THE ROLE OF ALCOHOL EXPECTATIONS IN THE CO-OCCURRENCE OF
ALCOHOL-RELATED PROBLEMS WITH ANXIETY AND DEPRESSIVE TRAITS IN A
JUVENILE CORRECTION SAMPLE

A Dissertation by

Brett E. Scofield

Master of Arts, Wichita State University, 2002

Master of Science, University of Baltimore, 1999

Bachelor of Arts, University of Maryland Baltimore County, 1997

Submitted to the Department of Psychology
and the faculty of the Graduate School of
Wichita State University
in partial fulfillment of
the requirements for the degree of
Doctor of Philosophy

December 2006

THE ROLE OF ALCOHOL EXPECTATIONS IN THE CO-OCCURRENCE OF
ALCOHOL-RELATED PROBLEMS WITH ANXIETY AND DEPRESSIVE TRAITS IN A
JUVENILE CORRECTION SAMPLE

I have examined the final copy of this dissertation for form and content, and recommend that it be accepted in partial fulfillment of the requirement for the degree of Doctor of Philosophy with a major in Clinical Psychology.

_____
Darwin Dorr, Ph.D., Committee Chair

We have read this dissertation
and recommend its acceptance:

_____
Elsie R. Shore, Ph.D., Committee Member

_____
Greg J. Meissen, Ph.D., Committee Member

_____
Darcee L. Datteri, Ph.D., Committee Member

_____
Nancy McKellar, Ph.D., Committee Member

Accepted for the College of Liberal Arts and Sciences

_____
William Bischoff, Dean

Accepted for the Graduate School

_____
Susan Kovar, Dean

DEDICATION

To my father, Roderick Scofield (December 3, 1942 – February 25, 2006)

and

To Kellie, Joyce, and Matt

Thank you for your inspiration

I love you

ACKNOWLEDGMENTS

ABSTRACT

Alcohol-related expectations have been defined as the anticipated consequences from consuming alcohol (Brown, Goldman, Inn, & Anderson, 1980). Previous research has been conducted to examine the role of alcohol expectations in the co-occurrence of alcohol problems with anxiety and depressive symptoms. In the current study, the relationship between alcohol problems, anxiety and depressive traits, and alcohol expectancies were examined within a male juvenile correction sample. Specifically, statistical analyses were conducted to test the degree to which alcohol expectancies combined with anxiety/depression traits improve the prediction of alcohol-related problems beyond that of anxiety/depression traits alone. Archival data were collected from 205 incarcerated male adolescents who completed both the Alcohol Expectancy Questionnaire – Adolescent Form (AEQ-A) and the Minnesota Multiphasic Personality Inventory – Adolescent (MMPI-A). Two research hypotheses were tested using correlation and regression analyses. The results demonstrated that depressive traits significantly predicted an increase in alcohol-related problems, and the addition of expectancies related to global positive changes and increased social behavior produced a significant gain in the prediction of alcohol problems. Furthermore, anxiety traits significantly predicted an increase in alcohol-related problems, and the inclusion of tension reduction expectancies yielded a significant gain in prediction. The results suggest that alcohol-related problems may be exacerbated by the presence of reinforcement-based expectancies in male juvenile offenders who are concurrently experiencing elevated levels of anxiety and depressive traits. These findings have implications for prevention and treatment programs that utilize cognitive-behavioral and expectancy challenge techniques to affect change in problematic alcohol consumption behaviors.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

Alcohol-related expectations have been defined as the anticipated consequences from consuming alcohol (Brown et al., 1980). Previous studies have been conducted to examine the role of alcohol expectations in the co-occurrence of alcohol problems with anxiety and depressive symptoms. Specifically, some researchers have suggested that a third variable, such as expectations, may moderate the relationship between anxiety/depressive symptoms and alcohol use (Burke & Stephens, 1999; Cooper, Russell, Skinner, Frone, & Mudar, 1992; Johnson & Gurin, 1994; Kushner, Sher, Wood, & Wood, 1994; McKirnan and Peterson, 1988; Morris, Stewart, & Ham, 2005; Tran, Haaga, & Chambless, 1997). For example, individuals with an anxiety or depressive disorder may develop a comorbid alcohol problem to the extent that they expect alcohol consumption will provide pleasurable consequences that are lacking or relieve aversive feelings they are experiencing.

In the current study, statistical analyses were conducted to test the degree to which alcohol expectancies combined with anxiety/depression traits improve the prediction of alcohol-related problems beyond that of anxiety/depression traits alone in a sample of male incarcerated adolescents. To date, there have been no studies that have examined the role of alcohol expectancies, utilizing the Alcohol Expectancy Questionnaire – Adolescent Form (AEQ-A, Goldman, Christiansen, & Brown, 1982), in the co-occurrence of alcohol problems with anxiety and depressive traits as measured by the Minnesota Multiphasic Personality Inventory – Adolescent (MMPI-A), a widely used instrument that assesses psychopathology in adolescents (Butcher et al., 1992).

CHAPTER II

LITERATURE REVIEW

Alcohol Use by Incarcerated Adolescents

Alcohol consumption is extremely prevalent within the juvenile correction population. Recent statistics have demonstrated the problematic nature of alcohol use in samples of incarcerated adolescents. In a study of 189 youth within a correctional facility, Prinz and Kerns (2003) reported that 17% of their sample reported using alcohol prior to the age of 10. By the age of 13, 32% of the males and 39% of the females disclosed that they consumed alcohol at a rate of at least several times per month. Additionally, 3% of males and 15% of females reported that they consumed alcohol daily before they reached the age of 13. Reviewing information from clinical intakes conducted with 186 newly adjudicated male adolescents, Lebeau-Craven et al. (2003) found that 88.7% of the offenders reported that they were current users of alcohol, with 15.1% indicating that they consumed alcohol daily. The average age at which the youth initiated alcohol use was 12.3 years. Similarly, in a sample of 2,280 adolescent male and female detainees, Braithwaite, Conerly, Robillard, Stephens, and Woodring (2003) reported that 77.8% of the youth reported drinking at some point in their lifetime with 62.6 % indicating that they had used alcohol during the month prior to their detention. The mean age of onset for alcohol use was 12.8 years. In terms of the frequency of consumption, 52% of the sample disclosed that they had consumed alcoholic beverages between 1 and 19 times, while nearly 20% admitted to drinking on 100 or more occasions.

As might be expected given the high rates of alcohol consumption in the juvenile correction population, alcohol-related diagnoses are very common. According to the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition – Text Revision (DSM-IV-TR,

American Psychiatric Association, 2000), alcohol abuse and dependence are the two main

alcohol-related diagnoses. The DSM-IV-TR further explains that abuse of a substance is defined

as repeated, dysfunctional use of a substance, which leads to significant negative consequences.

Dependence on a substance is a more severe diagnosis and is characterized by "a cluster of

cognitive, behavioral, and physiological symptoms indicating that the individual continues use of

the substance despite significant substance-related problems" (p. 192). Furthermore, in a

dependence diagnosis, repeated consumption of the substance may lead to symptoms of

tolerance, withdrawal, and compulsive substance consumption behaviors.

Several studies have examined the prevalence of alcohol-related diagnoses in

incarcerated adolescent samples. McManus, Alessi, Grapentine, and Brickman (1984) assessed

71 incarcerated adolescents and reported that 19.7% were diagnosed with alcohol abuse and

8.4% with alcohol dependence. These authors noted "substance abuse and alcohol

abuse/dependence were the most common psychiatric diagnoses made in the delinquent

adolescents studied" (p. 608). Davis, Bean, Schumacher, and Stringer (1991) collected

psychiatric data from a sample of 173 adolescents within a correctional facility and found that

34.1% met the criteria for alcohol abuse disorder and 11.6% for alcohol dependence. More

recently, Pliszka, Sherman, Barrow, and Irick (2000) conducted diagnostic interviews on 50

adolescents within a juvenile detention center and reported that 28% of the sample met the

criteria for alcohol dependence. Wasserman, McReynolds, Lucas, Fisher, and Santos (2002),

utilizing a sample of 292 detained male adolescents within secure placements in two states,

discovered that 17.1% met the criteria for alcohol abuse disorder and 13.4% for alcohol

dependence. Domalanta, Risser, Roberts, and Risser (2003) collected data on a sample of 1,024

incarcerated adolescents and reported that 26.8% of males and 27% of females had alcohol

abuse. Cauffman (2004) examined assessment information from 18,607 adolescents within multiple detention centers and found that 36% of females and 34% of males scored above the clinical cutoff on the alcohol/drug use domain on the Massachusetts Youth Screening Instrument – Second Version, a brief assessment measure used to identify adolescents at risk for a variety of problems.

When assessing substance-related disorders in general rather than exclusively alcohol-related diagnoses, the rates of occurrence increase within juvenile correction samples. Abrantes, Hoffman, and Anton (2005) interviewed 252 adolescents within two juvenile detention centers and found that 46% of males and 66% of females presented with high levels of substance dependence symptoms. Teplin, Abram, McClelland, Dulcan, and Mericle (2002) conducted diagnostic interviews on 1,829 adolescent detainees and reported that nearly 50% of their sample met the criteria for a substance use disorder. Similarly, Wasserman et al. (2002) documented that 50.3% of male detainees within secure placements met the criteria for a substance abuse diagnosis.

Several studies have compared rates of substance abuse in juvenile offender samples to other sectors of the adolescent population. Ulzen and Hamilton (1998), examining 49 incarcerated adolescents and 49 youth recruited from the community, reported that 38.8% of incarcerated adolescents met the criteria for alcohol dependence compared to 0% of a general community sample. Wilson, Rojas, Haapanen, Duxbury, and Steiner (2001) found higher rates of substance abuse or dependence in juvenile offenders than statistics reported from studies assessing general community samples (33.6% versus 3-10%). Atkins et al. (1999) reported that incarcerated adolescents experienced slightly higher rates of substance abuse diagnoses (20%) than youth receiving treatment in a community mental health center (18.3%), but less than

4

adolescents within an inpatient setting (38%). Additionally, Aarons, Brown, Hough, Garland, and Wood (2001) examined the lifetime prevalence of substance use disorders across five different sectors of the adolescent population who were receiving some form of care. The results revealed the following lifetime prevalence rates of alcohol use disorders within the five areas of care: (a) 68.9% of adolescents receiving alcohol/drug services; (b) 48.6% of youth involved with the juvenile justice system; (c) 32.2% of adolescents receiving public mental health care; (d) 19.1% of youth in school-based programs for emotional disturbance; and (e) 16.6% of adolescents involved with child welfare.

The negative consequences associated with adolescent alcohol consumption are numerous. Jones, Casswell, and Zhang (1995) studied a sample of adolescents and adults from New Zealand and found that heavy drinking was related to an increased rate of absences from work as well as a reduction in work productivity. Excessive drinking in youth between the ages of 14 and 16 was associated with increases in truancy from school and lower educational aspirations (Best, Manning, Gossop, Gross, & Strang, 2006). Alcohol use has been linked to increases in risky sexual behaviors in adolescents between the ages of 13 and 19 (Cooper, Peirce, & Huselid, 1994). Heightened levels of suicidal ideation and attempts were associated with excessive alcohol consumption in eighth and tenth grade students between the ages of 11 and 17 (Windle, Miller-Tutzauer, & Domenico, 1992). Research has suggested that early onset of alcohol use is a risk factor for progression to illicit drugs (Andrews, Hops, Ary, Lichtenstein, & Tildesley, 1991; Kandel, Yamaguchi, & Chen, 1992). Hingson, Heeren, Zakocs, Kopstein, and Wechsler (2002) reported that 1.9% of college students between the ages of 18 and 24 experienced alcohol-related health problems during the past year. Additionally, studies have shown that early alcohol use is related to increased risk for participation in delinquent behaviors,

such as theft, assault, and property damage (Best et al., 2006; Dawkins & Dawkins, 1983; Van Kammen, Loeber, & Stouthamer-Loeber, 1991; Zhang, Wieczorek, & Welte, 1997).

Further investigation in the area of alcohol-related negative consequences in adolescents has demonstrated that drinking is related to accidents and unintentional injuries. The Office of Juvenile Justice and Delinquency Prevention (OJJDP, 2005) reported that between 1994 and 2003 the number of driving under the influence arrests for juveniles increased by 33%. Overall, there were 16,694 fatalities connected to alcohol-related motor vehicle accidents in 2004 (National Highway Traffic Safety Administration's National Center for Statistics and Analysis, 2004). Of the 16,694 who were killed, 2,665 (16%) were under the age of 21. According to this same source, in 2004, there were 1,314 fatalities of drivers between the ages of 16 and 20 who had blood alcohol concentration levels of .08 or higher. Research on Australian adolescents demonstrated that excessive alcohol consumption is related to an increased risk for physical injuries and fights (Bonomo et al., 2001). Elder, Shults, Swahn, Strife, and Ryan (2004) discovered that alcohol use was associated with emergency room visits in individuals between the ages of 13 and 25. These authors reported that 119,503 emergency room visits in 2001 were alcohol-related and involved an individual under the age of 21. Alcohol-related compared to nonalcohol-related visits were more likely to involve serious injuries and hospitalizations. Similarly, examining a sample of college students over a two-year period, Turner and Shu (2004) found that alcohol-related problems were involved in 13% of the total emergency room visits within a university hospital, with trauma and acute intoxication being the most common diagnoses. Of those who experienced some form of trauma, accidents and falls accounted for the majority of the cases. Due to the extensive nature of the negative consequences associated with adolescent alcohol consumption, it is no surprise that in 2001 the estimated cost of underage

drinking was 61.9 billion, which included 5.4 billion in medical services, 7.1 billion in work

losses, 7.8 billion in property damage and other resource costs, and 41.6 billion in quality life

years lost (Miller, Levy, Spicer, & Taylor, 2006).

There are several risk factors associated with the onset of alcohol abuse. In a review of

the relevant literature, Hawkins, Kosterman, Maguin, Catalano, and Arthur (1997) discussed

several factors that increase the likelihood for developing alcohol-related problems, such as

family history of alcoholism, biological vulnerabilities, prenatal and birth experiences,

temperament, and the presence of early behavioral problems. Anderson, Schweinsburg, Paulus,

Brown, and Tapert (2005) suggested that the personality characteristic of extraversion may place

adolescents at risk for increased alcohol intake. In writing a book chapter, McGue (1999)

described behavioral genetic explanations of alcohol-related disorders, citing studies that provide

support for a family genetic basis of alcohol dependence. Additional research has concentrated

on psychosocial factors that influence the onset of problematic alcohol consumption. Costa,

Jessor, and Turbin (1999) discovered that potential risk factors are having low expectations for

achieving success academically and socially, low self-esteem, increased feelings of hopelessness,

poor academic performance, high levels of stress, frequent contact with friends who drink

alcohol, and having tendencies to be more influenced by friends than parents.

It is evident that alcohol consumption within the juvenile correction population is a

pervasive problem that needs to be given special attention. As noted in the previous paragraph,

there are a multitude of biological, genetic, psychological, and social risk factors associated with

excessive alcohol use. In order to further investigate the elements involved in alcohol abuse, a

surge of research was conducted during the latter portion of the 20th century that examined the

role of cognitive processes. In the following section, a widely researched model explaining

cognitive factors that contribute to alcohol use will be described. The majority of research on this model has been conducted using non-incarcerated samples. However, the current study involved the application of the model to a sample of incarcerated adolescents.

Alcohol Expectancy Theory

The role of cognitive factors in alcohol abuse has been widely studied over the past several decades. In a review of the literature, Sayette (1999) describes several areas within cognitive theory that offer explanations of alcohol use, such as information processing, memories, judgments, self-awareness, and other mental processes. An area of cognitive psychology that has been given increasing attention in terms of the impact on substance abuse behaviors is expectations. Research related to the general construct of expectations has expanded over the past 70 years (Goldman, Del Boca, & Darkes, 1999). During the course of its development, the concept of outcome expectancies has been influenced by social learning theory (Bandura, 1977; Rotter, 1954; Rotter, Chance, & Phares, 1972). Goldman et al. (1999) suggested that expectancies are more general rather than narrow cognitive processes that impact all behavior. Furthermore, they describe expectancies as templates stored in memory that contain representations of the relationships between consequences of certain behaviors that occur within specific situations, which are formulated based on direct or indirect experiences. When an individual encounters situations that are similar to the expectancy information stored in memory, the expectancies become activated and may influence subsequent behaviors. In the past two decades, numerous studies have applied the expectancy construct to alcohol use behaviors. Quite simply, alcohol expectations have been defined as the anticipated consequences from consuming alcohol (Brown et al., 1980).

Studies have shown that individuals can develop alcohol-related expectations at an early age. Research conducted by Christiansen, Goldman, and Brown (1985) found that adolescents between the ages of 12 and 19 increasingly endorsed expectancies that alcohol improves social interactions, enhances arousal level, and alleviates tension. Similarly, Gustafson (1992) reported that adolescents have already formulated alcohol expectancies at the age of 12, and the expectations are likely to become more pronounced as they grow older. Miller, Smith, and Goldman (1990) found evidence of alcohol expectations at an even earlier age, where children in the first grade experienced some alcohol expectancies, with a significant increase in alcohol expectancies occurring between the ages of 8.5 and 10. The manner in which alcohol-related expectations develop has been suggested to occur via two different processes (Christiansen et al. 1982). The first way is through an individual's direct experiences with consuming alcohol. A second way involves the development of expectations from social learning influences, such as family, friends, media, and the observation of others' alcohol consumption behaviors. This latter process allows for the formulation of alcohol-expectations prior to the onset of drinking behaviors. Thus, Christiansen et al. suggested that alcohol expectancies do exist prior to the onset of alcohol consumption, however, the direct pharmacological effects of drinking enhance the already existing expectancy structure once drinking is initiated.

