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### Effect of Sensation Seeking and Perfectionism on Stimulant Use

Carissa J. Scurlock

University of Nebraska at Lincoln, carissa.scurlock@gmail.com

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EFFECT OF SENSATION SEEKING AND PERFECTIONISM ON STIMULANT USE

by

Carissa J. Scurlock

A THESIS

Presented to the Faculty of

The Graduate College at University of Nebraska

In Partial Fulfillment of Requirements

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# EFFECT OF SENSATION SEEKING AND PERFECTIONISM ON STIMULANT USE

Carissa J. Scurlock, M. S.

University of Nebraska, 2010

Adviser: Yan Ruth Xia

Stimulant use is quickly becoming a widespread problem in the United States, especially on college campuses. Determining the risk factors for stimulant use may help professionals improve treatments for stimulant abusers. When considering Eysenck's Psychoticism Extraversion Neuroticism (PEN) personality theory, the occurrence of both sensation-seeking and perfectionism may be predictive of substance use. In fact, many studies show that sensation seeking plays a role in stimulant use. However, few studies exist concerning the association between perfectionism and stimulants. The goals of this study were to a) examine the effects of gender and ethnicity on stimulant use and b) to examine the relationship of the traits of sensation seeking and perfectionism and stimulant use.

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Table of Contents

Chapter 1 Introduction	1
Chapter 2 Literature Review	4
Chapter 3 Method	21
Chapter 4 Results	28
Chapter 5 Discussion	35
References	43
Appendix A	55

### Lists of Multimedia Objects

Table 1 Profile of Sample	51
Table 2 Stimulant Use by Gender and Race/Ethnicity	51
Table 3 Chi-Square Tests for Stimulant Use by Gender and Race/Ethnicity	51
Table 4 Summary of Logistic Regression Analysis for Variables Predicting Stimulant Use	52
Table 5 Classification Table for all Logistic Regression Models	52
Figure 1 Pictorial representation of Eysenck's Personality Theory	54
Approval Letter from Institutional Review Board	69

## Chapter One: Introduction

The illegal use of stimulants is quickly becoming a widespread problem throughout the United States. In 2007, 1.1 million people reported that they had abused stimulants in the past month. Furthermore, non-medical use of prescription stimulants increased significantly from 2006 to 2007. Approximately four percent of people ages 12 and older reported that they started their use of illegal drugs with prescription stimulants. The average age of starting prescription stimulants was found to be 21.9 years (Substance Abuse and Mental Health Services Administration [SAMHSA], 2008).

Stimulant use has negative physiological and psychological consequences. Psychological effects include depression, paranoia and anxiety. Physiological effects include rapid heartbeat, high blood pressure and the constriction of blood vessels, which, in turn, increases the likelihood of seizures and strokes (Dixon, 1994; Halkitis, Parsons, & Stirratt, 2001). Research shows that long-term use of methamphetamines and methamphetamine dependence negatively affects memory, attention and learning (Kalechstein, Newton & Green, 2003; Simon et al., 2000). Furthermore, use of methamphetamines is associated with risky sexual behaviors that put individuals at greater risk of contracting HIV (Halkitis et al.).

Substance use takes a toll on couples and their children. Grella and Greenwell (2006) studied a sample of substance-abusing women and found that about one-third had lost their parental rights. These women were also less likely to have worked a traditional job and were more likely to engage in prostitution (Grella & Greenwell). El-Bassel, Gilbert, Wu, Chang and Fontdevila (2007) found that 58% of the male substance users in

their sample had perpetrated intimate partner violence and that there were significant associations between cocaine use and partner violence. In a longitudinal study with female substance users, frequent crack cocaine use significantly increased the chances of subsequent intimate partner violence (El-Bassel, Gilbert, Wu, Go & Hill, 2005).

When studying adolescent children of substance users, results of a longitudinal study showed that 70% of the teens in the sample reported that they had experienced at least one parental transition in a two-and-a-half year period, and 28% reported at least three parental transitions. About 25% of the adolescents reported that they did not have any stable parental figure during this same time period. Over half of the teens reported that they had engaged in acts of delinquency and that they had also used illegal substances (Keller, Catalano, Haggerty & Fleming, 2002).

Dembo, Wareham, Poythress, Cook and Schmeidler (2006) found that adolescent drug users were more likely to be at least one grade behind in school and were more likely to commit crimes, such as theft and assault. These teens were also significantly more likely to experience poor interactions with their peers as a result of drug use (Dembo et al.). In a longitudinal study conducted by Jennison (2004), college students who used substances were more likely to drop out of college and, ten years later, earned less money than non-substance users. College students who used substances but did not drop out of college also reported decreased earnings (Jennison).

Despite this, an informal survey conducted by Walters, Foy and Castro (2002) showed that only two out of ten schools surveyed were developing programs for stimulant users. Additionally, none of these institutions were utilizing any programs

(Walters et al.). Researchers believe that knowledge of personality traits associated with stimulant use can aid in the formation of prevention and treatment models (Roberti, 2003; Slade & Owens, 1998). However, few studies have investigated personality traits associated specifically with stimulant use.

Low and Gendaszek (2002) examined the effects that the traits of sensation seeking and perfectionism have on stimulant use. The use of stimulants was found to be correlated with students scoring high in both sensation seeking and perfectionism personality traits. Additionally, these students used stimulants more often than individuals with any other combination of these traits (Low & Gendaszek). The goals of this study were to a) examine the effects of gender and ethnicity on stimulant use and b) to examine the relationship of the traits of sensation seeking and perfectionism and stimulant use.

## Chapter Two: Literature Review

In the literature review, the theoretical perspective of this study, Eysenck's Personality Theory, is discussed. Dimensions of personality in this theory, especially Psychoticism and Neuroticism, and their role in substance use are presented. Following this, traits related to these dimensions and their influence on substance use are discussed. Demographic variables associated with stimulant use are reviewed.

### **Theoretical Perspective**

When studying personality constructs, Eysenck's personality theory is one of the most comprehensive and widely cited models of personality in use today. This model considers both states and traits in individuals while accounting for the biological factors of individual temperament (Eysenck, 1990). Eysenck has proposed a four tiered hierarchy of personality (See Figure 1). The lower levels of the hierarchy account for temporary states while the traits on the upper tiers of the model consist of more permanent aspects of personality (Eysenck).

Eysenck's model has been dubbed the PEN model because of the three personality dimensions it considers—Psychoticism, Extraversion and Neuroticism. These dimensions comprise the highest level of Eysenck's hierarchy. The second highest level of the hierarchy includes traits. Eysenck defines traits as significant correlations found between habitual behaviors. For example, the traits sociable, carefree and dominant are related components of the Extraversion dimension. The third highest level of the hierarchy is made up of *habitual* cognitions and acts, such as going to parties. Lastly, the lowest level is comprised of *single* acts or cognitions (See Figure 1; Eysenck, 1990).

The personality dimension of Psychoticism may be biologically based in testosterone. It follows that the higher the amount of testosterone present, the more likely one is to display Psychoticism traits (Acton, 2003). These traits include aggression, impulsivity, creativity and tough-mindedness (Eysenck, 1990). Psychoticism has also been linked to dopamine functioning in the brain (Eysenck, 1997).

Extraversion has a proposed link to cortical arousal. It is believed that there is an optimal threshold for arousal. Any level of arousal too far below or above this threshold causes performance to worsen. Extraverts require external stimuli to increase their performance because they are generally under-aroused. Introverts are typically over-aroused and therefore prefer quiet and solitude to achieve optimal arousal. Some traits of extraversion include sociability and assertiveness (Acton, 2003; Eysenck, 1990).

Lastly, the dimension of Neuroticism is associated with the sympathetic nervous system, which controls the commonly known “fight-or-flight” response. People higher in neuroticism have a lower threshold at which the response is activated. Therefore, they have a tendency to have a negative affect and are easily upset by slight stressors (Acton, 2003). Traits of Neuroticism include shyness, guilty feelings, irrationality and emotionality (Eysenck, 1990).

In summary, Eysenck has proposed a four tiered hierarchy of personality. The dimensions of Psychoticism, Extraversion and Neuroticism encompass the highest level of the hierarchy and traits comprise the second highest level. This study will examine personality traits and stimulant use.

### **Substance Use and Personality Dimensions**

Many studies have revealed that individuals scoring high on Eysenck's dimensions of Psychoticism and Neuroticism and low on the Extraversion dimension are more susceptible to be substance users (Saiz et al., 2003; Teasdale, Segraves & Zacune, 1971). One study conducted by Saiz et al. studied potential correlations between personality dimensions of middle school students and frequency of cocaine use. Students who frequently used cocaine were compared to another group of students who had used cocaine less than ten times and a third group of students who had never used cocaine. The researchers found that both groups of cocaine users had high scores on the Psychoticism dimension (Saiz et al.).

Furthermore, Teasdale et al. (1971) found the Psychoticism and Neuroticism dimensions to be present in substance abusers. Personality dimensions were compared between five different groups of individuals: heroin users living in rural areas, in-patient drug abusers who previously injected drugs, in-patient drug abusers who previously abused drugs orally, students who were not considered drug addicts but had used drugs in the past three weeks and students who were not substance users. All groups were comparable in age and socioeconomic status. Higher Psychoticism scores were found in individuals who had previously abused substances with both in-patient groups and the group of heroin users having the highest Psychoticism scores. These three groups also scored at significantly high levels on the Neuroticism dimension (Teasdale et al.).

