Effects of Personality Traits on Predicting Substance Dependence in University Students

by

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Abstract

College students who do not successfully complete undergraduate studies by obtaining bachelor's degrees have much lower average lifetime earnings than college students who do obtain bachelor's degrees. Research suggests that one of the primary reasons for students dropping out or flunking out of undergraduate school is excessive substance use. This study used logistic regression analysis to determine the extent to which individual undergraduate students' scores for personality traits as measured in scales for psychoticism, extraversion, and neuroticism may predict probability of having a substance dependence disorder. A fourth predictor variable was each student's lie score on the same assessment. This study sought to determine how well the model classified cases for which the outcome was unknown, and to identify bivariate correlations among the four predictor variables. The results of this study revealed that of the four predictor variables, only extraversion was a statistically significant predictor of high probability of having a substance dependence disorder. The correct classification of 73% of cases affirmed that overall, the model was effective at classifying cases into one group or the other for which the outcome was unknown when all four predictor variables were included simultaneously. An unexpected bivariate correlation revealed in this study was that moderate, negative coefficients were identified for the correlation between psychoticism and lying.

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Table of Contents

Abstract……ii

Acknowledgments……..iii

List of Tables……viii

Figure……..ix

Chapter 1. Introduction……1

Health Consequences of Alcohol Dependence……....1

Additional Risks of Substance Dependence and Potential Role of Personality Traits……....4

Alcohol Dependence and Alcohol Abuse among University Students……...…5

Community College Students Compared to Students at Four-Year Institutions…….8

Personality Traits and Substance Use among University Students…….8

Statement of the Problem…….9

Research Questions……..9

Population and Sample……..10

Procedures……..11

Definition of Terms……12

Chapter 2. Review of the Literature……...16

Introduction……16

Substance Dependence, Substance Abuse, and Legal Difficulties……19

Paranoid Personality Disorder……...20

Antisocial Personality Disorder…….22

Borderline Personality Disorder……33

Histrionic Personality Disorder……..42

Narcissistic Personality Disorder……...44

Avoidant Personality Disorder……...46

Dependent Personality Disorder……47

Obsessive-Compulsive Personality Disorder…….48

Schizoid Personality Disorder……50

Schizotypal Personality Disorder……...51

Additional Considerations…….52

Issue of Not Treating Both Co-Occurring Conditions……...54

Adults and Adolescents with Developmental Disabilities…….55

Differences by Age Group…….56

Adolescents and Race Factors in Comorbidity……..57

Asian-Americans & Pacific Islanders……57

Gay, Lesbian, Bisexual, and Transgender (GLBT) Community……...58

Varying of Outcomes in Different Nations and Different Cultures……...58

Vocational and Occupational Impact and Outcomes…….59

Conclusion…….62

Chapter 3. Methodology……64

Introduction……64

Independent / Predictor Variables and Dependent / Criterion Variable……64

Identification and Justification of Measures……..65

The Adult Substance Abuse Subtle Screening Inventory (SASSI-3)……65

The Eysenck Personality Questionnaire – Revised (EPQ-R)……69

The *P* scale, Machiavellianism, and Aggression……...…73

Data Analysis……75

Expected Results……78

Chapter 4. Results of the Study……..79

Introduction……79

Preliminary Analysis……..79

Logistic Regression Analysis……80

Chapter 5. Conclusions and Recommendations……84

Summary of the Purpose of the Study……...84

Summary of the Research Procedure……84

Discussion and Interpretation of the Results……86

Conclusions……91

Implications and Recommendations……..92

References……..95

Appendix (Informed Consent)……112

List of Tables

Table 1 Problems Accompanying Antisocial Personality Disorder……..28

Table 2 Multinomial Logistic Regression Examining Borderline Personality Disorder (BPD) as a Predictor of Treatment Dropout Rate Relative to Treatment Completion….36

Table 3 Frequencies of DSM-IV Personality Diagnoses in Psychiatric Patients Presenting with Anger, Aggression, and Suicidal Ideation……....50

Table 4 Reliabilities of the EPQ-R with Regard to Gender……..……74

Table 5 Intercorrelations of Variables of the EPQ-R for Males and Females….....74

Table 6 EPQ-R Test-Retest Reliabilities……...75

Table 7 Coefficients for the Contribution of Each Variable to the Model in this Study……...81

Table 8 Pearson Correlation Coefficients for the Predictor Variables in this Study…….83

Figure

Figure Relationship of Extraversion-Introversion and Neuroticism Dimensions to the Galen-Kant-Wundt Temperament Scheme……72

CHAPTER 1. INTRODUCTION

Health Consequences of Alcohol Dependence

Alcohol dependence is widespread among individuals of all age groups from adolescence to the elderly. The condition affects members of all socioeconomic stratum, and the health consequences of alcohol dependence are vast (Cargiulo, 2007). Alcohol dependence results in elevated risk for multiple diseases and conditions, which include cardiovascular disease, psychiatric conditions, malignant neoplasms, and neurologic impairment. Resulting neurologic impairment is often in the form of deficits in "working memory, cognitive processing of emotional signals, executive functions, visuospatial abilities, and gait and balance" (Cargiulo, 2007, p. S1). In the year 2000, alcohol use accounted for 85,000 deaths in the U.S. This comprised approximately 3.5% of all deaths in the nation (Cargiulo, 2007). Alcohol consumption ranked behind only tobacco use and poor diet/physical inactivity among causes of behavioral deaths in the nation (Cargiulo, 2007).

Approximately two-thirds of people with alcohol dependence meet the diagnostic criteria for alcohol abuse as well (Hasin & Grant, 2004). Nelson and Kessler (1998) noted that alcohol dependence often begins with alcohol abuse, followed by impaired control, increased tolerance, and ultimately a physiologically-based dependence. Men are nearly three times more likely than women to have alcohol dependence, and the condition is more prevalent in young adults between the ages of 18 and 29 than in any other age group (Grant, Dawson, & Stinson, 2004). Within this age group are traditional undergraduate university and college students. In addition, alcohol dependence is often undiagnosed though present in patients. For example, only approximately half of patients who met the diagnostic criteria for alcohol dependence were given this diagnosis according to one study (Moore & Malitz, 1986).

Excessive alcohol consumption not only results in accidents, severe injuries, and deaths from driving under the influence, but also in "direct adverse effects on the nervous and cardiovascular systems as well as the liver … specific cancers … increased risk of suicide, and children of women who drink while pregnant being born with fetal alcohol spectrum disorders" (Cargiulo, 2007, p.S5). Vinson, Maclure, and Reidinger (2003) examined acute injury cases in emergency rooms, and found that consuming one to two alcoholic beverages within six hours doubles one's chances of having an acute injury, consuming three to four alcoholic beverages increases the likelihood of having an acute injury by six times, and consuming five to six drinks increases one's chances of having an acute injury by ten times. Intentional self-injury is 34 times more likely when one is under the influence of alcohol than when one is not under the influence of alcohol, and alcohol consumption increases the likelihood of hospital re-admission for new trauma (Vinson, Borges, & Cherpitel, 2003). In 2004, 16,694 known traffic fatalities occurred in the United States in crashes in which alcohol was involved, and approximately 248,000 individuals were injured in crashes in which alcohol was involved (National Highway Traffic Safety Administration, 2005). Consumption of alcoholic beverages results in lowered coordination and decreased balance, slowed reaction time, diminished attention, judgment and perception, as well as the residual effect of what is commonly called being "hungover" (Cherpital, Bond, & Ye, 2006).

Several studies have indicated that alcohol dependence results in brain damage and neurological impairment. For example, Pfefferbaum, Sullivan, and Mathalon (1997) conducted research on frontal lobe volume loss in older individuals with alcohol dependence, observing such volume loss by means of magnetic resonance imaging. Pfefferbaum, et al. (1997) found that alcohol dependence is significantly related to diminished cortical gray matter volume, as

well as sulcal and ventricular enlargement. Cerebral blood flow is lowered and weakened among individuals with alcohol dependence when compared to persons who are not alcohol dependent (Suzuki, Oishi, & Van Der, 2002). This diminished cerebral blood flow in the medial frontal gyrus often results in decreased working memory (Noel, Sferrazza, & Van Der, 2002). Not only do such memory deficits make staying on task at work or in academic settings more difficult, individuals who have sustained memory deficits find short-term abstinence from alcohol use to be an increased challenge (Noel, et al., 2002). Grant, Dawson, and Stinson (2004) found that during spatial working memory tasks, individuals with alcohol dependence experience and display reduced activation of the parietal and frontal cortices as compared to persons who do not have alcohol dependence. Monnot, Lovallo, and Nixon (2002) found that people with substance dependence tend to have lowered abilities to understand affective prosody, which is a nonlinguistic feature of language signifying attitudes and emotions, and a diminished capacity to perceive nonverbal cues such as facial expressions.

Several studies have revealed that limited (not excessive) alcohol intake actually lowers one's risk of cardiovascular disease and ischemic stroke. For example, Corrao, Rubbiati, and Bagnardi (2000) found that the risk of cardiovascular disease is lowered by 20% when one consumes alcohol in a quantity up to 20 grams per day. Conversely, those who drink alcoholic beverages in quantities exceeding 89 grams of alcohol per day increase the likelihood of developing coronary heart disease, and having seven or more drinks per day nearly triples one's chance of experiencing ischemic stroke (Sacco, Elkind, & Boden-Albala, 1999). The increased risk for ischemic stroke is due in part to elevated blood pressure, which frequently accompanies excessive alcohol consumption (Moore, Levine, & Southard, 1990). According to Randin, Vollenwider, and Tappy (1995), alcohol-induced activation of the sympathetic nervous system is

a physiologic mechanism potentially interceding in the adverse cardiovascular effects related to excessive consumption of alcoholic beverages.

Excessive drinking is also a contributing factor to diseases of the liver. This may include progressive conditions, such as the appearance of steatosis and steatohepatitis, moving on to fibrosis, and ultimately cirrhosis of the liver. Men who drink more than 60 grams of alcohol daily and women who drink more than 20 grams of alcohol daily are at markedly increased risk for liver disease, and nearly nine in ten alcohol dependent indivuduals have hepatic steatosis. Though hepatic steatosis is remediable, and will ebb if the individual begins abstinence from alcohol, up to 15% of people with alcoholic steatosis will develop cirrhosis of the liver (Adachi & Brenner, 2005). A wide range of negative health consequences exists for individuals who consume alcohol excessively, and the National Institute for Alcohol Abuse and Alcoholism (2012) has determined that in many cases, such excessive consumption begins while individuals are undergraduate students at colleges and universities. However, the greatly increased risk of disease and injury is only one consequence of excessive alcohol use among young adults on college campuses (Gibralter, 2008).

Additional Risks of Substance Dependence and the Potential Role of Personality Traits

The ability to more accurately predict the effects of personality traits on substance dependence among university students specifically is a critical issue in rehabilitation for several reasons, which include:

1) Both Axis II personality disorders and substance dependence are debilitating conditions (United States Social Security Administration, 2011).

2) There is greatly decreased likelihood of successful treatment of one condition without recognition and treatment of the other in cases where they coexist, yet existing research

does not adequately indicate the extent to which comorbidity exists between *specific* personality traits associated with Axis II disorders and specific substance use disorders, including alcohol dependence (Sher, et al., 2011).

3) Substance dependence and substance abuse are major obstacles to retention efforts at universities and colleges, costing families and taxpayers exorbitant amounts of money annually, and are prevalent causes of college and university students flunking out (Gibralter, 2008).
4) Alcohol dependence often begins with alcohol abuse while individuals are students at colleges and universities, where a deeply embedded culture exists in which many students perceive excessive drinking to be both a rite of passage and a key component of social approval (National Institute on Alcohol Abuse and Alcoholism, 2012).
5) Substance dependence has negative effects academically, occupationally, legally, financially, emotionally, and interpersonally for individuals with the condition (Substance Abuse and Mental Health Administration, 2012).

Alcohol Dependence and Alcohol Abuse among College and University Students

Nearly all college students are affected by college drinking, and approximately 80% of college students drink alcohol (National Institute on Alcohol Abuse and Alcoholism, 2013). Approximately half of the college students who drink do so through binge drinking, and according to the NIAAA (2013):

1. An average of five college students between the ages of 18 and 24 die every day in the United States as a result of unintentional alcohol-related injuries, and an average of 1,641 college students in this age range are injured daily while under the influence of alcohol (Hingson, et al., 2009).

2. Nearly 700,000 college students annually are assaulted by other students who are under the influence of alcohol; and of these, 97,000 are sexually assaulted or date-raped (Hingson, et al., 2009).
3. Every day, an average of 1,096 college students engage in unprotected sex while drinking, and in over one fourth of these instances, students indicated having been so intoxicated as to not know if they had consented to sexual activity (Hingson, et al., 2002).
4. One fourth of college students incur negative academic consequences directly related to drinking (Engs, et. al., 1996; Presley, et al., 1996; and Weschsler, et al., 2002).
5. Over 150,000 college students annually incur health problems directly related to alcohol use (Presley, et al., 1998).
6. 1.2 to 1.5 percent of college students report having attempted suicide while drinking or abusing other substances (Presley, et al., 1998).
7. Over 9,200 college students under 24 years of age drive drunk on an average day (Hinson, 2009), one in twenty undergraduate college students is involved with the police annually because of drinking, and an average of over 300 college students under the age of 25 are arrested every day in the United States for alcohol related violations – mainly driving under the influence and public intoxication (Hingson, 2002).
8. A majority of college and university administrators whose institutions have high drinking levels reported "moderate" or "major" problems with campus property damage from students who had been drinking (Wechsler et al., 2002).

The NIAAA (2013) reported that many students who abuse alcohol also abuse other substances, and that psychiatric disorders frequently accompany alcohol dependence. The National Comorbidity Survey (1997) found that individuals with alcohol dependence were up to

three times more likely than others to have mood and anxiety disorders. The NIAAA (2013) stated that while the connection between some specific mental health conditions and substance dependence is well documented, research on symptoms and traits of persons with mental health issues, and the relevance of those symptoms and traits to substance dependence, is needed. A better understanding of what specifically predicts substance dependence would possibly allow for treatment and intervention to be tailored more effectively for individuals, so that better outcomes academically and vocationally could potentially be attained (NIAAA, 2013).

Other research in the U.S. and abroad has yielded similar results. In a study to determine patterns of binge drinking among university students in China, Kim, et al. (2009) found that excessive drinking was strongly correlated to attempts to relieve stress, that excessive use of alcohol is a health hazard to students at Chinese universities, and should be addressed by university authorities. Kim, et al. (2009) also found that among Chinese university students, binge drinking occurs to a greater extent among male students than among female students. In the study, it was found that after one year in college, students recorded greatly increased rates of drinking among both genders. This suggests that being in an environment in which binge drinking is common influences university students to begin this behavior. A random sample consisted of 411 second year university students, and 2,630 freshmen university students (Kim, et al., 2009).

While male university students in the Kim (2009) study were more apt to engage in binge drinking than female university students, women are more likely to become intoxicated at a faster rate, to have higher blood alcohol levels than men when having consumed the same amount, and are more susceptible than men to the effects of binge drinking – including when body weight is the same (Murugiah, 2012). In the Murugiah (2012) study, 20 female students at

an Australian university were asked about how they perceive binge drinking. It was discovered that not only is binge drinking common, but that these university students' idea of what comprised binge drinking was not comparable to the public health definition (Murugiah, 2012). This indicates a lack of understanding among university students with regard to the quantity of alcohol consumed which constitutes binge drinking.

Community College Students Compared to Students at Four-Year Institutions

In a study conducted in part to assess the prevalence of excessive alcohol use and related harm among community college students, Wall, BaileyShea, and McIntosh (2012) analyzed data garnered through the administration of the Core Alcohol and Other Drug Use Survey to over 7,900 students at community colleges in the United States. It was found that 47% of students between the ages of 17 and 24 engage in heavy alcohol consumption, and 23% of students ages 25 and up engage in heavy alcohol consumption. The 47% of community college students from ages 17 to 24 who engage in heavy alcohol consumption is similar to the rate at four-year universities (Wall, BaileyShea, & McIntosh, 2012).

Personality Traits and Substance Use (Particularly Alcohol Use) Among University Students

There is a lack of information regarding the co-occurrence of personality disorders, or even specific personality traits, and alcohol use disorders in the United States (Grant, et al., 2006). According to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (2000, p. 685), personality disorders comprise a group of personality types marked by distress or disability, and deviate from social norms and expectations. Personality disorders are included in the DSM-IV-TR (2000) as Axis II mental disorders, and "personality" refers to enduring mental and behavioral traits among individuals. Therefore, personality disorders are

present when one's traits result in difficulty in control of impulses, cognition, emotiveness, or interpersonal functioning. While this study did not attempt to identify disorders among subjects, it did seek to identify specific traits which are predictive of substance dependence among undergraduate university students.

Certain personality traits are likely to result in a lowered capacity to effectively cope with stressors, and are often related to serious personal and social problems (Kernberg, 1984), even when the traits are too few to constitute a diagnosis of a disorder. Learning if and how personality traits predict alcohol dependence may prove beneficial for licensed professional counselors, rehabilitation counselors, and substance abuse treatment specialists. There are extremely high rates of recidivism; and personality traits such as inability to cope effectively with stressors increase the likelihood of relapse when both conditions are not treated (Higley, et al. 2011).

Statement of the Problem

There is a lack of information related to the influence of personality traits on predicting substance dependence among university students (Sher, et al., 2011). Excessive substance use on college campuses has a severely negative impact on retention rates of undergraduate students, and accounts for one fourth of students who flunk out or are otherwise unable to continue their studies (Gibralter, 2008).

Research Questions

For this study, the following research questions were developed:

Research Question One. To what extent can substance dependence (high or low) be predicted from individuals' scores on the Psychoticism, Extraversion, Neuroticism, and Propensity to Lie scales (P, E, N, and L)? The null hypotheses were stated as follows:

Ho1: There is no statistically significant relationship between probability of having a substance dependence disorder and (a) level of psychotic traits in undergraduate university students, (b) level of extraverted traits in undergraduate university students, (c) level of neurotic traits in undergraduate university students, and (d) level of propensity to lie in undergraduate university students.

Research Question Two. How well does the model classify cases for which the outcome is unknown? The null hypothesis was stated as follows:

Ho2: The model is not effective at classifying cases into one group or the other for which the outcome is unknown.

Research Question Three. What are bivariate correlations among the four predictor variables, (1) Psychoticism (*P*), (2) Extraversion (*E*), (3) Neuroticism (*N*), and (4) Propensity to Lie (*L*)?

Population and Sample

A convenience sampling strategy was utilized. Ninety-seven undergraduate students at a major land-grant university in the Southeastern United States who are enrolled in one of the programs in the Department of Special Education, Rehabilitation, and Counseling, and who were at least 19 years of age comprised the subjects examined in this study. Students who were under the age of 19 were not included among the subjects because the age of majority in the state in which the study took place is 19. The sample number was based on a 10% margin of error and a 95% confidence interval, with equal probabilities (50%) of an individual being classified as having a high probability of having a substance dependence disorder or low probability of having a substance dependence disorder. A convenience sample was taken because a randomized sampling of undergraduate students representative of the entire university would have been difficult to obtain. Furthermore, even if random sampling had been feasible, it would not have

represented all undergraduate students nationally or even regionally. For example, students such as those at community colleges, private institutions, institutions affiliated with religious organizations, and commuter institutions in urban areas would not have been represented.

Procedures

To obtain permission to administer the two assessments needed in order to complete this study, faculty members within the Department of Special Education, Rehabilitation, and Counseling (SERC) were contacted, and permission was requested to administer the assessments in their undergraduate classes. Because professors in SERC know the researcher, there was a greater likelihood of such professors being amenable to allowing time in one or more of their undergraduate classes for the administration of the assessments. During spring semester of 2013, after Institutional Review Board (IRB) approval was obtained, instructors were contacted, and dates and times for the administration of the two assessments were negotiated. As there was a possibility that some undergraduate students could have been administered the assessments more than once, students were asked to not take the assessments if they had already done so. Only one student had not yet reached the age of 19; therefore, this student did not participate in this study. Informed consent was obtained from every participant in the study. Informed consent documents were collected separately from the assessments in order to minimize risk of jeopardizing anonymity. The assessments were administered until ninety-seven undergraduate students had taken both assessments.

In order to assure that no student took the assessments more than once, the researcher later checked and verified that no signature on any two of the ninety-seven signed informed consents was the same. To assure the comparison of the results of each assessment to the correct corresponding assessment, a single, separate number was written on each set of two assessments

prior to administration. This was necessary since no identifying information such as names was collected. Students were instructed to not put any potentially identifying demographic information on the EPQ-R assessment, and to identify only gender on the SASSI-3 assessment. The need to know the gender only on the SASSI-3 only existed because there is a separate scoring procedure for males and females on the SASSI-3.

Definition of Terms

Note: Grove, McBride, and Slade (2010) found that research indicates alcohol dependence is not an appropriate diagnostic category, and that the distinction made between alcohol dependence and alcohol abuse in the DSM-IV and DSM-IV-TR serves as a point of strong contention in the literature. The DSM-V, which is scheduled to be released in May of 2013, is expected to combine alcohol abuse and alcohol dependence into one disorder, with the notion that alcohol abuse is a less severe form of alcohol dependence. Grove, McBride, and Slade (2010) noted that "the expected release of the DSM-V has renewed the longstanding debate around whether alcohol use disorders are best conceptualized as dimensional or categorical constructs" (p.45).