Research has been conducted to establish a method to empirically measure the construct of alcohol expectations. Utilizing a sample of 1,580 adolescents, research was conducted in an effort to construct an instrument that specifically assesses adolescent alcohol expectancies (Christiansen & Goldman, 1983; Christiansen, Goldman, & Inn., 1982). The resulting questionnaire was referred to as the Alcohol Expectancy Questionnaire – Adolescent Form (AEQ-A, Goldman et al., 1982). Using factor analytic procedures, Christiansen and Goldman

(1983) discovered the following seven dimensions of alcohol expectancies: (a) alcohol consumption produces global positive changes; (b) drinking increases social behavior; (c) alcohol improves cognitive and motor skills; (d) drinking enhances sexual experiences; (e) alcohol consumption impairs cognitive and motor functioning; (f) alcohol increases arousal; and (g) drinking provides relaxation and reduces tension. Upon defining the alcohol expectancy construct, researchers recognized the importance of evaluating the connection between expectancy variables and behaviors. In the following sections, several studies are reviewed that examined the impact of both reinforcing and punishing expectations on alcohol consumption behaviors.

Reinforcement-Based Expectancies and Consumption Behaviors

Christiansen, Smith, Roehiing, and Goldman (1989) investigated the degree to which alcohol expectancies can predict alcohol consumption behaviors one year later in a sample of young adolescents. Data were collected on 871 seventh and eighth grade students, ranging in age from 11 to 14. The sample was 48% male and 52% female. The participants were administered the Alcohol Expectancy Questionnaire-Adolescent Form (AEQ-A) as well as the Drinking Styles Questionnaire initially during their seventh and eighth grade years and again one year later. Of the 871 subjects who completed the initial questionnaires, 637 (77%) participated at the second administration. Expectations of increased social behavior as well as improved cognitive/motor functioning during the first year of the study were found to significantly predict drinking behaviors at year two.

Using adolescents from the same sample, Smith, Goldman, Greenbaum, and Christiansen (1995) examined the relationship between expectations of social facilitation and drinking

behaviors during the period of time when adolescents initiate alcohol use. The findings revealed that expectancies of social facilitation and consumption behaviors influenced each other in a reciprocal manner where increased endorsement of social facilitation expectancies were associated with greater levels of alcohol use and vice versa. These authors concluded that "prevention efforts should be targeted at children prior to the onset of drinking experience, to avoid the positive feedback cycle of reciprocal reinforcement between expectancy and drinking shown by some teens in the sample" (p. 39).

Reese, Chassin, and Molina (1994) evaluated how well alcohol expectations and family history of alcoholism predict alcohol consumption behaviors one year later. They examined responses from 454 subjects who were selected from a study of children of alcoholics and adolescents without an alcoholic parent. The children ranged in age from 10.5 to 15.5 years with a mean age of 12.78. Thirty-two of the participants were omitted from the study due to invalid responding. Data were collected on expectations related to the personal and social effects of alcohol, family history of alcoholism, alcohol consumption rates, and negative consequences from drinking, such as conflict with family and friends. The results revealed that expectations of enhanced personal and social effects were significant predictors of concurrent alcohol use, especially in older adolescents. In terms of prospective analyses, personal and social expectations significantly predicted adolescents' experiences of negative consequences related to alcohol use one year later. However, expectations did not predict alcohol consumption rates. When comparing the findings to previous studies, these researchers noted "expectancies were much more modest prospective predictors of alcohol consumption than previously reported" (p. 282). Nevertheless, these findings provide some additional support for the connection between expectations and concurrent drinking.

Greenbaum, Brown, and Friedman (1995) studied the impact of alcohol expectancies on alcohol consumption behaviors using a sample of 260 adolescents diagnosed with conduct disorder. Participants ranged in age from 11 to 18 years with an average age of 16.23. An abbreviated form of the Alcohol Expectancy Questionnaire – Adolescent Form (AEQ-A) was administered. This brief measure assesses expectations related to increased social behavior as well as improved cognitive/motor functioning. Results indicated that both types of alcohol expectancies were effective predictors of concurrent drinking behaviors in adolescents with conduct disorder. The expectation of increased social behavior was a better predictor of alcohol use than other variables, such as conduct disorder, oppositional defiant symptoms, and previous delinquent behaviors.

Additional research on expectancies of reinforcement and alcohol consumption behaviors has examined this relationship within college student samples. Johnson and Fromme (1994) conducted a study to determine the degree to which mood, craving, and expectancies of reinforcement are predictive of drinking behaviors. A total of 81 undergraduate students (mean age = 22 years) from a mid-Atlantic university agreed to participate in the study. Within a manipulated experimental setting, information was gathered related to alcohol consumption rates, expectations of reinforcement, evaluations of the effects of alcohol, mood, and alcohol cravings. The results indicated that expectations of favorable outcomes as well as positive evaluations pertaining to the effects of alcohol were related to faster consumption rates of alcoholic beverages. However, neither the expectations nor the evaluations were related to the time it took participants to begin drinking an alcoholic beverage within the experimental environment.

Carey (1995) examined the ability of alcohol expectancies to predict consumption behaviors in a university sample. Participants included 140 undergraduate students from a large private university, ranging in age from 17 to 38 with a mean age of 18.88. The sample was 61% female and 39% male. Data were collected at two different sessions. At the first session, information was gathered on alcohol consumption behaviors and alcohol expectancies, which was measured using the adult form of the Alcohol Expectancy Questionnaire (AEQ). At the second session one month later, the researchers collected data on consumption rates during the past month as well as problems related to drinking. The results indicated that expectations of global positive changes significantly predicted the maximum number of drinks the participants had consumed in a single day during the past month. Additionally, the expectation of sexual enhancement significantly predicted the frequency of intoxication. The results highlight the usefulness of certain alcohol-related expectancies in predicting alcohol consumption behaviors.

Goldman, Greenbaum, and Darkes (1997) explored the degree to which expectancies predict alcohol consumption one year later using confirmatory factor analytic methods. Data were collected from 638 incoming students at a large state university. Information was gathered related to alcohol expectancies and drinking behaviors. Only those individuals who reported consuming alcohol at least once in the past 90 days were included in the analysis, which yielded an initial sample size of 446 and 428 one year later. The results demonstrated that expectancies of sexual enhancement, social/physical pleasure, assertiveness, and tension reduction were significant predictors of alcohol consumption behaviors one year later. These results provided additional evidence that alcohol expectancies predict subsequent drinking behaviors.

Grube and Agostinelli (1999) examined the impact of expectancies and the perceived likelihood of anticipated outcomes on drinking behaviors. Data were collected on 824 students

13

between seventh and tenth grades. Information was gathered related to demographic variables, alcohol expectancies, and consumption behaviors. The results indicated that drinking occurred more frequently when expectancies of punishing consequences were believed to be improbable and expectancies of mood enhancement as well as social facilitation were perceived as likely to occur. These authors concluded that their findings provide support for the notion that alcohol expectancies predict drinking behaviors, however they noted that the relationship may be more complex than suggested in previous studies.

Grube, Chen, Madden, and Morgan (1995) further investigated the degree to which alcohol expectancies predict drinking behaviors. In addition to assessing alcohol expectancies and consumption rates, these authors gathered information related to the perceived likelihood that the expected outcomes will occur and evaluations of the expectancies, which was measured by the desirability of the consequences. Participants included 1,926 high school students from 11 public and parochial schools in the San Francisco area. Of those students who participated, 1,751 (91%) produced valid data. Statistical analyses were conducted to predict alcohol consumption using the interaction of alcohol expectancies and evaluations of the expectations. The results demonstrated that alcohol consumption rates increased when the desirability of reinforcing outcomes as well as the perceived likelihood of occurrence increased. However, there was a reduction in drinking when punishing consequences were rated as less desirable and more likely to occur. These authors noted that beliefs regarding the anticipated punishing consequences were more predictive than beliefs pertaining to positive effects. These results highlight the importance of assessing the perceived probability of occurrence and evaluations of the expectations in addition to the actual expectation, which improves the prediction of alcohol consumption rates.

Additional research that provides support for the alcohol expectancy construct has examined the differences in alcohol-related expectations between individuals with and without alcohol problems. In doing so, studies have been conducted using adolescent, college student, and clinical samples. Mann, Chassin, and Sher (1987) investigated the degree to which alcohol expectancies were associated with high or low risk alcohol consumption behaviors in a sample of adolescents. Information was collected on 979 high school students related to risk factors for increased problematic drinking, alcohol use behaviors, alcohol expectancies, and drinking motives. Of the 979 participants, 21 were excluded due to invalid responding, leaving a sample size of 958. The results revealed that expectancies of altered social behaviors were related to low-risk alcohol consumption. However, expectancies of both improved and deteriorated cognitive/motor functioning as well as tension reduction were characteristic of high-risk drinkers. In terms of the motives for drinking, high-risk drinkers were more likely to provide personal motives and indicate that they consumed alcohol to feel more powerful as opposed to drinking for social reasons. These authors concluded that certain alcohol expectancies and personal motives associated with high-risk alcohol consumption may be an appropriate target for primary prevention efforts.

Other studies have examined differences in alcohol expectancies between problem and nonproblem drinkers within college student samples. Specifically, Thombs (1993) examined how well alcohol expectancies discriminate between problem and nonproblem drinkers in a sample of university students. Information related to alcohol expectancies and consumption patterns was collected on 1,148 participants. Statistics were calculated separately for men and women. Among the males, problem compared to nonproblem drinkers experienced significantly more expectations related to global positive changes, increased physical/social pleasure, tension

reduction, and increased feelings of power and arousal. Within the female portion of the sample, problem compared to nonproblem drinkers experienced significantly more expectations related to global positive changes, enhanced sexuality, increased physical/social pleasure, heightened social assertiveness, tension reduction, and increased feelings of power and arousal.

More recently, Lewis and O'Neill (2000) investigated the relationship between problematic alcohol consumption and alcohol expectancies within a university setting. The initial sample included 116 college students who were recruited from their psychology courses. Three of students did not complete the study, resulting in a final sample of 113 students. The researchers gathered information related to alcohol consumption behaviors, alcohol expectancies, and social functioning. The results demonstrated that problem compared to nonproblem drinkers endorsed significantly greater expectations related to global positive changes, increased social behavior, improved cognitive/motor functioning, sexual enhancement, increased arousal, and tension reduction. Additional research examining college students has found that the expectancy of tension reduction was the strongest predictor of problematic alcohol consumption whereas the expectancy of enhanced physical and social pleasure was the best predictor of nonproblematic drinking (Brown, 1985a). Combined together, these findings provide some evidence that increased levels of reinforcement-based expectancies are related to greater risk for problematic alcohol consumption behaviors within college student samples.

Further investigation in this area has evaluated this phenomenon within clinical samples. Connors, O'Farrell, Cutter, and Thompson (1986) assessed alcohol expectations within a sample of 260 alcoholics, 79 problem drinkers, and 81 nonproblem drinkers. Participants included individuals receiving inpatient alcohol treatment as well as individuals from local organizations and the community. All participants were male. They were administered the adult version of the

Alcohol Expectancy Questionnaire (AEQ) as well as the Michigan Alcohol Screening Test (MAST), which is an instrument used to identify different types of drinking groups. The results revealed that alcoholics compared to both the problem and nonproblem drinkers demonstrated greater endorsements of expectancies related to global positive changes, enhanced sexual experiences, increased physical/social pleasure, heightened social assertiveness, and tension reduction. The alcoholic and problem drinkers experienced similar levels of expectancies related to enhanced arousal and aggression, but these same expectancies were significantly lower in the nonproblem group compared to the alcoholic and problem drinkers. Additionally, problem drinkers compared to nonproblem drinkers endorsed significantly more expectations related to global positive changes, increased social assertiveness, and enhanced arousal and aggression.

Nishith, Mueser, Srsic, and Beck (1997) evaluated the differences in alcohol expectancies between psychiatric patients with and without histories of alcohol and drug-related problems. Data were collected from 75 psychiatric outpatients related to substance-related diagnosis, alcohol expectancies, and drinking motives. The results revealed that individuals with a history of an alcohol-related problem compared to those with no history endorsed significantly greater expectations related to global positive changes, sexual enhancement, physical/social pleasure, increased social assertiveness, tension reduction, and enhanced arousal and power. These authors concluded that alcohol expectancies are important factors in the development and maintenance of substance-related problems within psychiatric samples.

Zarantonello (1986) sought to determine if differences in alcohol expectancies exist between alcoholics and nonalcoholics within treatment samples. Data were collected on diagnoses and alcohol expectancies in a sample of male inpatients within a Veterans Administration Hospital. The results demonstrated that alcoholics compared to general medical

inpatients endorsed significantly greater alcohol expectancies related to global positive changes,

enhanced social/physical pleasure, increased social assertion, and tension reduction. These

findings provide additional support for the notion that differences in expectancy structure exist

between individuals with alcohol-related problems and those without.

Expectations of Punishing Consequences and Consumption Behaviors

Based on previous research, it can be inferred that expectations of reinforcing outcomes

are related to increased alcohol consumption behaviors. However, relatively fewer studies have

investigated the impact of expectations related to punishing consequences on drinking behaviors

(Adams & McNeil, 1991; Jones, Corbin, & Fromme, 2001; McMahon, Jones, & O'Donnell,

1994). Rather and Goldman (1994) reported that expectations of negative consequences

demonstrated very low or negative correlations with drinking behaviors compared to

expectations of pleasurable consequences, which correlated positively to consumption rates.

Similarly, using structural equation modeling, previous studies have shown that expectancies of

negative consequences from drinking compared to expectations of positive outcomes displayed

weaker relationships to consumption rates (Rather, Goldman, Roehrich, & Brannick, 1992;

Stacy, Widaman, & Marlatt, 1990). Leigh and Stacy (1993) found that general positive and

negative expectancy variables predicted alcohol consumption equally. However, specific

expectancies of reinforcement were greater predictors of drinking than specific expectancies of

punishing consequences. Lee, Greely, and Oei (1999) reported that expectancies of negative

consequences were better predictors of frequency of alcohol consumption, but expectancies of

reinforcement accounted for a greater proportion of variance in quantity of alcohol intake. In an

effort to explain the discrepancy between the prediction power of reinforcement-based

expectancies compared to expectancies of negative consequences, researchers have suggested that many of the anticipated negative effects of alcohol are delayed whereas the reinforcing consequences are more immediate, thus more likely to motivate behavior (Leigh, 1989; Rohsenow, 1983).

While some studies have demonstrated that negative expectancies are not as effective predictors of alcohol consumption as reinforcement-based expectancies, other research has highlighted the value of expectancies of negative consequences in predicting drinking behaviors. Specifically, numerous studies have found that expectancies of punishing consequences from drinking were associated with decreased levels of alcohol consumption in a variety of samples (Fromme, Stroot, & Kaplan, 1993; Grube et al., 1995; Johnson, 1994; Sharkansky & Finn, 1998; Valdivia & Stewart, 2005). Wiers, Hoogeveen, Sergeant, and Gunning (1997) collected data on children between the ages of 11 and 18 as well as college students over the age of 18 and found that expectations of both reinforcing and punishing consequences significantly predicted drinking rates. Utilizing a sample of 1,084 Puerto Rican adults, Johnson, Gurin, and Rodriguez (1996) discovered that a greater proportion of drinkers experienced reinforcement-based expectancies compared to abstainers, who had a higher percentage of anticipated negative outcomes.

Additional research has examined the impact of expectations of punishing consequences in clinical samples. Several studies have reported that expectations of aversive consequences were better predictors of improved treatment outcomes than expectations of reinforcement (Jones & McMahon, 1994a; Jones & McMahon, 1994b; Jones & McMahon, 1996). Devine and Rosenberg (2000), utilizing a sample of individuals participating in a residential alcohol education program for DUI offenses, found that pre-treatment number of drinking days and

expectations of punishing consequences were significant predictors of the number of drinking days three months post-treatment. Although several studies have evaluated the impact of expectancies of negative consequences on alcohol consumption behaviors, researchers have suggested that further investigation should be conducted in this area (Adams & McNeil, 1991; Devine & Rosenberg, 2000; Grube et al., 1995; Jones & McMahon, 1994b; Jones & McMahon, 1996; Leigh, 1989; Wiers et al., 1997).

Comorbidity and Alcohol Expectations

It is evident that from numerous studies that there is a significant relationship between alcohol expectancies and consumption behaviors. Further investigation in the area of alcohol expectancies has devoted attention to the role of expectations in the comorbidity of alcohol problems and other psychiatric disorders. Seligman, Walker, and Rosenhan (2001) define comorbidity as the co-occurrence of two or more psychiatric diagnoses. This area of investigation has been deemed important due to the multitude of studies reporting high rates of co-occurrence between substance-related problems and other psychiatric diagnoses. Research related to the comorbidity of alcohol-related problems with other psychiatric disorders has examined this phenomenon in various populations, such as general community samples, psychiatric patients, and detainees within correctional facilities.

Kessler et al. (1996) assessed a sample of 8,098 noninstitutionalized civilians and found that 11.3% of individuals with alcohol abuse disorder had a major depressive episode in the same 12-month period. Nearly 28% of individuals diagnosed with alcohol dependence disorder experienced a major depressive episode within the same 12 months. Of those individuals diagnosed with alcohol abuse or dependence in a 12-month period, 12.3%-29.2% experienced a

mood disorder in the same timeframe and 29.1%-36.9% had an anxiety disorder. Lifetime comorbidity rates of alcohol abuse or dependence with a mood disorder were 18.9%-36% and 31.7%-43.3% with an anxiety disorder. When exclusively examining individuals with anxiety or mood disorders, Kessler et al. reported that within the subsample of individuals who experienced a major depressive episode in their lifetime, 26.4% also met the criteria for alcohol dependence and 9.1% for alcohol abuse. Additionally, of those participants who had any anxiety disorder in their lifetime, 21.4% were diagnosed with alcohol dependence and 10.4% with alcohol abuse.