A similar study compared Eysenck's personality dimensions between three groups of Saudi substance dependent men and a control group. The data received from

the substance abusers were divided into groups of voluntary inpatients, voluntary outpatients and involuntary inpatients. The involuntary inpatient group scored significantly higher than both voluntary patient groups on Psychoticism and Neuroticism. Additionally, voluntary inpatients were found to have significantly higher Neuroticism scores than voluntary outpatients. All substance abusing groups scored significantly higher than university students on the Psychoticism and Neuroticism scales (Abu-Arab & Hashem, 1995).

Lastly, Gossop and Eysenck (1980) collected data using the Eysenck Personality Questionnaire (EPQ) in a group of 211 substance dependent individuals and compared responses with those of 310 non-dependent individuals. They found that 32 items of the EPQ were able to discriminate between drug addicted individuals and non-addicted individuals. Questions falling under the Neuroticism dimension made up 13 of the 32 items. An additional 9 of the 32 items came from the Psychoticism dimension. Only 6 items were derived from the Eysenck Lie scale and 4 items were derived from the Extraversion dimension (Gossop & Eysenck).

In review, numerous studies have shown that individuals with high scores on the dimension of Psychoticism, low scores on the Extraversion dimension and high scores on the dimension of Neuroticism are more likely to be substance users.

### **Substance Use and Personality Traits**

The traits of concern in this study – sensation seeking and perfectionism – are linked to Eysenck's Psychoticism and Neuroticism dimensions (Acton, 2003; Christensen, Danko, & Johnson, 1993). According to Eysenck's Personality theory, it

should follow that individuals possessing traits associated with these personality dimensions would be more likely to abuse substances (Eysenck, 1990).

### **Sensation seeking**

The personality trait of sensation seeking has been linked to Eysenck's Psychoticism personality dimension (Acton, 2003). This trait has been defined as "the need for varied, novel, and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experience" (Zuckerman, 1979, p. 10). In essence, the sensation-seeker needs new experiences that are complex and ever-changing. Furthermore, individuals with the sensation seeking trait engage in actions that others regard as too risky (Zuckerman). This may result in both positive and negative behaviors. For instance, individuals scoring high in sensation seeking may be more willing to participate in extreme sports such as skydiving. In contrast, sensation seeking may lead one to negative behaviors like substance use.

In fact, numerous studies have shown sensation seeking to be a strong predictor of substance use (Horvath, Milich, Lyman, Leukefeld, & Clayton, 2004; Jaffe & Archer, 1987; Teichman, Barnea, & Ravav, 1989). This assertion may be effectively illustrated by a study conducted by Jaffe and Archer (1987). In this study, college students completed the Psychopathic Deviancy scale of the Minnesota Multiphasic Personality Inventory, the MacAndrew Alcoholism scale, the Sensation Seeking Scale (SSS-V), the Millon Alcohol Abuse Scale, the Millon Drug Abuse Scale and questionnaires about substance use. The results showed that sensation-seeking was the best predictor of substance use in the study (Jaffe & Archer).

Longitudinal studies also show a connection between sensation-seeking and substance use. Horvath et al. (2004) used a longitudinal, cross-lagged design over a five year period to support evidence that sensation seeking does have an influence on substance use. In this study, 9th and 10th-grade students were asked to complete surveys concerning sensation seeking and substance use. These same students were asked to complete the measures once more between the ages of 19 and 21. It was found that sensation-seeking and substance abuse influence one another (Horvath et al., 2004).

Additionally, Teichman et al. (1989) asked adolescent students to complete a substance use questionnaire, the SSS-V, the State-Trait Anxiety Inventory and the Depressive Adjective Check List. These same students were asked to complete these measures again 12 months later. The results of the study showed that sensation seeking was a better predictor of substance use than the anxiety and depressive mood assessments used in the study. Sensation seeking was also able to differentiate between those who did and did not use drugs (Teichman et al.).

Furthermore, the higher a student scores on sensation seeking scales, the more likely the individual is attracted to drugs beyond the more socially acceptable substances of alcohol and marijuana (Zuckerman, 1979). Researchers have proposed motivations for sensation-seekers using substances commonly called “hard drugs,” including stimulants. First, because the substances are illegal, possessing and using them provides a social risk appealing to sensation-seekers. Additionally, the effects of the drugs have a novel and complex effect on one’s emotions and awareness (Zuckerman). Lastly, Schinka, Curtiss

and Mulloy (1994) suggest that the “dangers of the drug marketplace” (p. 420) appeals to sensation-seekers.

Individuals with the sensation seeking trait desire new and complex experiences. Sensation seeking is associated with Eysenck’s Psychoticism dimension and many studies, including longitudinal studies, have shown that sensation seeking is a strong predictor of substance use.

### **Perfectionism**

Studies have shown that perfectionism is linked to Eysenck’s Neuroticism personality dimension (Christensen et al., 1993). Frost, Marten, Lahart and Rosenblate (1990) have proposed a multidimensional model of perfectionism that captures both adaptive and maladaptive aspects of the trait. This model is comprised of six dimensions: Personal Standards, Concern over Mistakes, Parental Expectations, Parental Criticism, Doubting of Actions and Organization. Organization represents a preference for order shown by some perfectionists. Personal Standards encompasses one’s standard of values and the importance placed on adhering to these values. These two dimensions are associated with the adaptive aspects of perfectionism (Frost et al.).

The remaining dimensions-Concern over Mistakes, Parental Expectations, Parental Criticism and Doubting of Actions-are associated with maladaptive perfectionism (Frost et al., 1990). Frost et al. describe Concern over Mistakes as the core facet of perfectionism. Negative reactions to mistakes and beliefs such as “mistakes are equivalent to failure” are components of the Concern over Mistakes dimension. The Parental Expectations factor describes the belief that one’s parents set high goals and are

overly critical. Parental Criticism entails the belief that one was punished for doing things less than perfectly. Lastly, the Doubting of Actions component describes the feeling that tasks are rarely performed satisfactorily (Frost et al.).

Although few studies have looked at the association of perfectionism and stimulant use, commonly cited reasons for stimulant use overlap with the dimensions of maladaptive perfectionism. For instance, Hall, Irwin, Bowman, Frankenberger and Jewett (2005) studied students' illicit use of stimulant prescription medication and the opinions, attitudes and experiences associated with illicit stimulant use. Many students in the study commonly agreed with the statements "I feel pressured by my time commitments (e.g., school, work, extracurricular activities, family)" and "sleepiness and fatigue make it difficult for me to study" (Hall et al.; p. 169-170). These students' concerns are concerns associated with the Parental Expectations dimension of perfectionism (Frost et al., 1990). Additionally, stimulant users in this study reported taking stimulants during finals week (27%) and before tests (15%). These were the two most commonly cited reasons for stimulant use (Hall et al.).

Additionally, Low and Gendaszek (2002) asked students to answer questions concerning reasons for stimulant abuse and found that 23% of stimulant users abused these substances "to improve intellectual performance", and 22% abused stimulants in order "to be more efficient on academic assignments" (p. 285). Student participants in this study and the study by Hall et al. (2005) may wish to stay awake longer in order to avoid potential mistakes or to be sure that tasks, such as term papers, have been

completed satisfactorily. White, Becker-Blease and Grace-Bishop (2006) found that students misused prescription stimulants to improve attention and study habits.

In review, the personality trait of perfectionism is associated with Eysenck's Neuroticism dimension. It has both adaptive and maladaptive aspects. Few studies have examined perfectionism and stimulant use, but commonly cited reasons for stimulant use seem to align with maladaptive perfectionism.

### **Preliminary Findings on the Influence of Sensation Seeking and Perfectionism on Stimulant Use**

Low and Gendaszek (2002) examined the traits of sensation seeking and perfectionism and their role in stimulant use. This was accomplished by asking 150 undergraduate students to complete anonymous questionnaires concerning illegal amphetamine use and illicit use of prescription stimulant medication. Students also completed the SSS-V and the Multidimensional Perfectionism Scale by Frost (MPS-F; 1990). Low and Gendaszek (2002) discovered that sensation seeking and perfectionism scores were correlated with the use of specific stimulants and frequency of stimulant use. Students high in both sensation seeking and perfectionism used stimulants more often than individuals with any other combination of these traits (e.g. high sensation seeking and low perfectionism). While sensation seeking did have a relationship to frequent stimulant use, this effect was amplified when perfectionism was also found to be a trait present in participants. Additionally, students classified as high sensation-seekers were more likely to use illegal stimulants, such as Ecstasy, than misuse legal stimulants like Ritalin (Low & Gendaszek). The present study examined these personality traits and

stimulant use with a larger sample at a Midwestern university. Rates of use according to both maladaptive and adaptive perfectionism were also examined.

### **Influence of Demographic Factors on Stimulant Use**

There are two main sets of demographic data concerning stimulant use – data concerning general stimulant use and data that only consider misuse of prescription stimulants. In this paper, stimulant use includes use of illegal stimulants, such as cocaine and ecstasy, and the misuse of prescription stimulants. Misuse of prescription stimulants describes individual use of prescriptions that have been classified as stimulants but have not been prescribed to the individual using them. These medications are obtained for use in the hopes of receiving benefits such as achieving a “high” or being able to stay awake longer to complete tasks. Furthermore, gender may have a moderating effect on the use of stimulants. This is explained in the context of personality variables and their potential influence on stimulant use.

