 5/02 | Department of Psychology, Virginia Polytechnic Institute and State University, Blacksburg, VA. Graduate Clinician. Duties: Conduct therapy and attend weekly supervision meetings with faculty supervisor and other graduate clinicians. Assignments included: |

- Therapist for a 20 year-old male; focused on interpersonal problems with girlfriend, family, and friends.

Supervisor: George Clum, Ph.D.

| 3/99 – 8/99 Program | Charter Behavioral Health Systems of Austin, Austin, Texas. Coordinator. Duties: |

- Counseling and supervision of behaviorally and emotionally disturbed children and adults in a psychological crisis unit

- Facilitating psychosocial group therapy sessions

Supervisor: Mary Jane Richards, M.S., R.N.

RESEARCH POSITIONS

| 8/01 – present | Department of Psychology, Virginia Polytechnic Institute and State University, Blacksburg, VA. Research Assistant. Duties: |

- Assisted in development of data entry screens, development and refinement of coding system for quality assurance, and tape coding for quality assurance purposes for the MCU2, described below.
- Participated in weekly conference calls related to implementation of the study.

- Assisted in refinement of study design and development of study protocol and manual for the VA study, administered assessments, developed and maintained weekly tracking database and reports, developed data entry screens, entered and cleaned data

- Assisted in development of data entry screens and cleaning data for the MCU2, a NIDA funded study comparing the effectiveness of a two- vs. a six-session motivational enhancement therapy.

- Participated in weekly research team meetings and conference calls (VA study, MCU2, TMCU, PRN study).

Supervisor: Robert S. Stephens, Ph.D.

8/99 – 05/01   Department of Social Sciences, International School of Humanities
and

Social Sciences, Universiteit van Amsterdam, Amsterdam, the
Netherlands. Master's thesis research. Duties:

- Extensive research of the historical/sociological development
  of drug policy in the United States and the Netherlands and
  composition of a thesis paper

- Interviewed various informed parties including DEA agents,
  professors of sociology, drug addicts, and marijuana
  "coffeeshop" owners

Supervisor: Geert de Vries, Ph.D.

9/97 – 5/98   Department of Psychology, University of Texas @ Austin, Austin,
TX. Undergraduate Honors thesis research. Duties:

- Proposed and conducted an original research project focused
  on incoming college freshman re: depression, adjustment
  difficulty, and risky sexual behavior.

- Extensive literature review, data analysis, and composition of
  a thesis paper

Supervisor: Joseph Horn, Ph.D.

6/96 – 3/97   Department of Psychology, University of Texas @ Austin, Austin ,
TX. Undergraduate research assistant. Panic and Anxiety Lab.
Duties:

- Data entry/analysis

- Diagnostic interviewing of anxiety history

- Co-administration of a panic prevention program and CO_2
  inhalations

Supervisor: Michael Telch, Ph.D.

9/95 – 12/95   Department of Psychology, University of Texas @ Austin, Austin,
TX.

Undergraduate research assistant. Children's Research Lab. Duties:

- Administering experimental procedures to infants and 5-6 year-olds re: language development

- Data entry and video coding

AWARDS & HONORS

2001 -- 2003   Graduate Research Assistantship (full tuition waiver)
1997 -- 1998   Undergraduate Honors program (Department of Psychology, University of Texas @ Austin)
1996 -- 1998   Dean's List (University of Texas @ Austin)
1993   Eagle Scout

PRESENTATIONS

Lash, S.J., Stephens, R., Burden, J.L., Grambow, S. C., Horner, R.D., Walker, N.R., DeMarce, J., Jones,M., & Lozano, B. (November, 2002). <u>Contracting, prompting and reinforcing substance abuse aftercare attendance: 3 month outcomes of a VA HSR&D clinical trial</u>. Poster presented at the
Annual Convention of the Association for the Advancement of Behavior Therapy, Reno, NV.

Walker, N. R., DeMarce, J., Jones, M. E., Lozano, B., Stephens, R. S., Lash, S. J., and Burden, J. L. (2202, November). <u>Development of an aftercare self-efficacy questionnaire: Validity and ability to predict aftercare attendance. </u> . Poster presented at the Annual Convention of the Association for the Advancement of Behavior Therapy, Reno, NV.