ILLICIT PRESCRIPTION DRUG USE AMONG COLLEGE UNDERGRADUATES:
A STUDY OF PREVALENCE AND AN APPLICATION OF SOCIAL
LEARNING THEORY

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ILLEGAL PRESCRIPTION DRUG USE AMONG COLLEGE UNDERGRADUATES: A STUDY OF PREVALENCE AND APPLICATION OF SOCIAL LEARNING THEORY (123 pp.)

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Illicit prescription drug use among young adults is a growing concern on college campuses, although there are only few studies empirically examining this phenomenon. The purpose of this study is to examine the use of illicit prescription drugs for recreational purposes among college students and to evaluate the applicability of Akers’ Social Learning Theory to this phenomenon. A survey was conducted to obtain a sample size of approximately 465 students from a large Midwestern university. This study demonstrates that illicit prescription drug use is relatively prevalent in this college sample. Students in the sample who reported illicit prescription drug use were more likely to engage in other risky behavior, such as binge drinking, driving under the influence of drugs or alcohol, attending parties where alcohol is consumed, and mixing prescription drugs with alcohol. These students are also more likely to smoke tobacco and report lifetime use of other drugs besides marijuana. More importantly, the results of this study indicate that there is general support for social learning theory as a valuable explanation for this behavior, with peer association as the best predictor for this behavior.

Approved:

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Chapter 1: Introduction

The abuse of prescription drugs is an emerging problem in the U.S. today. A little over eight million Americans use prescription drugs for non-medical purposes each year (Simoni-Watila and Strickler 2004). More specifically, national survey data have indicated that the age group with the highest prevalence of illicit prescription drug use in 2004 was adults from ages 18 to 25, with about 6% using prescription drugs non-medically in their lifetime (National Household Survey on Drug Abuse 2004). Furthermore, between 2000 and 2001 the rates of use increased 15% for young adults ages 18 and 19 (Office of Applied Studies 2003). With these statistics in mind, the questions for this research project are:

- How prevalent is illicit prescription drug use among college students, many of whom fall within this age group?
- Which prescription drugs are the most popular among this population?
- Where do students get these prescription drugs?
- Can this phenomenon be explained theoretically from a social learning standpoint?
- Are those students using prescription drugs nonmedically more likely to engage in risk taking behaviors more than other students, such as binge drinking, driving under the influence, etc?

These questions are important for a variety of reasons, such as examining the extent of use on campus, determining which prevention programs would be most effective for reducing use based upon the patterns of use, and enacting a plan of action for decreasing the negative consequences of campus wide use. Each of these questions are important for
examining the potential harmful effects of prescription drug use that could affect all the students on campus. Previous studies have indicated that students who use prescription drugs for non-medical purposes are also more likely to engage in other risky behavior: such as binge drinking, mixing drugs with alcohol, driving drunk, and use of other illicit drugs such as marijuana and cocaine (Teter 2006, McCabe 2005a, McCabe 3005b, Teter 2003). This increased occurrence of risky behavior among prescription drug users can affect both the user and non-using students. Abusing prescription drugs can lead to health problems for the user such as seizures, heart failure, high body temperatures, drug interactions, etc.

Furthermore I wanted to analyze this phenomenon from the theoretical perspective of social learning theory which is a well established theory in crime and deviance. More specifically I wanted to test the applicability of social learning theory to the use of illicit prescription drugs among those in the college population. Social learning theory states that deviant behavior, as well as the justifications for this deviance, is learned in intimate groups. Previous studies examining social learning theory have proven to be useful in other studies of alcohol and drug use. For example, a social learning theory model has explained about 45% of the variance in binge drinking among college students (Durkin 2005). Additionally, Triplett and Payne (2004) discovered that social learning theory was also very useful in explaining prescription drug use among adolescents. Furthermore previous studies have shown that most users will obtain their prescription drugs from a friend (Hurwitz 2005, McCabe et. al 2005a, McCabe et. al 2005b). This information follows along the lines of the peer association, or associations
with drug using peers could predict that an individual will also use. This could be an important factor in illicit prescription drug use yet a prescription drug use and a social learning theory model have never been tested among college students before.

This study was conducted between April and June 2006, at a large Midwestern university. I used the self-report questionnaire technique and drew from the undergraduate population in the College of Arts and Sciences. Thirteen classes were selected out of the college at this large Midwestern University using the registrar website. Classes were chosen by size and then randomly selected. (Science labs were excluded because of the lack of interest from the instructors due to time constraints in their classes.) The instructors of the classes selected were then contacted about participating by email. Upon permission from the instructors, I attended class and made announcements inviting students to participate voluntarily, confidentially, and anonymously in the study. After about a month of data collection I arrived at a sample size of 465 students. The data were then entered into SPSS and analyzed.

The three most commonly recognized categories of prescription drugs are opiates, stimulants, and depressants. Each of these categories was examined in my questionnaire and in order to understand the scope and nature of this study some background information on the drugs may be useful. In the following section I will introduce each drug category and give a brief history of its use and abuse in the United States. I will also include a number of studies that have been conducted on prescription drugs and college students in order to lay a foundation for explaining the significance of my work.
Categories of Prescription Drugs: Opiates, Stimulants, and Depressants

Opiates and Opioids

Opiates are defined as drugs containing, or derived from, opium and are used to alleviate pain. Opioids are synthetically produced substances that have the same effect as morphine or codeine. Opiates and opioids are used as pain-killers and produce an altered interpretation of painful stimuli, decrease anxiety, and promote sedation. These drugs usually create a sense of euphoria in the brain. Some of the common forms of opiates are: Heroin, Morphine, Codeine, Oxycontin, Dilaudid, Methadone, Vicodin, Percocet, Hydrocodone, and Davon (NIDA Bulletin 2005).

About 5% of the U.S. population is believed to misuse opiates, including illegal drugs like heroin and prescription pain medications such as Oxycontin (US National Library on Medicine – MedLine Plus 2005). According to the 2004 National Survey on Drug Abuse and Health, 2.4 million Americans age 12 and older initiated their first non-medical use of prescription pain killers twelve months prior to the national survey’s release (NSDAH 2004). Prevalence of the illicit use of pain killers, such as Oxycontin, is increasing both nationally and in college populations. According to the 2004 Monitoring the Future Survey, 2.5% of college students reported using Oxycontin in the last year compared to 2.2% in the previous year (Office of National Drug Control Policy 2006). The MF survey also indicated that Hydrocodone (Vicodin) use, the most commonly used opiate in the college population, also increased among college students (6.9% in 2002 to 7.4% in 2004) (Whitten 2006).
This increase of opiate use among college students can be very dangerous since this class of prescription drugs has a high potential for physical dependence. This means that there is a reliance on the drug to prevent symptoms of withdrawal. Over time, greater amounts of the drug become necessary to produce the same effect. The time it takes to become physically dependent varies with each individual (US National Library on Medicine – MedLine Plus 2005).

When opiates are stopped, the body needs time to recover, and withdrawal symptoms may result. Withdrawal from opiates can occur whenever any chronic use is discontinued or reduced. Some people even withdrawal from opiates after hospitalization for painful conditions without realizing what is happening to them. They think they have the flu, and because they don't know that opiates would fix the problem, they don't crave the drugs (US National Library on Medicine – MedLine Plus 2005, Lindesmith 1968).

Many researchers believe that opiates may also create a psychological dependence. In studies where animals were given low doses of morphine in return for learned behaviors it was concluded that the drug itself could serve as a positive reinforcement. Animals learn the required actions quickly and would perform them for long periods of time even though they had never experienced withdrawal symptoms (Ray and Ksir 2004). However some researchers like Lindesmith believe that people, or animals, will continue to use drugs in order to avoid withdrawal symptoms. Lindesmith theorized that the euphoria produced by the drug does not produce physical dependence but it is the relief of pain that can make a person dependent. Once a person stops using a drug and the individual understands their withdrawal symptoms occur because of
discontinued use. However recent studies reveal that Lindesmith’s theory does not account for most drug use among addicts. In fact, many addicts do experience a euphoria and it is considered a major fact in drug use (Goode 2005, Lindesmith 1968).

Opiate use can be very dangerous to a person’s health. If used without proper directions, from a physician, one single use may result in respiratory distress which could lead to death. The possibility of death may also occur if opiates are used with alcohol or other prescription drugs (NIDA Research Reports 2006). The Drug Abuse Warning Network (DAWN) has reported that emergency room data has indicated the rise in mentions of prescription pain relievers that exceeds the increase of marijuana, cocaine, and heroin (Hurwitz 2005). Oxycodone combinations alone increased from 22,397 in 2002 to 36,559 cases in 2004 (Office of National drug Control Policy 2006). According to DAWN’s 2002 morality data, oxycodone is ranked among the 10 most common drugs to be involved in a death in 17 different cities (Office of National Drug Control Policy 2006).

**Historical Context of Opiate Use**

Often prescription drugs will intersect with illegal drugs. For example both heroin and morphine are opiates. Heroin is derived from morphine, which comes from opium. Other prescription opiates, such as Demerol, Darvon, Oxycodone, also have many of the same effects of heroin. These opiates will often generate a euphoria followed by a feeling of well-being or calmness. At larges doses they can induce sleep or drowsiness (Goode 2005).
Opium poppy, the main compound found in many opiates, can be traced back to around 5000 B.C. (Lindesmith 1968). Historically its uses were the same as it is today, to relieve pain and as a remedy for sickness. In 1644 opium smoking became popular in China when the emperor banned tobacco smoking. In 1729, the use opium for nonmedical purposes was banned in China but recreational use continued to be popular. In 1804, morphine was discovered in the opium acid and alkaline base. Morphine became very important in the civil war and was administered to soldiers in large doses to relieve pain. After the war a large percentage of soldiers remained dependent on the drug were high enough that they gave it the name of “soldier’s disease” (Ray and Ksir 2004). Soon after the addictive qualities of morphine were realized and new compounds were made in an effort to make opium based pain relievers that were less habit forming (Lindesmith 1968).

Around the 1860s large number of Chinese began arriving in the U.S. and brought the drug from their homeland (Lindesmith 1968). Before 1870s the Chinese kept to themselves, because of racism, and recreational use of opium was confined to their ethnic population. However white criminals were willing to socially mix with the Chinese population and Americans soon learned the ritual and technique in using the drug. This spread fear among members of the white community who thought that respectable white women were becoming addicted to opium smoking and began to enact anti-opium legislation (Goode 2005).

San Francisco was the first city to make opium illegal in 1875. Six years later the entire state of California banned opium smoking and in 1909 the federal Smoking Opium
Excusion Act was passed, making opium even more difficult to obtain (Goode 2005). Two years later the Harrison Act was signed into law, which was the first federal law to control the traffic of opiates and cocaine (Goode 2005). After these laws were enacted it became noticeable that the pattern of opiate addiction changed from upper class white to lower class males. Most historians credited the Harrison Act of 1914 for these demographic changes except for David Courtwright, a historian who had a unique view on why this change in demographics took place. Courtwright insisted that this change was caused by the medical profession. He believed that most people started using opium recreationally after they were first given the drug in a medical treatment. After the Harrison Act, physicians became reluctant in prescribing pain medication to patients. This affected the population of addicts, many whom were upper class women according to surveys from physicians and pharmacists (Courtwright 1982).

In the late 1800s heroin was formulated. It was thought to be a new non-addicting substitute and was used as a cure for morphine and opium addiction. However later it was realized that heroin was just as addicting and three times more powerful than morphine (Lindesmith 1968). Heroin became the cheap recreational drug of choice since the Harrison Act made opium hard to find and other drugs such as cocaine scarce. In 1924 Congress passed a law to the ban heroin but this was ineffective in curbing its use (Goode 2005). After WWII heroin use began to increase among the lower class and by the 1950s was spreading rapidly. In the 1960s heroin became expensive due to a shortage and use began to decrease. Law enforcement began to crack down harder on heroin use and trafficking, causing the price to fluctuate throughout the decades (Ray and Ksir 2004).
Today Heroin is rarely used and ranks towards the bottom of illicit drug use among Americans (Goode 2005).

**Stimulants**

Stimulants are defined as drugs that produce a temporary increase of the functional activity or efficiency of an organism, or any of its parts (Ray and Ksir 2004). Stimulants increase the heart rate, breathing rate, and brain function and usually only affect a specific organ, such as the heart, lungs, brain, or nervous system. In the past, stimulants were used to treat a large variety of medical problems such as asthma and other respiratory problems, neurological disorders, and obesity. However, they are now prescribed less often for these problems because of the addictive nature of the drugs in this category. Common forms of stimulants include Ritalin, Adderall, Dexedrine, and Concerta. Diet pills, such as Phentermine, can also be classified in this category (NIDA Bulletin 2005, Ray and Ksir 2004). Stimulant use has also been on the rise in the last couple of years. Particularly Ritalin, or methylphenidate, has the highest level of lifetime abuse for individuals between 18 and 25. It has risen from 5.4% in 2002 to 5.7% in 2003 (National Survey on Drug Abuse and Health 2002 and 2003).

Stimulants that increase dopamine, such as Ritalin and Adderall often induce euphoria when first taken and become addictive for individuals who are not in need of a chemical increase. For example, Ritalin is often adjusted by a physician so that it is giving off enough medication for help with ADHD but if taken by a non-ADHD individual it can become very addictive (NIDA 2005 Info facts). In 2003, 378,000 people
meet criteria for dependence or abuse of stimulants in the past year (NSDUH Stimulants In Brief 2003). Often when this drug is abused, it is crushed or snorted. This can be dangerous because it can cause blood vessels to become blocked (NIDA 2005 Info facts).