#### **General stimulant use**

The National Survey on Drug Use and Health Report describes illegal drug use and misuse of prescription drugs and any associated demographic data. The results of the 2007 report show that 2.76% of adolescents, 9.89% of college-age individuals (18-25 year olds) and 8.27% of participants age 26 and over have used stimulants at least once in their lifetime (SAMHSA, 2008). In 2003, Caucasians reported the most lifetime stimulant use (10.7%), followed by Native Americans (10.2%), Pacific Islanders (8.3%), Hispanics (5.0%), Asian Americans (2.8%) and African Americans (2.7%). Adolescents and college-age participants were equally likely to be diagnosed with stimulant abuse or

dependence within the past year. Lastly, the highest rates of stimulant use in the US occurred in the Western region of the country (SAMHSA, 2005). In summary, college-age individuals, Caucasians and those living in the Western region of the US are more likely to engage in general stimulant use.

### **Prescription stimulant misuse**

When looking at data for prescription stimulant misuse alone, the data are somewhat different than that for general stimulant use. McCabe, Knight, Teter and Wechsler (2005) used data from the 2001 College Alcohol Study, which surveys demographics, substance use and other behaviors. When looking at data from individual universities, the researchers found that rates of prescription stimulant misuse at each institution varied from 0% to 25%. Institutions with more selective admissions and institutions located in the Northwestern and Southern regions of the US had higher rates of prescription misuse. Additionally, students belonging to fraternities and sororities and students with lower grade point averages were more likely to misuse prescription stimulants. Also, prescription misusers were 20 times more likely to use cocaine in the past year. Similar to general stimulant use, Caucasians in this study were more likely to misuse prescription stimulants (McCabe et al.).

Other studies concerning prescription stimulant misuse have resulted in similar findings. Teter, McCabe, Cranford, Boyd and Guthrie (2005) surveyed 19,278 students at the University of Michigan in order to compare demographic data, prescription stimulant misuse and alcohol and other drug use. Similar to McCabe et al. (2005), these researchers found that Caucasians tended to misuse prescription stimulants the most of

any ethnic group and found that students who misused prescription stimulants were more likely to use cocaine. Multiple studies have found that misusers of these medications are more likely to administer them orally, rather than intranasally (Hall et al., 2005; Teter, McCabe, LaGrange, Cranford & Boyd, 2006; White et al., 2006).

McCabe et al. (2006) examined the misuse of prescription stimulants among undergraduate students, including how students obtain prescription stimulants. Similar to Caucasians, non-freshman students, members of fraternities and sororities, students living off-campus and those with lower grade point averages were more likely to misuse prescription stimulants. During the previous year, 54% of surveyed students who were prescribed stimulant medication had been asked to sell or give away their medication. When determining how undergraduates obtained prescription stimulants, 67% of prescription misusers reported that they received the medication from friends. Misusers of prescription stimulants were significantly more likely to use marijuana, cocaine, Ecstasy and hallucinogens during the past year.

Teter, McCabe, Boyd and Guthrie (2003) analyzed prescription stimulant misuse even further by comparing one specific type of prescription stimulants – methylphenidate (e.g., Ritalin, Concerta, Metadate) – with other prescription stimulants and with nonstimulant users. They found that methylphenidate users reported significantly higher rates of negative consequences due to the use of alcohol and drugs. Lastly, prescription misusers of both groups were more likely to miss class because of the use of alcohol and other drugs (Teter et al.).

DuPont, Coleman, Bucher and Wilford (2008) also examined methylphenidate use among college students and found that 5.3% of respondents had misused the drug at least once. Most methylphenidate misusers were Caucasian and 46% lived off-campus. Most reported that they received the medication for free from a friend or family member (DuPont et al.).

In review, institutions with more selective admissions and institutions in the Northwestern and Southern US have been found to have higher rates of prescription stimulant misuse. Studies have shown that Caucasians, students belonging to fraternities and sororities and students with lower grade point averages are more likely to abuse prescription stimulants.

### **Gender**

Use of stimulants and prescription stimulants varies according to gender (Hall et al., 2005; McCabe et al., 2005; McCabe, Teter & Boyd, 2006; Teter et al., 2005). In 2007, 9.05% of males reported lifetime use of stimulants compared to 6.86% of females (SAMHSA, 2008). McCabe et al. (2006) found that males were significantly more likely to abuse prescription stimulants. Furthermore, Hall et al. found that men tended to obtain these medications through people they thought they could ask for the substances while women tended to misuse prescription stimulants when these substances were offered to them. However, both genders were equally likely to meet criteria for stimulant abuse and dependence (SAMHSA, 2005).

Teter et al. (2006) analyzed motives for prescription stimulant misuse and found significant gender differences. Men were significantly more likely to report using

prescription stimulants for experimentation and to counter the effects of other substances. Women were significantly more likely to report using prescription stimulants to help them study, increase alertness and lose weight (Teter et al.).

As mentioned earlier, Psychoticism and Neuroticism have been shown to be associated with substance abuse (Saiz et al., 2003; Teasdale et al., 1971). When considering gender and personality dimensions, males are more likely to possess the Psychoticism personality dimension whereas females are more likely to possess the Neuroticism dimension (Gossop & Eysenck, 1980; Lynn & Martin, 1997; Martin & Kirkcaldy, 1998). In fact, a study of personality dimensions in 37 countries found that females scored higher on the Neuroticism dimension in all countries while men scored higher on the Psychoticism dimension in 34 out of 37 countries (Lynn & Martin). This may make substance use occur for different reasons in males and females. When considering the results of Teter et al. (2006), the reasons males provide for misusing prescription stimulants align more closely with sensation seeking – a trait associated with the Psychoticism dimension. The reasons women cited for prescription stimulant misuse align with perfectionism, a trait on the Neuroticism dimension.

Additionally, the trait of perfectionism may differ by gender. Female adolescents score higher on the Organization subscale of the MPS-F, which is believed to be one of the adaptive aspects of perfectionism. Male adolescents tend to have higher scores on the maladaptive subscales of Parental Expectations and Concern over Mistakes. Female adolescents tend to score higher on the Concern over Mistakes subscale as they become older (Siegle & Schuler, 2000).

When examining the demographics of stimulant users, Caucasians have reported higher rates of lifetime stimulant use and prescription stimulant misuse (McCabe et al., 2005; McCabe et al., 2006; SAMHSA, 2005). Males report higher rates of lifetime use of stimulants and prescription stimulants than females (McCabe et al., 2006; SAMHSA, 2008). Males are also more likely to possess the Psychoticism personality dimension. Females are more likely to possess the Neuroticism dimension (Gossop & Eysenck, 1980; Lynn & Martin, 1997; Martin & Kirkcaldy, 1998).

Previous findings concerning perfectionism, sensation seeking and stimulant use have their limitations. The main study in this area is one conducted by Low and Gendaszek (2002). The prevalence of stimulant use in the sample by Low and Gendaszek (2002) has been found to be considerably higher than stimulant use of the general college population (McCabe et al., 2005; Strote, Lee & Wechsler, 2001; Yacoubian, 2003) and the general U.S. population (SAMHSA, 2008). Additionally, the study was conducted at a small competitive liberal arts college in the Northeast, a region which has been shown to have high rates of misuse of prescription stimulants (McCabe et al.; Teter et al., 2003). Low and Gendaszek (2002) also note that their sample was comprised of undergraduate psychology students. These students may be different from students choosing other majors or courses (Low & Gendaszek).

In summary, males have reported higher rates of lifetime use of stimulants and prescription stimulants than females. Men and women also report different reasons for using stimulants. Because males tend to have higher scores on Eysenck's Psychoticism dimension and females have higher scores on Eysenck's Neuroticism dimension,

stimulant use may occur for different reasons in males and females. Additionally, previous research that examines perfectionism, sensation seeking and stimulant use has limitations that the present study hoped to address.

### **Purpose and Hypotheses**

This study also sought to answer a number of questions regarding sensation seeking, perfectionism and stimulant use. The author's research questions and hypotheses were:

1. Question: What was the prevalence of overall stimulant use and use of specific stimulants in the sample? How did this sample compare to rates of use found in other samples (i.e., samples from one institution and samples taken from many schools)? Hypothesis 1: Rates of stimulant use in this sample were similar to rates of stimulant use in other samples.
2. Question: Were there any differences in stimulant use between males and females? Hypothesis 2: Male gender was associated with higher rates of both general stimulant use and stimulant prescription misuse.
3. Question: Were there any differences in stimulant use between Caucasians and other ethnic groups? Hypothesis 3: Caucasian ethnicity was associated with higher rates of both general stimulant use and stimulant prescription misuse than other ethnic groups.
4. Question: Did sensation seeking, maladaptive perfectionism and adaptive perfectionism alone significantly predict stimulant use in this sample? Hypothesis 4: Sensation seeking was associated with stimulant use. Hypothesis 5:

Maladaptive perfectionism was associated with stimulant use. Hypothesis 6:

Adaptive perfectionism did not have a significant association with stimulant use.

5. Question: Did the personality traits together significantly predict stimulant use?

Hypothesis 7: The interaction of sensation seeking and maladaptive perfectionism predicted higher rates of stimulant use. Hypothesis 8: Adaptive perfectionism and sensation seeking together did not predict stimulant use.

6. Question: Did gender and these personality traits together predict stimulant use?

Hypothesis 9: The interaction of sensation seeking and gender predicted stimulant use. Hypothesis 10: The interaction of maladaptive perfectionism and gender was associated with stimulant use. Hypothesis 11: Adaptive perfectionism and gender was not associated with stimulant use.

## Chapter Three: Method

### **Procedures**

A cross-sectional survey design was used in this study. Data were collected via an on-line survey. Survey Monkey, an Internet survey website, was used to e-mail participants to ask for their participation in the study. Participants were asked to complete a general demographic questionnaire, the Multidimensional Perfectionism Scale by Frost (MPS-F; Frost et al., 1990) and the Sensation Seeking Scale (SSS-V; Zuckerman, 1994). Students received a request via e-mail to complete the three questionnaires on-line. This on-line survey was designed by the primary researcher with tools provided by Survey Monkey. The Institutional Review Board for the University of Nebraska-Lincoln gave its approval for the project (see Appendix A).