For the purposes of this study, alcohol dependence and alcohol abuse were defined within the following list of terms:

> **Alcohol Abuse**: A condition present when a maladaptive pattern exists leading to clinically significant impairment or distress, as manifested by one or more of the following within a 12-month period: (1) Recurrent alcohol use resulting in failure to meet major role obligations at work, school, or home (e.g., repeated work absences or poor work performance related to alcohol use, alcohol-related school absences, suspension, or expulsions from school, neglect of children or household), (2)

Recurrent alcohol use in situations in which it is physically hazardous (e.g., driving an automobile or operating a machine when impaired by alcohol use), (3) Recurrent alcohol-related legal problems (e.g. arrests for alcohol-related disorderly conduct, DUI, or public intoxication, (4) Continued alcohol use despite having persistent or recurrent interpersonal or social problems caused or exacerbated by the effects of alcohol (e.g. arguments with significant other about consequences of intoxication, physical fights). The symptoms must have never met the criteria for Alcohol Dependence. (American Psychiatric Association, 2000, p. 199)

Alcohol Dependence: A condition present when three or more of the seven following criteria are manifested during a 12-month period: (1) Tolerance, (2) Withdrawal of symptoms or clinically defined Alcohol Withdrawal Syndrome, (3) Use of alcohol in larger amounts or for longer periods than intended, (4) Persistent desire or unsuccessful efforts to cut down on alcohol use, (5) Time is spent obtaining alcohol or recovering from its effects, (6) Social, occupational, and recreational pursuits are given up or reduced because of alcohol use, (7) Use is continued despite knowledge of alcohol-related harm, be it physical or psychological (American Psychiatric Association, 2000, p. 197)

Comorbid: The simultaneous presence of two or more medical, psychological, or emotional conditions

EPQ-R: The Eysenck Personality Questionnaire – Revised. The EPQ-R is an assessment comprised of scales which measure the major dimensions of personality. The scales include three dimensions of personality, which are psychoticism (*P*),

extraversion (*E*), and neuroticism (*N*). There is also a lie scale (*L*), which measures tendencies on the part of some subjects to "fake good."

Extraversion: Extraversion is one of the personality traits measured in scales on the EPQ-R. Subjects with high *E* scores "typically enjoy parties, have many friends, need to have people to talk to, do not like reading or studying alone, are apt to crave excitement, take chances, act impulsively, have a fondness for practical jokes, always have a ready answer, generally like to laugh and be merry, prefer to keep moving and doing things, tend to be aggressive and lose temper easily, do not keep feelings under tight control, and are not always reliable" (Eysenck & Eysenck, 1994, p. 3). Subjects with low scores on the *E* scale are more likely to be introverts, and typically "are retiring, introspective, fond of books rather than people, reserved and distant except toward intimate friends, tend to plan ahead and distrust the impulse of the moment, are not fond of excitement, take matters of everyday life with proper seriousness, enjoy a well-ordered mode of life, keep feelings under close control, seldom behave in an aggressive manner, do not lose temper easily, are reliable though somewhat pessimistic, and place great value on ethical standards" (Eysenck & Eysenck, 1994, p.3)

Machiavellianism: a view that the world is amoral and that any means, however unscrupulous, can justifiably be used in reaching one's objectives

Neuroticism: One of the personality traits measured in scales on the EPQ-R. Eysenck and Eysenck (1994) noted that high-*N* persons may accurately be described as "worriers," that their "main characteristic is a constant preoccupation with things

that might go wrong, and (he or she) has a strong emotional reaction to anxiety of these thoughts" (p.3).

Personality traits: Enduring or persistent characteristics of an individual's personality which can explain and predict consistencies and regularities in one's behavior, and explain differences in individuals. Traits such as neuroticism, extraversion, and psychoticism are hypothesized constructs.

Psychoticism: One of the personality traits measured in a scale on the EPQ-R. Eysenck and Eysenck (1994) maintain that psychoticism is present when the subject "may be described as solitary, not caring for people, often troublesome, not fitting in anywhere, cruel, inhumane, lacking in feeling and insensitive, hostile toward others, liking odd and unusual things" (p.4). Often, feelings of guilt are lacking in those with high *P* scores, and there is little or no concern with following rules.

SASSI-3: The Substance Abuse Subtle Screening Inventory-3. The SASSI-3 is a psychological screening instrument for substance use disorders. Specifically, the instrument identifies individuals as either having "a high probability of substance dependence" or having "a low probability of substance dependence." This determination is based on results from ten subscales, which include two face valid scales and eight true/false scales.

CHAPTER 2. REVIEW OF THE LITERATURE

In Chapter 1, there was a discussion about debilitating health risks and other risks associated with substance dependence, with a focus on excessive alcohol consumption among undergraduate college students. The relationship between personality traits and substance use among undergraduate college students was introduced, and the statement of the problem was presented. There is a lack of information related to the influence of personality traits on predicting substance dependence among undergraduate students. The impact of alcohol dependence on retention efforts at colleges and universities was documented. Chapter 1 identified the research questions developed for this study, outlined procedures, and included a list of terms with definitions. This chapter presents a review of studies on substance dependence in general and among college students in particular. The following topics are included in this chapter.

1. Review of documentation regarding increased likelihood of legal, vocational, and interpersonal difficulties resulting from alcohol dependence
2. Review of traits and characteristics associated with each of the ten Axis II personality disorders as identified by the current and revised text of the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR), which are (1) Paranoid Personality Disorder, (2) Schizoid Personality Disorder, (3) Schizotypal Personality Disorder, (4) Antisocial Personality Disorder, (5) Borderline Personality Disorder, (6) Histrionic Personality Disorder, (7) Narcissistic Personality Disorder, (8) Avoidant Personality Disorder, (9) Dependent Personality Disorder, and (10) Obsessive-Compulsive Personality Disorder

3. Review of studies on the extent to which traits associated with each Axis II personality disorder have been proven to be connected to substance dependence, particularly among college and university students
4. Review of consequences of not addressing both conditions (problematic levels of specific personality traits and substance dependence) when both are present
5. Review of factors related to individuals with developmental disabilities, personality traits, and substance dependence
6. Age group factors in the co-occurrence of problematic personality traits and substance dependence
7. Gender factors in the co-occurrence of problematic personality traits and substance dependence
8. Race factors in the co-occurrence of problematic personality traits and substance dependence
9. University and college factors in the co-occurrence of problematic personality traits and substance dependence
10. Factors related to the co-occurrence of problematic personality traits and substance dependence in the gay, lesbian, bisexual, and transgender (GLBT) community
11. Factors related to treatment efficacy in different settings, which relate to generalizability of the predictive validity of personality traits with regard to substance dependence
12. Vocational and occupational impact and outcomes

Review of the Literature

Many individuals begin abusing alcohol or increase abuse of alcohol as college students, and binge drinking is a frequent occurrence among college students (National Institute on Alcohol Abuse and Alcoholism, 2012). There is a lack of information regarding the co-occurrence of personality disorders and alcohol dependence in the United States (Grant, et al., 2006). Prior to examining personality disorders individually, traits associated with each, and the relationship between personality disorder traits and substance dependence among college students specifically, it is necessary to determine whether these often comorbid conditions adversely affect individuals legally and otherwise. This information is potentially beneficial for licensed professional counselors, rehabilitation counselors, and substance use treatment specialists, considering the dismal success rates of substance use treatment programs (Kirn, 2006). The vocational, legal, and interpersonal difficulties experienced by people with stressors and traits associated with personality disorders, and compounded through substance dependence, warrants further examination (Higley, et al., 2011).

People with substance dependence are more likely to have Axis II personality disorders than are people in the general population (Morcillo, et al., 2012). Public Law 104-121, the Contract with America Advancement Act of 1996, ended the authority of the Social Security Administration to grant benefits to individuals whose primary diagnosis was one of substance abuse or substance dependence (Brucker, 2007). This does not negate the fact that Axis II personality disorders, as well as substance use disorders, are debilitating conditions with multiple potentially negative consequences. College students who abuse substances, like others who abuse substances, often become substance dependent and incur "rap sheets," or arrest records, which may permanently limit their career options (Pogarsky, 2006).

Substance Dependence, Substance Abuse, and Legal Difficulties

According to a 2010 report released by the National Center for Addiction and Substance Abuse (CASA) at Columbia University, 85% of prison inmates in the United States meet one or more of the following scenarios:

1) the diagnostic criteria for substance abuse or substance dependence
2) were under the influence of a substance or substances when they committed the crimes resulting in their incarcerations
3) committed the crimes for which they are incarcerated in order to obtain funding for the purchase of substances
4) were incarcerated on substance violations

The referenced CASA report (2010) stated that in 2006, 78% of violent crimes, 83% of property crimes, and 77% of public order disturbances, immigration or weapons offenses, and probation or parole violations involved substances.

Kevin Pangburn (2008), the Director of the Division of Mental Health and Substance Abuse of the Kentucky Department of Corrections, reported that 80% of the inmates in Kentucky jails and prisons have substance use problems. In Louisiana, which has the nation's highest rate of incarceration, 80% of inmates have substance use problems according to Ouachita District Attorney Jerry Jones (2009). Weedon (2005) noted that evidence exists that substance use and crime are intrinsically linked, and that between 70% and 85% of state inmates have histories of serious alcohol or drug problems. Jones stated that among juveniles, 60% of males who are arrested and 46% of females who are arrested tested positive for substance use at the times of their detainments. The negative consequences of substance abuse and substance dependence are well documented.

Axis II Personality Disorders, Associated Traits, and Connection to Substance Dependence

Paranoid Personality Disorder

Paranoid Personality Disorder is a condition affecting between 0.5% and 2.5% of the general population (American Psychiatric Association, 2000). According to the DSM-IV-TR, paranoid personality disorder exists among individuals who are overly suspicious and mistrustful, and who believe others' motivations are malicious (American Psychiatric Association, 1994). People with this condition feel as if they are right and are mistreated, and perceive others to be manipulative, devious, and secretly deceptive (Hayward, 2007).

People with paranoid personality disorder are frequently "injustice collectors," and assume abuse has taken place and/or is forthcoming (Beck & Freeman, 1990). Dimagio, Catania, Carcione, and Niccolo (2006) noted those with paranoid traits often hide their intentions and operate furtively with a goal of identifying what they believe others are plotting. Dimagio, et al. (2006) stated that one who actually has a diagnosis of paranoid personality disorder will likely deny having taken this stance, or claim that taking such a stance is done for self-protection.

People with paranoid personality disorder are likely diffident and angry over others' having cheated or deceived them, whether or not they have actually been cheated or deceived (Salvatore, Niccolo & Dimaggio, 2005). Bernstein, et al. (1993) noted the condition is more prevalent in men than in women; and it is more common in refugees, inmates, immigrants, the hearing impaired, and the elderly than in the general population. Frances (2000) reported the condition is also more prevalent among minorities and relatives of people with schizophrenia. Pathological jealously and suspicion regarding perceived infidelity of spouses or significant others is frequent (Carrasco & Lecic-Tosevski 2000). Those with paranoid personality traits are prone to feel

slighted, and to make denigrating comments to those with whom they are involved; and those treating, teaching, or in personal relationships with them must be prepared for accusations, threats of reporting one to "higher ups," and/or threats of legal action (Meissner 1996).

People who have paranoid personality disorder are not likely to forgive perceived insults, and are apt to hold grudges (American Psychiatric Association, 2000). Frances (2000) noted that alcoholism frequently accompanies paranoid personality disorder, and that substance abuse to cope with the anxiety generated can potentially lead to substance dependence. Frances (2000) stated that any changes or elevation of stress levels can result in occupational, interpersonal, or financial adversity because of the tendency to amplify even the smallest problems. Questioning those with paranoid personality traits must be done carefully, because asking about substance use or other issues may provoke hostility. The individual may fear that information disclosed will likely be used against him or her (American Psychiatric Association, 2000, p. 694).

Mills, Gilbert, Bellew, McEwen, and Gale (2007) conducted a study of 131 university students in which paranoid ideation was one of the traits measured. Mills, et al. (2007) noted that paranoid beliefs are often connected to an individual's tendency to place blame on others because aggression and anger are defense mechanisms, which are part of an ingrained and heightened sensitivity. Mills et al., (2007) found that paranoid thought is correlated with depression. However, a paranoid belief system is correlated with self-criticism among university students. Paranoid ideation in university students often accompanies an extremely high level of self-criticism; and difficulty in being self-reassuring and benevolent to the self. Mills (2007) found that self-hatred is a valid predictor of paranoid beliefs, including when controlling for depression in the research.

Tone, Goulding, and Compton (2001) tested the hypothesis that normal-range paranoid ideation is apt to be experienced by persons with perceptual anomalies and anxiety in social settings. The goals were to determine whether social anxiety and presence of perceptual anomalies would predict paranoid thought patterns independently, and would interact to increase the likelihood of paranoid traits. While no significant interaction was noted, Tone, et al. (2001) found that perceptual aberrations and social anxiety with negative affect were predictors of paranoid thinking. Negative affect indicates that perceptual aberration and anxiety add to paranoia rather than interact to affect levels of paranoid ideation among college students (Tone, et al., 2001).

Antisocial Personality Disorder

Antisocial Personality Disorder is another Axis II condition. According to the DSM-IV-TR, Antisocial Personality Disorder is characterized by a pattern of having very little or no respect for the rights of others, and engaging in violation of the rights of others beginning around the age of 15 (American Psychiatric Association, 2000, p. 706). Antisocial personality traits frequently co-occur with substance use disorders, including alcohol abuse and alcohol dependence (Kessler et al., 1997). Persons with traits associated with antisocial personality disorder are 21 times more likely than those without traits associated with the condition to have diagnoses of substance use disorders (Helzer & Pryzbeck, 1988). According to the DSM-IV-TR (2000), approximately 3% of males and 1% of females have antisocial personality disorder, though many more have antisocial personality traits without meeting the criteria for a diagnosis. Some of the traits include irritability and aggressiveness, lack of conformation to social norms, continuous committing of illegal acts, impulsivity, deception, the use of aliases, irresponsibility, and disregard for the safety of oneself or others, as well as a lack of remorse over having hurt or

cheated others (American Psychiatric Association, 2000, p. 706). In addition, long-term patterns of manipulation and exploitation are commonly associated with antisocial personality disorder (Li, et al., 2011).

Driving while intoxicated is an example of an illegal act one commits with a lack of regard for the safety of oneself or others. Drunk driving is a high-risk behavior not only associated with alcohol abuse or addiction, but also with concurrent behavioral tendencies and personality traits (Stacy, Newcomb, & Bentler, 1991). Dickman (1990) described dysfunctional impulsivity and NEO-PI (Neuroticism-Extraversion-Openness Personality Inventory) impulsivity as conditions related to engaging in rapid, error prone information processing. Acting without forethought is often associated with drinking and driving (Eensoo, Paaver, Pulver, Harro, & Harro, 2004).

In the 2001 – 2002 National Epidemiologic Survey on Alcohol and Related Conditions, Grant, et al. (2006) examined the co-occurrence of alcohol and drug use disorders and seven personality disorders. Utilizing 43,093 participants from throughout the United States, Grant, et al. (2006) determined that 28.6% of subjects exhibiting alcohol abuse or alcohol dependence had one or more personality disorders, and 47.7% of subjects with other substance abuse or dependence had one or more personality disorders. Grant, et al. (2006) revealed associations between personality disorders and alcohol and other substance use disorders to be extremely positive and significant (Grant, et al., 2006). Alcohol abuse and dependence were particularly strongly aligned with antisocial personality disorder, dependent personality disorder, and histrionic personality disorder, respectively. Substance abuse and dependence (of substances other than alcohol) were most highly paired with antisocial personality disorder, histrionic personality disorder, and dependent personality disorder, respectively.

Women with both alcohol and other substance use disorders were more likely than men to have obsessive-compulsive personality disorder, histrionic personality disorder, schizoid personality disorder, and antisocial personality disorder (Grant, et al., 2006). Women with these disorders were significantly more likely ($p < .04$) than men to have alcohol and drug use disorders (Grant, et al., 2006). The connection between substance abuse and antisocial personality disorder among women is noteworthy, and somewhat surprising. It is surprising considering that men are approximately three times more likely than women to have diagnoses of antisocial personality disorder (Grant, et al., 2006). Men, conversely, had stronger associations between obsessive-compulsive disorder, histrionic personality disorder, schizoid personality disorder, and antisocial personality disorder comorbidly with substance abuse and substance dependence disorders other than alcohol ($p < .04$) (Grant, et al., 2006). Grant, et al. (2006) found comorbidity of alcohol and drug use disorders to be rampant among the U.S. population, signifying the need for further research of this relationship and treatment implications.

Goldstein, et al. (2007) found that antisocial personality disorder and syndromal adult antisocial behavior is prevalent among adults who are substance dependent, and that individuals with alcohol use disorders are less likely to have successful treatment outcomes when excessive alcohol use occurs in conjunction with antisocial behavioral syndromes. Goldstein, et al. (2007) also determined that antisocial behavioral traits are linked to more severe alcohol use disorders. Since, according to Goldstein, et al. (2007), there was no previous comparative data available about the connection between antisocial traits and clinical characteristics of substance dependence, Goldstein, et al. (2007) examined the likelihood and correlates of antisocial traits among individuals with histories of alcohol abuse. Goldstein, et al. (2007) noted the number of episodes of alcohol abuse over the lifespan, the duration of such episodes, and alcohol

consumption using normal theory and logistic regression. It was determined that the associations between all antisocial syndromes, particularly antisocial personality disorder, are closely linked to alcohol use disorders in the general population.

There is some debate over whether antisocial traits are learned, inherited, or a combination of environment and genetics. Li, Zhao, Kranzler, Oslin, Anton, Farrer, and Gelernter (2012) conducted a two-part genetic study involving subjects with both substance dependence and antisocial personality disorder. In the Li, et al. (2012) study, "627 single nucleotide polymorphisms (SNPs) located in 179 candidate genes for addiction were analyzed in a case-control cohort and in a family-based cohort ... and the significant findings were replicated in an independent case-control cohort. One SNP, rs13134663, in the collagen XXV alpha 1 gene (COL25A1), was significantly associated with antisocial personality disorder" (p. 733). This is noteworthy because it indicates that COL25A1 is possibly connected to the presence of antisocial personality disorder, particularly when accompanied with substance dependence; and that the traits associated with antisocial personality disorder are at least partially inherited for some.

In a study comparing people with alcohol dependence who smoke cigarettes daily and commit intimate partner violence to people with alcohol dependence committing intimate partner violence who do not smoke daily, Easton, Weinberger and McKee (2008) tested eighty-five men with alcohol dependence. The subjects had all been arrested for domestic violence, and were ordered to receive treatment for substance abuse. One group consisted of daily smokers (n = 52) and one group consisted of non-daily smokers (n = 21). It was found that daily smokers not only had more days of alcohol use in the four weeks preceding the start of treatment, but that they had significantly more diagnoses of antisocial personality disorder and more legal difficulties.

A possibility for further exploration is the self-medication of anxiety by means of substance use among people with antisocial personality disorder. One study which implies self-medication through substance dependence found that the more severely addicted subjects with opiate dependence are, the more likely they are to have dependence on other drugs, and the more likely they are to have antisocial personality disorder (Shand, Slade, Degenhardt, Baillie, & Nelson, 2011). About 50% of men who have antisocial personality disorder also have an anxiety disorder (Hodgins, De Brito, Chhabra, & Cote, 2010). Hodgins, et al. (2010) sought to determine the rates of antisocial personality disorder comorbidity with anxiety disorders. Over 66% of the subjects who had antisocial personality disorder were found to have a comorbid anxiety disorder. Of these subjects, Hodgins, et al. (2010) found that the onset of the anxiety disorder for half of the subjects began prior to the age of 16.

Compared to the subjects without anxiety disorders, the subjects with anxiety disorders were more likely to have antisocial personality disorder and to have diagnoses of alcohol abuse, alcohol dependence, substance abuse, and substance dependence. Subjects with anxiety disorders and co-occurring substance dependence were also more likely to have experienced suicidal ideation and to have made suicide attempts. With anxiety disorder accompanying antisocial personality disorder, and the latter appearing in most cases during the traditional high school years, the implications for college students who may be prone to excessive substance use are expanded. Hodgins, et al. (2010) found a need for more precise treatments based upon which specific personality traits are present in conjunction with substance dependence.

Westermeyer and Thuras (2005) conducted a study to compare the presence of substance use disorders among subjects with and without antisocial personality disorder. In the study, the Diagnostic and Statistical Manual (DSM) was used to establish criteria to determine whether or

not each subject had antisocial personality disorder. Additional researchers who were unaware of these determinations gathered the rest of the data from each of 606 voluntary subjects who were enrolled in drug treatment programs at medical centers affiliated with two universities. Westmeyer and Thuras (2005) learned that the use of tobacco and illegal substances was greater in the group with antisocial personality disorder than in the group without it.