Taking stimulants at high doses increases the likelihood that depression, feelings of hostility or paranoia, impulsive behavior, aggressiveness, loss of coordination, hallucinations, and disruption in sleep patterns may occur (NIDA Research Reports 2005, 2006, Ray and Ksir 2004). The chances of these symptoms occurring will increase if the user mixes their stimulant with alcohol. Taking stimulants in a large dosage or mixing them with other medications, including over-the-counter decongestions, may also result in dangerous temperature levels in the body, irregular heartbeat, heart attack, and seizures (NIDA Research Reports 2005, 2006).

### Historical Context of Stimulant Use

Current illegal stimulants, such as cocaine, were once used as prescription drugs or for medical research. Cocaine, a well known, illegal stimulant, was first recognized in the Inca Empire in Peru where natives chewed on coca leaves in order to obtain freedom from fatigue while carrying cargo over the mountainous terrain that surrounded them (Goode 2005, Ray and Ksir 2004). The leaf was not only recognized as increasing strength but it also decreased the need for food. Before the invasion by the Spanish in the sixteenth century the coca leaf had become an important aspect of Inca culture and was commonly used as a form of money and in religious ceremonies (Ray and Ksir 2004).
Angelo Mariani was one of the first men to use coca extract in many consumer products such as coca wine, coca loxenge, and other coca drinks. Around the 1880s physicians began derived cocaine from coca leaves and began to experiment with it as a local anesthesia. It was also successful in eye surgery and dentistry. In 1884 Freud studied the psychiatric uses of cocaine and discovered that it was successful in treating depression and indigestion (Ray and Ksir 2004).

Freud in 1885: “On the whole it must be demonstrated that the value of cocaine in psychiatric practice remains to be demonstrated, and it will probably be worthwhile to make a thorough trial as soon as the currently exorbitant price of the drug becomes more reasonable” (Ray and Ksir 2004, pg 169)

Freud also suggested the use of cocaine to help with the withdrawal symptoms of morphine. However Freud’s view of the positive uses of cocaine changed after a close friend, Ernest von Fleischl-Marxow, developed an addiction to the drug (Goode 2005, Ray and Ksir 2004).

Gradually cocaine use became less accepted by the public and medical practitioners. Between 1887 and 1914, almost all the states in the U.S. had passed laws regulating the use and distribution of cocaine. In 1903 cocaine was taken out of the Coca-Cola recipe, mainly because of racism. Southern whites believed that African Americans used cocaine more than any other race and that they were getting the drug any way possible. They also claimed that this drug made African Americans especially dangerous if they were under its influence. There is no documentation to prove that African Americans used cocaine more than whites in the early 1900s (Goode 2005). Furthermore cocaine was replaced by other drugs used for surgery in 1905 and was rarely used for depression because its medical effects were brief, created paranoia, caused rapid
tolerance, and many other side effects (Ray and Ksir 2004). In 1906 it was included in the Pure Food and Drugs Act, which banned food and drugs from becoming mislabeled, and in the Harrison Act of 1914 which lead to its exclusion as a legal narcotic.

Because of regulations cocaine become less available and more expensive. Then in the 1930s, amphetamines were introduced and concerns about cocaine disappeared until the late 1960s when amphetamines became harder to get. It was discovered around the 1970s that cocaine could be mixed with household products in order to produce crack cocaine. Crack cocaine was a smokable form of cocaine that was relatively less expensive than powder cocaine (Ray and Ksir 2004).

Amphetamine is another common stimulant, which was designed to replace a herb called ephedrine, in the 1930s. This drug was believed to help treat asthma patients. A few years later it was discovered to help patients with narcolepsy, a disease that causes people to suddenly fall asleep. In 1937, literature appeared that suggested amphetamines was effective in treating hyperactivity. In that same year, psychology students at the University of Minnesota began to use the drug to stay awake for long periods of time in order to cram for exams (Ray and Ksir 2004).

In World War II there were reports of both Germans and Japanese using stimulants to increase the effectiveness of their soldiers. Japan had such large stockpiles of amphetamine after WWII that they sold the drug without prescriptions causing widespread epidemic of abuse as late as the 1970s. In the U.S. amphetamines were prescription drugs but it was not difficult in the 1960s to obtain them. They were commonly prescribed for obesity and weight control (Ray and Ksir 2004).
The most desired amphetamine-like drug in the 1960s was methamphetamine, which was used to treat overdoses of sleeping pills and obesity. This drug was recognized as highly addicting and was no longer sold in the U.S. as a legal prescription. Many consumers obtained it illegally through street dealers or got the pill form, Methedrine, from Mexico manufacturers (Goode 2005). Reports of the addicting qualities of amphetamines were reported around 1965. Soon after laws were enacted which put restrictions on refills and physicians prescribed the drug less. As a consequence the price of the drug went up on the streets and amphetamine use was replaced by cocaine (Ray and Ksir 2004). Around the early 1980s methamphetamine made a comeback in a smokeable form, nick named “ice” (Goode 2005). Around the same time laboratory experiments revealed that the effects of amphetamines were so similar to cocaine that subjects could not tell the difference between the two, except the effects of amphetamines last longer (Goode 2005). Cocaine use then decreased again in the late 1980s and increased slightly in the 1990s, while stimulant use began to fall (Goode 2005).

Central Nervous System Depressants

Depressants are defined as drugs that reduce bodily functional activity or an instinctive desire. There are different categories of central nervous depressants, but they all work the same by affecting the neurotransmitter gammaaminobutyric acid in the brain and decreasing brain activity (neurotransmitter gammaaminobutyric acid includes the chemicals that keep communication going on the brain) (Ray and Ksir 2004). This causes a drowsy affect and for this reason depressants are usually prescribed to treat anxiety and

The prevalence of illicit use of depressants, such as Valium and Xanax, is highest among individuals between the ages of 18 and 25 and is steadily increasing. According to data from the National Survey on Drug Use and Health (2002, 2003) nonmedical lifetime use of Xanax, among that age group, has significantly increased from 6.7% to 7.5% in 2003 (NSDUH).

Within the first dosage of depressants, the user feels sleepy and uncoordinated. After a large dose a depressant may cause alcohol-like impairment such as irritability and poor judgment which can multiply the dangers in accidentally hurting oneself (NIDA Research Reports 2005, 2006, Ray and Ksir 2004). Additionally, depressants can cause moderate physical dependence and moderate to high psychological dependence (Ray and Ksir 2004).

Long term use of depressants can even be dangerous to individuals who have had the medication prescribed by a physician. Depressants have the tendency to depress respiration. When long term abusers stop taking the drug their brain may race out of control. This could lead to seizures or other harmful consequences. Death has been reported in 5% of individuals who withdrawal abruptly from a large dose (Ray and Ksir 2004). Research also indicates that common cold medications can interact with depressants. Alcohol also has been known to interact with many depressants, which can lead to a slowed heart beat or breathing and possibly death (NIDA Research Reports 2005, 2006 Ray and Ksir 2004).
Historical Context of Depressant Use

Currently there are two types of depressants benzodiazepines and barbiturates. But before these were used there were other drugs such as Chloral Hydrate, Paraldehyde, and Bromides that have since been discontinued. Chloral Hydrate was first used clinically in 1870 as a sleeping pill. After a year of use it was used recreationally and its addictive qualities became known. Bromide, another sleeping pill, was also discontinued after it was found to cause depression and toxicity, and other negative effects. Low doses were still used in over the counter medications until the 1960s. Paraldehyde was used in mental hospitals up to the 1950s but was later discontinued because of its bad odor and taste (Goode 2005, Ray and Ksir 2004).

Barbiturates were introduced in the early 1900s as a sedative. Some of the first barbiturates were long acting and rarely used recreationally because they did not produce a high, however these were replaced by short acting barbiturates, such as Amytal, Nembutal, and Seconal, because they worked more quickly. These short acting drugs were used recreationally because the doses were usually higher. However because these drug were short acting, they were known to cause physical and psychological dependence, as well as depressed respiration and death during withdrawal (Goode 2005, Ray and Ksir 2004).

In 1955, Meprobamate, or Miltown, was released as an approved prescription drug by the FDA. The CNS depressant was commonly prescribed for antianxiety and became extremely popular among the public. It was gradually learned that this depressant
caused both psychological and physical dependence. By 1970 Miltown was a Schedule IV drug and is rarely used today. Since, it has been replaced by Benzodiazepines (Goode 2005, Ray and Ksir 2004).

Barbiturates are rarely use while benzodiazepines, or tranquilizers, are now commonly used to treat dysfunctional behavior, anxiety, sleeping disorders, and epilepsy. Librium was the first Benzodiazepine to be used clinically around the 1960s. It was advertised as an antianxiety drug that caused less drowsiness and caused less overdoses than barbiturates. Almost ten years later it was replaced by Valium, a lower dose and more potent drug made by the same manufacturers as Librium. As these drugs became widely used it was discovered that they created both physical and psychological dependence (Goode 2005, Ray and Ksir 2004).

Xanax was developed in 1981 to replace Valium which was receiving negative attention for its addictive qualities. Currently, it is the fifth most prescribed drug and the one of the nation’s largest selling psychiatric drug (Consumer Reports 1993). Studies have shown that Xanax is even more addicting than Valium. Withdrawal symptoms have been known to come into affect after just three months (Consumer Reports 1993). Xanax has also been known to cause rage rather than tranquility in some of its users. Similarly, Prozac, another common depressant of the late eighties, has been reported to cause violent behavior, such as murder, and suicide attempts (Consumer Reports 1993).

In summary, drug use in the United States is historically diverse and complex; there are often new shifts in drug using patterns and interaction effects. The category that
appears to be most relevant to college students would seem to be stimulants which has been the most documented among prescription drug users age 18 to 25.

Previous Studies on Prescription Drug Use

Studies on Stimulants

While national binge drinking rates have remained steady in the last decade, the use of prescription drugs among college students has increased. Recreational use of stimulants is more frequent among people between the ages of 12 to 25 than any other age group (Hall 2005). Consequently, non-medical use of stimulants is relatively prevalent in the college population. In national studies of undergraduate students with a sample size of 9,000 or more, between 6.9% and 8.1% of students sampled reported stimulant use in their lifetime (McCabe, Knight, Teter, and Weschler 2005b, Teter et. al. 2005). It was also reported that between 5.4% and 4.1% had taken them in the last year, while 2.1% of respondents had taken them in the last month (McCabe, Knight, Teter, and Weschler 2005b, Teter et. al. 2005). Furthermore, research has indicated that rates of use may be higher for college students than other people in their age group, particularly for certain drugs used for the treatment of ADHD. For example in a study conducted by Johnston et. al. (2003) discovered that students in college report a higher use of methylphenidate (Ritalin) than those in the same age group and not attending college.

There may be a few reasons why stimulant use, more specifically ADHD drugs are more likely to be abused by college students. Research has examined how use may be linked to individual motivations. When examining the motivations behind use Teter et. al
(2005) discovered that there were three reoccurring motivations for the illicit use of prescription stimulants: help with concentration, increase alertness, and to get high. These motivations for participating in drug use may be linked to the environment. A person not in college may not need this drug for these purposes or may choose a stronger stimulant such as cocaine to get high.

Stimulant use among college students may be also linked to accessibility of the drug. In a study conducted by the Center for Substance Abuse Research in Maryland, (2005), they found that Adderall, another common drug used for the treatment of ADHD, was ranked third behind alcohol and marijuana as the easiest drug to obtain on campus. This study also found that use of prescription stimulants was more socially acceptable if it was used to enhance studying or academic performance (Center for Substance Abuse 2005). In a study of undergraduates who were prescribed medication for ADHD, about 45% had sold or given away their medication (McCabe 2005b). If accessibility is the key to prevalent use of stimulants among the college population we should see an increase over the next couple of decades. Currently it is estimated that 1.5 million adults take medication for ADHD and currently 2.5 children are also diagnosed (Van Vranken 2005).

Demographic Risk Factors and Stimulant Use

It was also discovered that there was great variance in the prevalence rates for individual colleges. According to McCabe et. al. (2005b), twenty schools had a zero prevalence rate of nonmedical prescription drug use while twelve universities had a prevalence rate of 10% or higher. A few colleges were as high as 25%. The universities
with the highest prevalence rates were located in the Northeastern United States and had highly competitive admission standards. Additionally, the highest rates of individual use were highest among members of Greek life (8.6% for members, 3.5% for nonmembers), males (5.8% versus 2.9% women), and students with low grade point averages (5.2% B or lower GPA, 3.3% B+ or higher (McCabe 2005b). Also, whites had the highest amount of use (4.9% verses 1.6% African American and 1.3% Asian). This is similar to data from national surveys of the general population. The only difference was found in one national study known as the National Epidemiologic Survey on Alcohol and Related Conditions. This survey discovered that Native Americans had the highest level of prescription drug use followed by whites (Huang 2006).

Fraternity/sorority members and students with a B grade point average or lower are twice as likely to use prescription stimulants. Those members of the college Greek life are at a higher risk of use if they attend school in the North Central United States. Also, college campuses with high binge drinking rates (over 50%) have a higher rate of prescription stimulants than those universities with low binge drinking rates (McCabe 2005b).

For all prescription drugs, stimulants and opiates, men are more likely than women to use prescription drugs. In three different studies researchers have found that men are more likely to use prescription drug in their lifetime and in the past month (Hall 2005, McCabe et. al. 2005, Teter et. al 2005). One study in particular by McCabe et. al. (2005b) found that the gender difference was important, with men being twice as likely as women to report stimulant use in the last year (5.8% verses 2.9%). Men (2.8%) were
also more likely than women (1.6%) to report use in the last month (McCabe et. al. 2005b).

The National Survey and Drug Use and Health reported a different finding on monthly usage between men and women. This survey had found that men were more likely than women to report lifetime use but also reported that both men and women had similar rates of illicit stimulant use in the last month. More specifically college men are more likely than college women to report Ritalin use (6.8% verse 3.5% for women) (NSDUH 2004). Opiate use follows along the same pattern of stimulant use with men reporting more use than women.