The first page of the survey website included an informed consent page. At the end of the informed consent, participants were required to answer a question asking if they wished to participate in the study. Individuals choosing not to participate were directed to a web page thanking them for their consideration to take part in the study. Individuals agreeing to participate were directed to the demographic questionnaire. The Multidimensional Perfectionism Scale by Frost (Frost et al., 1990) and the Sensation Seeking Scale (Zuckerman, 1994) followed this questionnaire. The surveys took approximately 15 minutes to complete. If participants were not able to complete the questionnaires in one sitting, they were permitted to return to the survey for completion. Due to the sensitive nature of the topic under study, student e-mail addresses and IP addresses were not tracked or associated with survey responses in order to assure the

maximum amount of anonymity. There was no compensation for participating in the study.

### **Sample**

The sample was comprised of students whose e-mail addresses were chosen randomly by a Midwestern University's Office of Records and Registration. This information was then provided to the primary researcher. All participants were over the age of 19, the age of adulthood in accordance with the laws of the state where the study was conducted. Approximately 3,000 students were contacted to participate. A literature review of studies using internet-based surveys found that response rates varied from 6% to 75% (Sheehan & Hoy, 1999). This sample size was chosen to ensure that the number of respondents was large enough so that statistical analysis could yield reliable results if the response rate was low. Because this study examined misuse of prescription stimulants by individuals who had not been prescribed these medications, participants who stated that they had been prescribed stimulant medication, such as Ritalin or Adderall, were excluded. Participants included both genders and all ethnic groups.

### **Instruments**

Participants were asked to complete three measures: a general demographic and stimulant use questionnaire, the Multidimensional Perfectionism Scale by Frost (MPS-F; Frost et al., 1990) and the Sensation Seeking Scale (SSS-V; Zuckerman, 1994).

The demographic questionnaire was a mix of open-ended and forced-choice questions. College major and age were presented as open-ended questions. Year in school and gender required participants to choose from a provided list of responses. A

question asking if the participant had been prescribed stimulant medication required a “yes” or “no” response. Participants who responded with a “yes” to this question were not allowed to respond to the MPS-F and the SSS-V to ensure stimulant users included in the study were individuals who had used these drugs illegally, as in the study by Low and Gendaszek (2002). These respondents were redirected to a page thanking them for their consideration to take part in the study. The remaining questions asked participants to choose which race-ethnic group they belong to and asked which substances they had used within the past 12 months. These two questions provided responses for participants to choose from including an open-ended choice labeled “other.”

The MPS-F is a 35-item questionnaire that has been shown to be a good measure of perfectionism (Frost et al., 1990). Questions are presented as a single statement and answered on a 5-point scale representing the degree to which participants agree with the statement, with 1 representing strongly disagree and 5 representing strongly agree. Examples of questions include: “If I fail at work/school, I am a failure as a person,” “I should be upset if I make a mistake,” and “People will probably think less of me if I make a mistake.” Internal consistency ranges from .81 (Clavin, Clavin, Gayton & Broida, 1996) to .91 (Frost et al.). Furthermore, reliability for this measure has been demonstrated over a 10-week period (Rice & Dellwo, 2001). For this sample, the Cronbach’s alpha coefficient was .90 for the MPS-F. The Cronbach’s alpha coefficient for the maladaptive perfectionism subscale of the MPS-F was .90 and the alpha coefficient for the adaptive perfectionism subscale was .87. Participants’ scores on the MPS-F maladaptive and adaptive subscales were re-coded into high, moderate and low levels of maladaptive and

adaptive perfectionism, as appropriate. More than one standard deviation (*SD*) below the mean was considered a low level of perfectionism and more than one *SD* above the mean was considered a high level of perfectionism. Scores within one *SD* of the mean were categorized as moderate perfectionism.

The SSS-V is a sensation seeking scale developed by Zuckerman (1994) and is currently one of the most widely used measures of sensation seeking. It is comprised of 40 questions regarding preferences or current feelings. Questions are presented as two statements labeled “A” and “B” and participants choose which statement best fits their personal preference. Questions include “A - There are some movies I enjoy seeing a second or even third time. B - I can't stand watching a movie that I've seen before” and “A - I have no patience with dull or boring persons. B - I find something interesting in almost every person I talk to.” Choices associated with sensation seeking are assigned one point. Other choices are assigned a score of zero. Participant scores are summed to determine to what extent they possess the personality trait. Reliabilities of the SSS-V range from .83 to .86 (Zuckerman). Additionally, when comparing the Psychopathic Deviancy subscale of the Minnesota Multiphasic Personality Inventory, the MacAndrew Alcoholism scale, the Millon Alcohol Abuse Scale, the Millon Drug Abuse Scale and the SSS-V, the SSS-V has been found to be the best predictor of substance use and abuse (Jaffe & Archer, 1987). For this sample, the Cronbach's alpha coefficient was .81 for the SSS-V. Participants' scores on the SSS-V were re-coded into high, moderate and low levels of sensation seeking, where more than one *SD* below the mean was considered a low level of sensation seeking and more than one *SD* above the mean was considered a

high level of sensation seeking. Scores within one *SD* of the mean were categorized as moderate sensation seeking (see Appendix A for complete instruments).

### **Data Analysis**

Upon data collection completion, data were exported from the Survey Monkey website to SPSS by the primary researcher. Data were analyzed using descriptive statistics, the Chi-square test, and logistic regression.

1. Hypothesis 1: Rates of stimulant use in this sample were similar to rates of stimulant use in other samples. This hypothesis was analyzed using descriptive statistics.
2. Hypothesis 2: Male gender was associated with higher rates of both general stimulant use and stimulant prescription misuse. To determine if this hypothesis was correct, data were analyzed using an independent Chi-square test.
3. Hypothesis 3: Caucasian ethnicity was associated with higher rates of both general stimulant use and stimulant prescription misuse than other ethnic groups. This hypothesis was also analyzed using a Chi-square test. The Chi-square statistic was used to test whether stimulant users and non-stimulant users proportionally distribute across gender or ethnic groups.
4. Hypothesis 4: Sensation seeking was associated with stimulant use. Hypothesis four was analyzed using logistic regression. Logistic regression was used because stimulant use, the dependent variable, was dichotomous (Yes/No). This type of analysis is able to determine if multiple variables can predict membership into a categorical group. Independent variables in logistic regression can be any type of

variable. Lastly, independent variables do not need to have homogeneity of variance or be normally distributed (Mertler & Vannatta, 2002). Sensation seeking was entered into a logistic regression model to determine any potential effects on stimulant use.

5. Hypothesis 5: Maladaptive perfectionism was associated with stimulant use. Logistic regression was used to determine this hypothesis was supported by the sample data. Maladaptive perfectionism was the independent variable and stimulant use was the dependent variable in the regression model.
6. Hypothesis 6: Adaptive perfectionism did not have a significant association with stimulant use. Logistic regression was also used to determine if hypothesis six was supported by the sample data.
7. Hypothesis 7: The interaction of sensation seeking and maladaptive perfectionism predicted higher rates of stimulant use. Sensation seeking and maladaptive perfectionism were entered into a logistic regression model with stimulant use as the dependent variable. The interaction of the independent variables was entered on the second step of the regression analysis. The Chi-Square difference test was conducted to determine if there was significant interaction for Hypotheses 7.
8. Hypothesis 8: Adaptive perfectionism and sensation seeking together did not predict stimulant use. Sensation seeking and adaptive perfectionism were entered into a logistic regression model with stimulant use as the dependent variable. The interaction of the independent variables was entered on the second step of the

regression analysis. The Chi-Square difference test was conducted to determine if there was significant interaction for Hypotheses 8.

9. Hypothesis 9: The interaction of sensation seeking and gender predicted stimulant use. Sensation seeking and gender were entered into a logistic regression model with stimulant use as the dependent variable. The interaction of the independent variables was entered on the second step of the regression analysis. The Chi-Square difference test was conducted to determine if there was significant interaction for Hypotheses 9.
10. Hypothesis 10: The interaction of maladaptive perfectionism and gender were associated with stimulant use. Gender and maladaptive perfectionism were entered into a logistic regression model with stimulant use as the dependent variable. The interaction of the independent variables was entered on the second step of the regression analysis. The Chi-Square difference test was conducted to determine if there was significant interaction for Hypotheses 10.
11. Hypothesis 11: Adaptive perfectionism and gender were not associated with stimulant use. Adaptive perfectionism and gender were entered into a logistic regression model with stimulant use as the dependent variable. The interaction of the independent variables was entered on the second step of the regression analysis. The Chi-Square difference test was conducted to determine if there was significant interaction for Hypotheses 11.

## Chapter 4: Results

Eleven hypotheses were investigated in this study. First, it was hypothesized that the rates of stimulant use in this sample would compare to other published samples. When looking at demographic variables, it was proposed that males would use stimulants and prescription stimulants more frequently than females and that Caucasians would use stimulants and prescription stimulants more frequently than other ethnic groups. The personality variables of sensation seeking and maladaptive perfectionism and their co-occurrence were hypothesized to be predictors of stimulant use. It was proposed that adaptive perfectionism and the co-occurrence of adaptive perfectionism and sensation seeking together would not predict stimulant use. Regarding gender and stimulant use, the interaction of sensation seeking and gender were hypothesized to be predictors of stimulant use, along with the interaction of maladaptive perfectionism and gender. Adaptive perfectionism and gender was not hypothesized to be a predictor of stimulant use.