Regier et al. (1990) estimated comordibity rates of alcohol use disorders and mental disorders from 20,291 participants recruited from a variety of settings, including mental hospitals, nursing homes, community centers, and prisons. The results demonstrated that 36.6% of individuals with alcohol use disorders had a coexisting mental disorder. Of those individuals diagnosed with alcohol abuse or dependence at some point in their life, 19.4% met the criteria for any anxiety disorder, 13.4% for any mood disorder, and 3.8% for schizophrenia. Regier et al. further examined subsamples of individuals diagnosed with anxiety and mood disorders. Of those participants who met the criteria for any lifetime anxiety disorder, 17.9% were diagnosed with an alcohol use disorder. Likewise, within the subsample of individuals diagnosed with any lifetime mood disorder, 21.8% met the criteria for an alcohol use disorder. When evaluating participants diagnosed with lifetime major depression, 16.5% also experienced an alcohol use disorder.

Miller, Belkin, and Gibbons (1994) conducted a study using 200 patients in a private psychiatric inpatient setting and found that 59 (29.5%) of the patients were experiencing a comorbid substance use disorder with another psychiatric diagnosis. Of those individuals experiencing comorbid substance-related problem with another psychiatric disorder, 49 (83%)

met the criteria for another Axis I disorder. The most common comorbid Axis I diagnoses in the 49 patients with a substance disorder were major depression (30.6%), bipolar (16.3%), schizophrenia (14.3%), and dysthymia (8.2%). Abram and Teplin (1991) examined comorbidity rates within a sample of 728 male detainees ranging in age from 16 to 68 (mean age = 26.3 years). Of those individuals who met the criteria for schizophrenia at some point in their lifetime, 84.9% also met the criteria for either alcohol abuse or dependence. Additionally, of those detainees who presented with lifetime major depression, 81% also were diagnosed with either alcohol abuse or dependence.

Several studies have examined rates of comorbidity within juvenile offender samples. Ulzen and Hamilton (1998) investigated a sample of 98 adolescents, 49 of whom were incarcerated. Upon conducting structured diagnostic interviews, these researchers reported that 63.3% of the incarcerated youth met the criteria for two or more psychiatric disorders. There were high rates of several disorders within the subsample of adolescent detainees. Oppositional Defiant Disorder (ODD) was the most prevalent diagnosis, occurring in 44.9% of the adolescents. Of those who were diagnosed with ODD, 63.6% also met the criteria for alcohol dependence.

Abram, Teplin, McClelland, and Dulcan (2003) assessed a sample of 1,829 detained youth ranging in age from 10 to 18. A diagnostic interview was performed with each adolescent. The results revealed that 56.5% of females and 45.9% of males were experiencing two or more psychiatric disorders. According to these authors, 32.2% of females and 26.3% of males diagnosed with an alcohol use disorder also experienced a major depressive episode. Additionally, 34.4% of females and 30% of males who were diagnosed with an alcohol use disorder also met the criteria for one or more major psychiatric disorders, which included

psychosis, a manic episode, and a major depressive episode. Abram et al. further examined a subsample of incarcerated adolescents who experienced a major depressive episode. Of those detainees who reported having a major depressive episode, 39.4% of females and 51.8% of males also were diagnosed with an alcohol use disorder.

Domalanta et al. (2003) evaluated a sample of 1,024 incarcerated male and female adolescents and found that 39% of the adolescents who met the criteria for Major Depressive Disorder were also experiencing alcohol abuse. Turner, Larimer, Sarason, and Trupin (2005) assessed 270 male adolescent offenders within two facilities. They found that 91 (34%) of the youth were experiencing negative mood, which was defined as elevated levels of anxiety and depressive symptoms. Adolescents with negative mood compared to normal mood reported a greater frequency of alcohol use as well as more negative consequences related to drinking. Riggs, Baker, Mikulich, Young, and Crowley (1995) complemented these findings, reporting that among adolescents with conduct disorder, depressed compared to nondepressed delinquents experienced significantly greater substance abuse and dependence diagnoses.

A theory that has been formulated to explain the elevated level of co-occurrence between alcohol problems and other psychiatric disorders is the Self-Medication Hypothesis (Khantzian, 1985). According to Khantzian, individuals suffering from addiction have tendencies to self-medicate themselves in response to experiencing a variety of psychiatric and emotional problems, such as anxiety and depression. While the long-term effects of addictive behaviors are devastating, the short-term effects of the excessive drug use assist the individual in coping with the distressful condition that they have been unable to relieve using any other means. Chutuape and de Wit (1995) outlined the following assumptions of the Self-Medication Hypothesis: (a) the distressing psychiatric symptoms occur prior to the substance use; (b) the substance use provides

23

relief from the psychiatric symptoms; and (c) the reduction in symptoms leads to continued use of the substance. Morris et al. (2005) highlighted the advantage of the Self-Medication Hypothesis in comparison to similar theories, indicating that this theory has broad applications because it explains the connection between multiple psychiatric disorders that are comorbid with substance-related diagnoses.

Some support for the Self-Medication Hypothesis has been found in the comorbidity literature. Kessler et al (1996) reported that "among people with a history of both a mental and an addictive disorder, the mental disorder usually occurs first." (p. 21). Specifically, of those with comorbid alcohol dependence and any mood disorder, 53.2% developed the mood disorder prior to the alcohol dependence. Additionally, 81.1% of individuals experiencing comorbid alcohol dependence with any anxiety disorder developed the anxiety disorder symptoms before the onset of the alcohol-related problems. Abram et al. (2003), examining a sample of incarcerated adolescents with a comorbid substance use disorder and a major mental disorder, discovered that 27.2% of females and 25% of males indicated that their major mental disorder occurred more than one year prior to their substance use disorder. Furthermore, 63% of females and 54.3% of males developed their comorbid disorders within the same year. These results raise questions regarding the degree to which individuals use substances with the intent to alleviate distressing psychiatric states.

In an effort to examine the degree to which individuals use substances to provide relief from aversive psychiatric symptoms, researchers have attempted to better understand the role of alcohol expectations in individuals with a dual-diagnosis. Specifically, some researchers have suggested that a third variable, such as expectations may moderate the relationship between anxiety/depression symptoms and the development of alcohol use disorders (Burke & Stephens,

1999; Cooper et al., 1992; Johnson & Gurin, 1994; Kushner et al., 1994; McKirnan & Peterson, 1988; Morris et al., 2005; Tran et al., 1997). A moderator variable is defined as a variable that impacts the direction and/or magnitude of the relationship between an independent and dependent variable (Baron & Kenny, 1986). For example, individuals with an anxiety or depressive disorder may develop a comorbid alcohol problem to the extent that they expect alcohol consumption will provide pleasurable consequences that are lacking or relieve aversive feelings they are currently experiencing. In this case, expectancies act as a moderator because the presence of alcohol expectancies makes it more likely that an individual with an anxiety or depressive disorder will develop an alcohol-related problem. To further investigate this area, several studies have evaluated the impact of expectancies in individuals who are experiencing co-occurring alcohol-related problems with anxiety and depressive symptoms. Insight in this domain might improve understanding of the processes involved in self-medication. In the following paragraphs, the current investigator will review research examining the role of expectancies in the co-occurrence of alcohol problems with general anxiety/stress, social anxiety, and depression.

Alcohol Expectancies, General Anxiety/Stress, and Alcohol-Related Problems

Previous research has examined the relationship between general anxiety, alcohol expectancies, and alcohol consumption behaviors. In a study of 256 college students, Brown and Munson (1987) noted that higher levels of anxiety traits were related to increased endorsement of expectations related to global positive changes, social assertiveness, sexual enhancement, and increased arousal with feelings of power. Further investigation in this area has examined the role of expectancies in the co-occurrence of general anxiety symptoms and excessive alcohol use.

25

Utilizing a sample of 421college freshman, Kushner et al. (1994) collected data on alcohol-related diagnoses in the participants and their families, alcohol expectancies, alcohol consumption behaviors, and anxiety symptoms. The results revealed that males with high levels of tension reduction expectancies had a stronger positive relationship between anxiety symptoms and alcohol consumption rates than those who experienced weaker tension reduction expectancies. These researchers noted that this same relationship was not found in females. Kushner et al. concluded that the findings provide support for the notion that tension reduction expectancies moderate the magnitude of the relationship between anxiety symptoms and drinking in male college students.

Additional studies in this area have assessed the impact of stress and alcohol expectancies on the risk for substance abuse. Specifically, McKirnan and Peterson (1988) sought to determine if particular attitudes and expectancies are related to increased vulnerability for substance abuse when confronted with stress. While these researchers did not specifically measure anxiety symptoms, they assessed stress by the presence of negative affect and the experience of discrimination due to sexual orientation using a sample of 2,603 homosexual males. Data were also collected on substance abuse and alcohol expectations related to tension reduction and psychological enhancement. The results revealed that negative affect was related to alcohol abuse primarily among those participants endorsing high levels of tension reduction expectancies. These authors concluded that expectations of tension relief are a significant risk factor for alcohol abuse when individuals are experiencing negative affect or other forms of stress.

In a similar study, Cooper et al. (1992) examined the relationship between stress, expectations, coping style, and alcohol abuse in a sample of 1,316 male and female adults who

indicated that they consumed alcohol at least once in the past year. Stress was measured by the experience of significant stressors during the previous month and over the course of the past year. The findings demonstrated that stressors were related to increased alcohol use when males were experiencing high levels of an avoidant coping style as well as heightened expectancies of reinforcement from using alcohol, as measured by a composite score on a questionnaire assessing expectations of global positive changes, social/physical pleasure, sexual enhancement, aggression/power, social expressiveness, and tension reduction. However, these same results were not found in women. These findings suggest that males experiencing significant stressors may be at a greater risk for developing alcohol-related problems if they possess elevated levels of reinforcement-based expectations.

In a related study, Abbey, Smith, and Scott (1993) examined the interaction effect of reasons for drinking and situational determinants on alcohol consumption behaviors. Situational factors included perceived stress and the degree of exposure to friends who consume alcohol. Utilizing a sample of 781 adults, information was gathered pertaining to drinking levels, reasons for consuming alcohol, stress, and friends' drinking behaviors. In this study, perceived stress was measured by participants' experiences of overload in the roles in which they serve. The findings revealed a significant interaction between individuals' motives for drinking and personal circumstances, which impacted drinking rates. Specifically, individuals who reported that they drink to cope with problems consumed more alcohol when experiencing high levels of stress. Likewise, participants who indicated that they consumed alcohol to be more sociable consumed more alcohol when they reported drinking with friends at social events. Abbey, Smith, and Scott noted that these results highlight the importance of considering the

correspondence between personal motives for drinking and individual life circumstances when evaluating the impact on alcohol use behaviors.

While several studies have demonstrated that experiences of anxiety/stress and expectations of reinforcement from drinking interact to produce increased rates of alcohol consumption, Corcoran and Parker (1991) obtained findings in their investigation that slightly contradict the results mentioned in the preceding four paragraphs. These authors investigated whether tension reduction expectancies predict drinking rates in situations where participants were experiencing tension and stress. Data were collected on 69 college students related to alcohol consumption rates and alcohol expectancies using the adult version of the Alcohol Expectancy Questionnaire (AEQ). Participants were randomly assigned to a moderate stress or low stress condition. The results indicated that none of the six expectancy scales in the moderate stress condition were significantly related to the amount of alcohol consumption while two expectancies scales (enhanced sexuality and increased social assertiveness) were significantly related to increased drinking rates in the low stress condition. These authors noted that tension reduction expectancies failed to predict drinking in either stress condition, which does not provide support for the ability of tension reduction expectancies to predict consumption in stress-induced situations.

Alcohol Expectancies, Social Anxiety, and Alcohol-Related Problems

In order to further evaluate the role of alcohol expectancies in the co-occurrence of alcohol problems with anxiety symptoms, research has specifically examined social anxiety. Studies have demonstrated that elevated levels of social anxiety are associated with increased expectations of positive consequences in social settings (Burke & Stephens, 1997; Ham,

Carrigan, Moak, & Randall, 2005; Tran & Haaga, 2002), global positive changes (Ham, Hope,

White, & Rivers, 2002; Leonard & Blane, 1988), social assertiveness (Ham et al., 2002; Ham et

al., 2005; Leonard & Blane, 1988; O'Hare, 1990), and tension reduction (Ham et al., 2002;

O'Hare, 1990). Research examining the role of alcohol expectancies in the co-occurrence of

social anxiety symptoms and excessive alcohol use has produced inconsistent results.

Support for expectancies serving a significant function in the relationship between social

anxiety and alcohol use was provided by Kidorf and Lang (1999). These authors examined the

degree to which trait social anxiety and alcohol expectancies predict alcohol consumption under

conditions of social stress. Participants included 42 male and 42 female undergraduate students.

Data were collected on drinking behaviors, trait social anxiety, and alcohol expectancies as

measured by the adult version of the Alcohol Expectancy Questionnaire (AEQ). The results

demonstrated that participants consumed more alcoholic beverages during the stressful

condition, however, individuals with high levels of trait social anxiety and males experiencing

increased expectancies of social assertiveness were the most likely to engage in drinking

behaviors when exposed to the socially stressful situation. These findings suggest that individual

characteristics, such as social anxiety traits and expectations of social reinforcement are potential

risk factors for excessive drinking when high-anxiety situations are encountered.

Ham et al. (2002) assessed the relationship between alcohol expectancies and drinking

behaviors in individuals diagnosed with social anxiety, dysthymia, and normal psychological

functioning. Information was gathered related to psychological functioning, alcohol

expectancies, and alcoholic beverage consumption. The results showed that individuals with

social anxiety experienced greater expectations related to global positive changes and tension

reduction than those with normal psychological functioning. However, there were no differences

between socially anxious and dysthymic participants with respect to these two expectations. Furthermore, individuals with social anxiety demonstrated more expectations related to social assertiveness than both the dysthymic participants and those with normal functioning. Additional analyses revealed that high levels of social assertiveness and tension reduction expectancies in conjunction with low levels of expectancies related to global positive changes were associated with greater amounts of alcohol consumption in individuals with social anxiety. Ham et al. concluded that the relationship between social anxiety and drinking behaviors may be mediated by alcohol expectancies.

Further research investigating social anxiety, expectancies, and drinking was conducted by Ham et al. (2005). Participants included 62 drinking adults who were recruited throughout the community. Data were collected on social anxiety, alcohol expectancies, and alcohol consumption rates. The findings demonstrated that socially anxious compared to nonsocially anxious individuals possessed greater expectations related to social assertion and experiencing positive consequences in social settings. However, no differences were found in expectancies of sexual enhancement, improved cognitive skills, and tension reduction. Additionally, Ham et al. reported that expectations of social assertion and receiving positive consequences in social contexts were associated with increased drinking rates as well as greater alcohol dependency symptoms. These authors concluded that targeting social performance expectations may be an important strategy to utilize when treating individuals with co-occurring social anxiety and alcohol-related problems.

Additional research in the area of social anxiety, alcohol expectancies, and drinking has found limited support for the suggestion that expectancies moderate the relationship between social anxiety and alcohol consumption. Tran et al. (1997) examined the degree to which social

anxiety and alcohol expectations interact to influence the quantity and frequency of alcohol consumption. Information was gathered related to social anxiety symptoms, alcohol expectancies, and the quantity/frequency of alcohol consumption. The results indicated that the interaction of social anxiety symptoms and expectancies of positive effects in social situations was significant in predicting the quantity and frequency of alcohol consumption, which demonstrated some evidence of a moderation effect. However, general tension reduction expectations did not moderate the relationship between social anxiety and drinking behaviors. Post hoc analyses revealed more detailed information. Specifically, of those individuals with low expectations of positive effects in social settings, high anxiety was associated with less quantity and frequency of alcohol consumption than low anxiety. Additionally, there were no differences in drinking rates between high and low anxiety individuals who expected positive outcomes in social settings. Thus, the interaction and moderation effect occurred in the participants with low expectancies, where individuals with high levels of social anxiety reported significantly less alcohol consumption than those with low anxiety. Based on these findings, the authors suggested that individuals who are socially anxious and possess minimal expectancies of reinforcement in social gatherings may avoid public activities, thus allowing for fewer drinking opportunities. While there was some evidence that expectancies of positive effects in social settings act as a moderator variable, individuals with high levels of both social anxiety and expectancies did not report significantly greater rates of alcohol consumption.

Other research has found minimal evidence that alcohol expectancies moderate the relationship between social anxiety and alcohol use (Bruch et al., 1992; Ham & Hope, 2005; Eggleston, Woolaway-Bickel, & Schmidt, 2004). Ham and Hope (2005) found no evidence that alcohol expectancies moderate the relationship between social anxiety and weekly alcohol

consumption but did find some support for the notion that social anxiety has an indirect effect on negative consequences related to drinking through alcohol expectancy variables. Additionally, Bruch et al. (1992) and Eggleston et al. (2004) reported that the interaction of social anxiety and expectations of reinforcement demonstrated a minimal impact on alcohol consumption rates. However, social anxiety was related to decreased drinking when the effects of expectations on alcohol consumption were removed. Therefore, these authors concluded that expectancies acted as a suppressor variable as opposed to a moderator variable. Eggleston et al. (2004) offered an explanation of the results, suggesting that social anxiety and alcohol expectations of reinforcement may serve competing functions in regard to alcohol use behaviors where social anxiety promotes fear and avoidance responses and alcohol expectations elicit approach behaviors of drinking. They concluded that the avoidance responses are likely to be stronger than the approach behaviors, thus individuals with social anxiety avoid situations where alcohol use is prevalent.