**Stimulant Use and Risky Behavior**

A number of studies on illicit prescription drugs have discovered that prescription drug users are also more likely to engage in risky behavior, such as binge drinking and using other illicit drugs than individuals who have not used prescription drugs non-medically. McCabe et. al (2005b) reported that students who abuse prescription stimulants are ten times more likely to use marijuana, seven times more likely to binge drink, and five times more likely to drive while intoxicated when compared to students who do not use prescription drugs (McCabe et. al. 2005b).

Recent studies have indicated that individuals who use prescription drugs are more likely to engage in binge drinking. McCabe (2006) also found that four out of five individuals who use prescription drugs non-medically are also more likely to report heavy episodic drinking in the two weeks prior to the survey. Teter, McCabe, Boyd, and Guthrie
(2003) found similar links between stimulants use and alcohol. In their sample, ninety-eight percent of methylphenidate (ADHD medication) users also more likely to report binge drinking two weeks prior to the survey and were more likely to suffer from an alcohol related consequence in the last year; such as injury, missing class, etc. (Teter et. al 2003).

Two different studies have also found that stimulant users are more likely to use other illegal drugs than non-users. Teter et. al. (2005) reported that those students who reported illicit use of prescription stimulants were more likely to report the use of alcohol and other drugs such as cocaine, ecstasy, and amphetamine use. In this study only 1.6% of students who did not use any prescription stimulants reported using cocaine, while 29% of stimulant users reported using cocaine (Teter, McCabe, Cranford, Boyd, and Guthrie 2005). Teter, McCabe, Boyd, and Guthrie (2003) concluded illicit users of methylphenidate (ADHD medication) were more likely to use other illegal drugs in the past month and the past year when compared to nonusers. More specifically, 100% of illicit methylphenidate users also had used ecstasy and marijuana in the last year (Teter et. al 2003).

Results from a study conducted by Hall et. al. (2005) also demonstrated risky behavior and drug use among stimulant users. Hall et. al (2005) discovered other risky behaviors by stimulant users, such as mixing stimulants with alcohol (15.4%) and snorting the drug to enhance a high or buzz (11.5%). This study also discovered that 21.2% of users took prescription stimulants with other drugs in order to enhance the effect (Hall 2005).
A number of studies have revealed that those who engage in illicit prescription drug use are also more likely to participate in other risky behaviors when compared to non-users. While correlation does not equal causation there is undeniably a relationship between these behaviors. This brings up several questions about the nature of individuals who use prescription drugs recreationally. Is there something about the individuals personality? Are prescription drugs a gateway to other illegal drugs?

**Studies on the Recreational Use of Pain Medication**

In research conducted by McCabe, Teter, Boyd (2005a) they discovered that illicit prescription pain medication, such as OxyContin and Vicodin, has increased among college students. Similar to stimulants, the highest prevalence of non-medical use of prescription pain medication is found among young adults age 18 to 25. The increase of use for this age group has increased four-fold in the last two decades and continues to rise (Office of Applied Studies 2002a).

Of the 1,387 students surveyed in the study conducted by McCabe et. al. (2005a) 42% admitted to first time opiate use in while in college. Of those who reported use, the most common sources the prescriptions were from peers. The characteristics of non-medical prescription pain users were similar to non-medical stimulants users. Non-medical prescription pain use was most likely to occur in individuals who lived off campus, had lower grade point averages, and were members of Greek life (McCabe et. al. 2005a).
Similar to stimulants, students often obtained pain medication from a friend and used it in combination with alcohol in order to obtain a better high or buzz. Those who reported using prescription pain medication illegally were also more likely to abuse other substances such as alcohol, marijuana, cocaine, ecstasy, and amphetamines (McCabe et. al. 2005a). Similar results were found when Boyd, McCabe, and Teter (2006) examined nonmedical use of prescription pain medication among juveniles ages 10 to 18 at a Detroit public school district. In their sample of 1,017 students, 32% reported illicit use of prescription pain medication. In a comparison of users and nonusers, it was also discovered that users were eight times more likely to use other illicit drugs and four times more likely to binge drink (Boyd 2006).

Fewer studies have been conducted on recreational use of opiates and depressants than what has been conducted on stimulants. Information on recreational use of opiates is small while recreational use of depressant among the college population is currently non-existent.

Conclusion on Previous Studies

The illicit use of prescription drugs has become a potential public health problem in the U.S., but more importantly, it represents a major concern on college campuses. Students who do not receive prescription drugs from a doctor, but obtain them from other sources may not be properly informed about the drug and are unaware of the possible drug interactions or side effects that may occur. Illicit use of prescription drugs not only affects the individual using but also may affect the overall college environment. Students
who are using prescription drugs recreationally could affect other students around them therefore affecting the college community. For example, there have been a number of studies that correlate illicit prescription drug use with risky behavior. Also prescription drugs have been medically proven to produce certain side effects such as hostility, paranoia, impulsive behavior, loss of coordination, aggressiveness, and in rare cases hallucinations (NIDA Research Reports 2005, 2006, Ray and Ksir 2004). All of these side effects could cause disruptions among the students body, which could include physical assaults, arguments, unnecessary car accidents. Many of these side effects can be intensified when these drugs are mixed with alcohol. Also there are some speculations that certain depressants such as Prozac, in some cases will cause violent behavior. In the early nineties there were reports that Prozac caused people to commit suicide and murder (Consumer Reports 1993).

Previous studies on prescription drug use have indicated that people between the ages of 18 and 25 are the most likely to use prescription drugs for non-medical purposes. Furthermore, the prevalence rates of this age group have been steadily increasing over the last ten years for both college students and young adults in the general population.

The new popularity of using prescription drugs for recreational purposes does not seem like it will decrease in the near future. Currently, there are no known prescription drug abuse prevention programs at any college or university. Studies on adolescent prescription drug use have also revealed that usage is on the rise among 12 to 17 year olds. It is estimated that one in five (18%) teenagers have abused Vicodin, one in ten have abused OxyContin (10%), and one in ten teens have tried prescription stimulants
As the prevalence of illicit use of prescription drugs increases, students on college campuses may suffer the consequences of risky behavior that is associated with such use. Studies on both prescription stimulant users and pain killer users have revealed that individuals between the ages of 12 to 25 are more likely to engage in risky behavior and to use other illicit drugs. This is consistent with national survey findings. In the National Household Survey on Drug Abuse (2003) it was discovered that people between the ages of 12 to 25 who had used prescription drugs nonmedically in the last year were also more likely to use marijuana in the past year (63% compared to 17% of nonusers) (NHSDA Report 2003).

While previous studies have examined the use and possible motives for prescription drugs they have failed to examine this phenomenon from a theoretical perspective that includes the social aspects of college life. There are many social factors that can influence drug use, such as one’s primary group of friends. Previous studies have concluded that some schools have zero illicit prescription drug use on their campus while other schools can have usage rates up to 25% and have opened up the possibility of a
social rather than individualistic explanation of why students choose to use prescription drugs.

**Significance of Research**

While previous studies have begun to examine the prevalence of drug use at colleges and universities, many fail to recognize the social situation surrounding prescription drug use. Studies on stimulant use have shown that most college students get their drugs from other students but fail to make the connection why certain individuals will choose to engage in drug use why others refrain from it. Previous studies on social learning theory and deviant behavior continue to reveal that peer association is one of the most supported predictors of participating in a deviant act.

By determining the applicability of social learning theory, I will interrogate the relevance of social learning theory to prescription drug use. Social learning theory has received a remarkable amount of support and its framework has been applied to a number of deviant behaviors which include: adolescent substance abuse (Akers, Krohn, Lanza-Kaduce, Radosevich 1979, Lanza-Kodue, Akers, Krohn, and Radosevich 1984, Winfree, Sellers, and Clason 1993, Brenda 1994, Triplett and Payne 2004); adolescent cigarette smoking (Krohn et. al. 1985, Akers and Lee 1996); cheating by university students (Michaels and Miethe 1989); binge drinking by college students (Durkin, Wolfe, and Clark 2005); use of fake identification by college students to obtain alcohol (Durkin, Wolfe, and Phillips 1996); adolescent sexual behavior (DiBlasio and Brenda 1990);
misconduct by police officers (Chappell and Piquero 2004); and computer crimes among college students (Skinner and Fream 1997).

More importantly, we may also be able to design effective prevention programs and strategies on college campuses by examining this phenomenon through a social learning perspective. These programs would be similar to those used to curb binge drinking. This research will offer a new and original insight on prescription drug abuse because there have been no studies that have tested the applicability of this theory to illicit prescription drug use among college students.
Chapter 2: Literature Review and Theoretical Overview

There are no universal definitions for what is constituted as a drug, drug abuse, misuse, and addiction by researchers, doctors, or the general public. In fact these terms have received a fair amount of debate in the narration of drug research. These definitions become even more blurry when we examine other factors in the addiction potential of drugs such as the route of administration or co-ingestion. In the following section, I will present these different definitions and the controversy surrounding them by providing a review of the arguments within drugs and society literature and research. In the second part of the literature review I will present an assessment of criminological theories that may be relevant to illicit prescription drug use among college students.

What is a Drug?

The construction of definitions surrounding drug use should be viewed with caution. Historically, definitions of drugs, drug abuse, and addiction are not agreed upon by all people. In the book *Drugs, Society, and Human Behavior*, by Oakley Ray and Charles Ksir, a drug is defined as “any substance, natural or artificial, other than food, that by its chemical nature alters structure or function in the living organism” (Ray and Ksir 2004:5). However this definition becomes problematic when we look at the definition of food. For example, alcohol can be considered food or a drug. Furthermore, other definitions that define a drug by its addicting qualities are too narrow and they excludes drug that are not addicting, while defining a drug as a chemical is too broad
because many chemicals are not considered drugs. Even the standard definition that defines a drug as a substance influencing biological processes is too broad because there are other things that can influence biological processes that are not drugs.

In the definitions surrounding drug use there is a lot of controversy about who is defining the different terms used in drug analysis. One of the most important ways of interpreting these definitions is through a social constructionist perspective. The social constructionist perspective is a unique approach to looking at social problems, such as drug use. This perspective looks at the claims makers involved with defining an act as criminal or problematic, rather than the condition of the claims itself. This perspective believes that society should look at the group making the claims, the values the groups hold, how the group defines the activity, and if the group has a vested interest in the claim. This approach focuses on who is making the claim, why, what the surrounding issues are, and how these claims become legitimate. This perspective is useful in examining criminality and deviance. Social constructionists would look at who defined illicit prescription drug use as criminal, why, and under what circumstances. This is an especially important perspective considering that the activities that we define as criminal historically tend to change (Spector and Kitsuse 2001).

Social construction, as well as setting or content may also affect the definition of a drug, such as medical utility, illegality, and psychoactivity. The medical definition of a drug can be defined as a substance used for healing the body or the mind. This definition of a drug is both objective and subjective. According to the objective element in the definition a drug must be assumed to do something to the body. But in order to be
considered a drug, a physician must see its effects as useful. This is the subjective side which is socially constructed. Some physicians may not see some drugs as useful while other physicians might. This can lead to many contradictions as to what can be considered a useful drug. For example, doctors in some states believe that marijuana is a useful drug while others believe it should be outlawed from the medical practice (Goode 2005). Furthermore, some drugs had previously been accepted by the medical community and then later discounted. A historical example in prescription drug history is the depressant Methaqualone.

In 1959 the depressant Methaqualone, or Mandrax, was introduced in Britain as a safe prescription sleeping pill. After massive campaigning the drug was widely used by the public and became a popular illicit drug on the streets. Germany and Japan also introduced the drug to their country. Soon after 10 to 15 percent of drug overdoses in Germany were due to methaqualone. In Japan from 1960 to 1964, 40 percent of all drug overdoses in hospitals were due to Methaqualone. In 1965 the drug was introduced in the U.S. and in 1966 the FDA decided to no longer monitor Methaqualone because it did not have abuse potential. Physicians began to think that the drug was safer than other barbiturates and were prescribing it extensively. However it was eventually discovered to be a dangerous and addicting drug. Since 1985 it has been listed on the Schedule I list and is not available as a prescription drug (Ray and Ksir 2004).

The legal definition of a drug is a substance whose possession and sale are against the law (Goode 2005). This definition is defined by law enforcement and is socially constructed depending upon society. The same drug may be illegal in the U.S. but legal in
Europe. By this definition alcohol would not be considered a drug since it is legal in the U.S. The exclusion of alcohol from the legal definition of drugs can be considered inadequate because it excludes alcohol consumption which has historically correlated with illicit drug use (Goode 2005).

Furthermore the social construction of the legal definition of a drug may change over a time period depending upon what government officials see as acceptable. For example, Ecstasy, or MDMA, was first discovered in 1910 but was rarely used until it was rediscovered again in the 1970s as a legal psychotherapeutic drug that reduced fear and promoted communication. In 1985 the Federal Drug Enforcement Administration ban the use of MDMA both medically and recreationally because of government research that found possible brain changes in users (Rosenbaum and Heilig 2001). Claims about this drug differs greatly among researchers and government officials. Some physicians that believe MDMA is less harmful than what governmental officials claim. In preliminary hearings conducted by a DEA administrative judge, psychiatrists argued for the medical value of the drug. Judge Francis Young was convinced of MDMA’s medical value and low potential of abuse (Rosenbaum 2002). He concluded that it should be placed on Schedule III enabling it for therapeutic use, however the DEA overturned his decision and placed it on Schedule I, criminalizing it for both medical and recreational use. Advocates for the MDMA pushed for its use in research and in 2001 the FDA approved a study of MDMA use in posttraumatic stress disorder (Rosenbaum 2002).

The psychoactive definition of a drug is a substance that causes significant changes in the mind such as mood, emotion, feelings, or cognitive, and therefore
affecting behavior. This definition is based on the essential properties of the substances. Any substance that influences the brain, regardless of legal or medical status, is considered a drug. Substances that do not affect the brain, such as penicillin, would not be considered a drug according to this definition. All substances that are taken recreationally are considered psychoactive because they are taken to influence the brain. In this definition even alcohol would be considered a drug (Goode 2005).