### **Sample Characteristics**

Originally, 451 students responded to the e-mail request for participation in the study. There were no follow-up e-mails sent to the sample and there was no compensation given to participants so that confidentiality could be maintained. The response rate to the survey was 15.03%. Of the 451 students who responded to the e-mail request, 445 agreed to participate and 6 declined. Four cases were excluded from answering the MPS-F and SSS-V because they reported that they had been prescribed stimulant medication within the past 12 months. An additional 71 cases were excluded

from data analysis because these participants answered only a small number of questions after agreeing to participate.

This resulted in a final sample of 370 participants included in data analysis. Information regarding demographic characteristics is provided in Table 1. The final sample included 3 freshman, 49 sophomores, 91 juniors, 120 seniors and 106 graduate students. Caucasians comprised 94.0% of the sample, 2.70% of participants identified themselves as Asian/Pacific Islander, 1.60% as Hispanic and 1.10% as Black, Not of Hispanic Origin. One person chose to identify themselves as belonging to more than one ethnic group. One person described their ethnicity as “American” and one other participant described their ethnicity as “Human.” The sample was made up of 142 males and 225 females (see Table 1).

### **Hypothesis 1**

Hypothesis 1: Rates of stimulant use in this sample were similar to rates of stimulant use in other samples. When looking at stimulant use, 6.0% of the sample reported using stimulants within the past 12 months, with 2.20% of the sample using prescription stimulants, 0.50% reporting methamphetamine use, 4.10% reporting cocaine use and 0.8% reporting ecstasy use.

### **Hypothesis 2**

Hypothesis 2: Male gender was associated with higher rates of both general stimulant use and stimulant prescription misuse. Males used stimulants significantly more often than did females,  $\chi^2(1, N = 369) = 5.96, p = .02$ . Additionally, prescription

stimulants were used by males significantly more than females,  $\chi^2(1, N = 369) = 4.48, p = .04$  (see Tables 2 and 3).

### **Hypothesis 3**

Hypothesis 3: Caucasian ethnicity was associated with higher rates of both general stimulant use and stimulant prescription misuse than other ethnic groups. When looking at ethnicity and stimulant use, 22 Caucasians, and one person of Asian/Pacific Islander origin reported using stimulants in the past 12 months. No other ethnic groups reported stimulant use. Eight Caucasians and one person of Asian/Pacific Islander origin reported misusing prescription stimulants in the past twelve months (see Table 2).

Differences between groups were nonsignificant. Chi-square tests revealed no significant differences between ethnic groups and use of stimulants,  $\chi^2(5, N = 368) = 1.05, p >.05$ . Additionally, chi-square tests were not significant for differences between ethnic groups and their use of prescription stimulants,  $\chi^2(5, N = 368) = 2.71, p >.05$ . Although the Chi-Square test does not require homogeneity and normal distribution, the researcher cautions the interpretation of results because of the small number of observations in the data table cells (see Table 3).

### **Hypothesis 4**

Hypothesis 4: Sensation seeking was associated with stimulant use. When looking at sensation seeking and stimulant use, sensation seeking was shown to be a significant predictor of stimulant use,  $\chi^2(1, N = 370) = 28.90, p <.01$ , Nagelkerke  $R^2 = .20$ . As the level of sensation seeking increased, participants were more than eight times as likely to have used stimulants in the past 12 months, ( $\beta = 2.15, \text{Exp}(\beta) = 8.58, p <.01$ ). In

other words, those with a moderate level of sensation seeking were more than eight times as likely to use stimulants as those with a low level of sensation seeking. Similarly, participants with a high level of sensation seeking were more than eight times as likely to use stimulants as those with a moderate level of sensation seeking (see Table 4).

### **Hypothesis 5**

Hypothesis 5: Maladaptive perfectionism was associated with stimulant use. The results showed that maladaptive perfectionism was not a significant predictor of stimulant use,  $\chi^2(1, N=370) = 0.78, p >.05$ , Nagelkerke  $R^2 <.01$ . Therefore, an increase in maladaptive perfectionism has virtually no effect on whether a participant used stimulants in the past 12 months, ( $\beta = 0.10$ ,  $\text{Exp}(\beta) = 1.11$ ,  $p >.05$ ; see Table 4).

### **Hypothesis 6**

Hypothesis 6: Adaptive perfectionism did not have a significant association with stimulant use. Adaptive perfectionism was not found to be a significant predictor of stimulant use,  $\chi^2(1, N=370) = 0.95, p >.05$ , Nagelkerke  $R^2 =.01$ . Although the finding is not significant, the odds ratio for this model shows that adaptive perfectionism is more likely to be inversely related to stimulant use, ( $\beta = -0.36$ ,  $\text{Exp}(\beta) = 0.70$ ,  $p >.05$ ; see Table 4).

### **Hypothesis 7**

Hypothesis 7: The interaction of sensation seeking and maladaptive perfectionism predicted higher rates of stimulant use. The model without the interaction in Step 1 was significant,  $\chi^2(2, N=370) = 28.97, p <.01$ , Nagelkerke  $R^2 =.20$ . The overall model was shown to be significant when the interaction was included,  $\chi^2(3, N=370) = 29.08, p <.01$ ,

Nagelkerke  $R^2 = .20$ . The Chi-Square difference test was conducted. The Chi-Square difference statistic was not significant,  $\chi^2(1, N=370) = .11$ ,  $\beta = 0.26$ ,  $\text{Exp}(\beta) = 1.29$ ,  $p > .05$  (see Table 3). Therefore, no interaction was observed. When examining the main effects of each independent variable, sensation seeking was found to be a significant predictor of stimulant use,  $\beta = 2.15$ ,  $\text{Exp}(\beta) = 8.59$ ,  $p < .01$ , but maladaptive perfectionism was not,  $\beta = 0.12$ ,  $\text{Exp}(\beta) = 1.12$ ,  $p > .05$  (see Table 4).

### **Hypothesis 8**

Hypothesis 8: Adaptive perfectionism and sensation seeking together did not predict stimulant use. The model without the interaction in Step 1 was significant,  $\chi^2(2, N=370) = 29.10$ ,  $p < .01$ , Nagelkerke  $R^2 = .20$ . The overall model was shown to be significant when the interaction of the variables was included,  $\chi^2(3, N=370) = 29.63$ ,  $p < .01$ , Nagelkerke  $R^2 = .21$ . The Chi-Square difference statistic was not significant,  $\chi^2(1, N=370) = .53$ ,  $\beta = -0.55$ ,  $\text{Exp}(\beta) = 0.58$ ,  $p > .05$  (see Table 3). Therefore, no interaction was observed. Sensation seeking was found to be a significant predictor in Step 1,  $\beta = 3.23$ ,  $\text{Exp}(\beta) = 25.32$ ,  $p < .05$ , but adaptive perfectionism was not significant,  $\beta = 1.28$ ,  $\text{Exp}(\beta) = 3.59$ ,  $p > .05$  (see Table 4).

### **Hypothesis 9**

Hypothesis 9: The interaction of sensation seeking and gender predicted stimulant use. When Hypothesis nine was tested, the model without the interaction in Step 1 was significant,  $\chi^2(2, N=370) = 29.60$ ,  $p < .01$ , Nagelkerke  $R^2 = .21$ . The overall model was shown to be significant with the interaction included,  $\chi^2(3, N=370) = 29.72$ ,  $p < .01$ , Nagelkerke  $R^2 = .21$ . The Chi-Square difference statistic was not significant,  $\chi^2(1, N$

$=370) = .13$ ,  $\beta = 0.33$ ,  $\text{Exp}(\beta) = 1.40$ ,  $p >.05$ , so no interaction was observed. Again, sensation seeking was found to be a significant predictor of stimulant use in Step 1,  $\beta = 2.01$ ,  $\text{Exp}(\beta) = 7.47$ ,  $p <.01$ . Gender was not a significant predictor,  $\beta = -0.84$ ,  $\text{Exp}(\beta) = 0.43$ ,  $p >.05$  when both sensation seeking and gender were in the model.

### **Hypothesis 10**

Hypothesis 10: The interaction of maladaptive perfectionism and gender were associated with stimulant use. The model without the interaction in Step 1 was significant,  $\chi^2(2, N=370) = 5.99$ ,  $p = .05$ , Nagelkerke  $R^2 = .04$ . The overall model was not significant when the interaction was included,  $\chi^2(3, N=370) = 6.01$ ,  $p >.05$ , Nagelkerke  $R^2 = .04$ . When the Chi-Square difference test was conducted, the Chi-Square difference statistic was not significant,  $\chi^2(1, N=370) = 0.13$ ,  $\beta = 0.09$ ,  $\text{Exp}(\beta) = 1.10$ ,  $p >.05$  and, therefore, no interaction was observed. When examining the main effects of the independent variables, gender was found to be a significant predictor of stimulant use,  $\beta = -1.09$ ,  $\text{Exp}(\beta) = 0.34$ ,  $p <.05$ , but maladaptive perfectionism was not,  $\beta = 0.19$ ,  $\text{Exp}(\beta) = 1.20$ ,  $p >.05$ .