Alcohol Expectancies, Depression, and Alcohol-Related Problems

A final area where alcohol expectancies have been found to produce a moderating effect involves the relationship between depressive symptoms, expectations, and alcohol consumption. Specifically, Johnson and Gurin (1994) investigated the connection between depression, recent drinking problems, and alcohol expectations in a sample of 1,084 Puerto Rican adults ranging in age from 18 to 79. Data were collected using personal interviews and the administration of four items adapted from the Spanish version of the Alcohol Expectancy Questionnaire (AEQ) measuring the degree to which participants expect the use of alcohol to reduce negative affect. The results demonstrated that alcohol expectancies moderated the relationship between

depressed mood and problems related to alcohol consumption. In essence, the degree to which depression was related to problematic alcohol use was a function of whether individuals believed the drinking would relieve their dysphoric mood. These authors concluded that "beliefs may be important elements in the co-morbidity of alcohol misuse and depressed mood" (p. 584).

Purpose and Hypotheses

Previous research has provided some support for the notion that alcohol expectancies play a significant role in the co-occurrence of alcohol problems with anxiety and depressive symptoms. However, further research is warranted within this area, especially within high-risk populations. In the current study, the relationship between alcohol problems, anxiety and depressive traits, and alcohol expectancies are examined within a male juvenile correction sample. Specifically, statistical analyses are conducted to test the degree to which alcohol expectancies combined with anxiety/depression traits improve the prediction of alcohol-related problems beyond that of anxiety/depression traits alone. These analyses provide useful information pertaining to the relative contribution that alcohol expectancies make to the prediction of alcohol-related problems once the impact of anxiety and depressive traits are considered. To date, there have been no studies that have examined the role of alcohol expectancies, utilizing the Alcohol Expectancy Questionnaire – Adolescent Form (AEQ-A, Goldman et al., 1982), in the co-occurrence of alcohol problems with anxiety and depressive traits as measured by the Minnesota Multiphasic Personality Inventory – Adolescent (MMPI-A), a widely used instrument that assesses psychopathology in adolescents (Butcher et al., 1992). In the current study, anxiety and depressive traits as well as tendencies to have alcohol-related problems are examined as opposed to diagnosed disorders. This strategy is used for two reasons.

Due to the fact that alcohol-related problems, depression, and anxiety fall on a continuum, it is likely that a portion of the sample will meet the criteria for a diagnosable disorder while others are likely to be experiencing traits or tendencies that fall below the threshold of diagnosis but are still problematic. Thus, investigating diagnosed versus non-diagnosed individuals ignores vital information from those individuals experiencing symptoms just below the diagnosable level. A second reason involves the data collection procedure. In the current dissertation, paper and pencil-based assessment instruments are the sole source of information utilized in this project. This is only one method of collecting psychiatric data, which is considered insufficient to formulate a diagnosis.

Based on previous research, the following two hypotheses are formulated: (a) depressive traits will significantly predict an increase in alcohol-related problems, and the addition of expectations related to global positive changes, increased social behavior, improved cognitive and motor functioning, enhanced sexual behaviors, and increased arousal level will improve the prediction of alcohol problems beyond depressive traits alone; and (b) anxiety traits will significantly predict an increase in alcohol-related problems, and the addition of expectations related to tension reduction will improve the prediction of alcohol problems beyond anxiety traits alone.

CHAPTER III

METHODOLOGY

Participants

A convenience sample was used in the current study. All individuals were inmates within Larned Juvenile Correctional Facility, and most were repeat offenders. Archival data was collected on 230 male adolescents. All incarcerated youth were between the ages of 14 and 18 (mean age = 16.6, median age = 17).

Measures

Minnesota Multiphasic Personality Inventory – Adolescent (MMPI-A). The MMPI-A is a 478-item, true/false instrument used to assess psychopathology in adolescents between the ages of 14 and 18 (Archer, 1997; Butcher et al., 1992). Normative and psychometric data for the MMPI-A were provided by Butcher et al., 1992. There are several scales on the MMPI-A that measure various domains of psychological functioning. For the purposes of the current study, only those scales measuring depressive and anxiety traits as well as alcohol-related problems were utilized. The following are the names and descriptions of the scales as outlined by Archer (1997) and Butcher et al. (1992): (a) Depression Clinical Scale, consists of 57 items that evaluate general apathy as well as levels of discomfort and dissatisfaction; (b) Adolescent-Depression Content Scale, includes 26 items that assess depression, sadness, apathy, low levels of energy, and poor morale; (c) Adolescent-Low Self-Esteem Content Scale, contains 18 items that measure feelings of inadequateness, uselessness, and rejection; (d) Psychasthenia Clinical Scale, consists of 48 items that evaluate for the presence of obsessions, compulsions, feelings of insecurity, and high levels of tension and anxiety; (e) Adolescent-Anxiety Content Scale,

contains 21 items that measure anxiety symptoms, tension, and feelings of being overwhelmed

by stress; (f) Adolescent-Obsessiveness Content Scale, includes 15 items that assess difficulty

making decisions, extensive worries, and the experience of intrusive and bothersome thoughts;

(g) MacAndrew Alcoholism - Revised Supplementary Scale, contains 49 items that assess the

likelihood of alcohol/drug problems, interpersonal assertiveness, and impulsivity; (h)

Alcohol/Drug Problem Acknowledgment Supplementary Scale, consists of 13 items that

measure the willingness to acknowledge alcohol/drug problems, attitudes, and beliefs; and (i)

Alcohol/Drug Problem Proneness Supplementary Scale, contains 36 items that evaluate an

increased potential for the development of alcohol and drug problems.

     Alcohol Expectancy Questionnaire – Adolescent Form (AEQ-A). The AEQ-A was

designed to measure adolescents' beliefs regarding the anticipated reinforcing and punishing

consequences from consuming alcohol (Christiansen et al., 1982). The instrument is comprised

of 90 true/false statements, such as "drinking alcohol makes the future seem brighter" or

"alcohol makes people more relaxed and less tense" (Goldman et al., 1982). The AEQ-A was

originally developed using a modified version of the adult form of Alcohol Expectancy

Questionnaire (Christiansen et al., 1982; Christiansen & Goldman, 1983). In order to validate

this questionnaire, 1,580 adolescents between the ages of 12 and 19 were administered the AEQ-

A. All participants were students from four suburban Detroit school districts. Using factor

analytic procedures, Christiansen and Goldman (1983) discovered the following seven

dimensions of expectancies: (a) alcohol consumption influences global positive changes

("Drinking alcohol makes a person feel good and happy"); (b) drinking increases social behavior

("Alcoholic beverages make parties more fun"); (c) alcohol improves cognitive and motor skills

("People drive better after a few drinks of alcohol"); (d) drinking enhances sexual experiences ("Alcohol makes sexual experiences easier and more enjoyable"); (e) alcohol consumption impairs cognitive and motor functioning ("People are apt to break and destroy things when they are drinking alcohol"); (f) alcohol increases arousal ("Alcohol increases arousal; it makes people feel stronger and more powerful and makes it easier to fight"); and (g) drinking provides relaxation and reduces tension ("Drinking alcohol makes people worry less"). Internal consistency estimates of the AEQ-A scales range from .47 to .82, with an average coefficient alpha of .72 (Christiansen & Goldman, 1983). Eight-week stability coefficients are .52 for the AEQ-A (Brown, Christiansen, & Goldman, 1987). As previously noted, criterion validity of the AEQ-A has been established by research demonstrating the significant relationship between alcohol expectancies and consumption behaviors (Brown, Creamer, & Stetson, 1987; Christiansen & Goldman, 1983; Christiansen et al., 1985; Christiansen et al., 1982; Christiansen et al., 1989; Greenbaum et al., 1995; Lewis & O'Neill, 2000; Mann et al., 1987; Rather, 1990; Smith et al., 1995). In terms of discriminant validity, the AEQ-A is statistically independent of social desirability and delinquency (Brown, Christiansen, et al., 1987).

Procedure

Larned Juvenile Correctional Facility, located in Larned, Kansas, is a correctional facility that hosts adolescent males who are primarily repeat offenders. As part of the orientation process in the facility, adolescents were interviewed and asked to complete a variety of assessment measures. The information was utilized by mental health professionals to recommend and provide the necessary treatment for each offender. The mental health staff at the facility allowed the current researcher to utilize archival data from the Minnesota Multiphasic

Personality Inventory – Adolescent (MMPI-A) as well as the Alcohol Expectancy Questionnaire

– Adolescent Form (AEQ-A) to investigate the relationship between alcohol-related problems,

depression and anxiety traits, and alcohol expectancies. The archival data were collected from

assessment instruments that were administered between September of 2001 and April of 2003.

CHAPTER IV

PLAN OF ANALYSIS

The data for the current research were manually entered in a profile using the Statistical

Package for Social Sciences – Version 11 (SPSS 11.0). For the purpose of the current project,

the statistical analyses examined selected scores on the MMPI-A and the AEQ-A. Prior to

initiating the statistical analyses, the validity of the data was evaluated. Information was

included in the analyses based on examination of the validity profile of the MMPI-A and the

number of missing responses on the AEQ-A. Specifically, a participant's data were excluded if

the MMPI-A was deemed invalid or if two or more items on a given AEQ-A scale were left

unanswered. A MMPI-A profile was invalid if any of the following criteria were met (Archer,

1997): (a) Cannot Say raw score = 31 or greater; (b) Lie T-score = 66 or greater; (c) F T-score =

90 or greater; (d) K T-score = 66 or greater; (e) VRIN T-score = 80 or greater; and (f) TRIN T-

score = 80 or greater.

Once the validity of the MMPI-A and the AEQ-A were determined, basic descriptive

statistics were calculated, such as means, medians, standard deviations, skewness, kurtosis, and

internal consistency estimates of the various scales within both instruments. The goal of the

current research is to investigate the relationship between alcohol-related problems, anxiety and

depressive traits, and alcohol expectancies. Since all variables on the MMPI-A and the AEQ-A

are continuous, a bivariate correlation and regression analyses were conducted using raw scores

on both measures. Calculating Pearson's r correlations between the MMPI-A alcohol problem

scales and the MMPI-A anxiety/depression scales as well as the MMPI-A alcohol problem scales

and AEQ-A scales allowed the current researcher to establish which MMMP-A

anxiety/depressive scales and AEQ-A scales were related to the MMPI-A alcohol problem

scales. The magnitudes of the correlation coefficients were interpreted based on guidelines

outlined by Cohen (1988) and Hemphill (2003).

After determining the correlations between MMPI-A anxiety and depressive scales,

AEQ-A scales, and the MMPI-A alcohol-related problems scales, sequential regression analyses

were conducted. According to Tabachnick and Fidell (1996), a sequential multiple regression

allows the researcher to insert predictor variables in the regression equation in a specified order

based on the priority assigned by the investigator. When initial predictor variables are entered in

the regression, their contribution to the prediction of the independent variable or criterion is

assessed using the R Squared statistic (Tabachnick & Fidell, 1996), which indicates the amount

variance in the criterion variable that is accounted for by the combination of predictor variables

(Brace, Kemp, & Snelger, 2003). Upon inclusion in the equation, each predictor variable was

analyzed according to the degree to which it added to the prediction of the criterion. In terms of

the recommended sample size for multiple regression, Tabachnick and Fidell (1996) suggest the

following guidelines: (a) for testing regression, sample size is greater than or equal to 8 times the

number of predictor variables plus 50; and (b) for testing individual predictors, the number of

predictor variables plus 104. Using either criteria, the current dissertation had an adequate

sample size for performing regression analyses. Another issue in conducting regression analyses

is the problem with multicollinearity, which is the occurrence of a high degree of correlation

between the predictor variables (Brace et al., 2003). After each regression equation was

calculated, the level of multicollinearity was evaluated by examining tolerance values within the

SPSS Version 11.0 Package. According to Brace et al., tolerance values are an indication of the

correlation between predictor variables. The numbers range from 0 to 1 with values closer to

zero demonstrating a stronger relationship between an individual predictor variable and the other predictors.

Prior to conducting the regression analyses, the specific predictor variables and criterion used in the procedure were chosen. Of the three MMPI-A alcohol-related problems scales, the one demonstrating the greatest internal consistency as well as the highest degree of correlation with the predictor variables was chosen. Additionally, the MMPI-A scales measuring depressive/anxiety traits and AEQ-A scales displaying the strongest correlations with the selected criterion variable were included in the analyses. In the current research, regression analyses served the following two purposes: (a) the combination of MMPI-A scales measuring depressive traits were used to predict scores on the selected MMPI-A alcohol-related problem scale, and the changes in the R Squared statistic were evaluated when AEQ-A scales assessing global positive changes, increased social behavior, improved cognitive/motor skills, enhanced sexuality, and increased arousal level were added to the regression equations; and (b) the combination of MMPI-A scales measuring anxiety traits were used to predict scores on the selected MMPI-A alcohol-related problem scale, and the change in R Squared was assessed when the AEQ-A tension reduction scale was added to the regression equation.

CHAPTER V

RESULTS

Validity of the MMPI-A and AEQ-A

The validity of the MMPI-A was determined using the criteria outlined by Archer (1997),

which was discussed in the Plan of Analysis section of the current dissertation. Data from the

MMPI-A were collected from 209 adolescent offenders between the ages of 14 and 18. Utilizing

the validity criteria, 145 (69.4%) adolescents produced a valid profile.

In terms of the validity of the AEQ-A, a given scale was deemed invalid if the MMPI-A

was invalidated based on the selected criteria or if an offender did not respond to two or more

items on the scale. A summary of the results is outlined in Table 1. Data from the AEQ-A were

collected from 226 offenders between the ages of 14 and 18. Of the 226 who completed the

AEQ-A, 159 (70.4%) produced a valid Scale 1, 161 (71.2%) on Scale 2, 160 (70.8%) on Scale 3,

163 (72.1%) on Scale 4, 155 (68.6%) on Scale 5, 162 (71.7%) on Scale 6, and 160 (70.8%) on

Scale 7.

As mentioned above, data were collected from 209 offenders on the MMPI-A and 226 on

the AEQ-A. However, due to scheduling and timing reasons within the correctional facility,

only 205 adolescents completed both the MMPI-A and the AEQ-A. Thus, the correlation and

regression analyses reported in the latter portions of the current Results section of this

dissertation were conducted with only those adolescents who produced both a valid MMPI-A

and AEQ-A scale.

TABLE 1

VALIDITY RATES OF THE MMPI-A AND AEQ-A SCALES

Instrument	Valid	Invalid	Total	Percent Valid
MMPI-A	145	64	209	69.4%
AEQ-A Scale 1	159	67	226	70.4%
AEQ-A Scale 2	161	65	226	71.2%
AEQ-A Scale 3	160	66	226	70.8%
AEQ-A Scale 4	163	63	226	72.1%
AEQ-A Scale 5	155	71	226	68.6%
AEQ-A Scale 6	162	64	226	71.7%
AEQ-A Scale 7	160	66	226	70.8%

Notes: (AEQ-A Scale 1 = Alcohol induces global positive changes; AEQ-A Scale 2 = Alcohol increases social behavior; AEQ-A Scale 3 = Alcohol improves cognitive and motor skills; AEQ-A Scale 4 = Alcohol enhances sexual experiences; AEQ-A Scale 5 = Alcohol impairs cognitive and motor functioning; AEQ-A Scale 6 = Alcohol increases arousal level; AEQ-A Scale 7 = Alcohol produces relaxation and reduces tension)

Descriptive Statistics

Descriptive statistics were calculated for the MMPI-A and AEQ-A scales and are described in detail in Table 2. The specific MMPI-A and AEQ-A scales used in the current dissertation were described in the Methodology section. However, the following is a second description of the MMPI-A and AEQ-A scales that were used in the statistical analyses: (a) Depression Clinical Scale, which measures general apathy as well as levels of discomfort and dissatisfaction; (b) Adolescent-Depression Content Scale, which assesses depression, sadness, apathy, low levels of energy, and poor morale; (c) Adolescent-Low Self-Esteem Content Scale, which evaluates feelings of inadequateness, uselessness, and rejection; (d) Psychasthenia Clinical Scale, which assesses for the presence of obsessions, compulsions, feelings of insecurity, and high levels of tension and anxiety; (e) Adolescent-Anxiety Content Scale, which measures anxiety symptoms, tension, and feelings of being overwhelmed by stress; (f) Adolescent-Obsessiveness Content Scale, which evaluates difficulty making decisions, extensive worries, and the experience of intrusive and bothersome thoughts; (g) MacAndrew Alcoholism - Revised Supplementary Scale, which assessed for likelihood of alcohol/drug problems, interpersonal assertiveness, and impulsivity; (h) Alcohol/Drug Problem Acknowledgment Supplementary Scale, which measures the willingness to acknowledge alcohol/drug problems, attitudes, and beliefs; (i) Alcohol/Drug Problem Proneness Scale, which measures an increased potential for the development of alcohol and drug problems; (j) AEQ-A Scale 1, which assesses expectations of global positive changes; (k) AEQ-A Scale 2, which evaluates expectations of increased social behavior; (l) AEQ-A Scale 3, which measures expectations of improved cognitive and motor skills; (m) AEQ-A Scale 4, which assesses expectations of enhanced sexual experiences; (n) AEQ-A Scale 5, which evaluates expectations of impaired cognitive and motor functioning; (o)

AEQ-A Scale 6, which measures expectations of increased arousal; and (p) AEQ-A Scale 7,

which assesses expectations of relaxation and tension reduction.