All of these definitions are valid for certain purposes. In some cases a drug may fill one or all three of these definitions and each one of these definitions can be considered useful depending upon the context it is used in. For purposes of recreational drug use the psychoactive definition and social constructionism, appears to be the most useful, legality maybe somewhat useful, and medical utility maybe be considered irrelevant (Goode 2005).

Drug Abuse, Misuse, and Addiction: Definitions

Historically drug abuse has been problematic to define. The area of prescription drug abuse is a new field of study. Currently, there is a great deal of debate about definition of prescription drug abuse. Some believe that the use of any drug outside a medical context can be considered drug abuse. This definition follows a legalistic criterion of drug abuse and therefore excludes alcohol or tobacco abuse (Goode 2005). Under this definition taking an illegal drug only once in the last year would qualify a person to be a drug abuser. An agency that currently uses this type of definition is the National Institute for Drug Abuse which defines prescription abuse as “the consumption
of a drug, with or without a prescription, to get high or for purposes other than what the
drug was intended for” (NIDA Bulletin 2005).

Other researchers define prescription drug use as abuse when the drug causes
harmful effects on the user’s life or impacts the people around the user. The Diagnostic
and Statistical Manual of Mental Disorders Fourth Edition (DSM-IV) uses this type of
definition of abuse. The DSM-IV classifies abuse by having one of the following
problems in the last twelve months: legal problems from use, failure to fulfill major
obligations because of use, use in situations which are hazardous, and continued use
despite social or personal problems (Hurwitz 2005). But this definition can also be
ineffective because it discounts that a person may be addicted and taking drugs but does
not suffer from any medical harm.

Since there is no exact correspondence between any drug, its level of use, and
harm, some observers define abuse by the level of use when harm. This harm can be
either physical or social, seems to be more than slightly likely, although many of these
observers do realize that this definition of abuse is inexact and may also depend on the
manner, situation, and amount of drug used (Goode 2005). Since drug abuse is clearly not
agreed upon many observers choose to use the term drug misuse. Drug misuse occurs
when an individual consumes prescribed drugs for purposes other than what the drug was
prescribed for or consumes drugs at a greater frequency than as recommended by a doctor
(Ray and Ksir 2004).

The concept of addiction has also changed throughout the years. The classic
addiction model dominated the drug studies until the 1970s. In this model a drug was
defined as addicting if withdrawal symptoms appeared. These withdrawal symptoms could be alleviated by taking the drug again or consuming any drug in the same category. For example, heroin and morphine are cross dependent and can help with each other’s withdrawal symptoms because they are both opiates with the same addictive qualities (Goode 2005).

Alfred Lindesmith’s sociological definition of drug addiction is quite different from other sources. He developed his definition of addiction as understanding that withdrawal symptoms are being caused by the absence of a drug and using opiates to prevent these symptoms from occurring. The addict knowingly uses the drug to avoid withdrawal symptoms because he knows that the absence of the drug is causing the distress. The user does not experience any sort of euphoria but wishes to avoid pain (Lindesmith 1968). An individual’s interpretation of withdrawal depends upon his/her social environment and culture. The individual will use the symbols, or attitudes, set by society when they apply to him/herself causing the individual to accept their self as an outcast. Under this model, the user must understand that they are experiencing withdrawal and it is because they had stopped using a certain drug. Under medical supervision patients experiencing withdrawal may not realize it because they may have no connection between the drug and their sickness. Lindesmith cited evidence for his theory using animal experiments. Lindesmith claimed that animals react the same way as humans do and will take the drug in order to avoid withdrawal (Lindesmith 1968). However, Lindesmith’s explanation of addiction, does not account for drugs that do not produce withdrawal symptoms, such as LSD or cocaine. Also recent studies reveal that
Lindesmith’s theory does not account for most drug use among addicts. In fact, many addicts do experience a euphoria and it is considered a major fact in drug use (Goode 2005, Lindesmith 1968).

Currently it is believed that physical addiction is only one piece of a complicated puzzle. Evidence has been presented that shows the classic concept of addiction does not explain continued drug use. Drugs that are not physically addicting are known to cause a behavioral dependence. Drugs that cause behavioral dependence do not cause withdrawal symptoms yet the user will still engage in compulsive, chronic use. This dependency is evident by lab experiments with animals where the animals would take cocaine, a nonaddicting drug under the classical model, more compulsively than heroin, a physically addicting drug. (Goode 2005:13). These laboratory experiments do not mirror the real lives of humans but they do give us an idea about the addicting qualities of certain drugs. In this instance, positive reinforcement seems to be the cause for continued, compulsive use (Ray and Ksir 2004). Currently most specialists like to use the term dependence as opposed to addiction (Goode 2005).

There are two different types of dependence, psychological or physiological (physical). These concepts are both independent and overlapping. Different drugs vary in the potential to cause either dependency as well as the susceptibility of different people to both dependencies. Psychological dependence exists on a continuum while physical dependence is either/or. Reinforcement is the key to understanding psychological dependence and can be viewed through behavior (Goode 2005).
Other Factors in the Addiction Potential of Prescription Drugs

Other factors besides the chemical makeup of the drug must be taken into consideration when examining the possibility of addiction and dependence among prescription drugs. There are key factors such as dose, co-administration with other drugs, route of administration, and expectations must be taken into consideration (Compton and Volkow 2005). Many drugs, such as stimulants and depressants, are prescribed in doses to individual users. These dose amounts are monitored under the care of a physician and are usually lower than what is needed to produce reinforcement and addiction. Also, the time between intervals of use can also affect whether a person will become dependent. Taking a prescription orally does not lessen the chances of dependence if the pills are taken at high doses and short intervals (Compton and Volkow 2005).

The onset of drug action and the method of use also affect dependency. Prescription drugs that are snorted, injected, or smoked have a more rapid onset, which can lead to a greater increase of becoming dependent to the drug (Compton and Volkow 2005). Taking prescription drugs with other drugs or alcohol could also result in additional reinforcement. Stimulants and nicotine have been known to increase addiction. The relationship between alcohol and prescription drugs is less clear but many studies have found a correlation between the two (Compton and Volkow 2005).
Licit and Illicit Drug Use

There are two dimensions of drug use, legal status and purpose of the drug use. A licit drug is a psychoactive drug that is legal to purchase, possess, or use. There are two common forms, legal instrumental use and legal recreational use. Common examples of these are cigarettes, alcohol, and caffeine. Drugs in these categories are often used for legal recreational use and have a wide range of motives for use besides a desired mental state. Over the counter medications and drugs prescribed to an individual by a doctor are categorized as legal instrumental use. These drugs are usually used for a purpose such as alleviating pain or other medical problems (Goode 2005).

The term illicit drug is defined as “a drug that is unlawful to possess or use” (Ray and Ksir 2004). Possessing a prescription drug that was not prescribed by a health care professional is considered illegal. This term may be viewed as complicated because there are many drugs that are available by prescription, however if drugs are manufactured and sold illegally they are illicit (Ray and Ksir 2004).

Under the category of illicit drugs there are two types of illicit use, illegal instrumental use and illegal recreational use. Illegal instrumental use includes taking prescription drugs without a prescription for an instrumental purpose, such as studying for an exam or calming anxiety. Many users in this category do not consider themselves as drug users since they are only striving for socially accepted goals set by society’s standards. While members of society would approve the goal of the user they would not approve the way they obtained the drug. Also the same drugs can be used for both
instrumental as well as recreational purposes. Illegal recreational use is the use of drugs classified as illegal for recreational purposes.

Theoretical Perspectives of Illicit Prescription Drug Use

There have been dozens of theories or explanations explaining drug use and abuse among various subgroups in the population, however when prescription drug use among college students is examined this list becomes more narrow. Merton’s strain theory, subculture theory, conflict theory, and bio-psych-social theory, seem to be the most promising theories that provide an explanation for this phenomenon. However social learning theory seems to be the most promising because of previous research conducted on adolescents and young adults. Social learning theory can also offer a useful explanation for recreational use and the desistance of prescription drug use, as studies begin to reveal that students may obtain prescriptions from other college students within their primary groups.

Social Learning Theory

Social learning theory was developed by Ron Akers and is an important theory of crime and deviance. Akers’s theory states that criminal and deviant behavior is learned and not biological. This theory of criminal behavior is an extension of differential association theory, which was first introduced by Edwin Sutherland in his textbook *Principles of Criminology* (1939). A decade later Akers extended and modified
Sutherland’s differential association to include two other major components: definitions and non-social differential reinforcement (Akers 1994, Sutherland and Cressey 1960, Sutherland 1955).

Differential association theory is the basis for Akers’s social learning theory. Differential association was originally based on nine central principles developed by Sutherland. The first central component is that criminal behavior is learned. This learning takes place through communication with others, which can be verbal or may include a “communication of gestures.” The second principle is that groups which produce individual criminal behavior must be personal and intimate groups (Cote 2002, Sutherland and Cressey 1960, Sutherland 1955).

The theory goes on to say that the learning criminal behavior encompasses learning the techniques, motives, rationalizations, and attitudes associated with the criminal or deviant activity. These motives and drives are learned from others people’s definitions of legal codes. According to Sutherland’s theory, an individual will become delinquent if they possess more of the favorable definitions of crime over definitions that are not favorable towards crime (Cote 2002, Sutherland 1955).

Since we gain these definitions from other people, those individuals who come into contact and have more exposure to the criminal elements will posses more favorable definitions and have a greater probability of committing crimes compared to those who do not have these contacts. These associations may vary in intensity, priority, frequency, and duration, all which will affect an individual’s behavior. Learning criminal behavior usually follows the same process of learning other behaviors and is not restricted to
imitation (Sutherland and Cressey 1960). The final main principal of differential association is that criminal behavior can not be explained by needs and values of a person, but is only an expression of needs and values since non-criminal behavior can be explained in the same way (Cote 2002, Sutherland 1955).

Ronald Akers reformulated and extended Sutherland’s theory of differential association. His central premise remains similar to Sutherland’s: that “the basic assumption in social learning theory is that the same learning process, operating in the context of the social structure, interaction, and situation, produces both conforming and deviant behavior” (Akers 1998:136). More precisely, deviant behavior is learned, modified, performed, repeated, or maintained in the same context as conforming behaviors. Akers expands Sutherland’s idea of definitions favorable to crime by using Sykes and Matza’s techniques of neutralization which involves more than merely rationalizing crime (Cote 2002, Akers 1998, Akers 1994).

Social learning definitions, or techniques of neutralization, were first introduced by Sykes and Matza in 1964. These techniques of neutralization can be described as justifications and accounts of behavior. Sykes and Matza believed that people who commit crimes sometimes felt guilty about their delinquent acts and needed to neutralize their feelings about the act. The authors came up with five techniques of neutralization commonly used by offenders: denial of responsibility, denial of injury, denial of victim, condemnation of the condemners, and an appeal to higher loyalties. These neutralizations can be utilized after an act has been committed or before it is attempted and will allow the person to decrease the negative sanctions and feelings associated with the act (Cote
For example, killing is wrong, unless it is committed in self defense, wartime, or other scenarios.

The concept of neutralizations also includes the notion of accounts and disclaimers. Accounts are explanations that people offer after they have performed actions threatening their identities (Cote 2002). A disclaimer is a verbal defense used to ward off or defeat, in advance, any doubts or negative evaluations that may result from the intended conduct. These neutralizing definitions are learned by imitating others and are formed to lessen social disapproval of their actions. These definitions can also be used as reinforcement for behavior because they could act as stimulus accompanying the direct reinforcements. For example, when stealing a car, two teens may justify that they are only “borrowing the car” and that no one was hurt by their actions (Cote 2002).

The third component of the social learning theory is differential reinforcement, which can be viewed as a combination of differential association and the principles of operant conditioning. Akers extended Sutherland’s theory by adding that crime can be learned by both imitation and reinforcement of behavior. Akers’ believed that the concept of differential reinforcement was the most significant factor in whether a person will conform or violate the social and legal norms of society. Individuals who receive more rewards than punishments relating to the criminal behavior will become delinquent (Akers 1994). While Akers believed that reinforcement was the core shaping component of behavior. He later revised his social learning theory to include imitation as another primary learning mechanism rather than just relying on radical Skinner behaviorism (Akers 1998, 1994).
Akers defined reinforcement in two ways: social and nonsocial. Social reinforcement includes a wide range of behaviors and reactions. These ranged anywhere from monetary rewards to verbal approval of those within the primary group. Nonsocial reinforcement was defined as the unconditioned positive and negative effects of the stimuli or drug (Akers 1994). Akers' perspective is different from Sutherland’s because it includes nonsocial reinforcement which takes the theory further away from a symbolic interactionist basis and broadens the idea of reinforcement in this theory. Both Sutherland and Akers believed that as reinforcement increases there would be an increase in the response rate: "The strength of criminal behavior is a direct function of the amount, frequency, and probability of its reinforcement” (Sutherland 1947: 5-7).

Social learning theory can be viewed as one of the most useful sociological theories for explaining both why people choose to do drugs as well as why they may desist, or not take, prescription drugs. According to social learning theory a person will desist from prescription drug use if members in their primary group disapprove of its use or if the person experiences more negative reinforcements than positive ones. Furthermore this theory could be extremely useful for studying prescription drug use among college students. This is made evident by previous studies concerning adolescences and drugs and college students participating in binge drinking.

While social learning theory seems to be a valuable explanation for deviance it does have limitations. One of the criticisms of social learning theory is the concept of peer association. It is hard to untangle whether individuals are changed by the peer group once they join it or if they self-select themselves into deviant peer groups. This criticism
has not been answered yet and it might be possible to answer this by conducting a longitudinal study. However even though peer association is shown to be limited, reinforcement, another important element of social learning theory, continues to be a valuable explanation for deviant behavior. Therefore social learning theory may still be a leading theory in illicit prescription drug use even though the concept of peer association has its limitations.