### **Hypothesis 11**

Hypothesis 11: Adaptive perfectionism and gender were not associated with stimulant use. The model without the interaction in Step 1 was significant,  $\chi^2(2, N=370) = 6.07$ ,  $p <.05$ , Nagelkerke  $R^2 = .05$ . The overall regression model was not significant when the interaction was included,  $\chi^2(3, N=370) = 6.09$ ,  $p >.05$ , Nagelkerke  $R^2 = .05$ . The Chi-Square difference statistic was not significant,  $\chi^2(1, N=370) = 0.02$ ,  $\beta = 0.11$ ,  $\text{Exp}(\beta) = 1.12$ ,  $p >.05$ . Therefore, no interaction was observed. When looking at the main

effects of each independent variable, gender was found to be a significant predictor of stimulant use,  $\beta = -1.06$ ,  $\text{Exp}(\beta) = 0.35$ ,  $p < .05$ , but adaptive perfectionism was not,  $\beta = -0.21$ ,  $\text{Exp}(\beta) = 0.81$ ,  $p > .05$ .

## Chapter 5: Discussion

This study further explored the relationship between sociodemographic characteristics, sensation seeking, perfectionism and the effects these may have on stimulant use. Males reported stimulant use and prescription stimulant misuse significantly more often than females. Differences between ethnic groups for stimulant use were not statistically significant. Sensation seeking was found to predict stimulant use in all regression models where it was entered as an independent variable but both maladaptive and adaptive perfectionism were not significantly associated with stimulant use in any statistical model. Furthermore, none of the interactions tested in this study were found to be significant. Gender was found to be a significant predictor in regression models where sensation seeking was not entered as an independent variable.

According to Eysenck's PEN personality theory, individuals with high scores on the dimensions of Psychoticism and Neuroticism and low scores on the Extraversion dimension are more likely to be substance users (Saiz et al., 2003; Teasdale et al., 1971). The personality trait of sensation seeking has been linked to the Psychoticism personality dimension (Acton, 2003). The results of this study found that sensation seeking was a significant predictor of stimulant use, which is consistent with Eysenck's model. Perfectionism is linked to Eysenck's Neuroticism dimension (Christensen et al., 1993). Contrary to expectations, maladaptive perfectionism was not a significant predictor of stimulant use.

In this study, rates of stimulant use were lower than rates of stimulant use in other published studies. The National Survey on Drug Use and Health Report reported a rate of

9.89% stimulant use in 18-25 year olds (SAMHSA, 2008). In a study by Low and Gendaszek (2002), 35.3% of the sample used prescription stimulants, and 34% had used cocaine, ecstasy or both substances within the past year. One study carried out at a Midwestern university reported that 13.7% of participants took prescription stimulants that were not prescribed to them (Hall et al., 2005). In a multi-institutional study, 4.1% of participants reported abusing prescription stimulants during the past year, with rates at each institution varying from 0% to 25% (McCabe et al., 2005). Lastly, Strote et al., (2001) found that 4.7% of their sample had used ecstasy within the past year. One reason for this may be that the sample in this study was comprised of approximately 60% female participants. This study and previous studies have shown that females tend to use stimulants less frequently than males (SAMHSA, 2008; McCabe et al., 2005; Hall et al., 2005). Additionally, stimulant users may have chosen not to complete the surveys due to fears of being identified or because others may have been present when they received the e-mail link to the survey.

Male gender was associated with higher rates of general stimulant use and with higher rates of prescription misuse. This finding supports those previously stated in The National Survey on Drug Use and Health Report (SAMHSA, 2008) and in other studies (McCabe et al., 2005; Hall et al., 2005). Furthermore, gender was a significant predictor of stimulant use but gender did not moderate maladaptive and adaptive perfectionism. When considering Eysenck's PEN model, males are more likely to possess the dimension of Psychoticism (Gossop & Eysenck, 1980; Lynn & Martin, 1997; Martin & Kirkcaldy, 1998). This personality dimension has been shown to be associated with substance abuse

(Saiz et al., 2003; Teasdale et al., 1971). Perfectionism is linked to Eysenck's Neuroticism personality dimension (Christensen et al., 1993). Females are more likely to possess the Neuroticism dimension (Gossop & Eysenck, 1980; Lynn & Martin, 1997; Martin & Kirkcaldy, 1998). Males may have had high rates of use in this sample because of a stronger association with the Psychoticism personality dimension and less of an association with Neuroticism and perfectionism. The absence of a relationship between stimulant use and maladaptive perfectionism may be related to the Concern over Mistakes aspect of the trait, particularly in females. Females tend to score higher on the Concern over Mistakes subscale as they become older (Siegle & Schuler, 2000). Concerns over mistakes may make women less likely to seek out stimulants or to accept stimulants offered to them by friends.

When looking at ethnicity, Caucasians were not significantly more likely to use stimulants than other ethnic groups. This finding may be due to the lack of diversity in the sample. Although statistically the sample was diverse enough to test this hypothesis, the overall sample was approximately 94% Caucasian. The second part of the hypothesis, in regards to prescription stimulant use, was not supported. Again, this was likely due to a lack of diversity among participants and the low number of prescription stimulant users in the sample.

As expected, sensation seeking was found to be a strong predictor of stimulant use. This finding supports Eysenck's PEN personality model. According to the model, personality traits should be associated with behaviors typical of someone possessing the personality dimension that corresponds with the trait (Eysenck, 1990). The personality

dimension of Psychoticism is associated with substance use (Abu-Arab & Hashem, 1995; Saiz et al., 2003; Teasdale et al., 1971). Sensation seeking is one of the personality traits associated with the Psychoticism dimension (Acton, 2003). According to the results of this study, sensation seeking is also associated with stimulant use. Furthermore, this finding is consistent with previous longitudinal studies (Horvath et al., 2004; Jaffe & Archer, 1987; Teichman et al., 1989).

Adaptive perfectionism was not shown to be a predictor of stimulant use. One of the aspects of adaptive perfectionism, Personal Standards, refers to placing great importance on upholding one's personal values (Frost et al., 1990) and may be why adaptive perfectionism was not a predictor of stimulant use. Furthermore, reasons students cite for using stimulants do not seem to align closely with the aspects of adaptive perfectionism. Also, females are more likely to possess characteristics of adaptive perfectionism (Siegle & Schuler, 2000).

Maladaptive perfectionism was not a predictor of stimulant use, which was an unexpected finding. Studies have shown that Neuroticism is associated with substance use (Abu-Arab & Hashem, 1995; Saiz et al., 2003; Teasdale et al., 1971). It should follow that personality traits associated with Neuroticism would engage in behaviors typical of someone possessing this personality dimension (Eysenck, 1990). Maladaptive perfectionism has been found to be associated with other traits of Neuroticism, such as negative affect (Brown et al., 1999; Frost et al., 1997), negative attributions about oneself and higher levels of anxiety (Brown et al.). Furthermore, males are more likely to be maladaptive perfectionists (Siegle & Schuler, 2000). One explanation for the finding in

this study may be that maladaptive perfectionism is associated with traits that are not strong predictors of stimulant use but are associated with Neuroticism. Another explanation is that the Concern over Mistakes and Parental Expectations aspects of maladaptive perfectionism made students less likely to use stimulants.

### **Limitations**

One main limitation of this study is a lack of ethnic diversity in the sample. This limitation is especially important when considering the possibility that sensation-seeking may not be a predictive factor of substance use for African-Americans (Brown, Miller & Clayton, 2004) and possibly other ethnic groups. Furthermore, perfectionism and the aspects of perfectionism that are present differ between ethnic groups (Castro & Rice, 2003; Nilsson, Paul, Lupini & Tatem, 1999). Ethnicity and personality traits according to ethnic group were not analyzed in this study.

Because this study was conducted among college students, the results may be generalizable to only the college student or college-educated population. Furthermore, this study uses a cross-sectional survey design. Although this type of design is ideal for gathering preliminary data, the information gathered here cannot make a definitive claim about causal relationships.

Another key limitation was the low response rate to the survey. This may have occurred for a few reasons. First, only one e-mail was sent to participants. There were no reminder e-mails or multiple e-mails sent to students asking them to complete the survey. Second, there were no incentives provided for completing the survey. Both of these have been shown to effectively increase response rate (O'Rourke, 1999; Wilk, 1993). E-mail

reminders and participation incentives were not offered in this study to avoid the risk of compromising participant confidentiality. Third, it is not known how the recruitment e-mail was viewed by respondents. Some respondents may have viewed the e-mail with indifferent or neutral feelings while others may have believed the e-mail was intrusive or was spam e-mail (Sheehan & Hoy, 1999). Lastly, the study was conducted during the Summer Semester, when decreased numbers of students are enrolled in classes and may be less likely to check their student e-mail account.

These findings contribute to the growing body of literature regarding risk factors for stimulant use. Currently, there are few studies examining stimulant use on college campuses. Most studies in this area examine the prevalence of use and reasons why students use stimulants. This study explores the relationship between stimulant use and personality variables among college students while addressing some limitations of previous studies. It is also one of the few studies that looks at perfectionism and substance use and that analyze the interaction of personality variables and substance use. There is also a paucity of research that examines the interaction of gender and personality traits. This study can help to fill these gaps in the literature.

Information on personality variables can help in formulating effective interventions for substance abusers (Castellanos & Conrod, 2006). Contingency management and cognitive behavioral therapy (CBT) have been shown to be effective methods of reducing stimulant use. Contingency management includes giving reward tickets to patients that are compliant with treatment and practice reduced or discontinued

substance use. CBT refers to therapeutic methods that focus on cognitions as crucial in changing feelings, behaviors and one's outlook on life. During treatment, contingency management has been shown to be more effective than CBT. (Rawson et al., 2006). To appeal to sensation seekers, one idea may be for reward tickets to be used for activities that are attractive to sensation seekers. One year after treatment, CBT has been found to be as effective as contingency management for reduction of stimulant use (Rawson et al.). Given the significance of sensation seeking as a predictor of stimulant use, mental health professionals may need to explore and help modify sensation seeking thoughts and tendencies in the course of using CBT to reduce stimulant use.