TABLE 2

DESCRIPTIVE STATISTICS OF THE MMPI-A AND AEQ-A RAW SCORES

Scale	N	Mean	Median	SD	Skewness	Kurtosis	Alpha
MMPI-A Sc. 2 D	145	20.51	20.00	5.36	.52	.34	.65
MMPI-A Dep.	145	7.71	7.00	5.17	.94	.62	.85
MMPI-A LSE	145	4.34	3.00	3.73	1.10	.80	.82
MMPI-A Sc. 7 PT	145	17.52	16.00	8.68	.51	-.33	.88
MMPI-A Anx.	145	8.24	8.00	4.64	.59	-.52	.82
MMPI-A Obs.	145	6.50	6.00	3.47	.26	-.65	.77
MMPI-A Mac.	145	27.72	28.00	3.97	.01	-.57	.40
MMPI-A Ack.	145	6.02	6.00	2.77	.09	-.80	.71
MMPI-A Pro.	145	21.14	21.00	4.66	.14	.03	.69
AEQ-A Scale 1	159	7.92	8.00	3.88	-.31	-.73	.83
AEQ-A Scale 2	161	8.80	9.00	3.65	-.20	-.74	.74
AEQ-A Scale 3	160	1.49	1.00	1.72	1.86	4.63	.66
AEQ-A Scale 4	163	4.29	5.00	2.11	-.52	-.68	.72
AEQ-A Scale 5	155	19.97	21.00	4.48	-1.88	4.27	.87
AEQ-A Scale 6	162	2.81	3.00	1.25	-.82	-.41	.59
AEQ-A Scale 7	160	10.16	11.00	3.21	-1.61	2.04	.84

Notes: (MMPI-A Sc. 2 D = Depression Clinical Scale; MMPI-A Dep. = Adolescent-Depression
Content Scale; MMPI-A LSE = Adolescent-Low Self-Esteem Content Scale; MMPI-A
Sc. 7 PT = Psychasthenia Clinical Scale; MMPI-A Anx. = Adolescent-Anxiety Content
Scale; MMPI-A Obs. = Adolescent-Obsessiveness Content Scale MMPI-A Mac. =
MacAndrew Alcoholism Scale; MMPI-A Ack. = Alcohol/Drug Problem
Acknowledgment Scale; MMPI-A Pro. = Alcohol/Drug Problem Proneness Scale; AEQ-
A Scale 1 = Alcohol induces global positive changes; AEQ-A Scale 2 = Alcohol
increases social behavior; AEQ-A Scale 3 = Alcohol improves cognitive and motor skills;
AEQ-A Scale 4 = Alcohol enhances sexual experiences; AEQ-A Scale 5 = Alcohol
impairs cognitive and motor functioning; AEQ-A Scale 6 = Alcohol increases arousal
level; AEQ-A Scale 7 = Alcohol produces relaxation and reduces tension)

Normative data on the AEQ-A were collected from 1,580 individuals from the general

adolescent population (Brown, Christiansen, et al., 1987; Christiansen et al., 1982; Christiansen

& Goldman, 1983), which was described in the Methodology section of the current dissertation.

Compared to the normative group, the current sample produced comparable responses, as

evidenced by the relatively similar means and standard deviations of each AEQ-A scale. Table 3

provides a comparison of the current sample with the normative group on each AEQ-A scale.

The majority of variables demonstrated a reasonable normal distribution, while some

displayed marked skewness and kurtosis. See Table 2 for the results. According to Tabachnick

and Fidell (1996), skewness is related to the symmetry of the distribution, and kurtosis refers to

the peakedness of the distribution. The MMPI-A Low Self-Esteem Content Scale and AEQ-A

Scale 3 displayed positive skewness, while AEQ-A Scales 5 and 7 showed marked negative

skewness. Additionally, AEQ-A Scales 3, 5, and 7 demonstrated peaked distributions as

evidenced by the high kurtosis values.

Internal consistency estimates of the MMPI-A scales ranged from .40 to .88. The

MacAndrew Alcoholism Scale demonstrated poor internal consistency with an alpha of .40,

while the remaining MMPI-A scales demonstrated adequate internal consistency. Internal

consistency estimates of the AEQ-A scales ranged from .59 to .87 with AEQ-A Scale 6

displaying borderline internal consistency with a value of .59. See Table 2 for the results. These

results are similar to the normative data on the AEQ-A, which reported AEQ-A Scale 6 as

having the weakest internal consistency of the seven scales with an alpha of .47 (Christiansen &

Goldman, 1983). Within the normative group, the remaining six scales produced alphas that

ranged from .66 to .82 compared to the current sample, which ranged from .66 to .87. These

findings suggest that the present group of incarcerated adolescents responded in a similar manner

to the normative sample studied by Christiansen and Goldman.

TABLE 3

COMPARISON OF MEANS AND STANDARD DEVIATIONS OF AEQ-A RAW
SCORES BETWEEN THE CURRENT JUVENILE OFFENDER SAMPLE AND
THE NORMATIVE GROUP

	Current Juvenile Offender Sample ($N = 155 – 163$)	Normative Group ($N = 1,580$)
AEQ-A Scale 1	Mean = 7.92 *SD* = 3.88	Mean = 7.89 *SD* = 3.47
AEQ-A Scale 2	Mean = 8.80 *SD* = 3.65	Mean = 8.39 *SD* = 4.12
AEQ-A Scale 3	Mean = 1.49 *SD* = 1.72	Mean = 1.83 *SD* = 1.81
AEQ-A Scale 4	Mean = 4.29 *SD* = 2.11	Mean = 4.75 *SD* = 2.08
AEQ-A Scale 5	Mean = 19.97 *SD* = 4.48	Mean = 20.83 *SD* = 3.53
AEQ-A Scale 6	Mean = 2.81 *SD* = 1.25	Mean = 2.43 *SD* = 1.21
AEQ-A Scale 7	Mean = 10.16 *SD* = 3.21	Mean = 10.42 *SD* = 2.54

Notes: (AEQ-A Scale 1 = Alcohol induces global positive changes; AEQ-A Scale 2 = Alcohol increases social behavior; AEQ-A Scale 3 = Alcohol improves cognitive and motor skills; AEQ-A Scale 4 = Alcohol enhances sexual experiences; AEQ-A Scale 5 = Alcohol impairs cognitive and motor functioning; AEQ-A Scale 6 = Alcohol increases arousal level; AEQ-A Scale 7 = Alcohol produces relaxation and reduces tension)

Correlation Analyses

Bivariate correlations using the Pearson's r statistic were obtained to examine the relationship between variables. Specifically, the goal of the current research was to determine the degree to which AEQ-A scales combined with MMPI-A anxiety/depressive scales improve the prediction of MMPI-A alcohol scales beyond that of the MMPI-A anxiety/depressive scales alone. Therefore, calculating Pearson's r correlations between the MMPI-A alcohol problem scales and the MMPI-A anxiety/depression scales as well as the MMPI-A alcohol problem scales and AEQ-A scales allowed the current researcher to establish which MMMP-A anxiety/depressive scales and AEQ-A scales are related to the MMPI-A alcohol problem scales. Once the correlations were obtained, the magnitudes of the coefficients were interpreted based on guidelines outlined by Cohen (1988). Cohen provided operational definitions for describing the magnitude of correlation coefficients, which were recently reaffirmed by Hemphill (2003) through meta-analytic review of the literature examining effect sizes. Specifically, the following categories of effects sizes were established by Cohen: (a) small effect size = correlation coefficient of .10; (b) medium effect size = correlation coefficient of .30; and (c) large effect size = correlation coefficient of .50. In the following paragraphs, the results of the correlation analyses are reported. Table 4 provides a complete list of correlations between the three potential criterion variables (MMPI-A MacAndrew Alcoholism Scale, MMPI-A Alcohol/Drug Problem Acknowledgment Scale, and Alcohol/Drug Problem Proneness Scale) and the potential predictor variables (MMPI-A Depression Clinical Scale, MMPI-A Adolescent-Depression Content Scale, MMPI-A Adolescent-Low Self-Esteem Content Scale, MMPI-A Psychasthenia Clinical Scale, MMPI-A Adolescent-Anxiety Content Scale, MMPI-A Adolescent-

Obsessiveness Content Scale, AEQ-A Scale 1, AEQ-A Scale 2, AEQ-A Scale 3, AEQ-A Scale 4,

AEQ-A Scale 5, AEQ-A Scale 6, and AEQ-A Scale 7).

TABLE 4

CORRELATIONS BETWEEN CRITERION AND PREDICTOR VARIABLES

	MMPI-A Mac.	MMPI-A Ack.	MMPI-A Pro.
MMPI-A Sc. 2 D	**-.18***	.01	.08
MMPI-A Dep.	.12	**.40****	**.22****
MMPI-A LSE	.07	**.39****	**.18***
MMPI-A Sc. 7 PT	.10	**.40****	**.23****
MMPI-A Anx.	.14	**.39****	**.36****
MMPI-A Obs.	.15	**.42****	**.24****
AEQ-A Scale 1	**.24****	**.43****	**.29****
AEQ-A Scale 2	**.17***	**.39****	**.30****
AEQ-A Scale 3	.02	**.17***	.11
AEQ-A Scale 4	.13	**.39****	**.30****
AEQ-A Scale 5	.09	.09	.13
AEQ-A Scale 6	**.26****	**.28****	**.31****
AEQ-A Scale 7	**.21***	**.39****	**.32****

Notes: ***p<.05 (2-tailed)***
       ****p<.01 (2-tailed)***

(MMPI-A Mac. = MacAndrew Alcoholism Scale; MMPI-A Ack. = Alcohol/Drug
Problem Acknowledgment Scale; MMPI-A Pro. = Alcohol/Drug Problem Proneness
Scale; MMPI-A Sc. 2 D = Depression Clinical Scale; MMPI-A Dep. = Adolescent-
Depression Content Scale; MMPI-A LSE = Adolescent-Low Self-Esteem Content Scale;
MMPI-A Sc. 7 PT = Psychasthenia Clinical Scale; MMPI-A Anx. = Adolescent-Anxiety
Content Scale; MMPI-A Obs. = Adolescent-Obsessiveness Content Scale; AEQ-A Scale
1 = Alcohol induces global positive changes; AEQ-A Scale 2 = Alcohol increases social
behavior; AEQ-A Scale 3 = Alcohol improves cognitive and motor skills; AEQ-A Scale
4 = Alcohol enhances sexual experiences; AEQ-A Scale 5 = Alcohol impairs cognitive
and motor functioning; AEQ-A Scale 6 = Alcohol increases arousal level; AEQ-A Scale
7 = Alcohol produces relaxation and reduces tension)

The MacAndrew Alcoholism Scale on the MMPI-A was the first alcohol-related problem scale that was examined. Overall, correlations of the MacAndrew with the MMPI-A anxiety, MMPI-A depression, and AEQ-A scales yielded values that ranged from -.18 to .26 with a median correlation coefficient of .13. Significant positive correlations with small effect sizes were found between the MMPI-A MacAndrew Alcoholism Scale and AEQ-A Scale 1 ($r = .24$, $n = 138$, $p < .01$, two-tailed), AEQ-A Scale 2 ($r = .17$, $n = 140$, $p < .05$, two-tailed), AEQ-A Scale 6 ($r = .26$, $n = 141$, $p < .01$, two-tailed), and AEQ-A Scale 7 ($r = .21$, $n = 139$, $p < .05$, two-tailed). One significant negative correlation with a small effect size occurred between the MMPI-A MacAndrew and the MMPI-A Depression Clinical Scale ($r = -.18$, $n = 145$, $p < .05$, two-tailed).

The second alcohol-related problem scale that was examined included the Alcohol/Drug Problem Acknowledgment Scale on the MMPI-A. Correlations of the Alcohol/Drug Problem Acknowledgment Scale with the MMPI-A anxiety, MMPI-A depression, and AEQ-A scales demonstrated values that ranged from .01 to .43 with median correlation coefficient of .39. Significant positive correlations with small effect sizes were found between the MMPI-A Alcohol/Drug Problem Acknowledgment Scale and AEQ-A Scale 3 ($r = .17$, $n = 139$, $p < .05$, two-tailed) and AEQ-A Scale 6 ($r = .28$, $n = 141$, $p < .01$, two-tailed). Additionally, there were significant positive correlations with medium effect sizes between the MMPI-A Alcohol/Drug Problem Acknowledgment Scale and MMPI-A Depression Content ($r = .40$, $n = 145$, $p < .01$, two-tailed), MMPI-A Low Self-Esteem ($r = .39$, $n = 145$, $p < .01$, two-tailed), MMPI-A Psychasthenia ($r = .40$, $n = 145$, $p < .01$, two-tailed), MMPI-A Anxiety ($r = .39$, $n = 145$, $p < .01$, two-tailed), MMPI-A Obsessiveness ($r = .42$, $n = 145$, $p < .01$, two-tailed), AEQ-A Scale 1 ($r = .43$, $n = 138$, $p < .01$, two-tailed), AEQ-A Scale 2 ($r = .39$, $n = 140$, $p < .01$, two-tailed), AEQ-A

Scale 4 ($r = .39$, $n = 142$, $p < .01$, two-tailed), and AEQ-A Scale 7 ($r = .39$, $n = 139$, $p < .01$, two-tailed).

The Alcohol/Drug Problem Proneness Scale on the MMPI-A was the third alcohol-related problem scale that was analyzed. Correlations of the Alcohol/Drug Problem Proneness Scale with the MMPI-A anxiety, MMPI-A depression, and AEQ-A scales yielded values that ranged from .08 to .36 with a median correlation coefficient of .24. Significant positive correlations with small effect sizes occurred between the MMPI-A Alcohol/Drug Problem Proneness Scale and the MMPI-A Depression Content ($r = .22$, $n = 145$, $p < .01$, two-tailed), MMPI-A Low Self-Esteem ($r = .18$, $n = 145$, $p < .05$, two-tailed), MMPI-A Psychasthenia ($r = .23$, $n = 145$, $p < .01$, two-tailed), MMPI-A Obsessiveness ($r = .24$, $n = 145$, $p < .01$, two-tailed), and AEQ-A Scale 1 ($r = .29$, $n = 138$, $p < .01$, two-tailed). Additionally, significant positive correlations with medium effect sizes were found between the MMPI-A Alcohol/Drug Problem Proneness Scale and the MMPI-A Anxiety ($r = .36$, $n = 145$, $p < .01$, two-tailed), AEQ-A Scale 2 ($r = .30$, $n = 140$, $p < .01$, two-tailed), AEQ-A Scale 4 ($r = .30$, $n = 142$, $p < .01$, two-tailed), AEQ-A Scale 6 ($r = .31$, $n = 141$, $p < .01$, two-tailed), and AEQ-A Scale 7 ($r = .32$, $n = 139$, $p < .01$, two-tailed).

Regression Analyses

Regression analyses were conducted to test the degree to which AEQ-A scales combined with MMPI-A anxiety/depressive scales improve the prediction of MMPI-A alcohol problem scales beyond that of the MMPI-A anxiety/depressive scales alone. Since three different scales on the MMPI-A measure aspects of alcohol-related problems, the current researcher had the choice of which scale to utilize as the criterion variable within the regression equations. Several statistical data were examined to assist in choosing the most appropriate scale. Upon analyzing the data, the decision was made to use the MMPI-A Alcohol/Drug Problem Acknowledgment Scale as the criterion for two reasons. First, correlations between the MMPI-A Alcohol/Drug Problem Acknowledgment Scale and the MMPI-A anxiety, MMPI-A depression, and AEQ-A scales produced a median correlation coefficient of .39 compared to .13 from the MMPI-A MacAndrew Alcoholism Scale and .24 from the MMPI-A Alcohol/Drug Problem Proneness Scale. These median correlations are important due to the fact that higher correlations between the criterion and predictor variables will result in more effective prediction equations. A second reason involved the internal consistency of the scales. While both the MMPI-A Alcohol/Drug Problem Acknowledgment and MMPI-A Alcohol/Drug Problem Proneness Scales demonstrated adequate internal consistency with respective alpha coefficients of .71 and .69, the MMPI-A MacAndrew Alcoholism had an alpha of .40. The poor internal consistency estimate of the MacAndrew Alcoholism Scale suggests that the items within the scale may be measuring alcohol-related problems in an inconsistent manner and could be assessing areas of psychopathology that differ from alcohol problems. For these two reasons, the MMPI-A Alcohol/Drug Problem Acknowledgment Scale was used as the criterion with AEQ-A scales and MMPI-A depression/anxiety scales as the predictor variables.

Sequential multiple regression analyses were performed to test the two research hypotheses. This type of regression allows for variables to be inserted in the regression equation in a specified order to determine the gain or loss in prediction. When computing the regression models for each hypothesis, the current investigator had to first establish which MMPI-A depression and anxiety scales were the most effective predictors of scores on the MMPI-A Alcohol/Drug Problem Acknowledgment Scale. This was accomplished by examining the Pearson's r correlation coefficients between MMPI-A anxiety/depressive scales and the MMPI-A Alcohol/Drug Problem Acknowledgment Scale. Secondly, AEQ-A scales were added to the regression equation to determine if they improved the prediction of alcohol problems beyond that of anxiety/depressive traits alone. The order in which AEQ-A scales were added in the model was determined by the magnitude of the Pearson's r correlations. Those AEQ-A scales with the highest correlations with the MMPI-A Alcohol/Drug Problem Acknowledgment Scale were added first followed by the next highest and so on. Upon calculating each regression equation, the level of multicollinearity was evaluated by examining tolerance values. According to Brace et al. (2003), tolerance values are an indication of the correlation between predictor variables. The numbers range from 0 to 1 with values closer to zero demonstrating a stronger relationship between an individual predictor variable and the other predictors.