Using regression analysis, Westermeyer and Thuras (2005) found that family and legal problems were significantly more highly associated with substance abuse patients with antisocial personality disorder than with substance abuse patients without antisocial personality disorder. They also compared the presence of several substance dependence treatment indicators, such as the length of periods of abstinence and days of use in given specific time frames, but found no significant difference between the two groups. However, they did find a significantly greater occurrence of treatment indicators such as lifetime number of admissions to treatment, duration of care, and cost of care. These indicators were significantly more present among those in the group whose members had antisocial personality disorder. Table 1 displays data from Westermeyer and Thuras (2005) showing the comparison of seven categories of problems with the presence or absence of antisocial personality disorder among the subjects included in the study.

Table 1.

Psychiatric symptoms and disorders, and absence of antisocial personality disorder versus presence of antisocial personality disorder.

Psychiatric symptoms and disorders
vs. antisocial personality disorder

Characteristic	No ASPD, n=552	ASPD, n=54
(ASPD = Antisocial Personality Disorder)		
Patient rated scale of SUD severity (lifetime rating)		
(SUD = Substance Use Disorder)		
MAST/AD	27.5 (12.8)	31.5 (12.2)
(MAST/AD = Michigan Assessment-Screening Test for Alcohol and Drugs)		
Interviewer Rated Scale of SUD (Substance Use Disorder) Severity (lifetime rating)		
Family problems	3.3 (2.0)	4.4 (2.l)
Interpersonal probls.	2.8 (1.8)	3.7 (2.0)
Legal problems	0.5 (1.0)	1.5 (1.5)
Psychological sx.	10.1 (4.3)	11.8 (4.5)
Pharmacological sx.	7.6 (2.7)	8.6 (2.5)
Financial problems	3.3 (2.0)	1.8 (1.3)
Occupational probls.	2.4 (1.7)	2.8 (1.7)
M-SAPS total score	28.5 (11.3)	34.7 (12.1)
(M-SAPS = Minnesota Substance Abuse Problems Scale)		

Interestingly, one study found that no personality disorder significantly influences the outcome of depression, which is sometimes self-medicated through the use of substances (Mandelli, et al., 2012). It is noteworthy that the characteristics and attributes described as neurotic personality traits slow the course of depression, making recovery periods longer on average. However, with regard to antisocial personality disorder, these anxious and neurotic traits are not present. Indeed, one trait present in antisocial personality disorder is a low

tolerance for distress (versus anxiousness), which significantly lowers one's ability to persist in goal-directed behavior during unpleasant or stressful situations. A low tolerance for distress is associated with several poor interpersonal and drug use outcomes (Sargeant, Daughters, Curtin, Schuster, & Lejuez, 2011). Sargeant, et al. (2011) tested 107 subjects with substance dependence, and found that antisocial personality traits were strongly connected to lower distress tolerance.

It is significant that rather than exhibit findings of Sargeant, et al. (2011), and what were described as neurotic traits or difficulty coming out of depressive states, those with antisocial personality disorder are likely to react to stressors somewhat differently than those with some other Axis II conditions. They are more likely to take dangerous risks, to abuse others, or to disregard rules and laws. This corroborates findings that the Antisocial Behaviors Subscale from the Personality Assessment Inventory is valid in predicting violations of rules (Hopwood, Baker, & Morey, 2008). Those with antisocial personality disorder share more in common with those with borderline personality disorder, for example, than with those with avoidant or "anxious" personality disorder.

In a study conducted in part to measure psychiatric and substance use disorders in methadone maintenance treatment (MMT) patients who have chronic hepatitis C virus (HCV) infection, Batki, Canfield, and Ploutz-Snyder (2011) tested 111 such patients. They found that antisocial personality disorder existed in 40% of the subjects, and 56% had substance use disorders according to the criteria from the DSM-IV-TR. This adds to the literature documenting the elevated rates of comorbid substance use disorders and antisocial personality disorder among subjects with conditions associated with high risk behavior and a lack of tolerance for distress. The use of opioids including heroin, and the use of these and/or other substances intravenously is

also elevated among people with antisocial personality traits – including an overwhelming need to alleviate stress regardless of potentially negative consequences health-wise, legally, or financially (Batke, Canfield, & Ploutz-Snyder, 2011).

Several researchers promote a need for a categorization of antisocial personality disorder into distinct subtypes due to the complexities inherent in the nuances of antisocial personality disorder. Magyar, Edens, Douglass, and Poythress (2011) conducted a study which drew on four subtypes already proposed to see if significant differences exist on multiple criterion measures. Magyar, et al. (2011) compared the four subtypes: primary, secondary, fearful psychopathic, and non-psychopathic. The subjects included 571 incarcerated males and other convicted male offenders who were ordered to receive treatment for substance abuse or substance dependence. It was revealed that substance use may vary depending upon the subtype of antisocial personality disorder with which individuals present. Surprisingly, associations were less remarkable among psychopathic subtypes relative to non-psychopathic subgroups (Magyar, Edens, Douglass, & Poythress, 2011).

Sargeant, Bornovalova, Trotman, Fishman, and Lejuez (2012) noted that most people entering drug treatment programs, especially those with antisocial personality disorder, are not successful at maintaining long-term abstinence. This is likely related to the low tolerance for distress that individuals with antisocial personality disorder frequently display. Sargeant, et al. (2012) proposed that a major contributing factor to the inability of most people with antisocial personality disorder to maintain abstinence from substances is controlled impulsivity (or, in many cases, uncontrolled impulsivity). To test this hypothesis, the antisocial personality disorder status was studied as it related to the abstinence attempts of 117 subjects in treatment for substance dependence. The following five factors of impulsivity were measured:

(1) perseverance, (2) control, (3) premeditation, (4) urgency, and (5) delay discounting. Results indicated that subjects with antisocial personality disorder not only had shorter periods of prior abstinence attempts, but also lower levels of perseverance and control than subjects without the Axis II condition. The study suggested a potential value in clinicians' consideration of various facets of impulsivity in order to more effectively lower relapse rates for subjects with antisocial personality disorder (Sargeant, et al., 2012).

The dismal long-term success (abstinence) rates for subjects with antisocial personality disorder mentioned in the Sargeant, et al. (2012) study are confirmed by other research. Uzun, Doruk, Perdeci, and Turkbay (2006) noted that lifelong substance use disorders are diagnosed in 86% of clients with antisocial personality disorder in Turkey. They found that alcohol, cannabis, and inhalants were the most frequent substances of choice among subjects with antisocial personality disorder. Among the subjects with the disorder in a sample of 500 male Turkish outpatients, 75.6% abused alcohol, 67.4% abused cannabis, and 35.6% abused inhalants (Uzun, et al., 2006).

Lewis (2011) noted that among males, substance dependence is related to criminal behavior and aggressive tendencies, and that people with antisocial personality disorder have more acute substance dependence and younger ages of onset. However, Lewis (2011) claimed that while women who are incarcerated also have elevated rates of antisocial personality disorder and substance dependence, there is a lack of research on the connection between substance abuse and substance dependence with specific violent acts among women. In light of this, Lewis (2011) analyzed 41 incarcerated women who were felons, had diagnoses of antisocial personality disorder, and were about one half of the way through their prison sentences.

The goal of the Lewis (2011) study was to establish which connections could be made, if any. Lewis (2011) found that among the women she examined, substance dependence was greatly elevated, just as with males with the same condition. Of the female inmates with antisocial personality disorder, 56.6% met the diagnostic criteria for alcohol dependence, 48.8% for opiate dependence, and 61.0% for cocaine dependence. Dependence on no one substance was connected to violent behavior significantly more than any other, but symptom severity was. For example, comorbidity and age of onset were factors significantly related to violence (Lewis, 2011).

Furthermore, the women with alcohol dependence and/or opiate dependence were significantly more likely to have been convicted of Assault 1 (Lewis, 2011). These findings would be beneficial in a study of non-incarcerated substance abusing or substance dependent women, as a comparison could be made to generate further literature on antisocial personality traits, substance abuse or substance dependence, and propensities for violence among women with antisocial personality disorder. Such research would help to determine what differences exist, if any, between the behaviors of males with these conditions and their female counterparts.

There is a conspicuous gap in the literature between comorbidity of antisocial personality disorder and substance dependence among university students. A possible explanation is that an elevated number of students with some traits associated with antisocial personality disorder may lack the discipline to succeed in academic settings, since gratification must be delayed in the form of having to work for several years on one's studies prior to benefitting from sustained efforts. Identifying which antisocial traits exist among university students and determining their substance use habits would contribute to the limited existing literature.

Borderline Personality Disorder

The DSM-IV-TR (American Psychiatric Association, 2000, p. 710) describes borderline personality disorder as the presence of consistent instability of interpersonal relationships, self-image, and affects, as well as notable impulsivity, beginning by early adulthood and present in several contexts as signified by a minimum of five specific symptoms. These symptoms include a pattern of unstable and intense interpersonal relationships characterized by alternating extremes of idealization and devaluation, impulsivity in a manner which is potentially self-harming, affective instability due to a marked reactivity of mood, frantic efforts to avoid real or imagined abandonment, identity disturbance featuring persistently unstable and fluctuating self-image, recurring suicidal or self-injuring behavior which may include threats, gestures, and self-cutting, a chronic sense of emptiness, inappropriate anger and difficulty with anger management, and transient, stress-related ideation, delusions or intense dissociative symptoms.

A common trait among people with borderline personality disorder is a propensity for "black and white thinking," meaning that they often perceive and consider only two solutions to a dilemma - versus multiple solutions which are in fact reasonable options. Moderation is often not given due consideration. Dialectical behavior therapy (DBT) is used extensively for people with borderline personality disorder, particularly those who have a comorbid substance use condition (Rizvi, et al., 2011). However, it remains a major challenge for those with the condition to control emotions and to take potential consequences into account prior to acting impulsively (Latalova & Prasko, 2010). People with borderline personality disorder present an elevated risk for aggression against themselves and others because of the tendency to act on emotion before considering consequences (Latalova & Prasko, 2010).

Research has revealed individuals with borderline personality disorder and those with substance use disorders to be the most emotionally impaired. Hertzel, et al. (2009) tested subjects with a variety of presenting symptoms and diagnoses for emotional intelligence. The results suggested that subjects with borderline personality disorder were more emotionally impaired than subjects with traits associated with other Axis II disorders, and that subjects with substance use disorders were more emotionally impaired than those with no substance use disorders (Hertzel, et al., 2009).

Several studies have been conducted to examine the relationship between borderline personality disorder and substance dependence, as well as to establish which factors distinguish people with borderline personality traits from those without such traits in the successful completion of substance use treatment programs. In a study focusing on the latter, Tull and Gratz (2012) researched the effect of borderline personality disorder on residential substance abuse and dependence treatment dropout rates. Among 159 male substance abusers in a residential treatment program, Tull and Gratz (2012) first identified which subjects met the diagnostic criteria for borderline personality disorder. In the next phase of the study, the patients were tracked to see how many successfully completed treatment versus how many dropped out beforehand; and if there was a relationship between the presence of borderline personality disorder and the completion of substance abuse or dependence treatment. It was further noted whether those who dropped out did so voluntarily or were expelled. Tull and Gratz (2012) found that substance abuse and dependence treatment patients with borderline personality disorder were significantly more likely to drop out of treatment prematurely. This finding remained intact when considering relevant covariates, including contract duration and whether or not the subject was court ordered to undergo treatment (Tull & Gratz, 2012).

Interestingly, subjects with borderline personality disorder were more likely to be expelled from the program than to voluntarily withdraw (Tull & Gratz, 2012). The results add to the literature regarding borderline personality disorder and its co-occurrence with substance abuse and substance dependence; and indicate that those with borderline personality disorder are less likely to be successful in treatment. An implication is that more emphasis should be placed on treating borderline personality disorder when present (not merely addressing problematic substance use), by agencies and clinicians charged with providing substance abuse and dependence treatment. Table 2 displays data from the study by Tull and Gratz (2012) showing multinomial logistic regression demonstrating the voluntary versus involuntary dropout likelihoods of subjects with and without borderline personality disorder (and major depressive disorder).

Table 2.

Multinomial logistic regression examining Borderline Personality Disorder (BPD) as a predictor of treatment dropout type relative to treatment completion.

	Likelihood of treatment dropout relative to treatment completion							
	Voluntary withdrawal				Center-initiated			
	B	Wald	OR	95% CI	*B*	Wald	OR	95% CI
Court-ordered status	−1.97	3.45	0.14	0.02–1.11	0.12	0.04	1.12	0.47–3.41
Contract duration	−0.08	2.04	0.92	0.82–1.03	−0.07	1.47	0.93	0.83–1.04
MDD	1.15	3.55	3.16	0.96–10.48	0.26	0.15	1.29	0.36–4.64
BPD	0.18	0.07	0.83	0.21–3.36	1.59	7.53*	0.20	0.07–0.64

Note: MDD = major depressive disorder; BPD = borderline personality disorder; OR = odds ratio; CI = confidence interval.

- $p < 0.01$.

Zanarini, et al. (2011) conducted research to chart substance use disorders over a course of ten years among subjects with borderline personality disorder and comparison subjects with other Axis II conditions. All participants were initially in-patients at a hospital in Massachusetts. There were 290 subjects with borderline personality disorder, and 72 "Axis II comparison" subjects. To avoid confusion, one should note that while the second group was called "Axis II comparison subjects," borderline personality disorder is an Axis II condition as well. Zanarini, et al. (2011) utilized data from the McLean Study of Adult Development (MSAD), which used

reliable repeated measures to analyze the longitudinal course of borderline personality disorder, and was given every two years to each follow-up subject for a period of ten years. Each participant was assessed at baseline and in five follow-ups. With this procedure, each subject was interviewed to determine diagnoses of borderline personality disorder and other personality disorders a total of six times. Zanarini, et al. (2011) used generalized estimating equations to study the longitudinal presence of substance abuse and dependence. The length of time before remission, recurrence, and new onsets of substance dependence were examined through Kaplan-Meier analyses.

Although substance abuse and dependence declined over time among both groups, the findings showed that substance abuse and dependence remained a significantly more pronounced problem among the subjects with borderline personality disorder than among the subjects with other Axis II personality disorders (Zanarini, 2011). More than 90% of subjects with borderline personality disorder met the criteria for a substance use disorder as well. So, while new onsets of substance use disorders were less common than expected, the study added to the literature by documenting very elevated rates of substance dependence among subjects with borderline personality disorder compared to both the general population and compared to subjects with other Axis II personality disorders (Zanarini, 2011).

Mikolajewski, Pizzarello, and Taylor (2011) also studied the co-occurrence of borderline personality disorder and substance use disorders, noting that the association between the two conditions is common and leads to many negative consequences, and that the reasons for this comorbidity are not known definitively. Mikolajewski, et al. (2011) sought to determine whether it is possible that borderline personality disorder symptom clusters are related differentially to the likelihood of substance abuse symptoms. Mikolajewski, et al. (2011) compared three

symptom clusters, or "dimensions," to the presence of substance abuse for each of the subjects in a nonclinical sample. It was established from hierarchical regression analyses that distinct borderline personality disorder symptom clusters are differentially connected to substance abuse symptoms. This indicates that it would be potentially useful to conduct further research which takes into consideration symptom clusters when studying the strong pattern of co-occurrence between the presence of borderline personality traits and substance abuse or dependence (Mikolajewski, et al., 2011).

Adding to the literature regarding borderline personality disorder and substance dependence specifically among women, another study analyzed 232 women, 77.6% of whom were experiencing psychiatric illness. In this study by Feske, Tarter, Kirisci, and Pilkonis (2006), borderline personality disorder was shown to be a strong predictor of lifetime diagnoses of substance use disorders across multiple categories, which included alcohol use, any substance use disorder, drug use, and heroin, cocaine, or polysubstance use. It was found that borderline personality disorder consistently predicted substance dependence accurately, including when there was statistical control for any effects of other Axis II conditions (Feske, et al., 2006). The only other personality disorders shown in this study to be significantly related to substance abuse were histrionic personality disorder and antisocial personality disorder (Feske, et al., 2006).

In a study addressing the co-occurrence of borderline personality traits and excessive substance use specifically among college students, Pizzarello and Taylor (2011) sought to determine whether the substance use patterns of close peers and romantic partners contribute significantly to this comorbidity (in addition to the naturally present impulsivity of students with borderline personality disorder). Undergraduate students (n = 2,202) at a large public university in the Southeast served as participants. Each was assessed for borderline personality traits,

general personality traits, and drug use patterns. Each participant was also asked about peers and romantic partners who had used illicit drugs over the past year. Pizzarello and Taylor (2011) found that the use of substances among subjects' peers and romantic partners significantly added to the likelihood of co-occurrence of borderline personality traits and substance abuse – including when controlling for levels of impulsivity. This is significant information for counselors and other professionals seeking to effectively treat clients in college settings (and elsewhere) because it suggests that changing one's social group may be necessary to enhance the prospect of success for many students and others with borderline personality disorder and substance use problems (Pizzarello & Taylor, 2011). This would likely be challenging because of resistance among young people especially to give up the company of "friends," even when those peers negatively influence or affect them.

Axelrod, Perepletchikova, Hotlzman, and Sinha (2011) examined the extent to which improvement in emotion regulation through dialectical behavior therapy (DBT) is beneficial in the treatment of subjects with co-occurring borderline personality disorder and substance abuse or substance dependence. Because poor emotion regulation and resulting impulsivity is chronic among subjects with borderline personality disorder, it might be surmised that improved emotion regulation would potentially lower impulsivity - particularly as it relates to substance abuse, including binge drinking. Therefore, Axelrod, et al. (2011) measured emotion regulation among the subjects participating in the study using the Difficulties in Emotion Regulation Scale, and measured depressed mood using the Beck Depression Inventory. Subjects included 27 women with substance dependence who had participated in 20 weeks of DBT in an outpatient substance use treatment program. Pizzarello and Taylor (2011) found that increased emotion regulation skills did result in enhanced mood and decreased substance use. This was the first study,

according to the authors, to show a significant connection between improved emotion regulation among patients with borderline personality disorder and healthier choices regarding substance use, i.e. fewer episodes of problematic substance use. This suggests DBT can be an effective tool in the treatment of women with borderline personality disorder who abuse substances; and should be further studied among both women and men with this specific comorbidity (Pizzarello & Taylor, 2011).

In another study specifically addressing borderline personality disorder among women, De Genna, Feske, Angiolieri, and Gold (2011), sought to determine if sexually transmitted diseases among women with borderline personality disorder were related to substance abuse or dependence. De Genna, et al. (2011) conducted structured clinical interviews as well as sexual health interviews with 215 women. Higher borderline personality dimensional scores and the African-American race were predictors of sexually transmitted disease, and women with substance use disorders had more STD risk factors than women without co-occurring substance use disorders (De Genna, et al., 2011).

Swann, et al. (2011) proposed that substance use disorders and personality disorders lead to impulsivity and criminal behavior, which can be detrimental to functioning academically and vocationally because of the legal difficulties potentially incurred. Swann, et al. (2011) hence conducted a study in which subjects in the criminal justice system with antisocial personality disorder or borderline personality disorder were measured for impulsivity traits, and their substance use histories were documented. These subjects were compared to subjects without histories of criminal convictions. Swann, et al. (2011) found significantly increased impulsivity traits among those subjects with criminal convictions. Those subjects with Axis II personality traits were found to have less education, more substance use, and more suicide attempts (Swann,

et al., 2011). They also experienced more manic symptoms than the members of the group without the Axis II traits (Swann, et al., 2011). This suggests, as have other studies mentioned in this literature review, that the presence of borderline and/or antisocial traits presents barriers to successful educational endeavors, which is particularly relevant information for counselors treating college students engaged in excessive use of alcohol and other substances.

Noting that rates of borderline personality disorder among individuals with substance use disorders are estimated to be as high as 65%, Pennay, et al. (2011) found that persons with borderline personality disorder have higher rates of substance abuse relapse, a propensity for noncompliance, and poorer outcomes than people without borderline personality disorder. Using randomized controlled trials, Pennay, et al. (2011) examined several treatment approaches to determine if one approach was significantly more successful than others, but found insufficient evidence to suggest that one treatment approach is more successful with patients presenting with this combination of conditions. It was concluded that more research is needed regarding the effectiveness of various treatment options among this population of clients (Pennay, et al., 2011).

Walter, et al. (2009) conducted a study to determine if people with borderline personality disorder are more likely than people with other personality disorders to have elevated rates of new onset substance abuse. One hundred seventy-five individuals with diagnoses of borderline personality disorder and 396 individuals with diagnoses of other personality disorders were studied in four cities in the northeastern United States. These subjects were patients at numerous clinical sites. The average age was 32.5 years, and the subjects were examined at baseline and at periods thereafter of 6, 12, 36, 48, 60, 72, and 84 months. Walter, et al. (2009) found that 13% of the subjects with borderline personality disorder developed new alcohol use disorders after treatment, as opposed to only 6% of subjects with other personality disorders. In addition,

Walter, et al. (2009) found that 11% of the persons with borderline personality disorder developed a new drug use disorder (abuse or dependence on a drug other than alcohol), versus 4% of persons with Axis II conditions other than borderline personality disorder. This indicates that people with borderline traits are particularly susceptible to developing comorbid alcohol and/or other substance use disorders even after treatment, and highlights the need for clinicians to treat substance abuse or dependence in combination with borderline personality disorder when this co-occurrence exists (Walter, et al., (2009).