**Previous Studies Dealing with Social Learning Theory**

While no studies that I am aware of have applied social learning theory to prescription drug use among college students, there have been studies that apply social learning theory to juvenile prescription drug use and to binge drinking by college students. Triplett and Payne (2004) tested the applicability of social learning theory to adolescent prescription drug use. The measure of reinforcement and peer associations were significant predictors of drug use. This research came to the conclusion that adolescents who used drugs not only experienced social reinforcement but also nonsocial reinforcement. The more likely the drug functioned correctly, (the adolescent obtained their ideal high) the more likely the individual continued use (Triplett and Payne 2004).

Akers also conducted a study examining drug use among teenagers and concluded that actual and anticipated rewards and punishments were significant predictors of the frequency of drug use. A large number of previous studies have discovered that peer associations and family were important to individual perceptions of drug use. Also social reinforcement through primary groups is a significant predictor of drug use (Akers, 1998,
Lanza-Kaduce et al. 1984, Krohn et al. 1985). A study conducted by Winfree, Sellers, and Clason (1993) found that social learning theory could explain why certain individual abstained from drug use. The variables found in social learning theory were able to differentiate between abstainers and current users. These studies have indicated that social learning theory is an advanced theory that can help explain both use and non-use of drugs.

There has also been a study that uses social learning theory to explain the reasons for the occurrences of binge drinking among college populations. This study, conducted by Durkin et. al. (2005), states that social learning theory can explain for more than half the variance of binge drinking in his sample, suggesting that binge drinking is learned behavior. Binge drinkers are more likely to associate with other binge drinkers making the peer group the most important predictor of binge drinking activity (Durkin, Wolfe, Clark 2005, Alva 1998). Students who binge drink react more positively to the idea of binge drinking, therefore also reacting positively towards the binge drinking behavior of others (Durkin et. al. 2005, Alva 1998). A third predictor of excessive alcohol consumption is that binge drinkers tend to perceive that their drinking activities have more positive outcomes than negative consequences. Students who binge drink have attitudes that help rationalize their excessive drinking (Durkin et. al. 2005.) Research on social learning is an important component when examining why binge drinking occurs and serves as a promising explanation for illicit prescription drug use among the college population.
Subculture Theory

Another possibly useful explanation for prescription drug use is subculture theory. The subculture theory is very similar to differential association. Involvement in a social group whose attitudes are favorable towards drug use will determine individual use. While drug use may be encouraged in some social circles, other groups may consider the use a serious norm violation and tend to discourage it. One main difference between Sutherland’s theories of deviance and that of subculture theory is that the subculture theory states that deviance is determined through the assimilation of specific groups. While social learning does not require socialization process to take place in clearly identifiable groups (Goode 2005).

Howard S. Becker was the first person to use a systematic application of subculture theory to marijuana usage. Becker purposed that the use causes motives, unlike traditional ways of examining drug use. Essentially, a person will learn to develop justifications and motivations for the use of the drug after they have already tried it. The social group is a main predictor of drug use (Goode 2005).

Becker believed that drug use only began through interactions and contact with others. Through interaction with others one learns the proper techniques for using, how to perceive use, and how to enjoy the effects of the drug (Goode 2005). This study was also replicated in 1990 by Michael L. Hirschi, Randall W. Conforti, and Carolyn J. Graney. They came to the same conclusion that initial involvement in drug use involved close associates in primary groups (Hirschi et. al. 1990).
Subculture theory does have some flaws. In Becker’s discussion of subculture theory he did not include any dialogue on individual/group characteristics of use and assumes an almost random recruitment into a subculture group. Becker’s model fails to explain why someone in the company of other people will participate in drug use or turn down the opportunity. Instead subculture theory assumes that everyone is favorable to use and will engage in this behavior. This theory would not be very useful in examining illicit prescription drug use since it would be hard to test methodologically. There is no way to know if a person was already a drug user who was attracted to a certain subculture or if they participated in drug use after initiated into the subculture group. One way to examine this would be with a longitudinal study following individuals before and after they join perspective subgroups. This is also problematic because there has not been enough research on illicit prescription drug use to determine which subcultures are more likely to engage in use.

Conflict Theory

Conflict theory is a macro perspective that examines entire societies and large structural forces. In this perspective drug use and addiction are strongly related to income, social class, and neighborhood. And it examines several key elements in economics and politics that have taken place over the last few decades (Goode 2005). For example, in the United States between 1967 and 1987, more than a half of million manufacturing jobs, along with 100,000 retail jobs, have been lost (Maher 1997). These drastic changes in the economy have had a devastating impact on the availability of lower
income jobs. As a result the lower end of the economy is becoming increasingly poor and the rich as also getting richer. This also created large economic gaps in many neighborhoods causing drugs to flourish in lower income neighborhoods where drug dealing is an alternative form of income (Goode 2005, Mayer 1997).

Furthermore conflict theory is also bound up in how law and power influence what drugs are considered illegal and interpretations of abuse. Traditionally those in power in society have built a system that will ensure that they will remain in power. It is through this stratification the elites groups are able to regulate the lower class. For example, alcohol, tobacco, and caffeine are legal because lawmakers and those in power have made them legal. These elites also have the power to define the legality of prescription drugs.

While this theory is a useful perspective embedded in historical evidence it would not be a very practical in examining illicit prescription drug use among college students. Many individuals from low income families are unable to afford a college education primarily because of the rising costs of a college education. While some people from low income families do make it into college, statistically there are not enough of them to compare middle and upper class students on campus. Furthermore it would be difficult to access prescription drugs use since it was formed for “harder drugs” (cocaine, heroin, etc.). Additionally some studies completed on softer drugs like ecstasy have revealed that drug use is found among both upper and lower class individuals, such as, Rosenbaum’s (1989) study on ecstasy use among white collar professionals.
Strain Theory

Merton’s strain theory could also be applicable to prescription drug abuse with specific drugs such as Ritalin or Adderall. Merton’s strain theory or the anomie theory of deviant behavior recognizes that people are driven by reaching common culturally defined goals. A society that places strong emphasis on the goals and a lesser emphasis on the law will result in a high level of criminal activity. Anomie or normlessness occurs when individuals cannot achieve the goals through their available means.

People deal with this structural strain in five ways: conformity, innovation, ritualism, retreatism, or rebellion. Some of these adaptations can lead an individual to criminal or deviant acts (Merton 1938). The most relevant adaptation that explains the illicit use of Ritalin is innovation, which occurs when an individual accepts the goals of society but rejects or feels incapable of gaining them through conventional means or methods. For example, most college students have the goal of getting good grades to eventually get a job. But if these students feel that they cannot achieve the grades without the help of a substance to help them study, they will turn to abuse the drug.

The only part of anomie that social scientists have attempted to use in the theoretical explanation of drug use has been retreatism. This theory has never been applied successfully to drug use. While the adaptation of innovation has not been used to explain any form of drug use, it has been used to explain drug dealing. Individuals who deal drugs often feel frustrated and that they cannot obtain their material goals through regular avenues (Goode 2005).
While there have been no studies testing the applicability of anomie’s innovation adaptation there have been a couple of interviews that warrant further investigation of prescription drug use and anomie. An interview, conducted by Laura Franz at the University of Maryland, revealed some insight as to why college students would use Adderall and Ritalin. According to the interview, the student claimed to take Adderall to stay awake and study in an attempt to improve his/her grades. The interviewee went on to further say that without the illicit use of Adderall he/she could not obtain as high of a g.p.a. Not only does this person use Adderall without a prescription, they break the pill up and snort it, which is dangerous due to the time released nature of the drug. The interviewee does not see their drug use as wrong and considers it more socially acceptable then other forms of drug use (Franz 2005).

Currently there have been no successful applications of anomie theory to drug use. In the past this theory has received devastating attacks from the academic world after prior attempts of applying this theory to drug use. One of the main criticisms is that it is not the poorest people who use drugs, such as heroin, but it is those people who are above the poor both financially and occupationally (Goode 2005). While anomie’s innovation adaptation may be useful to study in the future, more research should be conducted on the motives of illicit prescription drug use. Furthermore, anomie theory was not used for this study because it could only really be applied to one category of prescription drugs, study drugs.
Bio-Psych-Social Theory

In Andrew Weil’s *The Natural Mind*, he introduced the unique theory that drug use is universal and that all humans are born with the drive to seek an altered state of consciousness. He states in his theory that children begin to experiment with altered states of consciousness early in life and quickly learn the rewards and punishments for this behavior through socialization. Our preferred methods of inducing this altered state are shaped by desires, availabilities, and social norms. While some individuals choose, alcohol, a socially accepted way of changing the conscious, other people prefer stronger substances for the job (Weil 1986, 1972). However this theory does have some limitations. It does not answer the question why some individuals will seek stronger substances than alcohol if they know through socialization that it is not acceptable to use. It is also methodologically impossible to examine because we would have to measure the desire to alter consciousness at children at all ages with no starting ground. There is no evidence to conclude that children are born with a “drive” to alter their consciousness when this drive itself may be learned through socialization.

Literature Review: The Conclusion

While strain theory, subculture theory, conflict theory, and bio-psych-social theory all offer very reasonable explanations for prescription drug use among college students they hard are to examine methodologically, unless they are conducted as a longitudinal study. Previous studies rarely examine the applicability of these theories to drug use and other deviant behaviors. However, studies using social learning theory
models have proven to be both valid and reliable in previous studies of deviant behavior. Additionally social learning theory is a promising theory for illicit prescription drug use because it can explain both why people start this behavior as well as why they abstain from it.
Chapter 3: Methodology

In order to study illicit prescription drug use among college students I developed a self administered questionnaire. This survey format was chosen for this study because it was the most cost effective method for obtaining data. Also, distributing surveys in classrooms was a time effective way of collecting survey data. Telephone interviews and mail in surveys were not used because they would have been too time consuming and costly because I was the only one conducting this research. Furthermore, face to face interviews would have not been time efficient and would have resulted in a smaller sample size that would have made an empirical test of social learning theory impossible to administer.

Survey as a Method

Past research has also shown that obtaining data on drug and drinking behavior through the use of a self-report questionnaire is both reliable and valid (Hardt and Peterson-Hardt 1977, Johnston and O’Malley 1997, Harrison 1997). Furthermore recent studies show that, when surveys are given to college students in college classrooms the rates of recanting on previous drug use are modest for illegal drugs (Johnston and O’Malley 1997). Self-administered questionnaires also produce higher rates of drug use with more valid data than personal interviews with respondents (Harrison 1997, Mensch and Kandel 1988, Schober, Pergamit, and Brandon 1992). In a series of studies conducted by the NHSDA, it was discovered that respondents were more likely to report cocaine use in the past year and 30 days on self administered questionnaires rather than in face to face interviews (Harrison 1997).
A reoccurring finding among self-reported studies has also led to what is being called the “desirability hypothesis.” According to this hypothesis, most respondents will admit the use of less stigmatized drugs while few will admit the use of heavily stigmatized drugs (Harrison and Hughes 1997, Harrison 1992, 1995, Fendrich and Xu 1994). Most studies conclude that the less stigmatized drugs are marijuana, opiates, and stimulants, while cocaine is the most stigmatized.

On average, most respondents will tell the truth if they believe the survey is confidential and they will not receive any backlash for reporting their illegal use (Goode 2005). But it would be foolish to say that this is completely accurate. In reality, surveys give us a rough idea about what is going on and provide us with information about the characteristics of users that might not be obtained with ethnographic work.

Some studies have shown that a large number of people will understate their drug use in a self-reported survey. Recent studies have compared urinalysis and other bodily fluids to self reported surveys and have discovered that most drug use is underreported (Harrison and Hughes 1997, Harrison 1997). Self-reported surveys have received criticism for its respondents not being completely honest and there are problems measuring the validity of self-reported methods. However, at this point in time they are still one of the most valuable ways of collecting sensitive information. Studies that use bodily fluids to determine drug use have a limited time for detecting drugs and studies that examine records may be biased. Some people may be more likely to have a record than others. Also, those studies which use bodily fluids concentrate more on populations
where drug use may be more prevalent instead of using random sampling (Harrison 1997).

A majority of previous studies have used web based surveys while conducting research on this subject. Web based surveys have been shown to be successful in improving the reporting of sensitive information (Boyd et. al. 2006, McCabe et. al. 2006, McCabe et. al. 2005a, Teter et. al. 2003). The survey is maintained on a secure internet site and unique PINS, or passwords, are assigned to allow respondents confidentiality. Response rates differed for each study: Boyd et. al. (2006) had a 89% response rate, Teter et. al. (2003) had a response rate of 64% and McCabe (2005a) had a response rate of 47.3%. Low response rates may result in a participation bias due to non-response (Hser 1997).

In one study of illicit prescription drug use, a self-administered mail survey of college students was distributed (McCabe et. al. 2004). This study received a response rate of 52%. In another study, three different survey methods were used: mail in survey, door to door, and a self administered survey distributed in the classroom (Hall et. al. 2005). This study showed a significant difference on the question of illicit stimulant use between men surveyed in residence halls and men who received the survey through the mail. Men who filled out the survey in their residence halls were more likely to report illicit stimulant use than those men who filled out the survey by mail.
The Procedure

In my study, thirteen classes were selected from the College of Arts and Sciences at a large Midwestern university using the registrar website. Classes were chosen by size and then randomly selected (Science labs were excluded). The instructors of the classes selected were then contacted about participating by email. Upon permission from the instructors, I attended class and made announcements inviting students to participate voluntarily, confidentially, and anonymously in the study. The questionnaire was distributed in the first ten to fifteen minutes of each class period.