Targeted public service announcements (PSAs) could also be an effective means of discouraging stimulant use. D'Silva and Palmgreen (2007) found that individuals high in sensation seeking were more likely to recall PSAs than those low in sensation seeking, regardless of how many hours were spent watching television. In their study, a series of PSAs were aired with a phone number to call to receive an information booklet containing sensation seeking type activities available in the callers' area. Callers to the phone number were given a shortened Sensation Seeking Scale. The results showed that 73% of callers were high sensation seekers. Users of multiple substances were also able to recall the advertisement better than those who did not use drugs. Combined with recall of PSA items, this study shows that it may be possible to reach sensation seekers who are substance users with targeted PSAs that discourage drug use (D'Silva & Palmgreen).

### **Future study**

Future studies should investigate the effects of sensation seeking, perfectionism and gender on stimulant use while employing methods that allow researchers to send follow-up e-mails and provide compensation to participants while maintaining confidentiality. The role of sensation seeking and perfectionism in an ethnically diverse sample also requires further investigation. Additionally, stimulant abuse among individuals who have been prescribed stimulants, and the potential misuse of their own prescription stimulants, warrants further study. The potential for perfectionism as a protective role against stimulant use should be examined. Future research should explore potential causal or reciprocal relationships between female gender and adaptive perfectionism and how these may be protective factors against stimulant use. Lastly, research should be conducted to better determine how maladaptive perfectionism and Neuroticism interact in an individual's personality.

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## Tables

Table 1  
*Profile of Sample*

Student Characteristics	Gender	
	Male	Female
Freshman	2 (0.7)	1 (0.9)
Sophomore	33 (11.1)	16 (14.7)
Junior	53 (26.4)	38 (23.6)
Senior	78 (29.2)	44 (34.7)
Graduate Student	59 (32.6)	47 (26.2)
Caucasian, Non-Hispanic	134(94.4)	211(93.8)
Black, Non-Hispanic	2 (1.4)	2 (0.9)
Hispanic	1 (0.7)	5 (2.2)
Asian/Pacific Islander	5 (3.5)	5 (2.2)
Other	0 (0.0)	1 (0.4)
Multiracial	0 (0.0)	1 (0.4)

Table 2  
*Stimulant Use by Gender and Race/Ethnicity*

	Stimulant Use	Prescription Stimulant Use
Male	14 (3.8)	6 (1.6)
Female	8 (2.2)	2 (0.5)
Caucasian, Non-Hispanic	22 (6.0)	8 (2.2)
Black, Non-Hispanic	0 (0.0)	0 (0.0)
Hispanic	0 (0.0)	0 (0.0)
Asian/Pacific Islander	1 (0.3)	1 (0.3)
Other	0 (0.0)	0 (0.0)
Multiracial	0 (0.0)	0 (0.0)

Table 3  
*Chi-Square Tests for Stimulant Use by Gender and Race/Ethnicity*

Stimulant Use	$\chi^2$	Df	<i>p</i>
Gender	5.96	1	.02
Ethnicity	1.05	5	.96
<u>Prescription Stimulant Use</u>			
Gender	4.45	1	.04
Ethnicity	2.72	5	.74

Table 4  
*Summary of Logistic Regression Analysis for Variables Predicting Stimulant Use*

	B	SE B
<u>Hypothesis 4</u>		
Sensation seeking	2.15	0.43
<u>Hypothesis 5</u>		
Maladaptive perfectionism	0.10	0.37
<u>Hypothesis 6</u>		
Adaptive perfectionism	-0.36	0.37
<u>Hypothesis 7</u>		
Sensation seeking	2.15	0.44
Maladaptive perfectionism	0.12	0.42
Sensation seeking * maladaptive perfectionism	0.26	0.79
<u>Hypothesis 8</u>		
Sensation seeking	2.13	0.45
Adaptive perfectionism	-0.17	0.39
Sensation seeking * adaptive perfectionism	-0.55	0.79
<u>Hypothesis 9</u>		
Sensation seeking	2.01	0.92
Gender	-0.83	0.48
Sensation seeking * gender	0.33	0.92
<u>Hypothesis 10</u>		
Maladaptive perfectionism	0.19	0.40
Gender	-1.09	0.46
Maladaptive perfectionism * gender	0.09	0.80
<u>Hypothesis 11</u>		
Adaptive perfectionism	-0.21	-0.39
Gender	-1.06	0.46
Adaptive perfectionism * gender	0.11	0.80

Table 5  
*Classification Table for All Logistic Regression Models*

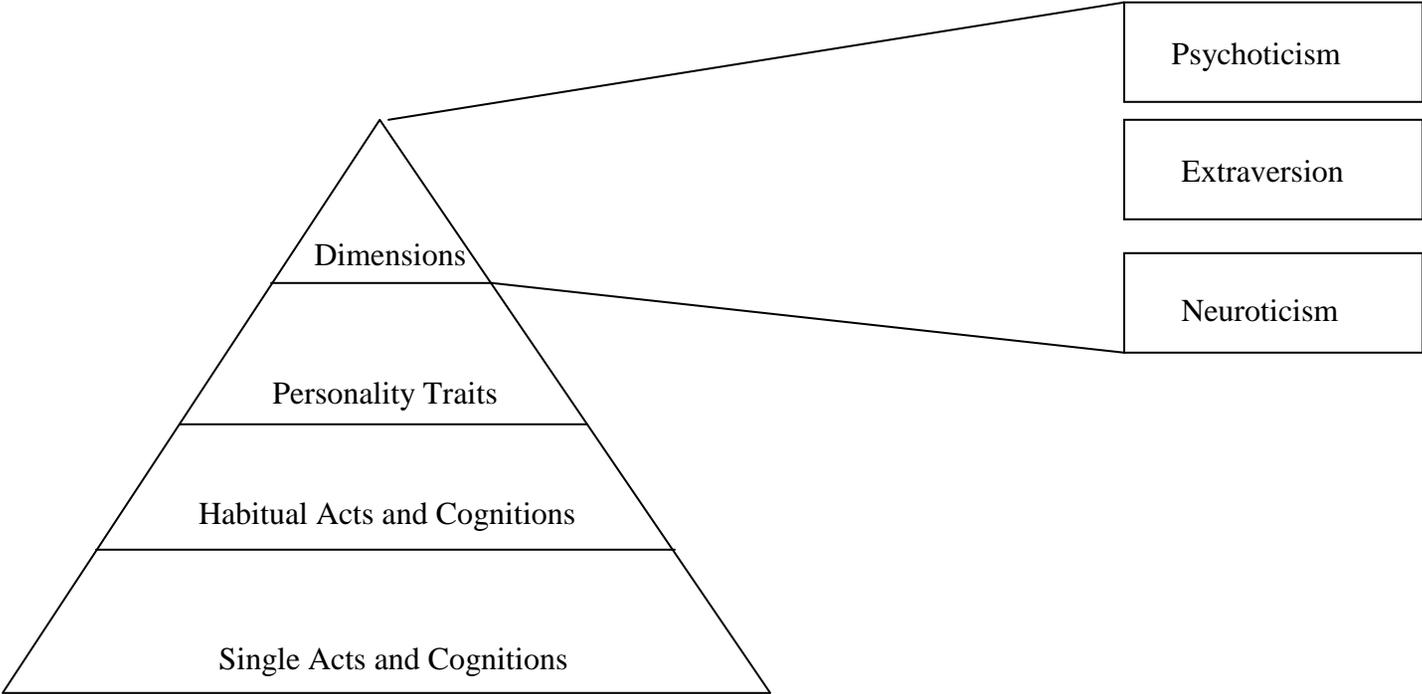
Observed	Predicted		
	Did not use stimulants	Used stimulants	Percentage correct
Did not use stimulants	347	0	100.0
Used stimulants	23	0	0.0
Overall Percentage			93.8

### Figure Caption

*Figure 1.* Pictorial representation of Eysenck's Personality Theory

Figure 1

TOP



Appendix A

Instruments

## Demographic Questionnaire

Year in School (choose the one that best applies):

\_\_\_\_\_ Freshman

\_\_\_\_\_ Sophomore

\_\_\_\_\_ Junior

\_\_\_\_\_ Senior

\_\_\_\_\_ Graduate

Major (fill in the blank): \_\_\_\_\_

Age (fill in the blank): \_\_\_\_\_

Race/Ethnic Group (choose the response that you feel best applies):

\_\_\_\_\_ White, Not of Hispanic Origin

\_\_\_\_\_ Black, Not of Hispanic Origin

\_\_\_\_\_ Hispanic

\_\_\_\_\_ Asian/Pacific Islander

\_\_\_\_\_ Native American / Alaska Native

\_\_\_\_\_ Other: \_\_\_\_\_

Gender (choose one):

\_\_\_\_\_ Male

\_\_\_\_\_ Female

Has your doctor prescribed stimulant medication, such as Ritalin or Adderall, to you within the past 12 months? (Choose one.)