Histrionic Personality Disorder

Histrionic personality disorder is manifested in persons with the condition who behave in overly dramatic and emotional ways in an effort to seek attention (American Psychiatric Association, 2000, p. 711). It is believed to have a genetic component and/or to result from early childhood events; and it is more common – or at least more frequently diagnosed – in women than in men. It is possible that women are diagnosed with histrionic personality disorder more frequently than men because of historically sexist notions that attention seeking and sexual forwardness are traits which are more inappropriate for women than for men. Sulz (2010) noted that "what is left of Freud's hysteria in modern diagnostics in the histrionic personality" (p. 879); and that "psychological and somatic functional disorders, such as dissociative and somatoform disorders are freed from the label of being hysterical, but even the histrionic personality disorder does not enjoy professional agreement as far as diagnostics and therapy are concerned" (p. 879).

The American Psychiatric Association (2000, p. 714) asserts that individuals with histrionic personality disorder possess a great need for the approval of others, are apt to engage in seductive behavior inappropriately, and tend to be vivacious, melodramatic, and flirtatious. Other histrionic traits include superficiality, rapidly altering affect, a need to be the center of

attention, and an impressionist cognitive style. Sulz (2010) also noted that there is a strong co-occurrence with narcissistic and antisocial personality traits among individuals with histrionic personality disorder.

The condition usually begins in early adulthood, and is often marked by a low tolerance for frustration, hypersensitivity to disapproval or criticism, and blaming of others for disappointments or shortcomings (Sulz (2010). There is difficulty in delaying gratification, which is also common among those with antisocial personality disorder, and in following through on commitments, which is common among those with any one of several personality disorders. To the latter point, Samuel, LaPaglia, Maccarelli, Moore, and Ball (2011) found that subjects with histrionic personality disorder are particularly prone to very early attrition from treatment programs for substance abusers. Samuel, et al., (2011) documented the presence of personality disorders as predictors of early abandonment of treatment for substance abuse.

In a study to measure the presence of psychiatric disorders among male and female subjects with childhood and adolescent histories of conduct disorders, Morcillo, et al. (2012) conducted interviews with over 34,000 adults, employing the Alcohol Use Disorder and Associated Disabilities Interview Schedule of the DSM–IV. Morcillo, et al. (2012) found that while men had higher rates of social anxiety disorder and paranoid personality disorder, women were more likely to have substance use disorders. This is an interesting and somewhat surprising finding, considering that men in the general population have higher rates of substance use disorders than women. An additional finding in the Morcillo, et al. (2012) study addressed histrionic personality disorder specifically. The condition was determined to be one of two (the other being bipolar disorder, an Axis I diagnosis) which was significantly associated with substance use disorders. The findings possibly identify gender specific risk factors, and suggest that early

recognition and treatment of conduct disorders may reduce the development of adult onset disorders.

One study contradicts the Morcillo, et al. (2012) study in one area. Jansson, Hesse, and Fridell (2008) assessed whether personality disorder traits were associated with psychiatric symptoms. The subjects participating were all females being treated for substance abuse in Sweden. Subjects were given the Structured Clinical Interview for DSM-IV (SCID-II) personality questionnaire and the SCID-II interview, and asked to complete a self-report questionnaire to gauge indicators of psychiatric illness, as well as the Symptoms Checklist-90 (SCL-90). This occurred during treatment and periodically afterwards over a span of five years.

Jansson, et al. (2008) found that the females with histories of substance abuse who participated featured significant traits of all Axis II personality disorders except histrionic personality disorder. Only borderline personality disorder and narcissistic personality disorder remained significantly associated with the SCL scores of the females with histories of substance abuse throughout the follow-up period. A suggestion was that the relatively little studied comorbidity of histrionic personality disorder and substance abuse needs further research, since there is not only a paucity of literature, but some of the existing literature is contradictory. The gap in the literature is particularly pronounced with regard to college and university students with histrionic traits and excessive substance use.

Narcissistic Personality Disorder

Narcissistic personality disorder is an Axis II condition which is manifested through excessive preoccupation with personal adequacy, prestige, vanity, and power. The DSM-IV-TR identifies symptoms such as reaction to criticism with anger, shame, or humiliation, a tendency to take advantage of others for selfish reasons, exaggeration of one's own importance, talents,

and achievements, craving of continuous attention and positive reinforcement, a propensity for jealousy, a lack of empathy toward others, a disregard for feelings of others, unrealistic fantasies of success, beauty, intelligence, or power, a propensity for setting unattainable goals, difficulty maintaining healthy relationships, and a desire to be "the best" (American Psychiatric Association, 2000, p. 717).

Like other Axis II disorders, narcissism is a condition marked partially by excessiveness in place of moderation. For example, ambitious goals and a high self-esteem can be very healthy; however, when it becomes a grandiose self-obsession, it becomes pathological and inhibiting to one's functioning. Narcissistic personality disorder may be removed from the next edition of the DSM (the DSM-V) because of controversy generated by disagreement among psychiatrists. The DSM-V is expected to be released in May of 2013. However, many researchers are currently presenting clinically relevant empirical evidence in support of leaving the diagnosis in the next edition (Ronningstam, 2011).

Regarding literature on the relationship between narcissistic personality traits and substance abuse or dependence, Vaughn, DeLisi, Beaver, Wright, and Howard (2007) noted that research on self-control and related constructs is important to individual-level assignments of meaning to antisocial behavior, and sought to measure the connection between self-control and a wide range of conditions. These conditions included excessive substance use and narcissistic personalities. Other factors considered to be possible effectors of self-control included trauma history and head injury. Vaughn, et al. (2007) found that the contributory elements of each of these were significant with regard to subjects' self-control, particularly the presence of narcissistic personality traits. This implies that narcissistic personality traits limit one's self-control, which inhibits one's ability to function without ongoing problems and unnecessary challenges.

Vaughn, et al. (2007) suggested more research is needed on the psychopathology frequently presented by people with narcissistic personalities. There is an absence of literature on narcissistic traits and substance use among college and university students.

Avoidant Personality Disorder

Avoidant personality disorder is an Axis II condition characterized by being focused on one's own shortcomings, and an unwillingness to form relationships unless one feels certain he or she will never be rejected by the other party. It is sometimes called "anxious personality disorder." Those with avoidant personality disorder so fear rejection or loss that they usually prefer loneliness over the perceived risks associated with interacting with others. Sperry (2003) and the American Psychiatric Association (2000, p. 721) identified the following symptoms associated with avoidant personality disorder: hypersensitivity to rejection or criticism, self-imposed social isolation, extreme shyness or anxiety socially (though the person has a strong desire for close relationships), avoidance of physical contact because of association with unpleasant or painful stimuli, feelings of inadequacy, extremely low self-esteem, self-loathing, a lack of trust of others, being emotionally distant with regard to intimacy, highly self-conscious, self-critical, problems in occupational functioning, feeling inferior to others, occasional agoraphobia, rich fantasy life used as escapism and to interrupt unpleasant thoughts, and lonely self-perception even though others may enjoy their company.

It is believed that avoidant personality disorder is caused by a combination of psychological, genetic and social factors (Sperry, 2003). Some temperamental factors are inherited and related to a shy or fearful disposition; and emotional neglect and bullying are significant contributors as well (Eggum, et al., 2009). A tendency to be withdrawers from social settings is commonplace among those with the condition. The increased likelihood of having

been victims of bullying in school settings (perhaps because of an innate shyness or low self-esteem) is noteworthy when considering connections between avoidant personality traits and substance use. This is because victims of bullying are far more likely to begin engaging in substance abuse purely as a coping mechanism (Radliff, Wheaton, Robinson, and Morris, 2012). Testing of college and university students for avoidant personality traits and substance dependence would contribute to the research by providing insight into whether the connection exists. This is particularly true for the many university students who may display avoidant or anxious traits as a result of having been bullied in middle and high school, and perhaps even in college.

Dependent Personality Disorder

The American Psychiatric Association (2000, p. 725) lists the following traits as being associated with dependent personality disorder: individual has difficulty making everyday decisions without an excessive amount of advice and reassurance from others, needs others to assume responsibility for most major areas of his or her life, has difficulty expressing disagreement with others because of fear of loss of support or approval, has difficulty initiating projects or doing things on his or her own (because of a lack of self-confidence), feels uncomfortable or helpless when alone because of exaggerated fears of being unable to care for himself or herself, urgently seeks another relationship as a source of care and support when a close relationship ends, and is unrealistically preoccupied with fears of being left to take care of himself or herself. The condition was previously known as asthenic personality disorder. Dependent personality disorder is debilitating for those possessing its traits because of a strong reluctance to take responsibility for managing one's own affairs, which can lead to relationships with abusive partners. College and university students with dependent traits who are away from

home for the first time may be particularly apt to enter into unhealthy relationships. Assessing these traits among college and university students could provide a meaningful contribution to the research, as could simultaneously measuring substance use patterns.

Echeburua, De Medina, and Aizpiri (2009) conducted research to assess personality disorders among 158 outpatient subjects with diagnoses of alcohol dependence. Of these, 62 had engaged in cocaine abuse and 96 had not. Among those subjects with diagnoses of alcohol dependence only, dependent personality disorder was among the most prevalent personality disorders (Echeburua, et al., 2009). Interestingly, among subjects with alcohol dependence and cocaine abuse, dependent personality disorder was not among the three most prevalent Axis II conditions. This suggests that there is a particularly strong connection between dependent personality traits and alcohol dependence alone.

Obsessive-Compulsive Personality Disorder

Obsessive-compulsive personality disorder is described by the American Psychiatric Association (2000, p. 729) as a pervasive pattern of preoccupation with perfectionism, orderliness, and mental and interpersonal control at the expense of efficiency, flexibility and openness, beginning by early adulthood and appearing in multiple contexts. While there is overlap, it should be noted that obsessive-compulsive personality disorder (an Axis II condition) is distinct from "obsessive-compulsive personality." The latter is an anxiety disorder in which actual obsessions and compulsions are experienced chronically.

Manifestations of traits and characteristics of obsessive-compulsive personality disorder may include, for example, an unwillingness to throw away old newspapers for which one has little or no need until the collection is so vast that one could not find a specific newspaper or even remember why it was saved. Another example of obsessive-compulsive personality

disorder is preoccupation with minor details and with perfection to the extent that one is deterred from completing projects. Many with the disorder frequently make "to-do" lists for themselves and often for others, which may annoy family members, coworkers, or acquaintances.

In a study conducted in part to confirm a multi-factor model of obsessive-compulsive personality disorder and, in part, to identify connections between the diagnosis and depression, suicidal thoughts, and aggression among psychiatric patients, Ansell, et al. (2010) examined 130 Hispanic subjects who were patients at a community mental health center. The researchers found that 26.2% of the psychiatric patients had diagnoses of obsessive-compulsive personality disorder (Ansell, et. al., 2010). In addition, interpersonal rigidity and perfectionism were the factors determined to comprise the most accurate model fit. Interpersonal rigidity was significantly present with aggression and anger, whereas suicidal ideation and depression were significantly present with perfectionism (Ansell, et al., 2010). It is particularly noteworthy that obsessive-compulsive personality disorder was found to be more prevalent than nearly any other Axis II personality disorder among the psychiatric patients presenting with anger, aggression, and suicidal ideation, as shown in Table 3 (Ansell, et al., 2010).

Table 3.

Frequencies of DSM-IV personality disorder diagnoses.

(*n* = 130).

	Diagnosis		Features[a]	
	n	%	n	%
Obsessive-compulsive PD	34	26.2	13	10.0
Paranoid PD	16	12.3	33	25.4
Schizotypal PD	6	4.6	18	13.8
Schizoid PD	2	1.5	14	10.8
Borderline PD	39	30.0	23	17.7
Antisocial PD	17	13.1	6	4.6
Narcissistic PD	4	3.1	1	0.8
Histrionic PD	4	3.1	7	5.4
Dependent PD	19	14.6	19	14.6
Avoidant PD	34	26.2	21	16.2

Schizoid Personality Disorder

Schizoid personality disorder is an Axis II condition manifested in a consistent and extensive pattern of non-inclusion in social relationships, and a limited range of emotional expression interpersonally, beginning early in adulthood (American Psychiatric Association, 2000). The DSM-IV-TR (2000, p. 697) describes persons with schizoid personality disorder as

being uninterested and not desirous of relationships with others (including family members), preferring lone activities, not having interest in sexual relationships with others, finding joy in few or no activities, having no close friends, being seemingly indifferent to the opinions of others, being cold emotionally, detached, and having flattened affect. By comparison to other Axis II conditions, there is relatively little research on schizoid personality disorder found in the literature. There is almost no research or literature on the relationship between schizoid personality disorder and substance dependence, including among university and college students.

While people with schizoid personality traits are often considered to be "hermits" or "loners" because they are perceived as not caring about what is taking place, people with the condition may experience loneliness and extreme sensitivity, which leads to a fear of rejection and to shyness. Loneliness has been proven to be a significant factor in substance abuse (Kott, 2011). Shyness and sensitivity have been significantly linked to likelihood of being victims of bullying. Jantzew, Hoover, and Narloch (2006) found that victimization is correlated positively with degrees of shyness in school-aged subjects. Therefore, while very little literature exists regarding schizoid personality disorder and substance use, several of the traits associated with the condition have been linked to substance abuse and dependence. This suggests a need for an examination of the connection between traits associated with schizoid personalities and substance use as a potential coping mechanism.

Schizotypal Personality Disorder

The final Axis II condition to be considered is schizotypal personality disorder. The DSM-IV-TR describes this condition as "a pervasive pattern of social and interpersonal deficits marked by acute discomfort with, and reduced capacity for, close relationships as well as by cognitive or perceptual distortions and eccentricities of behavior" (American Psychiatric Association, 2000,

p. 645). It further describes symptoms as "ideas of reference, odd beliefs or magical thinking, unusual perceptual experiences including bodily illusions, odd thinking and speech, suspiciousness or paranoid ideation, inappropriate or constricted affect, behavior that is odd, eccentric or peculiar, and excessive social anxiety that does not diminish with familiarity and tends to be associated with paranoid fears rather than negative judgments about self" (American Psychiatric Association, 2000, p. 645).

Several studies have linked chronic cannabis use among the general public and among college and university students specifically to schizotypal personality traits. Fridberg, Vollmer, O'Donnell, and Skosnik (2011) conducted a study to measure the relationship between normal personality, schizotypal personality, and cannabis use. Fridberg, et al. (2011) found that chronic cannabis users have significantly more schizotypal personality traits than do people who do not use cannabis. The Fridberg, et al. (2011) study provided additional evidence to the literature that cannabis use and schizotypy are connected.

Additional Considerations

Substance use disorders are significantly connected to Axis II personality disorders, and related to childhood adversity (Afifi, et al., 2011). This is evidence that the combination not only negatively affects individuals with such comorbidity, but that the collateral damage is significant for others, including children and adolescents in families of individuals with such comorbidity. One study which addressed the effect on children examined associations connected to multiple aspects of parental psychopathology. Harvey, Stoessel, and Herbert (2011) found that excessive substance use and various specific personality traits were related to maternal negativity, adversely impacted mothers' parenting practices, and that "paranoid, schizoid, schizotypal, and borderline symptoms" most accurately predicted mothers' negative parenting practices. Among

fathers, Harvey, Stoessel, and Herbert (2011) found that the same symptoms, as well as avoidant and dependent traits and excessive substance use were significantly connected to poor parenting. The study included 182 mothers and 126 fathers of children with behavioral problems. The results suggest that personality disorder symptoms figure prominently in parents' psychological states and substance use, and influence parental practices.

To conclude the literature review, it is important to consider other studies which document the connection or lack thereof between substance dependence and personality disorders in general or collectively. To this point, Hopwood, et al. (2011) noted that personality disorders may furnish latent risk factors for substance dependence. Hopwood, et al. (2011) compared Schedule for Nonadaptive and Adaptive Personality (SNAP) traits among 704 adults with current alcohol and other substance use issues, past alcohol and other substance use issues, and no history of alcohol or other substance use issues. Subjects were grouped based upon semi-structured clinical interviews. The results supported previous research showing a propensity for substance use among those with specific personality traits, and supported previous research showing that the effects of substance use are significantly aligned with various traits associated with several different personality disorders (Hopwood, et al., 2011). These traits include impulsivity, tendencies to be manipulative, disinhibition, and self-harm. However, not all traits were tested, and the lack of related data with regard to college and university students is pronounced.

The finding that exhibitionism and disinhibition were significantly elevated among subjects with past substance abuse or dependence diagnoses suggests evidence of a long lasting effect of substance use on some individuals' personalities. This information is potentially beneficial for those charged with treatment of substance abuse and dependence. Not only does the finding

suggest that certain personality traits increase the likelihood of abusing substances, it emphasizes the need to be aware of how clients' past substance use may have fundamentally altered their personalities – perhaps by changing neurological functioning. Hopwood (2011) noted that it is necessary for clinicians to routinely consider normative and pathological traits regarding substance related diagnoses. Trull, Jahng, Tomko, Wood, and Sher (2010) also found strong connections between personality disorders and substance dependence, and the presence of interpersonal problems, legal difficulties, and elevated stress when these conditions exist concurrently.

Issue of Not Treating Both Co-Occurring Conditions

Even though personality disorders and substance use disorders are very frequently comorbid, the treatment of the two is often separated (Katerud, Arefjord, Andresen, & Pedersen, 2009). Katerud, et al. (2009) conducted a study of 1,783 subjects with personality disorder diagnoses who entered ten-day treatment programs at hospitals in Norway. This was done in an effort to determine the extent of the lack of integration of substance use and personality disorder treatment before a Norwegian health reform which bolstered integration of treatment in 2004. It was discovered that subjects with borderline personality disorder were overrepresented among those with substance use problems. In addition, Karterud, et al. (2009) found that subjects with personality disorders who also had substance use disorders showed significantly more aggression while in treatment, and they were significantly more likely to drop out of treatment. This suggests that the two conditions should be jointly addressed by clinicians developing treatment plans for clients or patients with this comorbid combination. The findings of other studies indicate that testing for comorbid Axis II disorders in substance abusing clients could lead to vital insights about individuals being treated (Hesse & Pedersen, 2008).

In several studies, symptoms of substance use disorders and personality disorders were positively correlated. In a study corroborating the relationship between substance use disorders and personality disorders, and adding an additional dimension, Taylor (2005) found a significant correlation between alcohol and cannabis use, antisocial personality traits, and the proportion of acquaintances and romantic partners who use substances regularly. Also, the number of negative life events experienced by individual subjects was positively correlated to Axis II symptoms and alcohol abuse. Though it was anticipated, executive cognitive functioning was not found to be connected to substance abuse or Axis II traits in this study (Taylor, 2005). The results of the Taylor (2005) research suggest that environmental factors are especially relevant to the comprehension of substance use and specific Axis II conditions among higher functioning adults.

Adults and Adolescents with Developmental Disabilities

Within the literature, there is limited research indicating significantly prominent traits among "lower functioning" adults and adolescents with problematic substance use and personality disorders. Rush and Koegl (2008) found that "lower functioning" clients with this comorbidity were disproportionally male, unmarried, young, and poorly educated. These individuals were particularly associated with having legal involvement, being apt to self-harm, and presenting challenging behavior (Rush & Koegl, 2008). This indicates a need to focus on specific subpopulations and segments of society, and to seek more integrated treatment and support for those presenting with substance use issues as well as emotional or behavioral concerns. It is essential to treat both of the comorbid conditions utilizing an integrated or holistic approach, because they are commonly interrelated and exacerbate one another.

The potential for violence against staff members is a concern when treating some adults and adolescents with histories of aggression (Flannery, Farley, Tierney, & Walker, 2011). In a

study analyzing characteristics of patients who assault staff members at treatment facilities, it was determined that among younger adults, both substance use disorders and personality disorders were significantly more likely to be presenting factors (Flannery, et al., 2011). This was true for both males and females. Interestingly, among older adults, substance use disorders were frequently in play, but personality disorders were not significantly frequent among the assailants. Schizophrenic illness, while not a personality disorder, was significantly present among older adult males (Flannery, et al., 2011).

Differences by Age Group

Sher, et al. (2011) sought to establish whether comorbid substance dependence with Axis II diagnoses indicates pervasive or general personality pathology. With this goal, Sher, et al. (2011) examined data generated from interviews with 34,653 adults from the National Epidemiologic Survey on Alcohol and Related Conditions. General and specific personality traits were noted; and concurrently, specific personality disorder and substance use relationships were taken into account. Sher, et al. (2011) found that connections between personality disorder factors and substance dependence were more present in younger adults than in older adults. This is of particular interest to those interested in working with college and university students because it suggests that identifying traits associated with personality disorders in traditional college-aged persons is potentially more crucial than doing so in older adults. In addition, the results of the Sher et al. (2011) study are relevant because of the reiteration of the importance of avoiding drawing erroneous conclusions about the meaning of certain personality disorders and their comorbidity with substance abuse and substance dependence. The presence of one condition may not be the cause of the comorbid condition. Nevertheless, establishing which

traits are present in significant degrees among substance abusing and substance dependent adults, regardless of age, would contribute to the literature.