Students were informed during the beginning of each class that I was conducting a survey for my master’s thesis and that they must be 18 years or older to participate. They were then informed about the content of the survey and about the working definition of illicit prescription drug use that I employed and how it pertained to my survey. Illicit prescription drug use was defined as prescription drug use without a prescription from a health professional, specifically for recreational purposes. The term recreational purposes was also defined for participants and included using prescription drugs to aid in studying, test taking, helping to achieve a better high or buzz, or mixing prescriptions with other drugs/alcohol in order to achieve more intense effects of the drug.

Careful and appropriate steps were taken to protect the rights of the respondents. Potential respondents were informed that the survey was completely voluntary and that it did not affect their grade in the class in any way. It was also made clear that participation was confidential and anonymous. Respondents were instructed not to put any identifying marks anywhere on the survey and that their identity could not be revealed in any public
presentation of research. Additionally, participants were told that they could discontinue the survey at any time or skip specific questions that made them feel uncomfortable. Students were told and did not receive any monetary or course credit reward for their participation.

A cover page was also added to ensure the privacy of their answers and served as a reminder that the survey was voluntary, confidential, and anonymous. The cover page also reminded participants that they must be 18 or older to participate and that by completing the questionnaire they were giving me consent to analyze and report data on the answers provided.

The Questionnaire and Hypotheses of Results

One of the main purposes of this study was to determine how prevalent illicit prescription drug use is among college students and which prescription drugs are the most popular among this population. In an effort to determine this, illicit prescription drug use was assessed on the survey by allowing respondents to choose from a list of 30 of the most common names of opiates, stimulants, and depressants, which were acquired from the National Institute on Drug Abuse website. An open ended slot was also allotted for drugs that were not listed. While choosing a drug from the above category indicated lifetime use, the next three questions asked about more current use. How many occasions in the (a) last 30 days (b) last 3 months (c) last year have you used illicit prescription drugs. This was scale was consistent with national research of illicit prescription drug use and included: (1) never (2) 1-2 occasions (3) 3-5 occasions (4) 6-9 occasions (5) 10-19
occasions (6) 20-30 occasions (7) more than 30 occasions (Boyd et. al. 2006, McCabe 2006, 2005a, Teter et. al. 2005, Teter et. al. 2003). The only variation was that the last 3 months was not asked in the national studies and in the national studies they went up to 40 or more occasions. These measures are very similar to those that are used in many national studies. One advantage of these measures being the same as national population studies is that the results are compatible and can be compared across studies.

Additionally, the second main goal of this study was to determine if those students using prescription drugs nonmedically were more likely to engage in more risk taking behaviors than other students; such as binge drinking, smoking, mixing prescription drugs with alcohol, and driving under the influence of alcohol and/or illegal substances such as marijuana, coke.

The definition of binge drinking was used according to the standard definition used by most researchers which is, 5 or more drinks in a single occasion, over the last two weeks before receiving the survey (Wechsler and Nelson 2001). A single drink will be defined by the survey as “one twelve-ounce beer or wine cooler, one mixed drink/wine glass 6-8oz, or one shot of liquor 1.3oz.” (Wechsler and Nelson 2001). Patterns of alcohol use by asking respondents how many times they have consumed alcohol in the past 30 days and the average number of drinks consumed. Respondents’ choices for drinking occasions will be 0, 1-2, 3-5, 6-9, 10-19, 20-30. Respondents’ choices for number of drinks consumed were 0,1,2,3,4,5,6,7,8,9,10, and 11 or more.

These same measurements are used in numerous national studies such as Monitoring the Future, National College Health Behavior Survey, National Household
Survey of Drug Abuse, but the definition of binge drinking was first redefined in the Harvard’s School of Public Health College Alcohol Study. The College Alcohol Study started the 5 drink measure because they believed that it was a large enough amount of alcohol to put the consumer at risk and other people around them. By having the same measure in all these studies it makes it possible to compare the results in an effort to get an overall view of binge drinking across a range of subgroups in society. These studies confirm that 5 drinks are enough to cause a significant increase of alcohol related problems for the consumer (Wechsler and Nelson 2001). Those that continue to drink under the definition of binge drinking are significantly less likely to report these same problems (Wechsler and Nelson 2001).

Binge drinking was recoded using Wechsler and Nelson’s (2001) classification of frequent binge drinkers, occasional binge drinkers, non-binge drinkers, and abstainers. Frequent binge drinkers are those who have consumed alcohol three times or more in the last two weeks. Occasional binge drinkers are those that have binged one or two times in two weeks. Non-bingers are those who have consumed alcohol in the past year but have not the two weeks prior to the survey. An example, of a non-binger might be someone who drinks daily but do not surpass the number of drinks defined in the definition of binge drinking. Abstainers are defined as someone who has not consumed alcohol in the past year.

Finally in order to test the third research goal, the applicability of social learning theory to illicit prescription drug use, the survey was designed to include a series of indicators consistent with the components of social learning theory. A number of
questions relevant to social learning theory were drawn from previous studies (e.g. Akers et. al 1979, Durkin et. al 2005). Three main components of social learning theory were used; peer association, differential reinforcement, and definitions.

The first component of social learning theory was differential peer association. This included a two part scale and asked (a) what proportion of close friends, or friends they associated with most frequently take prescription drugs for recreational purposes (b) have any of your friends ever pressured you to take prescription drugs for recreational purposes. Response ranged from 1, none or almost none to 5, all or almost all. The internal consistency was measured using Cronbach’s alpha, which was .62. The second part of peer association asked how they thought their friends viewed illicit prescription drug use. The responses for this item ranged from 1, very negatively, to 5 very positively.

Two different scales were used to measure differential reinforcement. The first was a composed of a two scale questions which asked how would a) most of your friends b) your best friends react if they had discovered that you were using or had used illicit prescription drugs. Response options ranged from 1, very negatively, to 5 very positively. Cronbach’s alpha, which measured the internal consistency, was .83. The second scale was composed of 13 items was designed to measure the student’s perceived cost (for example getting sick) and benefits (achieving better grades) of using prescription drugs non-medically. Responses ranged from very unlikely to very likely. Cronbach’s alpha was measured at .73.

The final component of social learning theory, definitions, were measured using a six question scale which were designed to assess the presence of techniques of
neutralization. (For example “College students should not be held responsible for using prescription drugs without a prescription, such as Ritalin, to get ahead in school because they are under so much pressure”) The responses for these items ranged from strongly agree (6) to strongly disagree (1). Internal consistency measured by Cronbach’s alpha was .80. According to Akers, definitions of use can be verbal or nonverbal. Two questions were added to the end of this scale to access whether individuals have used these verbally before (1) have your friends ever offered or suggested the above reasons in order to persuade you to take prescription drugs for recreational purposes (b) have you ever suggested the above reasons to your friends in order to persuade them to take prescription drugs for recreational purposes.

In this study I hypothesize that illicit prescription drug use is relatively prevalent among the college population. More specifically study drugs like Ritalin and Adderall are the most common types of drugs used. Also similar to studies on binge drinking, I hypothesis that those students who use had used prescription drugs are more likely to engage in other risky behaviors such as driving under the influence of alcohol or drugs, smoking cigarettes, mixing prescription drugs and alcohol, binge drinking, attending parties frequently, and taking other illegal drugs.

Several hypotheses surrounding social learning theory were also developed for this study. First the probability of illicit prescription drug use will increase depending upon one’s peers. If a peer has friends who use prescription drugs illicitly he/she will be more likely to engage in this behavior. Second the likelihood of this behavior is increased if the peer’s behavior is reinforced either socially or non-socially. The more perceived
rewards and fewer punishments, the more likely the behavior will continue. Third, peers who participate in illicit prescription drug use are more likely to have neutral or positive definitions of this behavior.

**The Sample**

Survey responses were analyzed quantitatively through the statistical program, SPSS. The sample size was 465 students and composed of 43% (n=199) males and 55% (n=257) females, which is representative of the overall college population in the United States (Freeman 2004). According to the registrar information 662 students were registered for the thirteen classes included in the sample which indicates that number of students missing from the sample is 197. Respondents may be missing for a number of reasons including; absenteeism, not being qualified to take it (survey was only administered to undergraduates), students may have been enrolled in multiple classes that were surveyed (students were instruct not to take the survey again if they had already taken it in another class). The mean age for respondents was 20.42 (SD= 1.76). Twenty-six percent (n=120) were freshmen, 20.6% (n=96) were sophomores, 22.2% (n=103) were juniors, and 29.2% (n=136) were 4th-7th year seniors. The sample was predominantly White/non-Hispanic 88% (n=409), followed by African American/black 3% (n=14), Hispanic/Latino American 1.3% (n=6), and all other categories 2.7%. (The remaining percentage, 5.6%, did not answer the question on race.)
Figure 1: Distribution of School Status Across the Sample

- Freshmen: 26%
- Sophomores: 21%
- Juniors: 22%
- Seniors: 29%
Chapter 4: Presentation of Results

Prevalence Rates of Illicit Prescription Drug Use

One hundred and eighty three students, or 39.4% of the sample, had reported using a prescription drug for recreational purposes at least once in their lifetime. About 31% had reported recreational prescription drug use in the last year, 23.4% in the last three months, and 14.4% in the last 30 days. Also, 24% of those had used prescription drugs non-medically reported that they had used more than one prescription drug. Additionally, 18% cited that they had used three or more different types of prescription drugs.

Figure 2: Illicit Prescription Drug Use Across Time

The ten most common drugs respondents reported using were, in order: Vicodin 22.4%, Adderall 20.9 %, Ritalin 11.2 %, Percocet 10.8%, Codeine 9.9%, Xanax 9.7%, Hydrocone 9.2%, Valium 8.2%, Oxycodone: 6.7%, and Prescription Diet Pills 5.6%. When these drugs were put into their categories, opiates were the most common (27.3%), followed closely by stimulants (26%), and depressants (12.5%).
Figure 3: Top Ten Drugs And the Percent Taken

About twenty-six percent of those respondents that reported illicit use also reported that they had experienced one or more side effects as a result from the drug.

Fourteen percent of respondents experienced a rapid or irregular heart beat, 14% trouble sleeping, 5% irritability, 5% loss of coordination, 4% impulsive behavior, 4% aggressiveness, 4% depression, 3% paranoia or feelings of hostility, 3% hallucinations, 2% slowed heartbeat, 2% trouble breathing, 1.5% addiction, 1.3% loss of appetite, and other 2.4% (which included blackouts, drowsiness, anxiety, vision problems, vomiting
and nausea). Sixty-three percent of users first used illicit prescription drugs when they were 18 or older compared to 37% who first initiated use when they were 17 or younger.

Figure 4: Percentage of Those Who Experience Side Effects

When the data were broken down by gender it was discovered that 88 female respondents and 88 male respondents that had used in their lifetime but since there are more women than men in the sample percentages of use were slightly higher for men (men-44% and women-34%). Rates of use for the last year (men-37%, women-26%), last 3 months (men-28%, women-18%), and last 30 days (men-17%, women-11%) were also slightly higher for men than for women. Men (31%) were also more likely to report two
or more drugs nonmedically in their lifetime compared to women (20%). Furthermore
men were also slightly more likely to use opiates, stimulants, and depressants. Men were
also slightly more likely to admit that their friends had pressured them into taking
prescription drugs for recreational use (men-20% versus women-12%).

Demographics of Prescription Drug Use

Two significant correlation coefficients were found for prescription drug use in
the last 30 days. A Pearson correlation was calculated for the relationship between
respondents overall grade point average and recreational use in the last 30 days. A weak
negative correlation was discovered (r=-.171, p<.000). Respondents with a lower grade
point average were more likely to use prescription drug in the last 30 days. By
examining the relationship between recreational use of prescription drugs and Greek
membership using a Pearson correlation coefficient a weak positive relationship was
found (r=.100, p<.033), indicating a significant linear relationship between the two
variables. A point-biserial correlation was also conducted for Greek membership and the
use of prescription drugs in the last 30 days. There was not a significant difference
between the pearson’s correlation and the point-biserial correlation of (r=-.100, p<.033),
indicating that “the absolute value of the correlation coefficient is not affected by the
linear transformation.” (Chen and Popovich 2002). Members of Greek life tended to
report more prescription drug use in the last 30 days. No other demographics, such as
gender, age, etc. revealed significant associations for this category.
The relationship between demographics and prescription drug use in the last three months was then studied using Pearson correlation coefficients. Only two demographic relationships proved significant. A weak negative correlation between overall grade point average and use in the last 3 months was found ($r=-.136$, $p<.004$). Those with a grade point average of 3.1 to 3.5 were the most likely to use prescription drugs in the last 3 months, followed by those who had a grade point average of 2.6 to 3.0. A weak negative correlation was also found between use in the last 3 months and gender ($r=-.122$, $p<.009$) indicating a significant linear relationship between the two variables. Males reported more illicit prescription drug use in the last 3 months. A point-biserial correlation was also conducted for gender and the use of prescription drugs in the last three months. There was not a difference between the Pearson’s correlation and the point-biserial correlation of ($r=.122$, $p<.009$), indicating that “the absolute value of the correlation coefficient is not affected by the linear transformation.” (Chen and Popovich 2002).

Gender and grade point average were also negatively correlated with prescription drug use in the last year. A weak negative relationship was found for gender ($r=-.124$, $p<.008$) indicating males reported more illicit prescription drug use in the last 3 months. A point-biserial correlation was also conducted for gender and the use of prescription drugs in the last year. There was not a difference between the pearson’s correlation and the point-biserial correlation of ($r=.124$, $p<.008$). And a weak negative relationship was also found for overall grade point average ($r=-.175$, $p<.000$). Those who had a grade point average of 2.6 to 3.0 were more likely to use illicit prescription drugs in the last year. Two other weak positive relationships were also found between recreational
prescription drug use and the age and year of the respondent in school. Age was weakly correlated with use in the last year ($r=.115$, $p<.014$) as was year of the respondent in school ($r=.107$, $p<.022$). As age and year in school increased so did reports of illicit prescription drug use in the last year.