Testing Hypothesis 1

The first hypothesis stated that depressive traits will significantly predict an increase in alcohol-related problems, and the addition of expectations related to global positive changes, increased social behavior, improved cognitive and motor functioning, enhanced sexual behaviors, and increased arousal level will improve the prediction of alcohol problems beyond

53

depressive traits alone. To test this hypothesis, depressive traits, as measured by the MMPI-A

Depression Clinical Scale, the MMPI-A Adolescent-Depression Content Scale, and the MMPI-A

Adolescent-Low Self-Esteem Content Scale, were first used to predict alcohol-related problems,

which were assessed using the MMPI-A Alcohol/Drug Problem Acknowledgment Scale. The

MMPI-A Adolescent-Depression Content and Low Self-Esteem Scales were used in the

regression equation due to the fact that they had respective significant correlations of .40 and .39

with the MMPI-A Alcohol/Drug Problem Acknowledgment Scale. The MMPI-A Depression

Clinical Scale was not used as a predictor variable because it demonstrated no meaningful

association with the Alcohol/Drug Problem Acknowledgment Scale ($r = .01$, $n = 145$, $p = .953$,

two-tailed).

　　　　To test the first portion of Hypothesis 1, the MMPI-A Depression Content and Low Self-

Esteem Scales were used to predict scores on the MMPI-A Alcohol/Drug Problem

Acknowledgment Scale. This paradigm was labeled model 1. The results yielded a significant

regression model, $F (2, 142) = 15.24$, $p < .01$, which accounted for 17.7% of the variance in

alcohol/drug problems. See Table 5 for the results. Analyses of the tolerance values of each

predictor variable indicated no problems with multicollinearity. In order to determine if

including alcohol expectancies in the regression equation improved the prediction, a series of

additional regression equations were conducted that added different alcohol expectancies in a

specified order based on the magnitude of their correlations with the criterion. Specifically, the

AEQ-A scales demonstrating the strongest, significant correlations with the MMPI-A

Alcohol/Drug Problem Acknowledgment Scale were added first followed by the next highest

correlation. This procedure was repeated until all expectancies with significant correlations to

alcohol/drug problems were utilized.

TABLE 5

TESTING HYPOTHESIS 1: REGRESSION MODELS USING DEPRESSIVE TRAITS AND
ALCOHOL EXPECTANCIES TO PREDICT ALCOHOL/DRUG PROBLEMS

Regression Model	F Value	Significance of F Value	Predictor Variables	Standardized Beta Coefficients	Significance of Beta	R Squared	Change in R Squared
Model 1	15.24	$p < .01$	Depression Content	.248	$p < .05$	.177	
			Low Self-Esteem	.201	$p = .084$		
Model 2	18.97	$p < .01$	Depression Content	.157	$p = .166$	.298	.121
			Low Self-Esteem	.205	$p = .071$		
			AEQ-A Scale 1	.374	$p < .01$		
Model 3	16.74	$p < .01$	Depression Content	.165	$p = .138$	.335	.037
			Low Self-Esteem	.215	$p = .054$		
			AEQ-A Scale 1	.230	$p < .05$		
			AEQ-A Scale 2	.239	$p < .01$		
Model 4	13.94	$p < .01$	Depression Content	.181	$p = .103$	.346	.011
			Low Self-Esteem	.185	$p = .100$		
			AEQ-A Scale 1	.145	$p = .174$		
			AEQ-A Scale 2	.223	$p < .05$		
			AEQ-A Scale 4	.144	$p = .143$		
Model 5	11.53	$p < .01$	Depression Content	.180	$p = .108$	.346	.000
			Low Self-Esteem	.185	$p = .101$		
			AEQ-A Scale 1	.147	$p = .179$		
			AEQ-A Scale 2	.223	$p < .05$		
			AEQ-A Scale 4	.148	$p = .175$		
			AEQ-A Scale 6	-.009	$p = .930$		
Model 6	10.08	$p < .01$	Depression Content	.161	$p = .155$	.354	.008
			Low Self-Esteem	.209	$p = .068$		
			AEQ-A Scale 1	.179	$p = .123$		
			AEQ-A Scale 2	.223	$p < .05$		
			AEQ-A Scale 4	.172	$p = .121$		
			AEQ-A Scale 6	-.036	$p = .720$		
			AEQ-A Scale 3	-.064	$p = .440$		

Notes: (AEQ-A Scale 1 = Alcohol induces global positive changes; AEQ-A Scale 2 = Alcohol increases social behavior; AEQ-A Scale 3 = Alcohol improves cognitive and motor skills; AEQ-A Scale 4 = Alcohol enhances sexual experiences; AEQ-A Scale 6 = Alcohol increases arousal level)

The second test of Hypothesis 1 added AEQ-A Scale 1 (global positive changes) to the predictions and was called model 2. Findings demonstrated a significant regression model, F (3, 134) = 18.97, $p < .01$, accounting for 29.8% of the variance in alcohol/drug problems. See Table 5 for the results. The tolerance values of the predictor variables suggested no problems with multicollinearity. The addition of AEQ-A Scale 1 (global positive changes) produced a significant change in the amount of variance accounted for by the regression equation as evidenced by the significance of the standardized beta coefficient, t (1, 129) = 5.10, $p < .01$. Thus, including AEQ-A scale 1 (global positive changes) in the equation accounted for 12.1% more of the variance in alcohol/drug problems.

The third model added AEQ-A Scale 2 (increased social behavior) to the regression equation. The regression model was significant, F (4, 133) = 16.74, $p < .01$, which accounted for 33.5% of the variance in alcohol/drug problems. See Table 5 for the results. The tolerance values of each predictor variable indicated no problems with multicollinearity. The addition of AEQ-A Scale 2 (increased social behavior) produced a significant change in the amount of variance accounted for by the regression equation as demonstrated by the significance of the standardized beta coefficient, t (1, 129) = 2.71, $p < .01$. Therefore, the inclusion of AEQ-A Scale 2 (increased social behavior) produced a 3.7% change in the amount of variance explained by the regression equation.

A fourth model added AEQ-A Scale 4 (enhanced sexuality) to the predictions. The results revealed a significant regression model, F (5, 132) = 13.94, $p < .01$, which accounted for 34.6% of the variance in alcohol/drug problems. See Table 5 for the results. The tolerance values for each predictor variable suggested no problems with multicollinearity. The addition of AEQ-A Scale 4 (enhanced sexuality) to the equation produced a small 1.1 % increase in

explained variance, which was not significant based on the standardized beta coefficient, t (1, 129) = 1.47, p = .143.

A fifth model added AEQ-A Scale 6 (increased arousal), which was significant, F (6, 131) = 11.53, $p < .01$. Overall, this model accounted for 34.6% of the variance in alcohol/drug problems. See Table 5 for the results. The tolerance values for each predictor variable indicated no problems with multicollinearity. The addition of AEQ-A Scale 6 (increased arousal) produced no change in the amount of explained variance, which was not significant as evidenced by the standardized beta coefficient, t (1, 129) = -.088, p = .930.

A sixth and final model added AEQ-A Scale 3 (improved cognitive/motor skills). The regression equation was significant, F (7, 129) = 10.08, $p < .01$, which accounted for 35.4% of the variance in alcohol/drug problems. See Table 5 for the results. The tolerance values for each predictor variable demonstrated no problems with multicollinearity. The addition of AEQ-A Scale 3 (improved cognitive/motor skills) to the equation produced a small 0.8% increase in explained variance, which was not significant based on the standardized beta coefficient, t (1, 129) = -.775, p = .440.

Testing Hypothesis 2

The second hypothesis asserted that anxiety traits will significantly predict an increase in alcohol-related problems, and the addition of expectations related to tension reduction will improve the prediction of alcohol problems beyond anxiety traits alone. To test this hypothesis, anxiety traits, as measured by MMPI-A Psychasthenia Clinical Scale, the MMPI-A Adolescent-Anxiety Content Scale, and the MMPI-A Adolescent-Obsessiveness Content Scale, were first used to predict alcohol-related problems, which were assessed using the MMPI-A Alcohol/Drug

Problem Acknowledgment Scale. The MMPI-A Obsessiveness, Psychasthenia, and Anxiety

Scales were used in the regression equation due to the fact that they had respective significant

correlations of .42, .40, and .39 with the MMPI-A Alcohol/Drug Problem Acknowledgment

Scale.

Similar to the first hypothesis, a sequential regression allowed the current investigator to

insert variables in the regression equation in a specified order to determine the gain or loss in

prediction. To test the first portion of Hypothesis 2, the MMPI-A Obsessiveness, Psychasthenia,

and Anxiety Scales were used to predict scores on the MMPI-A Alcohol/Drug Problem

Acknowledgment Scale. This was labeled model 1. The results showed a significant regression

model, F (3, 141) = 10.75, $p < .01$, which accounted for 18.6% of the variance in alcohol/drug

problems. See Table 6 for the results. The tolerance values of each predictor variable suggested

no problems with multicollinearity.

A second model was tested to examine whether the addition of AEQ Scale 7 (tension

reduction) to the regression equation improved the prediction of alcohol/drug problems. The

results demonstrated a significant regression equation, F (4, 134) = 15.09, $p < .01$, accounting for

31.1% of the variance in alcohol/drug problems. See Table 6 for the results. The tolerance

values for each predictor revealed no problems with multicollinearity. The addition of AEQ-A

Scale 7 (tension reduction) produced a significant change in the amount of variance accounted

for by the regression equation as evidenced by the significance of the standardized beta

coefficient, t (1, 134) = 4.93, $p < .01$. Thus, including AEQ-A scale 7 (tension reduction) in the

equation accounted for 12.5% more of the variance in alcohol/drug problems.

TABLE 6

TESTING HYPOTHESIS 2: REGRESSION MODELS USING ANXIETY TRAITS AND ALCHOL EXPECTANCIES TO PREDICT ALCOHOL/DRUG PROBLEMS

Regression Model	*F* Value	Significance of *F* Value	Predictor Variables	Standardized Beta Coefficients	Significance of Beta	*R* Squared	Change in *R* Squared
Model 1	10.75	*p* < .01	Psychasthenia	.101	*p* = .551	.186	
			Anxiety	.129	*p* = .344		
			Obsessiveness	.230	*p* = .131		
Model 2	15.09	*p* < .01	Psychasthenia	.136	*p* = .395	.311	.125
			Anxiety	.026	*p* = .842		
			Obsessiveness	.256	*p* = .079		
			AEQ-A Scale 7	.355	*p* < .01		

Notes: (AEQ-A Scale 7 = Alcohol produces relaxation and reduces tension)

CHAPTER VI

DISCUSSION

Description of the Findings

       The relationship between alcohol problems, anxiety and depressive traits, and alcohol expectancies was examined within a juvenile correction sample. Statistical analyses were conducted to test the degree to which alcohol expectancies combined with anxiety and depressive traits improve the prediction of alcohol-related problems beyond that of anxiety/depressive traits alone. To accomplish this task, archival data were collected on 205 male inmates within a juvenile correction facility in Larned, Kansas who completed both the AEQ-A and MMPI-A. Two research hypotheses were formulated. The first hypotheses suggested that depressive traits would significantly predict an increase in alcohol-related problems, and the addition of expectations related to global positive changes, increased social behavior, improved cognitive and motor functioning, enhanced sexual behaviors, and increased arousal level will improve the prediction of alcohol problems beyond depressive traits alone. Regression analyses were conducted, which yielded some support for this hypothesis. Depressive traits, as measured by the MMPI-A Depression Content and Low Self-Esteem Scales, significantly predicted an increase in scores on the MMPI-A Alcohol/Drug Problem Acknowledgment Scale. Additionally, when expectancies of global positive changes and increased social behavior were included, there was a significant gain in prediction. When expectancies of improved cognitive/motor skills, enhanced sexual behaviors, and increased arousal were added to the regression equation, there was a small gain in prediction, but this change was not statistically significant. All predictor variables used to test the first hypothesis had correlations with small to medium effect sizes with the criterion.

60

The second hypothesis stated that anxiety traits will significantly predict an increase in alcohol-related problems, and the addition of expectations related to tension reduction will improve the prediction of alcohol problems beyond anxiety traits alone. Similar to the first research hypothesis, there was some support demonstrated for Hypothesis 2. Anxiety traits, as measured by the MMPI-A Psychasthenia, Obsessiveness, and Anxiety Scales, significantly predicted an increase in scores on the MMPI-A Alcohol/Drug Problem Acknowledgment Scale. Furthermore, when alcohol expectancies of tension reduction were added, there was a significant gain in prediction of alcohol problems. All predictor variables used to test the second hypothesis had correlations with medium effect sizes with the criterion.

The results of the current research demonstrate that elevated levels of anxiety and depressive symptoms are related to increased risk for alcohol-related problems, and the presence of reinforcement-based alcohol expectations significantly increases this risk. These findings highlight the importance of assessing alcohol expectancies in adolescents with alcohol-related problems and significant anxiety or depressive symptoms. It appears particularly important to evaluate expectancies of global positive changes and increased social behavior in adolescents experiencing comorbid depressive symptoms with alcohol problems and to measure expectancies of tension reduction in those who are having co-occurring anxiety symptoms with alcohol problems.

The findings of the current dissertation are consistent with some previous studies demonstrating that high levels of general anxiety symptoms (Kushner et al., 1994), social anxiety symptoms (Kidorf & Lang, 1999), negative affect (McKirnan & Peterson, 1988), stress (Abbey et al., 1993; Cooper et al., 1992), and depressive symptoms (Johnson & Gurin, 1994) in conjunction with elevated reinforcement-based expectations are associated with increased

alcohol consumption rates. These results suggest that alcohol-related problems may be exacerbated by reinforcement-based expectancies in male juvenile offenders who are concurrently experiencing anxiety and depressive traits. A possible explanation for this relationship is that some of the incarcerated adolescents may be using alcohol as a form of self-medication where they expect the alcohol to produce reinforcing effects to relieve their anxiety and depressive symptoms. However, extreme caution is suggested in endorsing this explanation because the cross-sectional design of this research prevents any conclusions to be drawn related to the sequential relationship between anxiety and depressive traits, alcohol expectancies, and alcohol-related problems. Nevertheless, the results of the current project coupled with previous research highlight the important function of alcohol expectancies in the co-occurrence of anxiety/depressive traits with concurrent alcohol-related problems, which suggests that targeting anticipated outcomes from consuming alcohol may be an important element in the treatment of individuals with comorbid alcohol-related problems and anxiety/depressive disorders.

Implications of the Findings

The current findings have implications for interventions that target alcohol-related problems. Specifically, modifying expectations are a strategy used in Cognitive Therapy to treat substance-related problems. According to Beck, Wright, Newman, and Liese (1993), one of the key steps in cognitive therapy of substance abuse is to challenge a patient's beliefs related to the substance. These authors suggest that anticipatory beliefs involve the expectation of reinforcement, and relief-oriented beliefs include the expectation that an aversive state will be relieved. A vital component in Cognitive Therapy is to modify existing belief structure to more constructive beliefs and expectations in order to decrease the risk for problematic alcohol

consumption behaviors. Fromme, Marlatt, Baer, and Kivlahan (1994) described a psychoeducational program using cognitive-behavioral techniques to teach skills that assist individuals in altering their alcohol consumption behaviors and associated lifestyle patterns. One of the components of the program is introducing alcohol expectancies and modifying existing expectancy structure to more realistic and constructive anticipated outcomes from drinking alcohol. Goldman (1994) discussed the possibilities for utilizing expectancy modification techniques in prevention and treatment efforts for alcohol-related problems. In doing so, this researcher postulated "the most probable effective strategy for prevention and intervention is to weaken activation of arousing, partying outcomes, to strengthen expectations of sedation and perhaps aversive outcomes" (p. 139).

Application to Prevention Programs

The current findings have specific implications for both the prevention and treatment of alcohol-related problems within the adolescent offender population. For preventative efforts, alcohol expectancies should be assessed within all adolescents due to the well-established relationship between expectancies and alcohol-related problems. By monitoring and challenging any reinforcement-based expectations that may arise as well as emphasizing the potential negative consequences associated with alcohol consumption, practitioners can modify expectancy structure, which in turn will decrease the risk for the development or exacerbation of alcohol-related problems.

A couple of studies have examined the utility of expectancy challenge procedures in preventative efforts with children. While the studies included children who were not incarcerated and younger than the sample used in the current dissertation, the findings could

have implications for a variety of adolescent samples. Kraus, Smith, and Ratner (1994) investigated whether expectancies could be modified though intervention in a sample of 268 children in the second through fourth grades. When children were exposed to a brief videotape that showcased a puppet displaying the negative effects of alcohol, reinforcement-based expectancies decreased in comparison to control conditions and a situation where adults modeled the negative effects of alcohol. These authors highlight the implications of these findings for preventing alcohol-related problems, suggesting that "children's alcohol-related expectancies can be modified during years in which those expectancies are first forming" (p. 539). In a study aimed at primary prevention, Cruz and Dunn (2003) examined expectancy challenge interventions in a sample of 216 fourth grade students. The results indicated that after receiving an interactive classroom curriculum aimed at challenging alcohol expectancies, children were more likely to associate alcohol use with negative consequences and less likely to associate alcohol with reinforcing outcomes. Combined together, these studies provide some support for the utility of programs aimed at modifying children's alcohol expectancies, which in turn decreases the risk for alcohol consumption in childhood.