Adolescents and Race Factors

While the study by Sher, et al. (2011) examined younger versus older adults, another study measured the prevalence of substance use disorders among psychiatric patients under the age of 18. Wu, Gersing, Burchett, Woody, and Blazer (2011) analyzed the records of 11,457 subjects, whose ages were capped at 17, to determine the prevalence of comorbid conditions among young people with substance use disorders. Wu, et al. (2011) found that among young subjects with substance use disorders, females had higher rates of comorbidities; and blacks were more likely than whites to be diagnosed with impulse control and psychotic conditions, while whites had greater likelihoods of personality disorders and eating disorders. In another study focusing on adolescents, researchers found that the risk of suicide attempt is greatest for adolescents who have personality disorders, substance use disorders, and/or depression (Christiansen & Larsen, 2012).

Asian-Americans & Pacific Islanders

In a comparative study of the prevalence of psychiatric disorders, Xu, et al. (2011) analyzed data from the National Epidemiologic Survey on Alcohol and Related Conditions for 1,332 Asian-Americans and Pacific Islanders (596 men and 736 women), and 24,507 non-Hispanic whites (10,845 men and 13,662 women). Xu, et al. (2011) found that the previous one year prevalence of substance abuse and personality disorders was significantly lower for Asian-American/Pacific Islander males than for non-Hispanic white males, but that the differences among females were not significant. Additionally, Asian-American/Pacific Islanders are less

likely than non-Hispanic whites to seek treatment, which may make providing treatment to Asian American/Pacific Islanders more of a challenge for clinicians (Xu, et al., 2011).

Personality Disorders and Substance Dependence Co-Occurrence in the Gay, Lesbian, Bisexual, and Transgender (GLBT) Community

Grant, Flynn, Odlaug, and Schreiber, (2011) conducted a study to determine the likelihood of the presence of personality disorder(s) among persons with substance abuse or substance dependence in the gay, lesbian, bisexual, and transgender (GLBT) community. Subjects included 145 GLBT individuals who were receiving residential treatment for dual diagnoses. Grant, et al. (2011) found that among the GLBT individuals studied, 93.8% had one or more Axis II personality disorders. Among the personality disorders, the most frequent was borderline personality disorder (64.1%), followed by obsessive-compulsive personality disorder (56.6%), and avoidant personality disorder (49%). A contribution to the literature was made by revealing that the rate of Axis II disorders among members of the GLBT community receiving treatment for substance use is high (Grant, et al., 2011), as it is in the general population.

The United States Compared to Switzerland: Outcomes May Vary Across Cultures or among Patients in Different Nations

While the previous studies considered differences between age groups and races, as well as comorbidity rates in the GLBT community, another study compared characteristics and outcomes for clients with substance use disorders and personality disorders in the United States versus Switzerland. Moggi, Giovanoli, Buri, Moos, and Moos (2010) sought to enhance understanding of different models of substance use treatment for people with comorbid personality disorders through this comparative research. One hundred and thirty-two males were matched demographically in the United States and Switzerland. All subjects' treatment program

characteristics were detailed. Next, outcomes were compared after one year post-treatment completion. Moggi, et al. (2010) found patients treated for substance dependence in conjunction with personality disorders in the United States exhibited more substance dependence and psychosocial problems at the beginning of treatment and at follow-up after a year than did their counterparts in Switzerland.

Vocational and Occupational Impact and Outcomes

Vocational rehabilitation professionals are faced with unique challenges in providing services for clients engaged in substance dependence with co-occurring emotional problems (Donnell, Mizelle, and Yan, 2009). Employment is one indicator of puissant recovery attempts which improve quality of life outcomes and lower the chances of return to the vocational rehabilitation system. However, attaining positive outcomes for clients who have substance dependence along with significant emotional problems characterized by maladaptive personality traits has been a particularly elusive objective for rehabilitation counselors (Donnell, et al., 2009).

Donnell, et al., (2009) examined the prevalence of dually-diagnosed individuals in the vocational rehabilitation system and recovery related attributes potentially impacting employment outcomes, and found that no significant differences existed between employed consumers and unemployed consumers across recovery related variables. Donnell, et al. (2009) found that clients with co-existing substance use and emotional problems did not receive vocational rehabilitation services at a rate comparable to the general population, and that future research is imperative to the success of those with co-occurring mental problems and substance dependence utilizing the vocational rehabilitation system.

In a study relevant to persons of the traditional undergraduate college age range specifically, Sheidow, McCart, Zajac, and Davis (2012) conducted a critical review of literature findings, and identified areas for further research on correlated prevalence and substance use on social role functioning among young adults with mental health conditions. Research with this age group is important because of the elevated rates of co-occurring emotional issues and substance dependence as individuals transition through early adulthood (Sheidow, et al., 2012). Sheidow, et al. (2012) found that an inadequate number of programs exist which address the needs of members of this age group experiencing substance dependence and mental/emotional issues, especially with regard to educational and vocational achievement and stability. Sheidow, et al. (2012) found that young adults with substance dependence and co-occurring emotional or mental health issues are underserved by current vocational rehabilitation and mental health systems, and recommended that comprehensive intervention programs be implemented to ensure provision of services effectively. Identifying which specific personality traits in college-aged individuals predict substance dependence would facilitate more appropriate interventions for persons ages 18 – 23, the span in which individuals are most likely to engage in substance dependence while experiencing emotional problems (Sheidow, et al. (2012).

Existing research validates that employment encourages recovery for persons with emotional problems and co-occurring substance dependence by strengthening economic stability and providing valuable social roles (McHugo, Drake, Xie, & Bond, 2012). However, because of ambiguous and conflicting literature on clinical and psychosocial outcomes for such individuals, McHugo et al. (2012) tracked non-vocational and psychosocial outcomes for individuals with emotional difficulties and co-occurring substance dependence by documenting non-vocational outcomes versus steady employment for ten years. Five non-vocational outcomes included

(1) substance use disorder, (2) life satisfaction, (3) independent living, (4) healthy relationships which were free from substance abuse, and (5) psychiatric symptoms. McHugo, et al. (2012) found steady workers obtained independent housing and greater quality of life after five years, but both groups had similar outcomes after ten years. Therefore, it was determined that people with co-occurring emotional problems and substance abuse or dependence can improve significantly, but those with regular employment are more likely to improve at a faster pace than those without employment (McHugo, et al., 2012). This suggests that being employed is beneficial for people with substance use and co-occurring emotional problems. A challenge remains since those with such co-occurring conditions are less likely to obtain and keep employment without intervention which is appropriately customized to the individual's particular situation (Sheidow, et al, 2012).

For college and university students, substance dependence is among the most prevalent causes for not graduating, whether not graduating is a result of dropping out or flunking out (Gibralter, 2008). Not finishing college can potentially limit one's career options, and potentially lower one's income, according to the United States Census Bureau (2002). The U.S. Census Bureau (2002) reported that the average income of a full-time worker in the United States with a bachelor's degree was $52,200, while the average income of a full-time worker in the United States who began college, but did not achieve a bachelor's degree was $36,800 annually. This was based on a survey conducted by the United States Census Bureau from 1997 through 1999. Cheeseman and Newburger (2002) found that people who hold bachelor's degrees but no graduate degrees earn approximately one-third more over their lifetimes than people who attended college but received no bachelor's degree.

Conclusion

In conclusion, this review of the literature examined existing research on the connection between Axis II personality disorders, associated traits, and co-occurring substance abuse and dependence. The review included research on comorbidity with regard to each Axis II condition individually, personality disorders collectively, and a review of studies on alcohol dependence among university and college students specifically. Literature regarding the likelihood of vocational, legal, academic, and interpersonal difficulties pursuant to this co-occurrence was reviewed. Also examined were potential consequences of neglecting to identify and address both issues in treatment, and factors related to age, gender, sexual orientation, and race. The literature review similarly examined research regarding vocational and occupational impacts and outcomes, including decreased average earning potential for individuals with this comorbidity, and for those who do not successfully complete college (often as a result of problematic substance use and/or emotional problems).

In spite of the likelihood of at least one personality disorder being present among individuals who are substance dependent, the literature on these co-occurring disorders is decidedly limited (Straussner & Nemenzik, 2007). Furthermore, this review found that much of the existing literature focuses on actual Axis II diagnoses as they relate to substance dependence. The consideration of diagnoses is essential in a review of the literature on this topic because the possession of combinations of inhibiting personality traits is what constitutes Axis II disorders, and as such is closely related to specific traits.

However, because many individuals who are substance dependent may possess one or more traits associated with an Axis II diagnosis, yet not actually meet all of the criteria for such a diagnosis, it would be especially beneficial to better understand which traits, if any, are

predictive of substance dependence. Maladaptive personality traits exist when one cannot effectively cope with stressors in a healthy, productive, legal, and solution-attaining manner – this inability being a result of a lack of resilience to stress. Little is known about how this is connected to substance dependence or about potential causality of this association, including whether specific traits accurately predict substance dependence (McHugh, Kaufman, Frost, Fitzmaurice, & White, 2013).

Chapter 3. METHODOLOGY

In the first chapter, a wide range of health risks and other risks for people in general who engage in excessive substance use was addressed, and the possible connection between substance dependence and personality traits was introduced. Excessive substance use and consequences for college and university students were examined. In the second chapter, a review of existing research and literature covered personality traits which are often debilitating. These may be associated with one or more personality disorders recognized by the American Psychiatric Association. Chapter Two also included literature on the comorbidity of substance dependence and personality disorders. In addition, personality trait and substance use factors related to people with developmental disabilities, people of different cultures, nations, and ethnic backgrounds, people of different age groups, and members of the gay, lesbian, bisexual, and transgender (GLBT) community were examined. Of particular interest was literature documenting the vocational and occupational outcomes of people with disabilities who experience problems with substance dependence. Research on people with disabilities who are substance dependent reveals that they are being underserved by the vocational rehabilitation system.

Predictor Variables and the Criterion Variable

The independent or predictor variables, which are scores on three dimensions of personality and scores on a lie scale, and obtained through the Eysenck Personality Questionnaire – Revised (EPQ-R), are:

1) psychoticism (*P*),
2) extraversion (*E*),
3) neuroticism (*N*),

4) propensity for lying (*L*).

These are the four separate scales of the EPQ-R.

The dependent or criterion variable, as determined by the Adult Substance Abuse Subtle Screening Inventory – 3 (SASSI-3) is one of two scenarios:

1) High probability of having a substance dependence disorder
2) Low probability of having a substance dependence disorder

Identification and Justification of Measures

Measure 1 of 2: The Adult Substance Abuse Subtle Screening Inventory (SASSI-3)

Background and development.

The SASSI-3 is a substance use measure developed by the SASSI Institute as part of a mission which assumes that substance dependence is a progressive and pervasive disorder which adversely affects individuals, their families, and society. The instrument is not based upon a specific theoretical perspective (Miller & Lazowski, 1999). Dr. Glenn A. Miller designed the original SASSI, published in 1985, to meet the need for a relatively short and cost efficient screening assessment for substance use disorders (Miller & Lazowski, 1999). A revision (the SASSI-2) was published in 1994, and featured new scales including a correctional scale, a random answering pattern scale, a scale to distinguish between alcohol abusers and abusers of other substances, a second defensiveness scale, and new items for research which were not part of the scoring procedure. The SASSI-3 was developed through an empirical procedure, with each question being included based upon its accuracy in discriminating between substance dependent and non-substance dependent persons. In its development, careful consideration was given to assure that clinical judgments were aligned with DSM diagnostic criteria (Miller & Lazowski, 1999).

The scoring structure of the SASSI-3 is based on ten different scales, each of which was developed by selecting determinants which discriminate between those who are substance dependent and those who are not (Miller & Lazowski, 1999). The decision scales included in the SASSI-3 are as follows:

Face Valid Alcohol (FVA) Scale.

Face Valid Other Drug (FVOD) Scale.

Symptoms (SYM) Scale.

Obvious Attributes (OAT) Scale.

(The preceding four scales discriminate between substance dependent and non-substance dependent individuals when they are requested to answer the questions with standard instructions, and respondents answer honestly.)

Subtle Attributes (SAT) Scale. The questions in this scale discriminate between substance dependent and non-substance dependent individuals whether the individual is answering with standard instructions or instructions to hide substance dependence.

Defensiveness (DEF) Scale. The questions in this scale discriminate between individuals who answer with standard instructions and those answering with "fake-good" instructions.

Supplementary Addiction Measure (SAM) Scale. The questions on this scale discriminate between substance dependent and non-substance dependent individuals responding under "fake-good" instructions.

Random Answering Pattern (RAP) Scale. The SASSI-3 features this scale to determine if a person has not answered the questions in the measure meaningfully.

There are also two non-decision scales included in the SASSI-3 which can help determine specific aspects of substance abuse. These include the Family vs. Control Subjects (FAM) Scale

and the Correctional (COR) Scale. Of these two non-decision scales, the former (FAM) can identify non-substance dependent persons with family members who are substance dependent, and the latter (COR) can identify individuals with extensive legal problems resulting from substance dependence (Miller and Lazowski, 1999).

The SASSI-3 can be administered and scored manually, or it can be taken and scored by computer. For this study, it was administered and scored manually. Individuals' names and demographic information, as well as 67 true-false items are included on side one of the assessment. To protect privacy and limit risk to anonymity, students were instructed to enter no demographic information other than gender. Gender was requested because the scoring procedure is different for males than for females. The majority of the true-false questions are seemingly unrelated to substance use. They are present to assist in the identification of persons with problematic substance use even if they do not readily concede to such use, and these items engender less anxiety for individuals than the face valid items which follow. The second side of the SASSI-3 assessment includes twelve face valid questions regarding the use of alcohol, and fourteen face valid questions regarding the use of other substances. Included in this section are items asking about the frequency of experience related to substance dependence. The person administering the SASSI-3 must decide which of four options to use with regard to instructions as to time frames for the face valid items on the assessment. These four options include "your entire life," "the past six months," "the six months prior to" (jail, for example), "the six months since" (release from jail or "rehab," for example) (Miller and Lazowski, 1999). In this assessment, subjects were asked to respond based upon their entire lives, since few undergraduate students would likely have served jail sentences, and few were likely have been in inpatient treatment.

Scoring and validity of the measurement.

In scoring the SASSI-3, it is necessary for the administrator to obtain numerical scores for all ten scales. These scale scores range from 0 to 11 for the SYM (symptoms) scale, 0 to 12 for the OAT (obvious attributes) scale, 0 to 8 for the SAT (subtle attributes) scale, 0 to 11 for the DEF (defensiveness) scale, 0 to 14 for the SAM (supplemental addiction measure) scale, 0 to 14 for the FAM (family vs. control subjects) scale, 0 to 15 for the COR (correctional) scale, and 0 to 6 for the RAP (random answering pattern) scale. For FVA (face valid alcohol) and FVOD (face valid other drug) scales, responses of "never" are given a value of zero, responses of "once or twice" are given a value of 2, and responses of "repeatedly" are given a value of 3. The total value for all scales combined indicates whether or not an individual likely has a substance dependence disorder. The overall accuracy rate of the SASSI-3 is 94 percent (Miller and Lazowski, 1999). In cases in which a subject's RAP score is two or greater, it cannot be assumed that he or she was responding to the questions on the assessment in a meaningful way, and a DEF score at or above the t-score level of 60 is indicative of defensive posturing (Miller & Lazowski, 1999).

Miller and Lazowski (1999) noted that "the SASSI-3 was developed and empirically validated as a screening instrument and as such, it provides a dichotomous classification regarding whether or not an individual is likely to have a substance use disorder" (p.13), and that "the SASSI-3 decision rules yield a dichotomous classification regarding substance dependence which was cross validated with 839 research participants" (p.13). Of these subjects, 667 had diagnoses of substance use disorders, and 172 had no such diagnoses. The SASSI-3 corresponded correctly to the individuals' actual diagnoses (having or not having substance use disorders) in 94% of the cases. Those subjects meeting the DSM-3 criteria for substance use

disorders were deemed likely to have substance use disorders in 98% of the cases, and 80% of the subjects who did not meet the diagnostic criteria according to the DSM-3 were deemed by the SASSI-3 to not likely have substance use disorders. Therefore, the following four probability statements can be made:

1) "For clients who are test positive on the SASSI-3, the probability is approximately .98 that a comprehensive assessment would reveal that they meet diagnostic criteria for a substance use disorder. The positive predictive power of the SASSI-3 is 98%" (Miller & Lazowski, 1999, p. 14)
2) "For clients who have a substance use disorder, the probability is approximately .94 that they will be test positive on the SASSI-3. The sensitivity of the SASSI-3 is 94%" (Miller & Lazowski, 1999, p.14).
3) "For clients who are test negative on the SASSI-3, the probability is approximately .80 that comprehensive clinical assessment would reveal that they do not meet the diagnostic criteria for a substance use disorder. The negative predictive power of the SASSI-3 is 80%" (Miller & Lazowski, 1999, p.14).
4) "For clients who are diagnosed as not having a substance use disorder, the probability is .94 that they will be test negative on the SASSI-3. The specificity of the SASSI-3 is 94%" (Miller & Lazowski, 1999, p. 14).

Measure 2 of 2: The Eysenck Personality Questionnaire – Revised (EPQ-R)

Background and development.

The Eysenck Personality Scales are a culmination of over forty years of development, and the result of thousands of experimental and psychometric studies in many nations (Eysenck & Eysenck, 1994). The scales are measurements derived from self-ratings, or by observational

studies, psychological / physiological experiments and biochemical analyses, ratings by persons with knowledge of subjects, and observational studies, and are measurements of the most prominent dimensions of personality (Eysenck & Eysenck, 1985). The Eysenck Personality Questionnaire (EPQ) is currently in a revised form, and was constructed based upon previous personality assessments. The first of these was the Maudsley Medical Questionnaire or MMQ (Eysenck, 1952). The MMQ measured neuroticism, or emotionality, and consisted of forty items.

This was followed by the Maudsley Personality Inventory (MPI) (Eysenck & Knapp, 1962), which included scales measuring extraversion and introversion among subjects, before the introduction of the Eysenck Personality Inventory (EPI) in 1964. The EPI included a lie (*L*) scale, and featured alternate forms for assessing the same population repeatedly (Eysenck & Eysenck, 1994). It also featured "simplified English," so that nearly all subjects could understand the questions easily, regardless of socioeconomic backgrounds and/or education levels. Another objective in the development of the EPI was to have psychometric improvements in relation to the MPI (Eysenck & Eysenck, 1994). One example is that the dimensions of extraversion and neuroticism were independent, whereas there had been a slight correlation in the MPI.

The greatest benefit to the EPQ was the inclusion of an additional variable, psychoticism (*P*), which allowed for the measurement of traits of this disposition in "normal" persons (Eysenck & Eysenck, 1994). This trait is present to some extent in all individuals, but clinicians can detect whether a person is actually predisposed to psychiatric abnormalities. The presence of this predisposition is not indicative of psychosis, however. Indeed, only a minute number of individuals with high *P* scores present with actual psychosis during their lives. Eysenck and

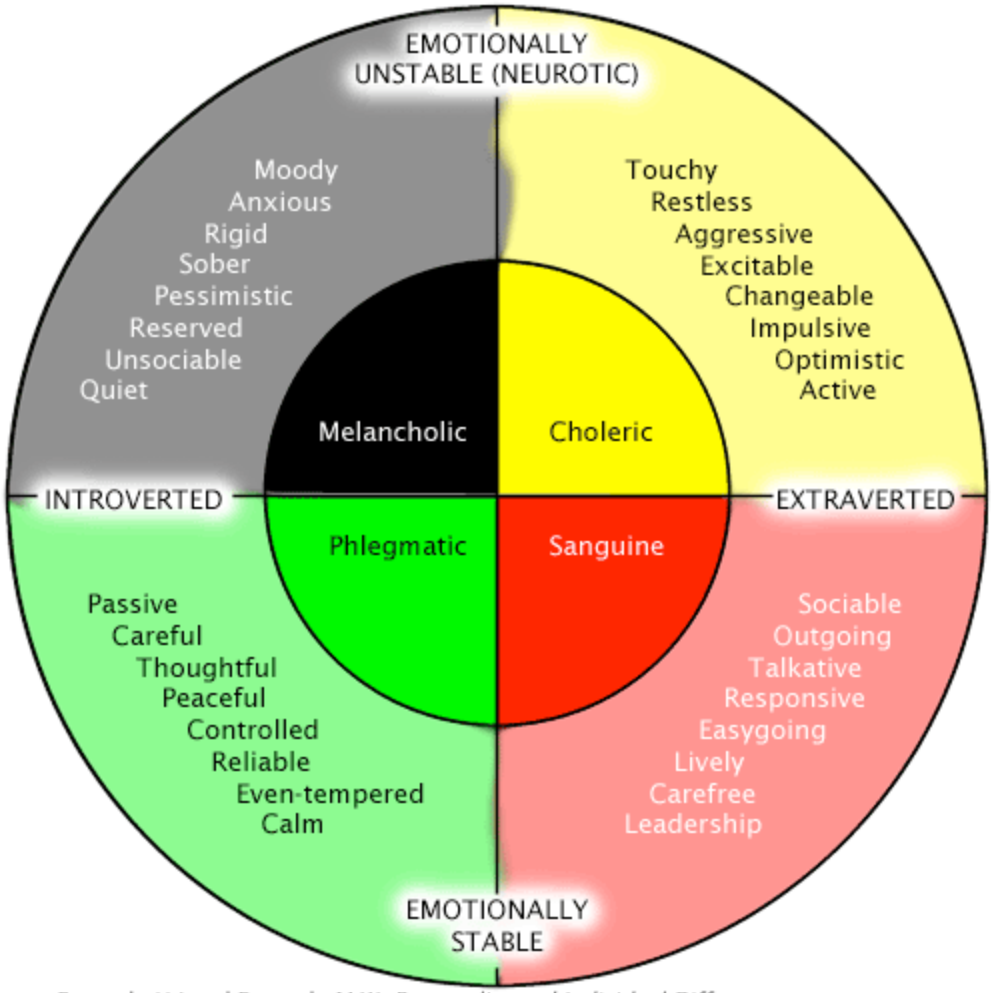
Eysenck (1994) suggest that in discussing inventory results with "lay persons," it may be preferable to use terms such as "emotionality" for "neuroticism," and "tough-mindedness" for "psychoticism," lest people misinterpret meanings.