\_\_\_\_\_ Yes

\_\_\_\_\_ No

Substances used during the previous 12 months (choose all that apply):

\_\_\_\_\_ Prescription stimulants (ex: Ritalin, Adderall)

\_\_\_\_\_ Methamphetamine

\_\_\_\_\_ Cocaine

\_\_\_\_\_ Ecstasy

\_\_\_\_\_ Other(s): \_\_\_\_\_

### Multidimensional Perfectionism Scale by Frost

Please choose the number that best corresponds to your agreement with each statement below. Use the rating system:

Strongly disagree   1       2       3       4       5   Strongly agree

1. My parents set very high standards for me.

1       2       3       4       5

2. Organization is very important to me.

1       2       3       4       5

3. As a child, I was punished for doing things less than perfectly.

1       2       3       4       5

4. If I do not set the highest standards for myself, I am likely to end up a second rate person.

1       2       3       4       5

5. My parents never tried to understand my mistakes.

1       2       3       4       5

6. It is important to me that I be thoroughly competent in everything I do.

1       2       3       4       5

7. I am a neat person.

1       2       3       4       5

8. I try to be an organized person.

1      2      3      4      5

9. If I fail at work/school, I am a failure as a person.

1      2      3      4      5

10. I should be upset if I make a mistake.

1      2      3      4      5

11. My parents wanted me to be the best at everything.

1      2      3      4      5

12. I set higher goals than most people.

1      2      3      4      5

13. If someone does a task at work/school better than I, then I feel like I failed the whole task.

1      2      3      4      5

14. If I fail partly, it is as bad as being a complete failure.

1      2      3      4      5

15. Only outstanding performance is good enough in my family.

1      2      3      4      5

16. I am very good at focusing my efforts on attaining a goal.

1      2      3      4      5

17. Even when I do something very carefully, I often feel that it is not quite right.

1      2      3      4      5

18. I hate being less than best at things.

1      2      3      4      5

19. I have extremely high goals.

1      2      3      4      5

20. My parents have expected excellence from me.

1      2      3      4      5

21. People will probably think less of me if I make a mistake.

1      2      3      4      5

22. I never felt like I could meet my parents' expectations.

1      2      3      4      5

23. If I do not do as well as other people, it means I am an inferior human being.

1      2      3      4      5

24. Other people seem to accept lower standards from themselves than I do.

1      2      3      4      5

25. If I do not do well all the time, people will not respect me.

1      2      3      4      5

26. My parents have always had higher expectations for my future than I have.

1      2      3      4      5

27. I try to be a neat person.

1      2      3      4      5

28. I usually have doubts about the simple everyday things I do.

1      2      3      4      5

29. Neatness is very important to me.

1      2      3      4      5

30. I expect higher performance in my daily tasks than most people.

1      2      3      4      5

31. I am an organized person.

1      2      3      4      5

32. I tend to get behind in my work because I repeat things over and over.

1      2      3      4      5

33. It takes me a long time to do something "right."

1      2      3      4      5

34. The fewer mistakes I make, the more people will like me.

1      2      3      4      5

35. I never felt like I could meet my parents' standards.

1      2      3      4      5

### Sensation Seeking Scale Form V

Each of the remaining items contains two choices A and B. Please indicate which of the choices most describes your likes or the way you feel. In some cases you may find items in which both choices describe your likes or feelings. Please choose the one which better describes your likes or feelings. In some cases you may find items in which you do not like either choice. In these cases mark the choice you dislike least. Do not leave any items blank. It is important you respond to all items with only one choice, A or B. We are interested only in your likes or feelings, not in how others feel about these things or how one is supposed to feel. There are no right or wrong answers as in other kinds of tests. Be frank and give your honest appraisal of yourself.

1. A - I like "wild" uninhibited parties.

B - I prefer quiet parties with good conversation.

2. A - There are some movies I enjoy seeing a second or even third time.

B - I can't stand watching a movie that I've seen before.

3. A - I often wish I could be a mountain climber.

B - I can't understand people who risk their necks climbing mountains.

4. A - I dislike all body odors.

B - I like some of the earthy body smells.

5. A - I get bored seeing the same old faces.

B - I like the comfortable familiarity of everyday friends.

6. A - I like to explore a strange city or section of town by myself, even if it means getting lost.

B - I prefer a guide when I am in a place I don't know well.

7. A - I dislike people who say or do things just to shock or upset others.

B - When you can predict almost everything a person will do and say he or she must be a bore.

8. A - I usually don't enjoy a movie or play where I can predict what will happen in advance.

B - I don't mind watching a movie or play where I can predict what will happen in advance.

9. A - I have tried marijuana or would like to.

B - I would never smoke marijuana.

10. A - I would not like to try any drug which might produce strange and dangerous effects on me.

B - I would like to try some of the drugs that produce hallucinations.

11. A - A sensible person avoids activities that are dangerous.

B - I sometimes like to do things that are a little frightening.

12. A - I dislike "swingers" (people who are uninhibited and free about sex).

B - I enjoy the company of real "swingers."

13. A - I find that stimulants make me uncomfortable.

B - I often like to get high (drinking liquor or smoking marijuana).

14. A - I like to try new foods that I have never tasted before.

B - I order the dishes with which I am familiar so as to avoid disappointment and unpleasantness.

15. A - I enjoy looking at home movies, videos, or travel slides.

B - Looking at someone's home movies, videos, or travel slides bores me tremendously.

16. A - I would like to take up the sport of water skiing.

B - I would not like to take up water skiing.

17. A - I would like to try surfboard riding.

B - I would not like to try surfboard riding.

18. A - I would like to take off on a trip with no preplanned or definite routes, or timetable.

B - When I go on a trip I like to plan my route and timetable fairly carefully.

19. A - I prefer the "down to earth" kinds of people as friends.

B - I would like to make friends in some of the "far-out" groups like artists or "punks"

20. A - I would not like to learn to fly an airplane.

B - I would like to learn to fly an airplane.

21. A - I prefer the surface of the water to the depths.

B - I would like to go scuba diving.

22. A - I would like to meet some persons who are homosexual (men or women).

B - I stay away from anyone I suspect of being "gay" or "lesbian."

23. A - I would like to try parachute jumping.

B - I would never want to try jumping out of a plane, with or without a parachute.

24. A - I prefer friends who are excitingly unpredictable.

B - I prefer friends who are reliable and predictable.

25. A - I am not interested in experience for its own sake.

B - I like to have new and exciting experiences and sensations even if they are a little frightening, unconventional, or illegal.

26. A - The essence of good art is in its clarity, symmetry of form, and harmony of colors.

B - I often find beauty in the "clashing" colors and irregular forms of modern painting.

27. A - I enjoy spending time in the familiar surroundings of home.

B - I get very restless if I have to stay around home for any length of time.

28. A - I like to dive off the high board.

B - I don't like the feeling I get standing on the high board (or I don't go near it at all).

29. A - I like to date persons who are physically exciting.

B - I like to date persons who share my values.

30. A - Heavy drinking usually ruins a party because some people get loud and boisterous.

B - Keeping the drinks full is key to a good party.

31. A- The worst social sin is to be rude.

B - The worst social sin is to be a bore.

32. A- A person should have considerable sexual experience before marriage.

B - It's better if two married persons begin their sexual experience with each other.

33. A - Even if I had the money, I would not care to associate with flighty rich persons in the "jet set."

B - I could conceive of myself seeking pleasures around the world with the "jet set."

34. A- I like people who are sharp and witty even if they do sometimes insult others.

B - I dislike people who have their fun at the expense of hurting the feelings of others.

35. A- There is altogether too much portrayal of sex in movies.

B - I enjoy watching many of the "sexy" scenes in movies.

36. A- I feel best after taking a couple of drinks.

B - Something is wrong with people who need liquor to feel good.

37. A - People should dress according to some standard of taste, neatness, and style.

B - People should dress in individual ways even if the effects are sometimes strange.

38. A - Sailing long distances in small sailing crafts is foolhardy.

B - I would like to sail a long distance in a small but seaworthy sailing craft.

39. A - I have no patience with dull or boring persons.

B - I find something interesting in almost every person I talk to.

40. A - Skiing down a high mountain slope is a good way to end up on crutches.

B - I think I would enjoy the sensation of skiing very fast down a high mountain slope.



HUMAN RESEARCH PROTECTIONS  
Institutional Review Board

June 27, 2006

Carissa Scurlock  
Dr. Yan Ruth Xia  
[REDACTED]  
[REDACTED]  
[REDACTED]

IRB # 2006-05-414 EP

TITLE OF PROJECT: **Effect of Perfectionism and Sensation-Seeking on Stimulant Use**

Dear Carissa:

This letter is to officially notify you of the approval of your project by the Institutional Review Board (IRB) for the Protection of Human Subjects. It is the Board's opinion that you have provided adequate safeguards for the rights and welfare of the participants in this study. Your proposal seems to be in compliance with this institution's Federal Wide Assurance 00002258 and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46).

Date of EP Review: **06/14/06**.

You are authorized to implement this study as of the Date of Final Approval: **06/22/06**. This approval is Valid Until: **06/21/07**.

We wish to remind you that the principal investigator is responsible for reporting to this Board any of the following events within 48 hours of the event:

- Any serious event (including on-site and off-site adverse events, injuries, side effects, deaths, or other problems) which in the opinion of the local investigator was unanticipated, involved risk to subjects or others, and was possibly related to the research procedures;
- Any serious accidental or unintentional change to the IRB-approved protocol that involves risk or has the potential to recur;
- Any publication in the literature, safety monitoring report, interim result or other finding that indicates an unexpected change to the risk/benefit ratio of the research;
- Any breach in confidentiality or compromise in data privacy related to the subject or others; or
- Any complaint of a subject that indicates an unanticipated risk or that cannot be resolved by the research staff.

For projects which continue beyond one year from the starting date, the IRB will request continuing review and update of the research project. Your study will be due for continuing review as indicated above. The investigator must also advise the Board when this study is finished or discontinued by completing the enclosed Protocol Final Report form and returning it to the Institutional Review Board.

If you have any questions, please contact Shirley Horstman, IRB Administrator, at [REDACTED] or email [REDACTED]

Sincerely,

  
Dan R. Hoyt, Chair  
for the IRB

  
Shirley Horstman  
IRB Administrator

cc: Faculty Advisor