Pearson correlation coefficients were calculated examining the relationship between lifetime illicit use of prescription drugs and the demographics of respondents. A weak positive correlation was found for current residence and lifetime illicit prescription drug use ($r=.148$, $p<.002$). Abstainers from prescription drug use were more likely to live in a campus dorm (69%) rather than live off campus (31%). Age was positively correlated with lifetime illicit use ($r=.161$, $p<.001$), as age increased so did the reports of lifetime use of prescription drugs. Year in school was also positively weakly correlated to lifetime use ($r=.151$, $p<.001$), as year in school increase so did the reports of lifetime prescription drug use.

Weak negative relationships between lifetime illicit use and overall g.p.a. and gender were discovered using Pearson correlation coefficients. Gender was negatively correlated with lifetime use ($r=-.102$, $p<.030$), indicating a significant linear relationship between the two variables. Males tended to report more lifetime illicit use of prescription drugs. A point-biserial correlation was also conducted for gender and lifetime use of prescription drugs. There was not a difference between the pearson’s correlation and the point-biserial correlation of ($r=.102$, $p<.030$). G.P.A. was also negatively correlated with lifetime use ($r=-.144$, $p<.002$), those with lower g.p.a. are more likely to report more
lifetime use. Particularly those students who had a g.p.a. of 3.1 to 3.5 were most likely to report lifetime illicit use of prescription drugs.

Marriage was not examined since only 5 people in the sample were married. Furthermore almost half of the sample did not reveal their family income so analysis using income was also omitted.

**Access to Prescription Drugs**

Respondents were also asked about what they thought was the easiest way to obtain prescription drugs without a prescription. These statistics were obtained from frequency tables using SPSS. About 75% said that if they wanted to get prescription drugs to use recreationally they would get it from a friend. Nearly 11% said that they knew of a drug dealer and 10% said that they would get their drug of choice from a family member. The other options were: the internet 7%, from an organization 6%, and work associates 5%. The second question in this section asked if they knew anybody who used prescription drugs without consulting a doctor and where did they obtain the drugs from. Sixty-one percent of respondents reported that they had obtained the drug from a friend followed by drug dealer 21%, 12% a family member, 6% from an organization on campus, and 2% responded that their friend got the drug from the internet. Answers were then examined for differences in gender, age, grade point average, Greek affiliation, year in school, and use of drugs by splitting the data and examining the frequency tables. There were no significant differences on answer choices on any of these questions.
Figure 5: Conditional Means of Access (If Respondents Were to Seek Out Drugs)

Figure 6: Actual Means of Access (When Respondents’ Friends Did Seek Out Drugs)
Mixing Prescription Drugs and Alcohol

About 21% had mixed prescription drugs and alcohol in their lifetime and about 10% had done it in the last 30 days. There was a weak significant correlation between gender and lifetime mixing of prescription drugs and alcohol ($r = .115, p < .014$). Men were more likely to answer yes (26%) to ever mixing prescription drugs and alcohol, compared to women 17%. However, this difference was smaller for mixing prescription drugs and alcohol in the last 30 days (men 9% versus women 7%). There was also a weak negative correlation between lifetime reports of mixing prescription drugs and alcohol, year in school ($r = -.183, p < .000$) and age ($r = -.147, p < .002$). Seniors were also slightly more likely to have mixed prescription drugs and alcohol (Seniors 31%, Juniors 24%, Sophomores 15%, Freshmen 13%). For every year in school, the category above had about the same rates of mixing in the past 30 days which was about 8% in each category. Consequently, similar results were found for age. Lifetime reports of mixing prescription drugs and alcohol increased steadily with age ($r = -.136, p < .004$). Current residence was also weakly negatively correlated with the mixing of prescription drugs and alcohol across lifetime. Those students who lived off campus were more likely to report mixing prescription drugs and alcohol. The highest to report were those who lived in a Greek house (35%), followed by those who lived in an off campus house that was not Greek affiliated (34%), off campus apartment (23%), and campus dorm (14%).

There was roughly the same amount of distribution for these questions when Greek membership and current residence was examined. There was only one weak correlation related to mixing prescription drugs and alcohol in the last 30 days.
Membership in a Greek organization was positively correlated ($r=.104$, $p<.027$). Fourteen percent of members of Greek organizations had mixed prescription drugs with alcohol, compared to 9% of nonmembers who participated in this activity.

A little over 28% of respondents claimed that one fourth or more of their friends mix prescription drugs and alcohol in order to obtain a better buzz or high. Members of Greek organizations (35%) were slightly more likely to have one fourth or more of their friends mix prescription drugs with alcohol than nonmembers 26.7%. There was roughly the same distribution of answers on this question regardless of gender, year in school, age, and current residence. However, there were significant differences in risky behavior between recreational users and non-users of prescription drugs.

**Risky Behavior and Drug Use**

Those people who used prescription drugs for recreational purposes in the last year were more likely to be frequent binge drinkers than those who did not use prescription drugs illicitly. Seventy percent of those who used prescription drugs had used prescription drugs nonmedically in the last year also reported frequent binge drinking while 40% those who did not report use reported frequent binge drinking. Furthermore, 51% of those who report illicit use in the last year also reported mixing prescription drugs with alcohol in order to enhance a high or buzz. On average, those who had used prescription drugs in the last year consumed more drinks than those who had not. Sixty-two percent had an average of 7 or more drinks per occasion while only 26% of non-prescription drug users reported an average of 7 or more drinks. Prescription
drug users also reported attending more parties where alcohol was present in the last thirty days. Sixty-five percent of illicit drug users reported partying 6 or more days in the last 30. (34.8%-10 or more days, 30.4%-6 to 9 days) while 44% of non-users reported attending parties in the same time frame (18.7%-10 or more days, 25%-6 to 9 days).

Figure 7: Binge Drinking and Illicit Prescription Drug Use in the Last Year

Those who used prescription drugs recreationally in the last year were also more likely to report ever using other drugs besides marijuana, smoking cigarettes more often, driving under the influence of drugs or alcohol. Prescription drug users were more likely to report ever using any other illegal drugs besides marijuana or prescription drugs (55%) than nonusers (5%). Those who used prescription drugs nonmedically in the last year
were also more likely to smoke often or occasionally (33% occasionally, 20% often) when compared to nonusers (17% occasionally, 2% often).

Fifty-five percent of users reported that they had driven while under the influence of an illegal substance such as marijuana, coke, ecstasy, while they were in college and 48% reported driving while they were drunk in college. Only 9% of those who did not report prescription drug use reported driving under the influence of a illegal drug while 21% said they had driven drunk while in college.

Figure 8: Driving Under the Influence While in College

Similar results were obtained for those who had used prescription drugs illicitly in the last 30 days. Prescription drug users are more likely to report binge drinking, mixing prescription drugs with alcohol, smoking, taking other illegal drugs, driving under the influence of drugs or alcohol while in college, and attend parties where alcohol is served more often than non-users.
Perceived Use and Prevention

About 48% of respondents believed that use of prescription drugs, for recreational or academic purposes was popular on campus, while 24.5% did not believe it was popular. Eight percent of respondents believed that there was only a moderate amount of use on campus. Respondents were also asked if they had ever seen any information (bulletins, posters, emails, etc) informing students of the negative or harmful effects of abusing prescription drugs. A little over 73% had said that they had not while 16.3% said that they had seen information on campus. There were no differences in exposure to prevention information between those who had used prescription drugs and those who did not. However those students, who had reported illicit prescription drug use in the last 30 days, last 3 months, and the last year, were more likely to think that illicit prescription drug use was more popular on campus (69-62% users versus 45-42% of nonusers).

Correlations Between Social Learning Variables and Illicit Prescription Drug Use

The relationship between each of the social learning variables and illicit drug use (in the past year and lifetime) was examined using Pearson product-moment correlation coefficient. All bivariate relationships between lifetime illicit drug use were statistically significant and moderately correlated. These correlations were positive and included friends’ reactions to drug use ($r=0.503$, $p<.000$), peer association ($r=0.474$, $p<.000$), reinforcement (perceived effects and benefits of use ($r=0.456$, $p<.000$), how friends view use ($r=0.378$, $p<.000$), and neutralizations ($r=0.357$, $p<.000$). All bivariate relationships between illicit drug use in the last year were statistically significant. Three variables of
social learning were moderately and positively correlated. These included peer association \((r=.399, p<.000)\), friends’ reaction to use \((r=.375, p<.000)\), and neutralizations \((r=.356, p<.000)\). Two social learning variables were weak when the relationship between them and the dependent variable were examined. These included friends view of use \((r=.283, p<.000)\) and reinforcement questions \((r=.277, p<.000)\).

For lifetime illicit prescription drug use several demographics were weakly correlated. These included year in school \((r=.151, p<.001)\), current residence \((r=.148, p<.002)\), overall g.p.a. \((r= -.144, p<.002)\), age \((r=.161, p<.001)\). Other demographics, race, Greek membership, and income were not significantly correlated to lifetime use. Furthermore, there were no significant correlations between student demographics and prescription drug use in the last year.

**A Test of Regression**

The only two dependent variables used for regression of the social learning variables were lifetime use and use in the last year. The frequencies of illicit prescription drug use in the last 3 months and last 30 days were less than 30% and could not be used in the regression equation, because they would violate an assumption of OLS regression. The purpose of multiple regression is to learn more about the magnitude of the relationship between several independent variables and the dependent variables and the causal direction. In this study multiple regression was used to discover if social learning theory was efficient in explaining illicit prescription drug use among college students. Because of strong correlations among independent variables this model was examined for
multicollinearity. Multicollinearity is always a threat with social learning theory and can have damaging effects on regression outcomes. If this issue is neglected it can lead to misleading conclusions (Fox 1981). However in this study multicollinearity was not a threat. Inter-item correlations did not exceed .70 indicating that there was a shared variance between variables. None of the VIFs were near 5.0, providing more evidence that multicollinearity is not a problem in this sample. Shared variance often happens with social learning models. Previous studies dealing with social learning theory have also found fairly strong correlations among independent variables but low levels of multicollinearity within the regression equations (Durkin et. al. 2005, Akers et. al. 1979).

**Prescription Drug Use in the Past Year and Social Learning Theory**

The results of the regression analysis are based on the dependent variable of past year use of prescription drugs. A multiple linear regression was calculated to predict use of illicit prescription drugs in the last year based only social learning variables. A significant regression equation was found (F(5, 424) =59.821, p<.000), with an R² of .41. Peer associations (β=.37) were the best predictor of this behavior followed by friends’ reactions (β=.26), reinforcement questions (β=.14), neutralizations (β=.09). The other variable how friends view use was not significant in the combined model but proved to be significant when examined in a simple regression analysis. The results of this model explain about 41% of the variance in illicit prescription drug use in the last year. Peer
associations, or having friends that participate in this behavior makes it more likely that an individual will also engage in illicit prescription drug use.

A second model for prescription drug use in the last year was then composed to include only demographic variables. The regression equation was not significant ($F(8,108)=1.708, p>.05$) with an $R^2$ at .11. The only demographic variable that was significant was gender ($\beta=-.20$). The remaining variables (age, overall g.p.a, current residence, Greek membership, income, race, and year in school) were not significant predictors of drug use in the last year. The results for this model indicate that demographic variables only explain a small amount of the variance, 11%, for illicit prescription drug use in the last year with the only significant variable being gender.

A final model was composed of both sets of variables, demographics and social learning variables. A significant regression equation was found ($R(13,238)=16.870, p<.000$), with an $R^2$ of .48. Again peer associations ($\beta=.37$) were the strongest predictor of illicit prescription drug use. Followed by friend’s reactions ($\beta=.26$) and reinforcement ($\beta=.18$). None of the other independent variables were significant in this equation. The results of this model explain about 48% of the variance in illicit prescription drug use in the last year. Peer associations, or having friends that participate in this behavior, makes it more likely that an individual will also engage in illicit prescription drug use. Additionally the demographic variables did not add a large amount of significance to the model.
**Lifetime Prescription Drug Use and Social Learning Theory**

A multiple linear regression was calculated for the lifetime use of illicit prescription drugs and social learning variables. The regression equation was significant (F(5,424)=43.874, p<.000), with an R² of .34. The strongest significant predictor was peer associations (β=.25) followed by friend’s reactions (β=.26) and reinforcement (β=.20). Neutralizations and how friends view use was not significant in this equation. The results of this model explain about 34% of the variance for the lifetime illicit prescription drugs. Peer associations, or having friends that participate in this behavior, makes it more likely that an individual will also engage in illicit prescription drug use.

A second model of lifetime prescription drug use and demographics was composed. A significant regression equation was found (F(8,260) =3.333, p<.001), with an R² of .09. However none of the demographic independent variables were found to be significant. The results of this model explain a very small amount, approximately 9%, of the variance for the lifetime use of illicit prescription drugs.

A final model was composed of all the variables with lifetime prescription drug use as the dependent variable. A significant equation was found (F(13,238)=11.639, p<.000), with an R² of .39. The strongest significant predictor was peer association followed (β=.24) followed by reinforcement (β=.22) and friend’s reactions (β=.22). The other two social learning variables, friends view use and neutralizations were not significant in this equation. None of the demographic variables were significant. The results of this model explain about 39% of the variance in lifetime use of illicit prescription drugs. As in previous models, peer associations, or having friends that
participate in this behavior, makes it more likely that an individual will also engage in illicit prescription drug use. Additionally the demographic variables did not add much to the explanatory value of the model.
Chapter 5: Discussion

The Facts Surrounding Prescription Drug Use

In this study, the rates for illicit prescription drug use for lifetime use, use in the last year, and use in the last month were higher then anticipated. This study discovered that 39.4% of the sample had reported illicit lifetime use of prescription drugs, while 31% had reported use in the last year, and 14.4% in the last month. Although this is not a national random sample these findings lend some support to the first hypothesis, that prescription drug use is relatively prevalent among the college population. The three most popular prescription drugs chosen by respondents were Vicodin 22.4%, Adderall 20.9 %, and Ritalin 11.2 %. This could be due to the accessibility of these drugs to the general public. Sales and production of these drugs have increased in the last ten years.