Dimensions of personality and significance.

Eysenck (1970) documented strong support in personality research for the notion of the existence of two distinct dimensions:

1) Extraversion-Introversion.
2) Neuroticism (emotionality or stability-instability).

The following figure displays how the above dimensions relate to the Galen-Kant-Wundt temperament scheme (Eysenck & Eysenck, 1985):



Eysenck, H.J and Eysenck, M.W. *Personality and Individual Differences.*

On the outer rim of the preceding figure, "traits shown represent the diagrammatic form of the results of large numbers of factor-analytic attempts to discover the interrelations of various of these traits in many different human populations; it is an empirical fact that a large proportion of the total common variance produced by the observed correlations between these traits … can be accounted for in terms of these two factors" (Eysenck & Eysenck, 1994, pp. 1-2). Hans Eysenck presented this hypothesis in 1947, and there was considerable debate about the scheme's efficacy. However, the principal alternative scheme, which was presented by psychologist Raymond Cattell, was found to produce extremely similar results (Cattell & Scheier, 1961).

Furthermore, psychologist J. Paul Guilford's research revealed second-order factors very similar to Eysenck's hypothesis (Eysenck & Eysenck, 1969).

Eysenck and Eysenck (1994) determined that the factors of *E* and *N* give more to personality descriptions than any other factor set of two. A third major dimension of personality, "psychoticism," was proposed by Hans Eysenck in 1952. The hypothesis was that "just as neurosis is a pathological exaggeration of high degrees of some underlying trait of neuroticism, so psychosis is a pathological exaggeration of high degrees of some underlying trait of psychoticism" (Eysenck & Eysenck, 1994, p. 2).

The *P* scale, Machiavellianism, and Aggression.

Many studies have tested the factorial stability of the EPQ factors. Kline and Cooper (1983) examined the structure of Machiavellianism, a tendency to be cunning and to have the notion that "the end justifies the means," and determined that among the Cattellian and Eysenckian factors, the *P* scale exclusively is related to Machiavellianism. Hernandez and Mauger (1980) found positive correlations between *N* and *P* while studying aggression. In a study of perceptions of violence and aggression, Gunter (1983) found that subjects with lower *P* scores perceived violence on television as more disconcerting and violent than did subjects with higher *P* scores. In a study to determine whether self-mutilation was related to high *P* and *N* scores, Williams and Hassanyeh (1983) determined that high *P* and *N* scores did not correlate to overly high scoring on any of the EPQ scales.

The Final Product: The Eysenck Personality Questionnaire – Revised (EPQ-R)

A goal for the revision of the EPQ was to minimize any psychometric shortcomings in the *P* scale by "designing new items based on the development of the original concept, testing the relevance of these items by new factor-analytic studies and constructing revised questionnaires in

the hope of improving upon the original version of the psychoticism (*P*) scale" (Eysenck & Eysenck, 1994, p. 12). The EPQ-R consists of 27 questions to measure the psychoticism (*P*) scale, 22 to measure the extraversion (*E*) scale, 24 to measure the neuroticism (*N*) scale, and 21 to measure the propensity for lying (*L*) scale, for a total of 94 items on the assessment (Eysenck & Eysenck, 1994). Tables 4 and 5 show the reliabilities and intercorrelations of the EPQ-R for males and females (Eysenck, 1994).

Table 4.

Reliability coefficients by gender for each scale.

	P Psychoticism	*E* Extraversion	*N* Neuroticism	*L* Propensity to Lie
Males	.66	.84	.86	.77
Females	.67	.85	.86	.76

Table 5.

Intercorrelation coefficients of scales by gender.

	Males	Females
PE	-.05	.04
PN	.12	.08
PL	-.25	-.17
EN	-.28	-.28
EL	-.16	-.15
NL	-.22	-.15

Table 6 shows test-retest reliabilities with one month intervening between testing (Eysenck & Eysenck, 1994).

Table 6.

Test-retest reliabilities with one month intervening between testing.

P	*E*	*N*	*L*
.71	.92	.89	.83

While the reliabilities for the *P* scale remain lower than the reliabilities obtained for the *E, N,* and *L* scales, it is noteworthy that the *P* scale considers multiple indicators like nonconformity, absence of empathy, cruelty, and hostility; and these traits hold lower reliabilities than traits measured in a scale like *E* (Cattell & Tsujioka, 1964), which is comprised mainly of activity and sociability items. The new reliabilities are a marked improvement from those of the EPQ prior to revisions, nonetheless (Eysenck & Eysenck, 1994).

Data Analysis

The criterion variable in this study is categorical, with two possible outcomes (high probability of substance dependence or low probability of substance dependence); therefore logistic regression was the appropriate procedure for data analysis. Logistic regression allowed for the identification of combinations of the predictor variables (*P, E, N,* and *L*) which best predicted the probability of substance dependence (high or low) among undergraduate university students enrolled in undergraduate programs for Special Education or Rehabilitation at a large land-grant university in the Southeastern United States.

Logistic regression was preferable to discriminant analysis since the objective was to predict alignment in one of two groups based upon the presence, as measured in scales, of each

predictor variable and each possible combination of the predictor variables as measured in scales. The criterion variable is dichotomous, meaning that the two categories differ widely from one another or they are in contrast to one another. This type of research design warrants a binary logistic regression procedure (Mertler & Vannatta, 2004).

George and Mallery (2000) noted that while the concepts benefitting researchers using multiple regression analysis are similar to those for logistic regression, there are key distinctions between the two. For example, the meaning of the resulting standard regression equation is quite distinct. The value predicted in logistic regression is a probability ranging from 0 to 1, whereas a standard regression equation is comprised of the sum of the products of weights and actual values on predictor variables (George & Mallery, 2000). For this study, logistic regression was appropriate since the probability of specific categories (high probability or low probability of substance dependence) was determined for each student. Logistic regression analysis provided a regression equation which predicted the probability of undergraduate students being classified into one of the two categories, high probability of substance dependence or low probability of substance dependence (Tate, 1992).

For logistic regression analysis, predictor variables need not be linearly related, normally distributed, or have equal variances within groups (Tabachnick & Fidell, 2007). For this study, psychoticism, neuroticism, extraversion, and propensity for lying do not meet these criteria. Adding to its flexibility, logistic regression is capable of establishing nonlinear models (Mertler & Vannatta, 2004).

For this study, a logistic regression analysis allowed for the manipulation of combinations of the four variables (*P*, *E*, *N*, and *L*) in predictions of the likelihood of substance dependence. The researcher assigned a value of 0 for "low probability of substance dependence" and a value

of 1 for "high probability of substance dependence." Logistic regression resulted in three components of the model that were interpreted. First, the model produced a "goodness-of-fit" test. At multiple steps, the test compared values for cases on the criterion variable with predicted values on the criterion variable, revealing which of the four predictor variables (*P*, *E*, *N*, or *L*) were or were not significant predictors of the dependent or criterion variable. Combinations of predictor variables were examined to determine the percentages with which each combination correctly predicted "low probability of having a substance dependence disorder" or "high probability of having a substance dependence disorder." Next, a classification table for "high probability of having a substance dependence disorder" compared the predicted values for the criterion variable with observed values from the data entered into the logistic regression model. These values were obtained by calculating the probability of each combination of predictors, and classifying each specific combination into one of the two possible categories based on that probability. In cases in which probability was less than .50, that case was assigned to the value for the criterion variable (low probability of having a substance dependence disorder, which was coded as "0"). Cases with probability greater than .50 were coded as "1." The third component that was interpreted reported the beta coefficients and the Exponential beta (odds-ratio) for all variables included in the model. The Wald statistic was used to determine the statistical significance of each coefficient (β) in the model.

Logistic regression allowed for the prediction of a discrete outcome (in this study, high probability or low probability of having a substance dependence disorder among undergraduate university students) from a set of variables representing the significant presence of the traits of psychoticism, extraversion, and neuroticism, as well as the propensity for lying. It was the

appropriate procedure for this study due to the dichotomous nature of the criterion variable, and the continuous (scored on scales) nature of the predictor variables.

Prediction of What Results Would Reflect

Much of the researcher's professional experience was attained through working as an LPC (licensed professional counselor) in Laramie, Wyoming, which is home to the only university in the state, the University of Wyoming. Many of the clients seen by the researcher were university students who were having moderate to extreme difficulties academically, socially, emotionally, and sometimes financially and legally. These presenting symptoms were often a result of substance dependence co-occurring with what was sometimes described as "an overwhelming combination of depression, anxiety, fear, and dread." Many of the students had Axis I diagnoses, which made them potential candidates for medical treatment from the psychiatrist at the facility. Others with Axis II traits (not necessarily diagnoses) were heavily engaged in substance use.

Based on the literature and research, as well as the experience of the researcher in providing counseling to many undergraduate students, it was expected that strong traits of psychoticism and neuroticism would predict a high probability of substance dependence among university students, while the propensity to lie would not necessarily predict substance dependence. In addition, it was expected that traits associated with extraversion would not predict high probabilities of substance dependence. This expectation was based on the researcher's counseling and interaction with many students who were engaged in excessive substance use and were moderately to extremely introverted, as well as many who clearly had extraverted personalities.

CHAPTER 4. RESULTS OF THE STUDY

Chapters 1, 2, and 3 presented the research problem and background information; a review of the research and literature; and methods and procedures. This study was designed to identify relationships between substance dependence and each of four predictor variables, which are psychoticism, extraversion, neuroticism, and propensity to lie. The extent to which high or low probability of having a substance dependence disorder may be predicted correctly by individual students' scores on the four referenced variables was measured. Which variables were statistically significant predictors of high or low probability was examined, as were bivariate correlations among the four predictors. Logistic regression procedures were used to analyze the data. This chapter presents those findings from the data analysis.

Preliminary Analysis

Prior to the logistic regression procedure, preliminary analyses were conducted. First, multicollinearity among the variables was investigated. Preliminary analysis to detect multicollinearity among the four variables (psychoticism, extraversion, neuroticism, and lying) was performed. Both the Tolerance and the Variance Inflation factors were within acceptable ranges (greater than .1 and less than 10 respectively,) indicating no multicollinearity among the variables. This means that each of the variables was measuring a unique component of an individual's personality traits.

Mahalanobis distance, using the chi-square criterion as a cut-off point, was used to identify outliers in the data. The chi-square criterion with four degrees of freedom is 18.47. No values in the data set exceeded the chi-square value of 18.47 at the .001 level. This means that the data were normally distributed with no outlying data points. Therefore, no data points were deleted from the analysis.

Logistic Regression Analysis

Results of the logistic regression procedure indicated that the overall model was a good fit for the data ($\chi^2_{(4)} = 9.819$, $p = .04$). In other words, the model accurately predicted group membership for high or low probability of having a substance dependence disorder. However, the summary of model statistics indicated that one should use caution when interpreting the chi-square value for model fit (-2 log likelihood = 104.91; Nagelkerke R Square = .139). Since the -2 log likelihood was far from zero (0 means a perfect fit), and the Nagelkerke R square accounted for only 14% of the variance in substance dependence based on the combination of the individual variables, the model fit is questionable. In other words, results of the omnibus test and model fit statistics were inconsistent. Therefore, one cannot make an absolute claim of a good fit of the data to the model, and one should use caution when interpreting the model. This model correctly classified 73% of the cases. The model with four predictors was fairly good at classifying high probability or low probability of having a substance dependence disorder.

Three research questions and two null hypotheses were formulated for this study. Results of the analyses are presented in the following paragraphs by research question and corresponding hypothesis.

Research Question 1

The first research question addressed the extent to which the probability of each subject having a substance dependence disorder (high or low) can be predicted from individuals' scores on the Psychoticism, Extraversion, Neuroticism, and Propensity to Lie (*P*, *E*, *N*, and *L*) scales. The null hypothesis to respond to this question was tested by entering the combination of all four variables into the analysis simultaneously. Results of the logistic regression procedure revealed that only the variable of extraversion was a statistically significant predictor when entered into

the model with the other individual variables (Wald = 4.468, df = 1, p = .04). None of the other variables (psychoticism, neuroticism, and lying) was a significant predictor. Table 7 displays the beta coefficients for the contribution of each variable to the model.

Table 7.

Coefficients for the contribution of each variable to the model.

Variable	B	Wald	df	Sig	Odds Ratio
Psychoticism	.112	1.924	1	.165	1.119
Extraversion	.120	4.468	1	.035	1.127
Neuroticism	.088	2.353	1	.125	1.092
Lying	-.025	.120	1	.729	.975
Constant	-4.127	6.353	1	.012	.016

Based on the Wald statistic for each of the predictors, one must reject the null hypothesis for the relationship between extraversion and probability (high or low) of having a substance dependence disorder. However, as indicated by the odds ratio (1.127) in Table 7, predicting the probability (high or low) of having a substance dependence disorder based on scores for the extraversion scale (odds ratio = 1.127) is negligible. This means that the odds of having a substance dependence disorder based on their score on the Extraversion scale are 1.127 to 1. One could say the odds of having a substance dependence disorder based on their score on the Extraversion scale are 11 to 10. The null hypotheses for the relationship between psychoticism, neuroticism, and propensity for lying and high or low probability of having a substance dependence disorder must be retained.

Research Question 2

The second research question addressed the extent to which the model correctly classified cases for which the outcome is unknown. Overall, the model correctly classified 73.2% of the cases when all four predictors were included. The model correctly classified 95.7% of low probability of substance dependence disorder cases. However, the model correctly classified only 14.8% of high probability of substance dependence disorder cases. The null hypothesis that the model is not effective at classifying cases into one group or the other for which the outcome is unknown was rejected.

Research Question 3

The third research question addressed the bivariate correlations among the four predictor variables, (1) Psychoticism (*P*), (2) Extraversion (*E*), (3) Neuroticism (*N*), and (4) Propensity to Lie (*L*). Results of the bivariate correlation analysis revealed a weak, positive correlation between psychoticism and extraversion (.06), psychoticism and neuroticism (.12), and extraversion and lying (.15). Moderate, negative coefficients were revealed for the correlation between psychoticism and lying (-.39), extraversion and neuroticism (-.39), and neuroticism and lying (-.47). Inspection of the data showed that the higher the mean score for lying (8.69), the lower the mean score for psychoticism (4.52). The lower the mean score for neuroticism (11.71), the higher the mean score for extraversion (14.53); and the lower the mean score for lying (8.69), the higher the mean score for neuroticism (11.71). Table 8 displays the Pearson correlation coefficients for predictor variables, with statistically significant correlations noted.

Table 8.

Pearson correlation coefficients for the predictor variables.

	Psychoticism	Extraversion	Neuroticism	Lying
Psychoticism	1	.056	.119	-.387*
Extraversion	_____	1	-.392*	.149
Neuroticism	_____	_____	1	-.469*
Lying	_____	_____	_____	1

** Correlation is significant at the .01 level (2-tailed).*

Chapter 5. CONCLUSIONS AND RECOMMENDATIONS

Summary of the Purpose of the Study

The primary purpose of this study was to determine whether personality traits predict probability of substance dependence disorders in undergraduate university students. Specifically, the three personality traits considered were psychoticism, extraversion, and neuroticism. A fourth predictor variable considered was the propensity for lying. Excessive drinking is an especially pervasive problem among university students in the United States and many other nations worldwide (Hingson, et al., 2009; and Kim et al., 2009). Alcohol abuse that is begun in college settings often leads to alcohol dependence and myriad of other problems academically (Gibralter, 2008), legally (CASA, 2010), occupationally – especially for persons with disabilities (Donnell, 2008), and with regard to health (Cargiulo, 2007). A need exists among mental health professionals, rehabilitation professionals, and university administrators for a better understanding of how to address the issue more holistically and effectively (Gibralter, 2008). A more holistic treatment approach may be appropriate since many university students, like many in the general population, abuse alcohol and other substances with a comorbid psychological condition such as the presence of depressive symptoms or anxiety (Frances, 2000). This study investigated the extent to which the logistic regression model correctly classified cases for which there was a high or low probability of substance dependence. In addition, the strength of bivariate correlations among the four predictor variables was examined.

Summary of the Research Procedure

Methodology.

A convenience sampling strategy was utilized to gather data. Two separate instruments were administered to ninety-seven undergraduate students who were enrolled in Special

Education or Rehabilitation programs at a large land-grant university in the Southeastern United States and who were at least 19 years of age. The instruments used were the Eysenck Personality Questionnaire – Revised (EPQ-R) and the Adult Substance Abuse Subtle Screening Inventory – Third Edition (SASSI-3). The EPQ-R measures the presence of three personality traits in scales. These traits include psychoticism, extraversion, and neuroticism. The EPQ-R also measures lying on a scale. The SASSI-3 determines whether individuals have a high probability or low probability of having a substance dependence disorder. This probability (high or low) was the dependent or criterion variable.

In gathering the data, only one student did not participate because of being under the age of 19, which is the age of majority in Alabama. The sample number of 97 was based on a 10% margin of error and a 95% confidence interval, with equal probabilities (50%) of an individual being classified as high probability of having a substance dependence disorder or low probability of having a substance dependence disorder. A randomized sampling of undergraduate students would have been difficult to obtain because of time constraints and accessibility issues. Further, a random sample of undergraduate students from only one major land-grant university in the Southeast may not be representative of all undergraduate students nationally or regionally.

Guiding Questions.

Three research questions and corresponding hypotheses guided the study. The first research question involved the extent to which the probability (high or low) of having a substance dependence disorder can be predicted from individuals' scores on the Psychoticism, Extraversion, Neuroticism, and Propensity to Lie scales (*P*, *E*, *N*, and *L*). The null hypotheses were stated as follows:

Ho1: There is no statistically significant relationship between probability of having a

substance dependence disorder and (a) level of psychotic traits in undergraduate university students, (b) level of extraverted traits in undergraduate university students, (c) level of neurotic traits in undergraduate university students, and (d) level of propensity to lie in undergraduate university students.

The second research question sought to establish how well the logistic regression model classified cases for which the outcome was unknown. The null hypothesis was stated as follows:

Ho2: The model is not effective at classifying cases into one group or the other for which the outcome is unknown.

The third research question examined bivariate correlations among the four predictor variables, (1) Psychoticism (*P*), (2) Extraversion (*E*), (3) Neuroticism (*N*), and (4) Propensity to Lie (*L*).

Data collected enabled the investigator to ascertain the probability of having a substance dependence disorder; to evaluate the efficacy of the logistic regression model; and to identify the strength of the bivariate correlations.

Discussion and Interpretation of the Results

The purpose of this study was to examine the relationship among four predictor variables and the probability of having a substance dependence disorder in undergraduate university students. According to the SASSI-3, twenty-seven of the ninety-seven undergraduate students who participated in the study had a high probability of having a substance dependence disorder, and seventy had a low probability of having a substance dependence disorder. Therefore, nearly 28% of the students participating in the study were deemed by the SASSI-3 to probably have a substance dependence disorder. This percentage is somewhat surprisingly high. Thirty-one

percent of college students nationally meet the criteria for a diagnosis of alcohol abuse, but only 6% meet the criteria for a diagnosis of alcohol dependence (National Institute on Alcohol Abuse and Alcoholism, 2013; Knight, et al., 2002). However, it should be noted that the SASSI-3 is not used for the purpose of making diagnoses, but rather for determining probability of having a substance dependence disorder. It is also possible that in this study, students were more likely to be forthright about their use of alcohol and other substances since their responses were anonymous.

Also, the specific substance dependence disorder which the individual may have a high probability of having may be one other than alcohol dependence. For example, it may be indicative of having a high probability of cannabis dependence. Regarding cannabis use, there is currently a trend in many states in which cannabis possession and use is moving toward becoming legal; and in two states, it is legal now. Federal law in the United States prohibits cannabis use and possession. State laws may not supersede federal law, though federal authorities may not actively seek to enforce federal laws regarding cannabis use and possession in states which have made it legal or are moving toward making it legal. Colorado and Washington passed cannabis legalization in 2012. It is possible that the growing societal acceptance of cannabis use may result in its being increasingly viewed as socialization versus an addiction.

Regarding the first research question, analysis of the data revealed that of the four predictor variables (psychoticism, extraversion, neuroticism, and propensity for lying), only extraversion was a statistically significant predictor of high probability of having a substance dependence disorder. This was the most surprising result of the study for several reasons. First, individuals with antisocial personality disorder, of which psychotic personality traits are a major component,

are 21 times more likely than those without antisocial personality disorder to have diagnoses of substance use disorders (Helzer & Pryzbeck, 1988). While no diagnoses were made in this study, it was nonetheless interesting that psychoticism was not a statistically significant factor in high probability of having a substance dependence disorder.