Application to Secondary Intervention and Treatment Programs

The results of this dissertation have implications for the development of secondary prevention and treatment efforts. Specifically, alcohol expectancies should be evaluated in those adolescent offenders who are experiencing comorbid alcohol problems with anxiety and depressive disorders. Once clinicians are made aware of the specific alcohol expectancies that are present, interventions can be formulated and implemented to modify the existing expectancy structure. Consequently, there could be decreases in alcohol-related problems.

Support for expectancy challenge interventions for the purposes of secondary prevention and treatment has been established using college student samples. Utilizing a university sample, Darkes and Goldman (1993) found evidence that exposing male college students to expectancy challenge conditions produced decreases in alcohol expectancies of reinforcing consequences as well as drinking behaviors. These findings were later replicated by Darkes and Goldman (1998). Similarly, Dunn, Lau, and Cruz (2000) discovered that an expectancy challenge procedure with undergraduate students led to increased expectancies of negative consequences, subsequently decreasing alcohol consumption rates. These authors noted that the results were significant in male participants but not females. Investigating a sample of college students, Jones, Silvia, and Richman (1995) reported that expectancy challenge techniques coupled with a procedure where students wrote essays to challenge the accuracy of their reinforcement-based expectancies was related to decreased alcohol intake approximately four weeks after the intervention.

While there have been promising results revealing that expectancy challenge protocols modify alcohol expectancies and subsequent drinking behaviors, other studies have produced contradictory findings. Evaluating a sample of female college students who reported engaging in moderate to heavy amounts of drinking, Musher-Eizenman and Kulick (2003) reported that females receiving an expectancy challenge intervention experienced fewer expectancies related to increased social behaviors, sexual enhancement, and tension reduction compared to the control condition. However, both the control and expectancy challenge condition reported similar reductions in the amount of alcohol consumption after the study. The authors concluded that although there were differences in expectancies between the two conditions, the decreases in alcohol consumption appear to be related to factors other than the expectancy challenge intervention. Results from an expectancy challenge protocol demonstrated that participants

receiving this intervention experienced a significant decrease in expectancies of global positive changes, sexual enhancement, social/physical pleasure, and increased social assertiveness (Corbin, McNair, & Carter, 2001). These authors noted that despite the decreases in expectancies, no significant changes were found in drinking rates after receiving the expectancy challenge intervention. Additionally, Gustafson (1986) found no evidence of changes in expectancies of aggression upon exposing college students to information that provides an accurate account of the effect of alcohol on aggressive behaviors.

Further studies have examined expectancy changes and associated treatment outcomes in clinical samples. Brown (1985b), examining 42 males who had been involved in an inpatient alcohol treatment program within a Veterans Administration Medical Center, found that decreased expectancies of global positive changes, enhanced sexuality, social/physical pleasure, and tension reduction were associated with increased levels of abstinence one year post-treatment. Ramsey, Brown, Stuart, Burgess, and Miller (2002) evaluated a sample of alcohol dependent patients with elevated symptoms of depression and discovered those patients who received cognitive-behavioral treatment demonstrated an increase in expectancies related to the negative effects of alcohol, which in turn was associated with decreased quantity of alcohol consumption six months post-treatment. Connors, Tarbox, and Faillace (1993) investigated changes in alcohol expectancies longitudinally in a sample of individuals receiving outpatient alcohol treatment. The results showed that decreases in reinforcement-based expectancies were significantly associated with decreased alcohol consumption. However, the authors noted that decreases in alcohol expectancies occurred over the period of the 18-month post-treatment period as opposed to during treatment. Therefore, they concluded decreases in expectations did not precede the reduced alcohol consumption.

The findings from studies examining expectancy challenge interventions have generally produced promising results. While some studies have found that modification of expectancies are not necessarily correlated with changes in alcohol consumption rates, many authors recognize the importance of continuing efforts to explore expectancy challenge procedures in an attempt to improve prevention and treatment protocols (Connors et al., 1993; Corbin et al., 2001; Cruz & Dunn, 2003; Dunn et al., 2000; Jones et al., 2001; Jones, Silvia, et al., 1995; Kraus et al., 1994; Musher-Eizenman & Kulick, 2003; Sharkansky & Finn, 1998; Van De Luitgaarden, Wiers, Knibbe, & Boon, 2006). As noted by Jones et al. (2001), "further research is warranted to determine the relative efficacy of different types of expectancy manipulations on both positive and negative expectancies" (p. 67).

Limitations

There were numerous limitations to the current study. First, the representativeness of the sample is limited for several reasons. The archival data utilized in the current study were collected from a single juvenile correction facility in Kansas that only housed male offenders. Additionally, the assessment information was obtained from adolescents as they were admitted to the facility rather than through random selection procedures. Due to the fact that this was a convenience sample consisting of all males within one facility, the generalizability of the current findings are limited and should be interpreted with caution when applied to incarcerated females as well as the general adolescent male offender population.

A second limitation of the study involves the measurement of alcohol-related problems. As previously discussed, three scales on the MMPI-A were utilized to measure alcohol-related problems. However, the majority of items within each of the three scales are content that

correlates highly with alcohol-related problems rather than items that actually measure problematic alcohol consumption behaviors and related consequences (Archer, 1997). A more thorough instrument measuring actual alcohol consumption behaviors and the associated negative consequences could have improved the assessment of alcohol-related problems. Furthermore, additional methods of assessment to evaluate alcohol-related problems could have been utilized, such as diagnostic interviews.

A third limitation of the study involves the lack of information available regarding diagnoses and race/ethnicity. The diagnoses and race/ethnicity of the adolescents were not recorded in a systematic manner. Therefore, no information regarding diagnoses and race/ethnicity could be included in the statistical analyses.

A final limitation includes the design of the current project. A cross-sectional method was utilized where adolescents completed various assessment instruments at essentially the same time. This type of design allows the researcher to draw some conclusions regarding adolescents' responses on a set of assessment instruments at the specific time in which the information was collected. However, the cross-sectional research does not allow for any conclusions to be drawn regarding the temporal relationships between alcohol-related problems, anxiety and depressive traits, and alcohol expectancies. A longitudinal design would provide a better opportunity to examine how these variables change over a period of time, which could offer some information related to causality.

Directions for Future Research

The findings of the current dissertation provide several suggestions for areas of future research. First, the current procedure could be replicated on other samples of both male and

female juvenile offenders to determine if similar findings are obtained. This would improve the generalizability of the results to incarcerated females and the general adolescent offender population. If future research is undertaken in this area, more extensive and face valid measures of alcohol-related problems should be utilized.

Other suggestions for future research involve the design of the project. As previously mentioned, a longitudinal design would allow the researcher to examine how alcohol-related problems, anxiety and depressive traits, and alcohol expectancies change over the course of time, which might allow for causal relationships between variables to be determined. If additional research in this area is replicated and conducted using a more sophisticated design, a line of evidence could be established, producing increased confidence in the current findings.

LIST OF REFERENCES

REFERENCES

Aarons, G. A., Brown, S. A., Hough, R. L., Garland, A. F., & Wood, P. A. (2001). Prevalence of adolescent substance use disorders across five sectors of care. *Journal of the American Academy of Child and Adolescent Psychiatry, 40(4),* 419-426.

Abbey, A., Smith, M. J., & Scott, R. O. (1993). The relationship between reasons for drinking alcohol and alcohol consumption: An interactional approach. *Addictive Behaviors, 18(6),* 659-670.

Abram, K. M., & Teplin, L. A. (1991). Co-occurring disorders among mentally ill jail detainees. *American Psychologist, 46(10),* 1036-1045.

Abram, K. M., Teplin, L. A., McClelland, G. M., & Dulcan, M. K. (2003). Comorbid psychiatric disorders in youth in juvenile detention. *Archives of General Psychiatry, 60(11),* 1097-1108.

Abrantes, A. M., Hoffman, N. G., & Anton, R. (2005). Prevalence of co-occurring disorders among juveniles committed to detention centers. *International Journal of Offender Therapy and Comparative Criminology, 49(2),* 179-193.

Adams, S. L., & McNeil, D. W. (1991). Negative alcohol expectancies reconsidered. *Psychology of Addictive Behavior, 5(1),* 9-14.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders: Text revision* (4th ed.). Washington, DC: Author.

Anderson, K. G., Schweinsburg, A., Paulus, M. P., Brown, S. A., & Tapert, S. (2005). Examining personality and alcohol expectancies using functional magnetic resonance imaging (fMRI) with adolescents. *Journal of Studies on Alcohol, 66(3),* 323-331.

Andrews, J. A., Hops, H., Ary, D., Lichtenstein, E., & Tildesley, E. (1991). The construction, validation and use of a Guttman scale of adolescent substance use: An investigation of family relationships. *Journal of Drug Issues, 21(3),* 557-572.

Archer, R. P. (1997). *MMPI-A: Assessing adolescent psychopathology* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

Atkins, D. L., Pumariega, A. J., Rogers, K., Montgomery, L., Nybro, C., Jeffers, G., et al. (1999). Mental health and incarcerated youth. I: Prevalence and nature of psychopathology. *Journal of Child and Family Studies, 8(2),* 193-204.

Bandura, A. (1977). *Social learning theory.* Englewood Cliffs, NJ: Prentice-Hall.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51(6),* 1173-1182.

Beck, A. T., Wright, F. D., Newman, C. F. & Liese, B. S. (1993). *Cognitive therapy of substance abuse.* New York: Guilford Press.

Best, D., Manning, V., Gossop, M., Gross, S., & Strang, J. (2006). Excessive drinking and other problem behaviours among 14-16 year old schoolchildren. *Addictive Behaviors, 31(8),* 1424-1435.

Bonomo, Y., Coffey, C., Wolfe, R., Lynskey, M., Bowes, G., & Patton, G. (2001). Adverse outcomes of alcohol use in adolescents. *Addiction, 96(10),* 1485-1496.

Brace, N., Kemp, R., & Snelgar, R. (2003). *SPSS for psychologists: A guide to data analysis using SPSS for windows* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.

Braithwaite, R. L., Conerly, R. C., Robillard, A. G., Stephens, T. T., & Woodring T. (2003). Alcohol and other drug use among adolescent detainees. *Journal of Substance Use, 8(2),* 126-131.

Brown, S. A. (1985a). Expectancies versus background in the prediction of college drinking patterns. *Journal of Consulting and Clinical Psychology, 53(1),* 123-130.

Brown, S. A. (1985b). Reinforcement expectancies and alcoholism treatment outcome after a one-year follow-up. *Journal of Studies on Alcohol, 46(4),* 304-308.

Brown, S. A., Christiansen, B. A., & Goldman, M. S. (1987). The alcohol expectancy questionnaire: An instrument for the assessment of adolescent and adult alcohol expectancies. *Journal of Studies on Alcohol, 48(5),* 483-491.

Brown, S. A., Creamer, V. A., & Stetson, B. A. (1987). Adolescent alcohol expectancies in relation to personal and parental drinking patterns. *Journal of Abnormal Psychology, 96(2),* 117-121.

Brown, S. A., Goldman, M. S., Inn, A., & Anderson, L. R. (1980). Expectations of reinforcement from alcohol: Their domain and relation to drinking patterns. *Journal of Consulting and Clinical Psychology, 48(4),* 419-426.

Brown, S. A., & Munson, E. (1987). Extroversion, anxiety and the perceived effects of alcohol. *Journal of Studies on Alcohol, 48(3),* 272-276.

Bruch, M. A., Heimberg, R. G., Harvey, C., McCann, M., Mahone, M., & Slavkin, S. L. (1992). Shyness, alcohol expectancies, and alcohol use: Discovery of a suppressor effect. *Journal of Research in Personality, 26(2),* 137-149.

Burke, R. S., & Stephens, R. S. (1997). Effect of anxious affect on drinking self-efficacy in college students. *Psychology of Addictive Behaviors, 11(1),* 65-75.

Burke, R. S. & Stephens, R. S. (1999). Social anxiety and drinking in college students: A social cognitive theory analysis. *Clinical Psychology Review, 19(5),* 513-530.

Butcher, J. N., Williams, C. L., Graham, J. R., Archer, R. P., Tellegen, A., Ben-Porath, Y. S., & Kaemmer, B. (1992). *MMPI-A (Minnesota Multiphasic Personality Inventory-Adolescent): Manual for administration, scoring, and interpretation.* Minneapolis, MN: University of Minnesota Press.

Carey, K. B. (1995). Alcohol-related expectancies predict quantity and frequency of heavy drinking among college students. *Psychology of Addictive Behaviors, 9(4),* 236-241.

Cauffman, E. (2004). A statewide screening of mental health symptoms among juvenile offenders in detention. *Journal of the American Academy of Child and Adolescent Psychiatry, 43(4),* 430-439.

Christiansen, B. A., & Goldman, M. S. (1983). Alcohol-related expectancies versus demographic/background variables in the prediction of adolescent drinking. *Journal of Consulting and Clinical Psychology, 51(2),* 249-257.

Christiansen, B. A., Goldman, M. S., & Brown, S. A. (1985). The differential development of adolescent alcohol expectancies may predict adult alcoholism. *Addictive Behaviors, 10(3),* 299-306.

Christiansen, B. A., Goldman, M. S., & Inn, A. (1982). Development of alcohol-related expectancies in adolescents: Separating pharmacological from social-learning influences. *Journal of Consulting and Clinical Psychology, 50(3),* 336-344.

Christiansen, B. A., Smith, G. T., Roehiing, P. V., & Goldman, M. S. (1989). Using alcohol expectancies to predict adolescent drinking behavior after one year. *Journal of Consulting and Clinical Psychology, 57(1),* 93-99.

Chutuape, M. A. D., & de Wit, H. (1995). Preferences for ethanol and diazepam in anxious individuals: An evaluation of the self-medication hypothesis. *Psychopharmacology, 121(1),* 91-103.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). New York: Lawrence Erlbaum Associates.

Connors, G. J., O'Farrell, T. J., Cutter, H. S. G., & Thompson, D. L. (1986). Alcohol expectancies among male alcoholics, problem drinkers, and nonproblem drinkers. *Alcoholism: Clinical and Experimental Research, 10(6),* 667-671.

Connors, G. J., Tarbox, A. R., & Faillace, L. A. (1993). Changes in alcohol expectancies and

drinking behavior among treated problem drinkers. *Journal of Studies on Alcohol, 54(6),* 676-683.

Cooper, M. L., Peirce, R. S., & Huselid, R. F. (1994). Substance use and sexual risk taking among black adolescents and white adolescents. *Health Psychology, 13(3),* 251-262.

Cooper, M. L., Russell, M., Skinner, J. B., Frone, M. R., & Mudar, P. (1992). Stress and alcohol use: Moderating effects of gender, coping, and alcohol expectancies. *Journal of Abnormal Psychology, 101(1),* 139-152.

Corbin, W. R., McNair, L. D., & Carter, J. A. (2001). Evaluation of a treatment-appropriate cognitive intervention for challenging alcohol outcome expectancies. *Addictive Behaviors, 26(4),* 475-488.

Corcoran, K. J., & Parker, P. S. (1991). Alcohol expectancy questionnaire tension reduction scale as a predictor of alcohol consumption in a stressful situation. *Addictive Behaviors, 16(3-4),* 129-137.

Costa, F. M., Jessor, R., & Turbin, M. S. (1999). Transition into adolescent problem drinking: The role of psychosocial risk and protective factors. *Journal of Studies on Alcohol, 60(4),* 480-490.

Cruz, I. Y., & Dunn M. E. (2003). Lowering risk for early alcohol use by challenging alcohol expectancies in elementary school children. *Journal of Consulting and Clinical Psychology, 71(3),* 493-503.

Darkes, J., & Goldman, M. S. (1993). Expectancy challenge and drinking reduction: Experimental evidence for a mediational process. *Journal of Consulting and Clinical Psychology, 61(2),* 344-353.

Darkes, J., & Goldman, M. S. (1998). Expectancy challenge and drinking reduction: Process and structure in the alcohol expectancy network. *Experimental and Clinical Psychopharmacology, 6(1),* 64-76.

Davis, D. L., Bean, G. J., Schumacher, J. E., & Stringer, T. L. (1991). Prevalence of emotional disorders in a juvenile justice institutional population. *American Journal of Forensic Psychology, 9(1),* 5-17.

Dawkins, R. L., & Dawkins, M. P. (1983). Alcohol use and delinquency among black, white and Hispanic adolescent offenders. *Adolescence, 18(72),* 799-809.

Devine, E. G., & Rosenberg, H. (2000). Understanding the relation between expectancies and drinking among DUI offenders using expectancy categories. *Journal of Studies on Alcohol, 61(1),* 164-167.

Domalanta, D. D., Risser, W. L, Roberts, R. E., & Risser, J. M. H. (2003). Prevalence of depression and other psychiatric disorders among incarcerated youths. *Journal of the American Academy of Child and Adolescent Psychiatry, 42(4),* 477-484.

Dunn, M. E., Lau, H. C., & Cruz, I. Y. (2000). Changes in activation of alcohol expectancies in memory in relation to changes in alcohol use after participation in an expectancy challenge program. *Experimental and Clinical Psychopharmacology, 8(4),* 566-575.

Eggleston, A. M., Woolaway-Bickel, K., & Schmidt, N. B. (2004). Social anxiety and alcohol use: Evaluation of the moderating and mediating effects of alcohol expectancies. *Journal of Anxiety Disorders, 18(1),* 33-49.

Elder, R. W., Shults, R. A., Swahn, M. H., Strife, B. J., & Ryan, G. W. (2004). Alcohol-related emergency department visits among people ages 13 to 25 years. *Journal of Studies on Alcohol, 65(3),* 297-300.

Fromme, K., Marlatt, G. A., Baer, J. S., & Kivlahan, D. R. (1994). The alcohol skills training program: A group intervention for young adult drinkers. *Journal of Substance Abuse Treatment, 11(2),* 143-154.