Goldstein (2007) found a strong connection between alcohol dependence and syndromal adult antisocial behavior, and found that antisocial behavioral traits were linked to severe alcohol use disorders. Lewis (2011) found that people with antisocial personality traits have more acute substance dependence and younger ages of onset than people without antisocial personality traits. Because antisocial personality disorder is the Axis II personality disorder most closely associated with psychoticism, and because the research has strongly linked antisocial personality traits with substance abuse and substance dependence (Helzer & Pryzbeck, 1988), it was expected that psychoticism would be a predictor of substance dependence in this study. A possible explanation for this study revealing that psychoticism was not a statistically significant predictor of having a high probability of having a substance dependence disorder is the relatively young age of the vast majority of the undergraduate students participating in the study. Their personalities may still be in formation. However, the Lewis (2011) study indicated younger ages of onset of substance use problems for people with antisocial personality traits, so the proposition that the subjects in this study were so young as to have still evolving personalities is inconsistent with the Lewis (2011) results.

It was also surprising that this study revealed that among the participants, neuroticism was not a statistically significant predictor of high probability of having a substance dependence disorder. The reason it had been expected at the outset of the study that neuroticism would be a statistically significant predictor of high probability of having a substance dependence disorder is

that neuroticism is present when one has excessive worry, anxiety, and obsessiveness, often accompanied by depressive symptoms and fluctuating mood (American Psychiatric Association, 1994). While psychoticism is associated with specific personality disorders, most prominently with antisocial personality disorder, neuroticism is associated with every Axis II personality disorder (Grant, et al., 2006). Individuals with borderline personality disorder, for example, have very elevated odds of being substance dependent when compared to the general population (Zanarini, 2011). Mikolajewski, Pizzarello, and Taylor (2011) noted that while the reasons for the comorbidity of substance dependence and borderline personality disorder are not definitively known, the association between the two conditions is pronounced and leads to many negative consequences. Pennay, et al. (2011) found that the percentage of people with borderline personality disorder who also have substance use disorders is as high as 65%. Other studies linked other Axis II personality disorders in which neuroticism is a prominent feature to increased likelihood of substance use disorders. For example, Echeburua, De Medina, and Aizpiri (2009) found that dependent personality disorder was strongly connected to alcohol dependence. Dependent personality disorder is characterized by especially high levels of neuroticism in the form of exaggerated fears and worry over being left alone (American Psychiatric Association, 2000). It was therefore expected that neuroticism would be a predictor of substance dependence among undergraduate university students. However, a conclusion of this study was that neuroticism does not predict substance dependence among undergraduate students. This outcome was unexpected, considering the findings of the Echeburua, De Medina, and Aizpiri (2009) study.

Regarding propensity for lying, this variable was not a statistically significant predictor for high probability of having a substance dependence disorder in this study. It was not expected

that lying would prove to be a predictor of high probability of having a substance dependence disorder because there was little in the body of literature indicating that it would be. The only information in the body of literature which suggested this could be a possibility was that individuals with Machiavellian tendencies typically feel no remorse or even hesitation about lying when they perceive doing so to likely prove advantageous personally (McLeod & Genereux, 2008). Also, those with the conditions associated with Machiavellianism, such as antisocial personality disorder, are far more likely to be substance dependent than individuals in the general population (Helzer & Pryzbeck, 1988). It should be noted again that this study made no diagnoses.

The only predictor variable revealed by this study to be a statistically significant predictor of high probability of having a substance dependence disorder was extraversion. In some ways this was a surprising finding; however, in other ways it was not. For example, many individuals with elevated levels of anxiety are not extraverted, but rather they are introverted – frequently to the point of avoiding contact with others. This is especially true of individuals with schizoid personality traits, avoidant personality traits, and schizotypal personality traits. However, isolation and loneliness, which are often experienced by introverted individuals more so than by extraverted persons, are associated with increased risk of substance use (Kott, 2011). A possible explanation for why extraversion was revealed to be a statistically significant predictor of high probability of having a substance dependence disorder in this study may be found in the population sample of undergraduate university students. It could be that among university students, being more socially active or extraverted would increase the probability of substance dependence due to the deeply ingrained culture of excessive alcohol use and binge drinking in college settings. Excessive drinking is viewed by many students as both a rite of passage and a

key component of college social life (National Institute on Alcohol Abuse and Alcoholism, 2012).

In addition, this study sought to determine the extent to which the logistic regression model correctly classified cases for which the outcome was unknown. The model correctly classified 95.7% of low probability of substance dependence disorder cases, which was extremely high. The model correctly classified only 14.8% of high probability of substance dependence disorder cases, which was low. The correct classification of 73.2% of cases revealed that overall, the model was effective at classifying cases into one group or the other for which the outcome was unknown when all four predictors were included in the model simultaneously.

The weak, positive bivariate correlations revealed in this study between psychoticism and extraversion; psychoticism and neuroticism; and extraversion and lying were not surprising. The moderate, negative coefficients revealed for the correlation between extraversion and neuroticism; and neuroticism and lying were likewise expected. An unexpected bivariate correlation found in this study was that moderate, negative coefficients were identified for the correlation between psychoticism and lying. Psychoticism and lying are both prominent antisocial personality traits (American Psychiatric Association, 2000; and Li, et al., 2011); therefore it was expected that there would be a positive correlation between these two variables. However, in this study, the higher the mean score on the scale for lying, the lower the mean score on the scale for psychoticism. This is inconsistent with the expected outcome.

Conclusions

One conclusion of this study is that among the four variables measured by the Eysenck Personality Questionnaire - Revised, only the personality trait of extraversion significantly predicted a high probability of undergraduate university students having a substance dependence

disorder. Further conclusions are that the other two personality traits, psychoticism and neuroticism, and the variable of propensity for lying, do not significantly predict high probability of having a substance dependence disorder among undergraduate university students. Another conclusion of this study is that among undergraduate university students, there was a negative bivariate correlation between psychoticism and lying. This presents another interesting question since lying is a prevalent characteristic of psychoticism (Li, et al., 2011). Additional research to determine why these two unexpected outcomes were found among undergraduate university students would be an interesting contribution to the related body of literature. The finding of this study that there is no statistically significant prediction of high probability of having substance dependence disorders among undergraduate university students based upon psychoticism or neuroticism in particular warrants further investigation. Psychoticism and neuroticism are predictors of substance dependence in the general population.

Implications and Recommendations

This study revealed that psychoticism is not a statistically significant predictor of substance dependence in undergraduate university students. This revelation is inconsistent with the Goldstein, et al. (2007) research, which found psychoticism to be a prevalent trait among substance dependent individuals. Furthermore, this study revealed that neuroticism is not a statistically significant predictor of substance dependence in undergraduate university students. This revelation is also inconsistent with research indicating that neuroticism is a prevalent trait among substance dependent individuals (Grant, et al., 2006). Psychoticism (Goldstein, et al., 2007) and neuroticism (Grant, et al., 2006) are highly associated with substance dependence disorders in the general population.

One implication of this study is that clinicians and student affairs personnel should consider the SASSI-3 to be the better tool in predicting substance dependence among undergraduate students. It is better than the EPQ-R in predicting substance dependence. College counselors and student affairs personnel should consider giving the SASSI-3 to all entering freshmen, because doing so may make some students aware of personal substance use patterns which they may not recognize as potentially problematic. Special care should be taken by college counselors and student affairs personnel to avoid subtly affirming binge drinking and other excessive substance use among students as a "rite of passage." Simply being commonplace for a high number of undergraduate students does not make excessive substance use a rite of passage.

Because this study found only extraversion to be a statistically significant predictor of substance dependence in undergraduate students, a question arises about whether one's being in a manic phase contributes to extraverted traits during such a phase. Experiencing manic phases with alternating phases of depressive symptoms (or, in the case of mixed bipolar disorder, experiencing manic and depressive phases simultaneously) is far more indicative of bipolar disorder, an Axis I condition, than of Axis II diagnoses. However, people with bipolar disorder frequently display antisocial, borderline, histrionic, or narcissistic personality traits, albeit usually during the manic, or "hypomanic" phase. Janowsky, Leff, and Epstein (1970) noted that bipolar patients in manic phases are often gamey, manipulative, or behave in a manner which is antisocial, but usually only while experiencing hypomania. Further research could examine the substance use patterns of undergraduate university students with bipolar disorder with regard to the experienced phases (mania and depression).

Another path for further research could be an investigation of other traits that might predict having a substance dependence disorder among undergraduate university students specifically.

Considering that about half of men who have antisocial personality disorder also have an anxiety disorder (Hodgins, De Brito, Chhabra, & Cote, 2010), a study to determine whether the presence of anxiety in undergraduate university students predicts substance dependence could be warranted. It would be interesting to know if undergraduate students' scores on assessments for anxiety significantly predict substance dependence. Further investigation need not exclusively examine other personality traits as predictors of substance dependence, but could also consider other psychological symptoms as predictors of substance dependence in college settings. As this study revealed, findings regarding substance dependence and comorbid conditions in the general population may not necessarily be generalized to undergraduate college students.

REFERENCES

Adachi, M., & Brennier, D. (2005). Clinical syndromes of alcoholic liver disease. *Digestive Diseases, 23*, 255-263.

Afifi, T., Mather, A., Boman, J., Fleisher, W., Enns, M., MacMillan, H., & Sareen, J. (2011). Childhood adversity and personality disorder: results from a nationally representative population-based study. *Journal of Psychiatric Research, 45*(6), 814-882.

American Psychiatric Association (2000). Diagnostic and Statistical Manual of Mental Disorders, 4th edn., Text Revision, Washington, DC: American Psychiatric Association

American Psychiatric Association (1994). Diagnostic and Statistical Manual of Mental Disorders, 4th edn. Washington, DC: American Psychiatric Association

Ansell, E., Pinto, A., Crosby, R., Becker, D., Anez, L., Paris, M., & Grilo, C. (2010). The prevalence and structure of obsessive-compulsive personality disorder in Hispanic psychiatric outpatients. *Journal of Behavior Therapy & Experimental Psychiatry, 41*(3), 275-281.

Axelrod, S., Perepletchikova, F., Hotlzman, K., & Sinha, R. (2011). Emotion regulation and substance use frequency in women with substance dependence and borderline personality disorder receiving dialectical behavior therapy. *American Journal of Drug & Alcohol Abuse, 37*(1), 37-42.

Batki, S., Canfield, K., & Ploutz-Snyder, R. (2011). Psychiatric and substance use disorders among methadone maintenance patients with chronic hepatitis c infection: effects on eligibility for hepatitis c treatment. *American Journal on Addictions, 20*(4), 312-318.

Beck, A., & Freeman, A. (1990). *Cognitive Therapy of Personality Disorders.* New York: The Guildford Press.

Bernstein, D. P., Useda, D., & Siever, L. J. (1993). Paranoid personality disorder: review of the literature and recommendations for the DSM-IV. *Journal of Personality Disorders, 7*(1), 53-62.

Cargiulo, T. (2007). Understanding the health impact of alcohol dependence. *American Journal of Health-System Pharmacy, 64*(3), Supplement 1-17.

Carrasco, J., & Lecic-Tosevski, D. (2000). Specific types of personality disorders. In: M. G. Gelder, J. J. Lopez-Ibor, & N. Andreasen (Eds). *New Oxford Textbook of Psychiatry*, Vol. 1 (pp. 927–953). New York: Oxford University Press.

Cattell, R., & Scheier, I. (1961). The meaning and measurement of neuroticism and anxiety. New York, NY: Arnold.

Cheeseman Day, J., & Newburger, E. (2002). The big payoff: educational attainment and synthetic estimates of work-life earnings. Retrieved from http://www.census.gov/prod/2002pubs/p23-210.pdf

Cherpital, C., Bond, J., & Ye, Y. (2006). Multi-level analysis of causal attribution of injury to alcohol and modifying effects: Data from two international emergency room projects. *Drug and Alcohol Dependence, 82,* 258-268.

Christiansen, E., & Larsen, K. (2012). Young people's risk of suicide attempts after contact with a psychiatric department – a nested case-control study design using Danish register data. *Journal of Child Psychology & Psychiatry, 53*(1), 16-25.

Corrao, G., Rubbiti, L., & Bagnardi, V. (2000). Alcohol and coronary heart disease: a meta-analysis. *Addiction, 95,* 1505-1523.

De Genna, N., Feske, U., Angiolieri, T, & Gold, M. (2011). Race and sexually transmitted diseases in women with and without borderline personality disorder. *Journal of Women's Health, 20*(3), 333-340.

Dickman, S. (1990). Functional and dysfunctional impulsivity: personality and cognitive correlates. *Journal of Personality and Social Psychology, 58,* 59-102.

Dimaggio, G., Catania, D., Salvatore, G., Carcione, A., & Nocolo, G. (2006). Psychotherapy of paranoid personality disorder from the perspective of dialogical self-theory. *Counselling Psychology Quarterly, 19*(3), 69-87.

Donnell, C., Mizell, N., & Yan, Z. (2009). Consumers of vocational rehabilitation services diagnosed with psychiatric and substance use disorders. *Journal of Rehabilitation, 75*(3), 41-49.

Easton, C., Weinberger, A., & McKee, S. (2008). Cigarette smoking and intimate partner violence among men referred to substance abuse treatment. *American Journal of Drug and Alcohol Abuse, 34*(1), 39-46.

Echeburua, E., De Medina, R., & Aizpiri, J. (2009). Personality disorders among alcohol-dependent patients manifesting or not manifesting cocaine abuse: a comparative pilot study. *Substance Use & Dependence, 44*(7), 981-989.

Eensoo, D., Paaver, M., Pulver, A., Harro, M., & Harro, J. (2003). Low platelet MAO activity associated with high dysfunctional impulsivity. *Psychopharmacology, 172,* 356-358.

Eggum, N., Eisenberg, N., Sinrad, T., Valiente, C., Edwards, A., Kupfer, A., & Reiser, M. (2009). Predictors of withdrawal: possible precursors of avoidant personality disorder. *Development and Psychopathology, 21*(3), 815-838.

Engs, R., Diebold, B., & Hansen, D. (1996). The drinking patterns and problems of a national national sample of college students, 1994. *Journal of Alcohol and Drug Education, 41*(3), 13-33.

Eysenck, H. (1952). The scientific study of personality. London, UK: Routledge, & Kegan Paul.

Eysenck, H. (1970). The structure of human personality. London, UK: Methuen.

Eysenck, H., & Eysenck, M. (1985). Personality and individual differences: a natural science approach. New York, NY: Plenum Press.

Eysenck, H., & Eysenck, S. (1994). Manual of the Eysenck personality questionnaire. San Diego, CA: EdiTS.

Eysenck, H., & Eysenck, S. (1969). Personality structure and measurement. San Diego, CA: EdITs.

Eysenck, H., & Knapp, R. (1962). Manual of the Maudsley personality inventory. San Diego, CA: EdITs.

Feske, U., Tarter, R., Kirisci, L., & Pilkonis, P. (2006). Borderline personality and substance abuse in women. *American Journal on Addictions, 15*(2), 131-137.

Flannery, R., Farley, E., Tierney, T., & Walker, A. (2011). Characteristics of assaultive psychiatric patients: 20-year analysis of the assaultive staff protection program (asap). *Psychiatric Quarterly, 82*(1), 1-10.

Francis, A. (2000). Paranoid Personality Disorder. In *Medical Disability Advisor*. Retrieved October 19, 2011 from http://www.mdguidelines.com/paranoid-personality-disorder

Fridberg, D., Vollmer, J., O'Donnell, B., & Skosnik, P. (2011), *Psychiatry Research, 186*(1), 46-52.

George, D., & Mallery, P. (2010). SPSS for Windows step by step: A simple guide and reference, 17.0 update, 10th edition. Cambridge, UK: Pearson Publishing.

Gibralter, J. (2008). Students in need, schools at the ready. *University Business, 11*(7), 35-38.

Goldstein, R., Dawson, D., Saha, T., Ruan, W., Compton, W., & Grant, B. (2007). Antisocial Syndromes and DSM-IV alcohol use disorders: results from the national epidemiologic survey on alcohol and related conditions. *Alcoholism: Clinical & Experimental Research, 31*(5), 814-828.

Grant, B., Dawson, D., & Stinson, F. (2004). The 12-month prevalence and trends in DSM-IV alcohol abuse and dependence: United States, 1991-1992 and 2001-2002. *Drug and Alcohol Dependence, 74,* 22-234.

Grant, B., Stinson, F., Dawson, D., Chou, S., Ruan, W., & Pickering, R. (2006). Co-occurrence of 12-month alcohol and drug use disorders and personality disorders in the United States. *Alcohol Research & Health, 29*(2), 121-130.

Grant, J., Flynn, M., Odlaug, B., & Schreiber, L. (2011). Personality disorders in gay, lesbian, bisexual, and transgender chemically dependent patients. *American Journal on Addictions, 20*(5), 405-441.

Grove, R., McBride, O., & Slade, T. (2010). Towards DSM-V: Exploring diagnostic thresholds for alcohol dependence and abuse. *Alcohol & Assessment, 45*(1), 45-52.

Gunter, B. (1983). Personality and perceptions of harmful and harmless TV violence. *Personality & Individual Differences, 4*(6), 665-670.

Harvey, E., Stoessel, B., & Herbert, S. (2011). Psychopathology and parenting practices of parents of preschool children with behavior problems. *Parenting: Science & Practice, 11*(4), 239-263.

Hasin, D., & Grant, B. (2004). The co-occurrence of DSM-IV-TR alcohol abuse in DSM-IV alcohol dependence: results of the National Epidemiologic Survey on Alcohol and Related Conditions on heterogeneity that differ by population subgroup. *Archives of General Psychiatry, 61,* 891-896.

Hayward, B. (2007). Cluster A personality disorders: considering the 'odd-eccentric' in psychiatric nursing. *International Journal of Mental Health Nursing, 16*(1), 15-21.

Helzer, J., & Pryzbeck T. (1988). The co-occurrence of alcoholism with other psychiatric disorders in the general population and its impact on treatment. *Journal of Studies on Alcohol, 49,* 219-224.

Hernandez, S., & Mauger P. (1980). Assertiveness, aggressiveness and Eysenck's personality variables. *Personality & Individual Differences, 1*(2), 143-149.

Hertzel, J., Schutz, A., & Lammers, C. (2009). Emotional intelligence and mental disorder. *Journal of Clinical Psychology*, *65*(9), 942-954.

Hesse, M., & Pedersen, M. (2008). Protocol: personality assessment as a support for referral and case-work in treatment for substance use disorders. *BMC Psychiatry, 8,* 1-9.

Higley, A., Crane, N., Spadoni, A., Quello, S., Goodell, V., & Mason, B. (2011). Craving in response to stress induction in a human laboratory paradigm predicts treatment outcome in alcohol-dependent individuals. *Psychopharmacology, 218*(1), 121-129.

Hingson, R., Heeren, T., Zakocs, R., 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.

Hingson, R., Zha, W., & Weitzman, E. (2009). Magnitude of and trends in alcohol-related mortality and morbidity among U.S. college students ages 18-24, 1998-2005. *Journal of Studies on Alcohol and Drugs, July*(Suppl. 16), 12-20.

Hodgins, S., De Brito, A., Chhabra, P., & Cote, G. (2010). Anxiety disorders among offenders with antisocial personality disorders: a distinct subtype? *Canadian Journal of Psychiatry, 55(*12), 784-791.

Hopwood, C., Baker, K., & Morey, L. (2008). Extratest validity of selected personality assessment inventory scales and indicators in an inpatient substance abuse setting. *Journal of Personality Assessment, 90*(6), 574-577.

Hopwood, C., Morey, L., Skodol, A., Sanislow, C., Grilo, C., Ansell, E., McGlashan, T., Markowitz, J., Pinto, A., Yen, S., Gunderson, J., Zanarini, M., & Stout, R. (2011). Pathological personality traits among patients with absent, current, and remitted substance use disorders. *Addictive Behaviors, 36*(1), 1087-1090.

Jannson, I., Hesse, M., & Fridell, M. (2008). Personality disorder features as predictors of symptoms five years post-treatment. *American Journal on Addictions, 17*(3), 172-175.

Janowsky, D., Leff, M., & Epstein, R. (1970), Playing the manic game. Interpersonal maneuvers of the acutely manic patient. *Archives of General Psychiatry, 22*(3), 252-261.

Jantzew, A., Hoover, J., & Narloch, R. (2006). The relationship between school-aged bullying and trust, shyness and quality of friendships in young adulthood. *School Psychology International, 27*(2), 146-156.

Karterud, S., Arefijord, N., Andresen, N., & Pedersen, G. (2009). Substance use disorders among personality disordered patients admitted for day hospital treatment. Implications for service developments. *Nordic Journal of Psychiatry, 63*(1), 57-63.

Kernberg, O. (1984). Severe Personality Disorders. New Haven, CT: Yale University Press.

Kessler, R., Crum, R., Warner, L., Nelson, C., Schulenberg, J., & Anthony, J. (1997). Lifetime co-occurrence of DSM-II-R alcohol abuse and dependence with other psychiatric disorders in the national comorbidity survey. *Archives of General Psychiatry, 54,* 313-321.

Kim, J., Chan, K., Chow, J., Fung, K., Fong, B., Cheuk, K., & Griffiths, S. (2009). University binge drinking patterns and changes in patterns of alcohol consumption among Chinese undergraduate students in a Hong Kong university. *Journal of American College Health, 58*(3), 255-265.