Fromme, K., Stroot, E., & Kaplan, D. (1993). Comprehensive effects of alcohol: Development and psychometric assessment of a new expectancy questionnaire. *Psychological Assessment, 5(1),* 19-26.

Goldman, M. S. (1994). The alcohol expectancy concept: Applications to assessment, prevention, and treatment of alcohol abuse. *Applied and Preventative Psychology, 3(3),* 131-144.

Goldman, M. S., Christiansen, B. A., & Brown, S. A. (1982). *Alcohol Expectancy Questionnaire Adolescent Form (AEQ-A).* Author.

Goldman, M. S., Del Boca, F. K., & Darkes, J. (1999). Alcohol expectancy theory: The application of cognitive neuroscience. In K. E. Leonard, & H. T. Blane (Eds.), *Psychological theories of drinking and alcoholism* (2nd ed., pp. 203-246). New York: Guilford Press.

Goldman, M. S., Greenbaum, P. E., & Darkes, J. (1997). A confirmatory test of hierarchical expectancy structure and predictive power: Discriminant validation of the alcohol expectancy questionnaire. *Psychological Assessment, 9(2),* 145-157.

Greenbaum, P. E., Brown, E. C., & Friedman, R. M. (1995). Alcohol expectancies among adolescents with conduct disorder: Prediction and mediation of drinking. *Addictive Behaviors 20(3),* 321-323.

Grube, J. W., & Agostinelli, G. E. (1999). Perceived consequences and adolescent drinking: Nonlinear and interactive models of alcohol expectancies. *Psychology of Addictive Behaviors, 13(4),* 303-312.

Grube, J. W., Chen, M. J., Madden, P., & Morgan, M. (1995). Predicting adolescent drinking from alcohol expectancy values: A comparison of additive, interactive, and nonlinear models. *Journal of Applied Social Psychology, 25(10),* 839-857.

Gustafson, R. (1986). Can straight-forward information change alcohol-related expectancies? *Perceptual and Motor Skills, 63(2), 937-938.*

Gustafson, R. (1992). The development of alcohol-related expectancies from the age of 12 to the age of 15 for two Swedish adolescent samples. *Alcoholism: Clinical and Experimental Research, 16(4),* 700-704.

Ham, L. S., Carrigan, M. H., Moak, D. H., & Randall, C. L. (2005). Social anxiety and specificity of positive alcohol expectancies: Preliminary findings. *Journal of Psychopathology and Behavioral Assessment, 27(2),* 115-121.

Ham, L. S., & Hope. D. A. (2005). Incorporating social anxiety into a model of college student problematic drinking. *Addictive Behaviors, 30(1),* 127-150.

Ham, L. S., Hope, D. A., White, C. S., & Rivers, P. C. (2002). Alcohol expectancies and drinking behavior in adults with social anxiety disorder and dysthymia. *Cognitive Therapy and Research, 26(2),* 275-288.

Hawkins, J. D., Kosterman, R., Maguin, E., Catalano, R. F., & Arthur, M. W. (1997). Substance use and abuse. In R. T. Ammerman, & M. Hersen (Eds.), *Handbook of prevention and treatment with children and adolescents: Intervention in the real world context* (pp. 203-237). New York: John Wiley and Sons.

Hemphill, J. F. (2003). Interpreting the magnitudes of correlation coefficients. *American Psychologist, 58(1),* 78-80.

Hingson, R. W., Heeren, T., Zakocs, R. C., Kopstein, A., & Wechsler, H. (2002). Magnitude of alcohol-related mortality and morbidity among U.S. college students ages 18-24. *Journal of Studies on Alcohol, 63(2),* 136-144.

Johnson, P. B. (1994). Alcohol expectancies and reaction expectancies: Their impact on student drinking. *Journal of Alcohol and Drug Education, 40(1),* 57-68.

Johnson, C. N., & Fromme, K. (1994). An experimental test of affect, subjective craving, and alcohol outcome expectancies as motivators of young adult drinking. *Addictive Behaviors, 19(6),* 631-641.

Johnson, P. B., & Gurin, G. (1994). Negative affect, alcohol expectancies and alcohol-related problems. *Addiction, 89(5),* 581-586.

Johnson, P. B., Gurin, G., & Rodriguez, O. (1996). The self-generated alcohol expectancies of Puerto Rican drinkers and abstainers. *Substance Use and Misuse, 31(9),* 1155-1165.

Jones S., Casswell, S., & Zhang, J. F. (1995). The economic costs of alcohol-related absenteeism and reduced productivity among the working population of New Zealand. *Addiction, 90(11),* 1455-1461.

Jones, B. T., Corbin, W., & Fromme, K. (2001). A review of expectancy theory and alcohol consumption. *Addiction, 96(1),* 57-72.

Jones, B. T., & McMahon, J. (1994a). Negative alcohol expectancy predicts post-treatment abstinence survivorship: The whether, when and why of relapse to a first drink. *Addiction, 89(12),* 1653-1665.

Jones, B. T., & McMahon, J. (1994b). Negative and positive alcohol expectancies as predictors of abstinence after discharge from a residential treatment program: A one-month and three-month follow-up study in men. *Journal of Studies on Alcohol, 55(5),* 543-548.

Jones, B. T., & McMahon, J. (1996). Changes in alcohol expectancies during treatment relate to subsequent abstinence survivorship. *British Journal of Clinical Psychology, 35(2),* 221-234.

Jones, L. M., Silvia, L. Y., & Richman, C. L. (1995). Increased awareness and self-challenge of alcohol expectancies. *Substance Abuse, 16(2),* 77-85.

Kandel, D. B., Yamaguchi, K., & Chen K. (1992). Stages of progression in drug involvement from adolescence to adulthood: Further evidence for the gateway theory. *Journal of Studies on Alcohol, 53(5),* 447-457.

Kessler, R. C., Nelson, C. B., McGonagle, K. A., Edlund, M. J., Frank, R. G., & Leaf, P. J. (1996). The epidemiology of co-occurring addictive and mental disorders: Implications for prevention and service utilization. *American Journal of Orthopsychiatry, 66(1),* 17-31.

Khantzian, E. J. (1985). The self-medication hypothesis of addictive disorders: Focus on heroin and cocaine dependence. *American Journal of Psychiatry, 142(11),* 1259-1264.

Kidorf, M., & Lang, A. R. (1999). Effects of social anxiety and alcohol expectancies on stress-induced drinking. *Psychology of Addictive Behaviors, 13(2),* 134-142.

Kraus, D., Smith, G. T., & Ratner, H. H. (1994). Modifying alcohol-related expectancies in grade-school children. *Journal of Studies on Alcohol, 55(5),* 535-542.

Kushner, M. G., Sher, K. J., Wood, M. D., Wood, P. K. (1994). Anxiety and drinking behavior: Moderating effects of tension-reduction alcohol outcome expectancies. *Alcoholism: Clinical and Experimental Research, 18(4),* 852-860.

Lebeau-Craven, R., Stein, L., Barnett, N., Colby, S. M., Smith, J. L., & Canto, A. L. (2003). Prevalence of alcohol and drug use in an adolescent training facility. *Substance Use and Misuse, 38(7),* 825-834.

Lee, N. K., Greely, J., & Oei, T. P. S. (1999). The relationship of positive and negative alcohol expectancies to patterns of consumption of alcohol in social drinkers. *Addictive Behaviors, 24(3),* 359-369.

Leigh, B. C. (1989). In search of the seven dwarves: Issues of measurement and meaning in alcohol expectancy research. *Psychological Bulletin, 105(3),* 361-373.

Leigh, B. C., & Stacy, A. W. (1993). Alcohol outcome expectancies: Scale construction and predictive utility in higher order confirmatory models. *Psychological Assessment, 5(2),* 216-229.

Leonard, K. E., & Blane, H. T. (1988). Alcohol expectancies and personality characteristics in young men. *Addictive Behaviors, 13(4),* 353-357.

Lewis, B. A., & O'Neill, H. K. (2000). Alcohol expectancies and social deficits relating to problem drinking among college students. *Addictive Behaviors, 25(2), 295-299.*

Mann, L. M., Chassin, L., & Sher, K. J. (1987). Alcohol expectancies and the risk for alcoholism. *Journal of Consulting and Clinical Psychology, 55(3),* 411-417.

McGue, M. (1999). Behavioral genetic models of alcoholism and drinking. In K. E. Leonard, & H. T. Blane (Eds.), *Psychological theories of drinking and alcoholism* (2nd ed., pp. 372-421). New York: Guilford Press.

McKirnan, D. J., & Peterson, P. L. (1988). Stress, expectancies, and vulnerability to substance abuse: A test of a model among homosexual men. *Journal of Abnormal Psychology, 97(4),* 461-466.

McMahon, J., Jones, B. T., & O'Donnell, P. (1994). Comparing positive and negative alcohol expectancies in male and female social drinkers. *Addiction Research, 1(4),* 349-365.

McManus, M., Alessi, N. E., Grapentine, W. L., & Brickman, A. (1984). Psychiatric disturbance in serious delinquents. *Journal of the American Academy of Child Psychiatry, 23(5),* 602-615.

Miller, N. S., Belkin, B. M., & Gibbons, R. (1994). Clinical diagnosis of substance use disorders in private psychiatric populations. *Journal of Substance Abuse Treatment, 11(4),* 387-392.

Miller, T. R., Levy, D. T., Spicer, R. S., & Taylor, D. M. (2006). Societal costs of underage drinking. *Journal of Studies on Alcohol, 67(4),* 519-528.

Miller, P. M., Smith, G. T., & Goldman, M. S. (1990). Emergence of alcohol expectations in childhood: A possible critical period. *Journal of Studies on Alcohol, 51(4),* 343-349.

Morris, E. P., Stewart, S. H., & Ham, L. S. (2005). The relationship between social anxiety

disorder and alcohol use disorders: A critical review. *Clinical Psychology Review, 25(6),* 734-760.

Musher-Eizenman, D. R., & Kulick, A. D. (2003). An alcohol expectancy-challenge prevention program for at-risk college women. *Psychology of Addictive Behaviors, 17(2),* 163-166.

National Highway Traffic Safety Administration. Traffic safety facts 2004 data. Retrieved August 11, 2006, from http://www.nhtsa.dot.gov

Nishith, P., Mueser, K. T., Srsic, C. S., & Beck, A. T. (1997). Expectations and motives for alcohol use in a psychiatric outpatient population. *The Journal of Nervous and Mental Disease, 185(10),* 622-626.

Office of Juvenile Justice and Delinquency Prevention. Statistical briefing book. Retrieved September 16, 2005, from http://www.ojjdp.ncjrs.org

O'Hare, T. M. (1990). Alcohol expectancies and social anxiety in male and female undergraduates. *Addictive Behaviors, 15(6),* 561-566.

Pliszka, S. R., Sherman, J. O., Barrow, M. V., & Irick, S. (2000). Affective disorder in juvenile offenders: A preliminary study. *American Journal of Psychiatry, 157(1)*, 130-132.

Prinz, R. J., & Kerns, S. E. U. (2003). Early substance use by juvenile offenders. *Child Psychiatry and Human Development, 33(4),* 263-277.

Ramsey, S. E., Brown, R. A., Stuart, G. L., Burgess, E. S., & Miller, I. W. (2002). Cognitive variables in alcohol dependent patients with elevated depressive symptoms: Changes and predictive utility as a function of treatment modality. *Substance Abuse, 23(3),* 171-182.

Rather, B. C. (1990). Using the alcohol expectancy questionnaire-adolescent form to predict college drinking: Long versus short forms. *Addictive Behaviors, 15(6),* 567-572.

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

Rather, B. C., Goldman, M. S., Roehrich, L., & Brannick, M. (1992). Empirical modeling of an alcohol expectancy memory network using multidimensional scaling. *Journal of Abnormal Psychology, 101(1),* 174-183.

Reese, F. L., Chassin, L., & Molina, B. S. G. (1994). Alcohol expectancies in early adolescents: Predicting drinking behavior from alcohol expectancies and parental alcoholism. *Journal of Studies on Alcohol, 55(3),* 276-284.

Regier, D. A., Farmer, M. E., Rae, D. S., Locke, B. Z., Keith, S. J., Judd, L. L., et al. (1990). Comorbidity of mental disorders with alcohol and other drug abuse: Results from the

epidemiologic catchment area (ECA) study. *Journal of the American Medical Association, 264(19),* 2511-2518.

Riggs, P. D., Baker, S., Mikulich, S. K., Young, S. E., & Crowley, T. J. (1995). Depression in substance-dependent delinquents. *Journal of the American Academy of Child and Adolescent Psychiatry, 34(6),* 764-771.

Rohsenow, D. J. (1983). Drinking habits and expectancies about alcohol's effects for self versus others. *Journal of Consulting and Clinical Psychology, 51(5),* 752-756.

Rotter, J. B. (1954). *Social learning and clinical psychology.* New York: Prentice-Hall.

Rotter, J. B., Chance, J. E., & Phares, E. J. (1972). *Applications of a social learning theory of Personality.* New York: Holt, Rinehart, and Winston.

Sayette, M. A. (1999). Cognitive theory and research. In K. E. Leonard, & H. T. Blane (Eds.), *Psychological theories of drinking and alcoholism* (2nd ed., pp. 247-291). New York: Guilford Press.

Seligman, M. E. P., Walker, E. F., & Rosenhan, D. L. (2001). *Abnormal psychology* (4th ed.). New York: Norton and Company.

Sharkansky, E. J., & Finn, P. R. (1998). Effects of outcome expectancies and disinhibition on ad lib alcohol consumption. *Journal of Studies on Alcohol, 59(2),* 198-206.

Smith, G. T., Goldman, M. S., Greenbaum P. E., & Christiansen, B. A. (1995). Expectancy for social facilitation from drinking: The divergent paths of high-expectancy and low-expectancy adolescents. *Journal of Abnormal Psychology, 104(1),* 32-40.

Stacy, A. W., Widaman, K. F., & Marlatt, G. A. (1990). Expectancy models of alcohol use. *Journal of Personality and Social Psychology, 58(5),* 918-928.

Tabachnick, B. G., & Fidell, L. S. (1996). *Using multivariate statistics* (3rd ed.). New York: Harper Collins.

Teplin, L. A., Abram, K. M., McClelland, G. M., Dulcan, M. D., & Mericle, A. A. (2002). Psychiatric disorders in youth in juvenile detention. *Archives of General Psychiatry, 59(12),* 1133-1143.

Thombs, D. L. (1993). The differentially discriminating properties of alcohol expectancies for female and male drinkers. *Journal of Counseling and Development, 71(3),* 321-325.

Tran, G. Q., Haaga, D. A. F., & Chambless, D. L. (1997). Expecting that alcohol use will reduce social anxiety moderates the relation between social anxiety and alcohol consumption. *Cognitive Therapy and Research, 21(5),* 535-553.

Tran, G. Q., & Haaga, D. A. F. (2002). Coping responses and alcohol outcome expectancies in alcohol abusing and nonabusing social phobics. *Cognitive Therapy and Research, 26(1),* 1-17.

Turner, A. P., Larimer, M. E., Sarason, I. G., & Trupin E. W. (2005). Identifying a negative mood subtype in incarcerated adolescents: Relationship to substance use. *Addictive Behaviors, 30(7),* 1442-1448.

Turner, J. C., & Shu, J. (2004). Serious health consequences associated with alcohol use among college students: Demographic and clinical characteristics of patients seen in an emergency department. *Journal of Studies on Alcohol, 65(2),* 179-183.

Ulzen, T. P. M., & Hamilton, H. (1998). The nature and characteristics of psychiatric comorbidity in incarcerated adolescents. *Canadian Journal of Psychiatry, 43(1),* 57-63.

Valdivia, I., & Stewart, S. H. (2005). Further examination of the psychometric properties of the comprehensive effects of alcohol questionnaire. *Cognitive Behaviour Therapy, 34(1),* 22-33.

Van De Luitgaarden, J., Wiers, R. W., Knibbe, R. A., & Boon, B. J. (2006). From the laboratory to real life: A pilot study of an expectancy challenge with "heavy drinking" young people on holiday. *Substance Use and Misuse, 41(3),* 353-368.

Van Kammen, W. B., Loeber, R., & Stouthamer-Loeber, M. (1991). Substance use and its relationship to conduct problems and delinquency in young boys. *Journal of Youth and Adolescence, 20(4),* 399-413.

Wasserman, G. A., McReynolds, L. S., Lucas, C. P., Fisher, P., & Santos, L. (2002). The voice DISC-IV with incarcerated male youths: Prevalence of disorder. *Journal of the American Academy of Child and Adolescent Psychiatry, 41(3),* 314-321.

Wiers, R. W., Hoogeveen, K. J., Sergeant, J. A., & Gunning, W. B. (1997). High- and low-dose alcohol-related expectancies and the differential associations with drinking in male and female adolescents and young adults. *Addiction, 92(7),* 871-888.

Wilson, J. J., Rojas, N., Haapanen, R., Duxbury, E., & Steiner, H. (2001). Substance abuse and criminal recidivism: A prospective study of adolescents. *Child Psychiatry and Human Development, 31(4),* 297-312.

Windle, M., Miller-Tutzauer, C., & Domenico, D. (1992). Alcohol use, suicidal behavior, and risky activities among adolescents. *Journal of Research on Adolescence, 2(4),* 317-330.

Zarantonello, M. M. (1986). Expectations for reinforcement from alcohol use in a clinical sample. *Journal of Studies on Alcohol, 47(6),* 485-488.

Zhang, L., Wieczorek, W. F., & Welte, J. W. (1997). The impact of age of onset of substance use on delinquency. *Journal of Research in Crime and Delinquency, 34(2),* 253-268.