Kline, P., & Cooper, C. (1983). A factor-analytic study of measures of Machiavellianism. *Personality & Individual Differences, 4*(5), 221-234.

Knight, J., Wechsler, H., Kuo, M., Seibring, M., Weitzman, E., & Schuckit, M. (2002). Alcohol abuse and dependence among U.S. college students. *Journal of Studies on Alcohol,* In press.

Kott, A. (2011). Drug use and loneliness are linked to unprotected sex in older adults with hiv. *Perspectives on Sexual & Reproductive Health, 43*(1), 69.

Latalova, K., & Prasko, J. (2010). Aggression in borderline personality disorder. *Psychiatric Quarterly 81*(3), 239-251.

Lewis, C. (2011). Substance use and violent behavior in women with antisocial personality disorder. *Behavioral Sciences & the Law, 29*(5), 667-676.

Li, D., Zhao, H., Kranzler, H., Oslin, D., Anton, R., Farrer, L., & Gelernter, J. (2012). Association of COL25A1 with comorbid antisocial personality disorder and substance dependence. *Biological Psychiatry, 71*(8), 733-740.

Magyar, M., Edens, J., Littlefield, S., Douglas, K., & Poythress, N. (2011). Examining the relationship among substance abuse, negative emotionality and impulsivity across subtypes of antisocial and psychopathic substance abusers. *Journal of Criminal Justice, 39*(3), 232-237.

Mandelli, L., Mazza, M., Di Nicola, M., Zaninotto, L., Harnic, D., Catalano, V., Tedeschi, D., Martinotti, G., Bria, P., Janiri, L., & Serretti, A. (2012). Role of substance abuse comorbidity and personality on the outcome of depression in bipolar disorder: harm avoidance influences medium-term treatment outcome. *Psychopathology, 45*(3), 174-178.

McHugh, R., Kaufman, J., Frost, K., Fitzmaurice, G., & Weiss, R. (2013). Positive affect and stress reactivity in alcohol-dependent outpatients. *Journal of Studies on Alcohol & Drugs, 74*(1), 152-157.

McHugo, G., Drake, R., Xie, H., & Bond, G. (2012). A 10-year study of steady employment and non-vocational outcomes among people with serious mental illness and co-occurring substance use disorders. *Schizophrenia Research, 138(2/3),* 233-239.

McLeod, B., & Genereux, R. (2008). Predicting the acceptability and likelihood of lying: The interaction of personality type with the type of lie. *Personality and Individual Differences, 45,* 591-596.

Meissner, W. W. (1996). Paranoid personality disorder. In: G.O. Gabbard & S. D. Atkinson (Eds). *Synopsis of Treatments of Psychiatric Disorders*, 2nd edn. (pp. 947–952). Washington: American Psychiatric Press.

Mertler, C., & Vannatta, R. (2004). Advanced and multivariate statistical methods, 3rd edition. Glendale, CA: Pyrczak Publishing.

Mikolajewski, A., Pizzarello, S., & Taylor, J. (2011). Borderline personality disorder symptom clusters predict substance use disorder symptoms in a nonclinical sample. *Journal of social and clinical psychology, 30*(7), 722-731.

Miller, G., & Lazowski, L. (1999). The adult SASSI-3 manual. Springville, IN: The SASSI Institute.

Mills, A., Gilbert, P., Bellew, R., McEwan, K., & Gale, C. (2007). Paranoid beliefs and self-criticism in students. *Clinical Psychology and Psychotherapy, 14*, 358-364.

Moggi, F., Giovanoli, A., Buri, C., Moos, B., & Moos, R. (2010). Patients with substance use and personality disorders: a comparison of patient characteristics, treatment process, and outcomes in Swiss and U.S. substance use disorder programs. *American Journal of Drug & Alcohol Abuse, 36*(1), 66-72.

Monnot, M., Lovallo, W., & Nixon, S. (2002) Neurological basis of deficits in affective prosody comprehension among alcoholics and fetal alcohol-exposed adults. *Journal of Neuropsychiatry and Clinical Neurosciences, 14*, 321-328.

Moore, R., Levine, D., & Southard, J. (1990). Alcohol consumption and blood pressure in the 1982 Maryland Hypertension Survey. *American Journal of Hypertension, 3*, 1-7.

Moore, R., & Malitz, F. (1986). Underdiagnosis of alcoholism by residents in an ambulatory medical practice. *Journal of Medical Education, 61,* 46-52.

Morcillo, C., Duarte, C., Sala, R., Wang, S., Lejuez, C., Kerridge, B., & Blanco, C. (2012). Conduct disorder and adult psychiatric diagnoses: associations and gender differences in the U.S. adult population. *Journal of Psychiatric Research, 46*(3), 323-330.

Murugiah, S. (2012). A discrepancy of definitions: binge drinking and female students at an Australian university. *Youth Studies Australia, 31*(2), 26-34.

National Comorbidity Survey (1997). National Comorbidity Survey (NCS) and National Comorbidity Survey Replication (NCS-R). Retrieved from http://www.hcp.med.harvard.edu/ncs/index.php

National Highway Traffic Safety Administration (2005). *Traffic Safety Facts 2004: Alcohol*. Washington, DC: United States Department of Transportation.

National Institute on Alcohol Abuse & Alcoholism (2012). College Drinking – Changing the Culture. Retrieved from http://collegedrinkingprevention.gov/aboutus/default.aspx

National Institute on Alcohol Abuse & Alcoholism (2013). Understanding the Impact of Alcohol on Human Health & Well-Being. Retrieved from http://www.niaaa.nih.gov/alcohol-health/special-populations-co-occurring-disorders/college-drinking

Nelson, C., Heath, A., & Kessler, R. (1998). Temporal progression of alcohol dependence symptoms in the U.S. household population: results from the National Comorbidity Survey. *Journal of Consulting and Clinical Psychology, 66,* 474-783.

Noel, X., Sferrazza, R., & Van Der, L. (2002). Contribution of frontal cerebral blood flow measured by (99m) Tc-Bicisate spect and executive function deficits to predicting treatment outcome in alcohol-dependent patients. *Alcohol and Alcoholism, 37,* 347-354.

Pennay, A., Cameron, J., Reichert, T., Strickland, H., Lee, N., Hall, K., & Lubman, D. (2011). A systematic review of interventions for co-occurring substance use disorder and borderline personality disorder. *Journal of Substance Abuse Treatment, 41*(4), 363-373.

Pfefferbaum, A., Sullivan, E., & Mathalon, D. (1997). Frontal lobe volume loss observed with magnetic resonance imaging in older chronic alcoholics. *Alcoholism-clinical and Experimental Research, 21,* 521-529.

Pizzarello, S., & Taylor, J. (2011). Peer substance use associated with the co-occurrence of borderline personality disorder features and drug use problems in college students. *Journal of American College Health, 59*(5), 408-414.

Pogarsky, G. (2006). Criminal records, employment, & recidivism. *Criminology & Public Policy, 5*(3), 479-482.

Presley, C., Leichliter, M., & Meilman, P. (1998). Alcohol and drugs on American college campuses: A report to college presidents: Third in a series. Carbondale, IL: Core Institute, Southern Illinois University.

Presley, C., Meilman, P., & Cashin, J. (1996). Alcohol and drugs on American college campuses: use, consequences, and perceptions of the campus environment, Vol. IV: 1992-1994. Carbondale, IL: Core Institute, Southern Illinois University

Radliff, K., Wheaton, J., Robinson, K., & Morris, J. (2012). Illuminating the relationship between bullying and substance use among middle and high school youth. *Addictive Behaviors, 37*(4), 569-572.

Randin, D., Vollenweider, P., & Tappy, L. (1995). Suppression of alcohol-induced hypertension by dexamethasone. *New England Journal of Medicine, 332,* 1733-1737.

Rizvi, S., Dimeff, L., Skutch, J., Carroll, D., & Linehan, M. (2011). A pilot study of the DBT coach: an interactive mobile phone application for individuals with borderline personality disorder and substance use disorder. *Behavior Therapy, 42*(4), 589-600.

Ronningstam, E. (2011). Narcissistic personality disorder in the DSM-V – in support of retaining a significant diagnosis. *Journal of Personality Disorders, 25*(2), 248-259.

Rush, B., & Koegl, C. (2008). Prévalence et profit de personnes souffrant de troubles d'utilisation de substance et de troubles mentaux co-occurrents dans un système complet de santé mentale. *Journal canadien de la psychiatrie, 53*(12), 810-821.

Sacco, R., Elkind, M., & Boden-Albala, B. (1999). The protective effect of moderate alcohol consumption on ischemic stroke. *Journal of the American Medical Association, 281,* 53-60.

Salvatore, G., Nicolo, G., & Dimaggio, G. (2005). Impoverished dialogical relationship patterns in paranoid personality disorder. *American Journal of Psychotherapy, 59*(3), 247.

Samuel, D., LaPaglia, D., Maccarelli, L., Moore, B., & Ball, S. (2011). Personality disorders and retention in a therapeutic community for substance dependence. *American Journal on Addictions, 20*(6), 555-562.

Sargeant, M., Bornovalova, M., Trotman, A., Fishman, S., & Lejuez, C. (2012). Facets of impulsivity in the relationship between antisocial personality and abstinence. *Addictive Behaviors, 37*(3), 293-298.

Sargeant, M., Daughters, S., Curtin, J., Schuster, R., & Lejuez, C. (2011). Unique roles of antisocial personality disorder and psychopathic traits in distress tolerance. *Abnormal Psychology, 120*(4), 987-992.

Shand, F., Fiona, L., Slade, T., Degenhardt, L., Baillie, A., & Nelson, E. (2011). Opioid dependence latent structure: two classes with differing severity? *Addiction, 106*(3), 590-598.

Sheidow, A., McCart, M., Zajac, K., & Davis, M. (2012). Prevalence and impact of substance use among emerging adults with serious mental health conditions. *Psychiatric Rehabilitation Journal, 35*(3), 235-243.

Sher, K., Seungmin, J., Trull, T., Wood, P., Tragesser, S., Tomko, R., Grant, J., & Bucholz, K. (2011). Distinguishing general and specific personality disorder features and implications for substance dependence comorbidity. *Journal of Abnormal Psychology, 120*(3), 656-669.

Sperry, L. (2003). Avoidant personality disorder. In: *Handbook of diagnosis and treatment of DSM-IV-TR personality disorders,* (pp. 59-79). Philadelphia: Brunner-Routledge.

Stacy, A., Newcomb, M., & Bentler, P. (1991). Personality, problem drinking, and drunk driving: mediating, moderating and direct effect models. *Journal of Personality and Social Psychology, 60,* 795-811.

Straussner, S., & Nemenzik, J. (2007). Co-occurring substance use and personality disorders: current thinking on etiology, diagnosis, and treatment. *Journal of Social Work Practice in the Addictions, 7*(1/2), 5-23.

Substance Abuse and Mental Health Administration (2012). Treatment for Alcohol and Other Drug Abuse: Opportunities for Coordination (Technical Assistance Publication (TAP) Series 11). Retrieved from http://kap.samhsa.gov/products/manuals/taps/11d.htm

Sulz, S. (2010). Hysterie I: histrionische persönlichkeitsstörung. *Nervenarzt, 81*(7), 879-888.

Suzuki, Y., Oishi, M., & Mizutani, T. (2002). Regional cerebral blood flow measured by the resting and vascular reserve (RVR) method in chronic alcoholics. *Alcoholism-clinical and Experimental Research, 26,* 95S-99-S.

Swann, A., Lijffijt, M., Lane, S., Kiome, K., Steinberg, J., & Moeller, F. (2011). Criminal conviction, impulsivity, and the course of illness in bipolar disorder. *Bipolar Disorders, 13*(2), 173-181.

Tabachnick, B., & Fidell, L. (1996). Using multivariate statistics (3rd ed.). New York, NY: HarperCollins College Publishers.

Tapert, S., Brown, G., & Kindermann, S. (2001). MRI measurement of brain dysfunction in alcohol-dependent young women. *Alcoholism-clinical and Experimental Research, 25,* 236-245.

Tate, R. (1992). General linear model applications. Unpublished manuscript, Florida State University.

Taylor, J. (2005). Substance use disorders and cluster b personality disorders: physiological, cognitive, and environmental correlates in a college sample. *American Journal of Drug & Alcohol Abuse, 31*(3), 515-535.

Tone, E., Goulding, S., & Compton, M. (2011). Associations among perceptual anomalies, social anxiety, and paranoia in a college student sample. *Psychiatry Research, 188*(2), 258-263.

Trull, T., Jahng, S., Tomko, R., Wood, P., & Sher, K. (2010). Revised NESARC personality disorder diagnoses: gender, prevalence, and comorbidity with substance abuse disorders. *Journal of Personality Disorders, 24*(4), 412-426.

Tull, M., & Gratz, K. (2012). The impact of borderline personality disorder on residential substance abuse treatment dropout among men. *Drug & Alcohol Dependence, 121(*1/2), 97-102.

Uzun, O., Doruk, A., Perdeci, Z., & Turkbay, T. (2006). Substance use disorders in men with antisocial personality disorder: a study in Turkish sample. *Substance Use and Dependence, 41*(8), 1171-1178.

Vaughn, M., DeLisi, M., Beaver, K., Wright, J., & Howard, M. (2007). Toward a psychopathology of self-control theory: the importance of narcissistic traits. *Behavioral Sciences & the Law, 25*(6), 803-821.

Vinson, D., Borges, G., & Cherpital, C. The risk of intentional injury with acute and chronic alcohol exposures: a case-control and case-crossover study. *Journal of Studies on Alcohol, 64,* 350-357.

Vinson, D., Maclure, M., & Reidinger, C. (2003). A population-based case crossover and case-control study of alcohol and the risk of injury. *Journal of Studies on Alcohol, 64,* 358-366.

United States Census Bureau (2002). Work experience and average annual earnings of workers 25 to 64 years old by educational attainment: 1997 – 1999. Retrieved from http://www.census.gov/prod/2002pubs/p23-210.pdf

United States Social Security Administration (2011). Disability Evaluation Under Social Security (Blue Book – June 2011). Retrieved from http://www.ssa.gov/disability/professionals/bluebook/AdultListings.htm

Wall, A., BaileyShea, C., & McIntosh, S. (2012). Community college student alcohol use: developing context-specific evidence and prevention approaches. *Community College Review, 40*(1), 25-45.

Walter, M., Gunderson, J., Zanarini, M., Sanislow, C., Grilo, C., McGlashan, T., Morey, L., Yen, S., Stout, R., & Skodol, A. (2009). New onsets of substance use disorders in borderline personality disorder over 7 years of follow-ups: findings from the Collaborative Longitudinal Personality Disorders Study. *Addiction, 104*(1), 93-110.

Wechsler, H., Lee, J., Seibring, M., Nelson, T., & Lee, H. (2002). Trends in college binge drinking during a period of increased prevention efforts: Findings from four Harvard School of Public Health study surveys, 1993-2001. *Journal of American College Health, 50*(5), 203-217.

Wechsler, H., Moeykens, B., Davenport, A., Castillo, S., & Hansen, J. (1995). The adverse impact of heavy episodic drinkers on other college students. *Journal of Studies on Alcohol, 56*(6), 628-634.

Westermeyer, J., & Thuras, P. (2005) Association of antisocial personality disorder and substance disorder comorbidity in a clinical sample. *American Journal of Drug & Alcohol Abuse, 31*(1), 93-110.

Williams, J., & Hassanyeh, F. (1983). Deliberate self-harm, clinical history and extreme scoring on the EPQ. *Personality & Individual Differences, 3*(2), 347-350.

Wu, L., Gersing, K., Burchett, B., Woody, G., & Blazer, D. (2011), Substance use disorders and comorbid Axis I and II psychiatric disorders among young psychiatric patients: findings from a large electronic health records database. *Journal of Psychiatric Research, 45*(11), 1453-1462.

Xu, Y., Okuda, M., Hser, Y., Hasin, D., Liu, S., Grant, B., & Blanco, C. (2011). Twelve-month prevalence of psychiatric disorders and treatment-seeking among Asian Americans/Pacific Islanders in the United States: results from the national epidemiological survey on alcohol and related conditions. *Journal of Psychiatric Research, 45*(7), 910-991.

Zanarini, M., Frankenbur, F., Weingeroff, J., Reich, D., Fitzmaurice, G., & Weiss, R. (2011). The course of substance use disorders in patients with borderline personality disorder and Axis II comparison subjects: a 10-year follow-up study. *Addiction, 106*(2), 342-348.

AUBURN
UNIVERSITY

DEPARTMENT OF
SPECIAL EDUCATION,
REHABILITATION, AND COUNSELING

The Auburn University Institutional Review Board has approved this document for use from 2/24/13 to 2/23/14 Protocol # 13-071 EP 1302

INFORMED CONSENT
for a Research Study entitled
"Effects of Personality Traits on Substance Dependence in University Students"

You are invited to participate in a research study to determine the effects of personality traits on the probability of substance dependence among university students. The study is being conducted by Stephen Adams, doctoral student in Rehabilitation, under the direction of Dr. E. Davis Martin, Jr. in the Auburn University Department of Special Education, Rehabilitation, and Counseling. You were selected as a possible participant because you are an undergraduate student and are age 19 or older. Data will be collected anonymously and aggregated for analysis.

What will be involved if you participate? If you decide to participate in this research study, you will be asked to complete the Adult Substance Abuse Subtle Screening Inventory-3 (SASSI-3) and the Eysenck Personality Questionnaire - Revised (EPQ-R). Your total time commitment will be approximately 50 minutes.

Are there any risks or discomforts? Yes. A potential for psychological risk and discomfort exists in studies which ask questions about substance use and dependence. Specifically, participants can be led to focus on problems they may be having with their substance use or other behaviors. Because of this risk, participants will be provided with a referral sheet of treatment resources in the Auburn/Opelika area and nearby communities.

Are there any benefits to yourself or others? No.

Will you receive compensation for participating? No.

Are there any costs? There are no costs to participants of this study.

If you change your mind about participating, you can withdraw at any time during the study. Your participation is completely voluntary. If you choose to withdraw, your data can be withdrawn as long as it is identifiable. Your decision about whether or not to participate or to stop participating will not jeopardize your future relations with Auburn University or the Department of Rehabilitation, Special Education, and Counseling.

Participant's initials _____

2084 Haley Center, Auburn, AL 36849-5222; Telephone: 334-844-7676; Fax: 334-844-7677
www.auburn.edu/serc

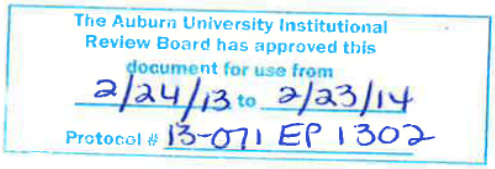
Your privacy will be protected. Any information obtained in connection with this study will remain anonymous. Information obtained through your participation may be used to fill an educational requirement for the dissertation of Stephen Adams, published in a professional journal, or presented at a professional meeting.

If you have questions about this study, *please ask them now or* contact Stephen Adams at adamsst@auburn.edu or Dr. E. Davis Martin, Jr. at martiev@auburn.edu. A copy of this document will be given to you to keep.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Human Subjects Research or the Institutional Review Board by phone (334)-844-5966 or e-mail at hsubjec@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE WHETHER OR NOT YOU WISH TO PARTICIPATE IN THIS RESEARCH STUDY. YOUR SIGNATURE INDICATES YOUR WILLINGNESS TO PARTICIPATE.

Participant's signature Date	Investigator obtaining consent
Date	
Printed Name	Printed Name
	Co-Investigator Date
	Printed Name



Referral Sheet

Substance Abuse &Substance Dependence Treatment Facilities near Auburn University

Name	Phone	Address	Website
Opelika Addictions Center *(Affiliated with East Alabama Mental Health Center)*	(334) 742-2130	2300 Center Hill Drive Opelika, AL 36801	http://eastalabamamhc.org/about.html
Bradford Health Services	(334) 749-3445	401 9th Street Opelika, AL 36801	http://www.bradfordhealth.com/
The Bradley Center at St. Francis Hospital	(706)-596-4000	2122 Manchester Expressway Columbus, GA 31904	http://www.sfhga.com/the-bradley-center
Talbott Recovery Centers	(770) 994-0185	1200 Brookstone Centre Parkway Suite 210 Columbus, GA 31904	https://www.talbottcampus.com/index.php/outpatient-programs/talbott-columbus/
Georgia Therapy Associates Inc.	(706) 576-4033	1301 Wynnton Court Columbus, GA 31906	
House of T.I.M.E. *(Specializes in the treatment of women who are homeless and who are addicted to substances)*	(706) 327-6836	1200 Wynnton Road Columbus, GA 31906	http://www.thehouseoftime.org
Lighthouse of Tallapoosa County Inc. Substance Abuse Rehabilitation Program/Residential	(256) 234-4894	36 Franklin Street Alexander City, AL 35010	
Pathways Center	(706) 845-4045	120 Gordon Commercial Drive, Ste B LaGrange, GA 30240	http://www.pathwayscsb.org
Addiction Recovery Services	(706) 594-4735	301 West Broome Street Ste 106 LaGrange, GA 30240	http://www.AddictionRecoveryLaGrange.com

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