Furthermore, the percentages for lifetime use of stimulants are much larger than national studies of undergraduate students with a sample size of 9,000 or more. Typically these studies have prevalence rates between 6.9% and 8.1% for lifetime use of stimulants (McCabe, Knight, Teter, and Weschler 2005b, Teter et. al. 2005) while 26% of the sample in this study reported recreational use of stimulants. However, the university chosen for this study could be a factor in the large prevalence rate of stimulants. A study done by McCabe et. al. (2005b) revealed that prevalence rates differed by the schools that were surveyed and its region. In his study, some universities’ prevalence rates of stimulant use were as low as zero while other schools had rates as high as 25% (McCabe 2005b). The difference in prevalence could primarily be due to the party culture found on campus. Also there is evidence that other social factors may account for the large amount
of stimulant use in this sample. In a previous study, McCabe et al. (2005b) found that universities with high binge drinking rates (over 50%) have a higher rate of prescription stimulants than those universities with low binge drinking rates. In this study there was a very high rate of binge drinking (51% of the sample were frequent binge drinkers, 22% occasional binge drinkers). Also another factor that could account for the statistical differences in prevalence rates could be due to the design of the questionnaire that was used in this study. The questionnaire listed about 30 well known prescription drugs and also provided another category where respondents were able to fill in the blank. This is drastically different than other studies where the respondent is usually given a choice of opiates, stimulants, or depressants. This would limit the answers because the respondents may not know what category the drug he/she took belonged in so they might just leave it blank. Also listing common names of prescription drugs may trigger the respondents memory that he/she did use a particular drug in the time frame provided.

In this study the lifetime rate of opiate use is much smaller compared to one national study by McCabe et al. (2005a) which discovered that 42% of college students in his sample admitted to first time opiate use while in college while only 27.3% of this study’s sample reported lifetime nonmedical use of opiates. No other studies have examined the illicit use of depressants among college students. The rate of lifetime depressant use was 12.5%.

Since a majority of the sample in this study, 63%, reported that they initiated their first use of prescription drugs for recreational purposes when they were age 18 or older, most of their illicit prescription drug use began in college. Furthermore, positive
correlations were found between the age of the respondent and year in school with their prescription drug use in the last year and during their lifetime. This finding indicates that students who have been exposed longer to the college environment are more likely to have used prescription drugs while they attended the university. As an individual’s age and academic status in school increases, so does their likelihood of using prescription drugs in the last year or lifetime. However, there were no significant correlations between the age and year in school of the respondent with the most recent categories of use, such as the last 30 days or 3 months.

Also, both recent and lifetime use of prescription drugs correlated with the respondent’s grade point average. This finding corresponds with other studies which found that students with a B grade point average or lower are more likely to use prescription stimulants or opiates ((McCabe et. al. 2005a, McCabe 2005b). This finding about grade point average generates the question: do people who use illicit drugs have lower grade point averages or does drug use lead to lower the grade point average? Also are those students with B averages more likely to use study drugs such as Adderall more than students with a C average or lower? Other factors could also affect the results here, such as binge drinking. Binge drinking is positively correlated to prescription drug use as well as negatively correlated to grade point average.

In previous studies on recreational stimulant and opiate users, members of Greek life were found to be more likely to engage in illicit prescription drug use (McCabe et. al. 2005a, McCabe 2005b). However in this study, Greek membership was only weakly correlated with one measurement, prescription drug use in the last 30 days. There were no
significant correlations between Greek membership and use of prescription drugs in the last 3 months, year, or lifetime. Perhaps this is because of the low number of Greek members in the sample. Ninety-two respondents, of 456 who answered the question, reported that they were members of a Greek organization. Gender was significantly correlated for three categories of use: past 3 months, last year, and lifetime use. Consistent with previous studies, males were more likely to participate in illicit use (Hall 2005, McCabe et. al. 2005b, Teter et. al 2005).

In this study, it was found that about 61% of respondents knew someone who uses or had used prescription drug illicitly and had received the drug from a friend, while about 75% of respondents said that they knew a friend that could give them prescription drugs if they chose to take them for recreational purposes. This is consistent with previous studies: students are most likely to get prescription drugs from a friend (Hurwitz 2005, McCabe et. al 2005a, McCabe et. al 2005b). While this information in itself might not be surprising or remarkable, it may help give some ideas for decreasing the illicit use of prescription drugs on campus. Ideas for prevention efforts will be discussed later in this section.

Risky Behavior and Illicit Prescription Drug Use Among College Students

Risky behavior seems to be correlated with illicit prescription drug use, therefore supporting the previous hypothesis. Those individuals who use illicit prescription drugs in the last year and the last month were more likely to: report frequent binge drinking, consume 7 or more drinks during one drinking session, mix prescription drugs and
alcohol, attend more parties where alcohol is present, use other illegal drugs besides marijuana or prescription drugs, smoke cigarettes, and drive under the influence of an illegal drug or alcohol.

The results of this study seem to be consistent with other studies conducted on illicit prescription drug use. While there have been no studies that examine risky behavior and prescription drug use overall, there are a number that concentrate on stimulant and opiate use. Stimulant users have been found more likely to engage in binge drinking and suffer from alcohol related consequences than those students who do not participate in illicit prescription drug use (McCabe 2006, McCabe 2005b, Teter et. al. 2003). Stimulant users were also more likely to drink and drive (McCabe et. al 2005b); use other drugs (Teter et. al. 2003, Teter et. al. 2005); mix prescription drugs with alcohol or take them intranasally in order to get high (Hall et. al. 2005). Similarly, those students who reported opiate use were also more likely to abuse other substances such as alcohol, marijuana, cocaine, ecstasy, and amphetamines (McCabe et. al. 2005a). Also in a study examining juveniles and opiate use, it was discovered that users were eight times more likely to use other illicit drugs and four times more likely to binge drink (Boyd 2006).

Social Learning Theory and the Illicit Use of Prescription Drugs

Several of the hypotheses for social learning theory and illicit prescription drug use were supported in this study. Results from the various sets of regression models provide support for social learning theory as a legitimate explanation for illicit prescription drug use among the college population. It explained nearly half, 48%, of the
variance in illicit prescription drug use for those students who had taken drugs in the last year. Social learning theory also explained 39% of the variance in lifetime use of illicit prescription drugs. The results of this current study suggest that this behavior is learned behavior. This finding corresponds to other studies conducted on deviant behaviors and substance abuse (Triplett and Payne 2004, Durkin et. al. 1996 Akers, Brenda 1994, Winfree et. al. 1993, Michaels and Miethe 1989, Lanza-Kodue et. al. 1984, Akers et. al. 1979).

Furthermore, as predicted by hypothesis, peer association was one of the strongest predictors of illicit prescription drug use. Those students who used prescription drugs were more likely to have friends who also engaged in this behavior. Also, as hypothesized, those who participated in illicit prescription drug use were more likely to perceive benefits to this behavior rather than negative consequences. Differential reinforcement was the second strongest predictor in three out of four of the social learning regression equations. Additionally, as predicted, those students who regarded illicit prescription drug use as acceptable also had friends who reacted to this behavior as acceptable. Finally, although they were not as strongly supported as the previous findings, it was found that students who engaged in this behavior had neutralizations for their behavior rather than negative definitions. This finding suggests that prescription drug users have developed justifications or positive definitions for engaging in this behavior.
Study Limitations and Strengths

Although this study has found many results that are similar to national studies there may be several limitations due to the composition of the sample. The first limitation of this study was that the sample size was relatively small and was cross-sectional, or taken at one point in time and from a single university. A longitudinal study would add further support to the findings that were discovered in this study. A longitudinal study that began in late high school and followed students through college, or began in college and followed students after college graduation, would give us a better idea on how patterns in drugs use work and could provide a stronger test of social learning theory as an explanation for use. Another limitation of this study is that it may not be possible to generalize the findings from this study to other colleges and universities across the region. At least one study has found that illicit prescription drug use is different in many regions of the country (McCabe 2005). Also, because of the nature of the subject, this study concentrated on, the data collected was skewed which may affect some of the statistics used in the examination of this data. As the frequency of use goes up the scale fewer individuals were found to participate.

Another limitation of the study was that the sample was composed of predominantly white students. More research is needed to compare the results to a more diverse sample. However, these concerns can be reduced for this study because the demographic characteristics were similar to the overall student population at both the university studied and national college statistics. Also it would have been helpful if information was collected on taking more than one prescription drug at a time, and
mixing with over the counter or other illicit drugs. This information could have been included in evaluating users and their other risky behaviors. The route of drug administration may also be important for future research to determine which prescription drugs may have the most potential of abuse. Furthermore, readers with a social constructionist point of view may conclude that this study is flawed due to the definitions used on the survey instrument. The definition of illicit prescription drug is not agreed upon by everyone and would have a probable affect on this study’s findings, and therefore limiting the use of this study. Additionally some may consider this study as setting the groundwork for a moral panic. However I would disagree with these critics because historically the way drug use patterns have worked in the past is that certain drugs become popular while other drugs commonly used by the population begin to decrease. This phenomenon is not an epidemic but simply a change in the illicit consumption patterns of the student population.

Several strengths of the study are noteworthy. The first is that this study is currently the only study that has attempted to evaluate recreational prescription drug use among the college population from this particular theoretical standpoint. This was also the first study of its kind to ask about the side effects of taking prescription drugs without a prescription. Additionally, no prior surveys have ever asked students if they had seen any prevention information on campus in an attempt to warn students about the dangers of taking prescription drugs without a prescription from a health care professional. Also, to gain a better understanding of drug use, this study provided a list of common prescription drug names to choose from. This is different from previous studies in which
respondents have been asked by the drug’s category (opiates, stimulants, depressants) and only provided a few of the most common drug names.

**Recommendations for Reducing the Illicit Use of Prescription Drugs**

A number of national studies suggest that the number of prescription drug users continues to increase for those within the 18 to 25 year old age range. This study has also concluded that a majority of prescription drug users, 63%, reported that they initiated their first use of illicit prescription drugs at the age 18 or older. It is becoming more evident that college campuses may have to serve as an ideological battleground for the prevention of prescription drugs among this age group. Also, research suggests that there is something about contemporary college life which leads to this behavior. More research is needed in order in this area to address prevention. This study, as well as several other studies on deviant behavior, can serve as a foreground of ideas to help curb the prevalence of illicit prescription drug use among the college population or at least lead to a more informed understanding of drug use.

This study reveals that social learning theory provides a sufficient amount of explanation for the use of prescription drugs among college students. Peer associations, or having friends who also engage in this behavior is one of the strongest predictors of illicit use. Therefore, prevention efforts that focus on changing the environment may be the most effective way of curbing illicit prescription drug use among college students. If the environment is changed, the learning processes that take place in this environment should also change or be challenged. A way of accomplishing this would be to implement
social norm intervention programs similar to what is currently in place for binge drinking on many college campuses.

A social norms program would entail specific actions aimed at targeting the justifications and beliefs (Jung 2003) surrounding the nonmedical use of prescription drugs that are learned within the peer group. Social norm prevention would include a goal of informing the campus population of the negative affects of taking prescription drugs without a doctor’s approval, by the use of posters, newsletters, classes, and other outlets where information can be displayed on campus. This program would also distribute the real rates of campus usage since students might think that everyone uses prescription drugs recreationally. By displaying this information where it is easily accessible, this information can help challenge common misconceptions students hold about prescription drugs. For example, a majority of respondents in this study, 53%, believed that prescription drugs where not as bad as other illegal drugs such as cocaine, heroin, etc. Also 26% of respondents felt that prescription drugs were less addictive than other illegal drugs, while 22% only slightly disagreed with this statement. Since friends are a major source of obtaining drugs in many studies, this program should also be aimed at those who distribute their medication to friends. Students should be continually informed about the consequences of selling or sharing their medications with other students.

Currently there are hardly any information outlets informing students about the dangers of the nonmedical use of prescription drugs on the college campus that was studied. Participants in this study were asked if they believed illicit use of prescription drugs was popular on campus and if they ever came across any prevention information
while on campus. Almost half the respondents thought prescription drug use was popular on campus and about 73% responded that they did not see any information about the dangerous of using prescription drugs for recreational purposes.

State and Local Efforts in the Fight Against Illicit Prescription Drug Use

Recently the State of Ohio has recognized that abuse of prescription drugs is becoming a potential threat to the state. In late September 2006, Ohio’s state pharmacy board launched the Ohio Automated Rx Reporting System to track the sales of controlled substances. Retail and mail in pharmacies that sell to Ohioans are now required to report their transactions twice a month (Armon 2006). About twenty four states currently have programs similar to this, however they are all relatively new and there have not been studies conducted to determine if this is an effective measure in reducing prescription drug abuse (Armon 2006).

As prescription drug use emerges as a new health threat in the U.S., health care workers should also consider alternative treatments or drugs to treat ADHD and other disorders. For instance, the F.D.A. approved a new nonstimulant drug called atomoxetine, brand name Strattera, which is used as a treatment for ADHD. There have been reports that this drug does not have the same abuse potential as other drugs because it does not affect the region of the brain that causes addictive behavior (Olfson 2004). It was found in clinical tests that monkeys would not self-administer the drug, but other animals could not tell the difference between atomoxetine and small doses of cocaine.
More research on this drug is needed since only two tests have been conducted to date (Wikipedia Online 2006a).

Furthermore, some stimulants differ in their capacity to produce euphoria. There have been reports that Concerta is harder to abuse because it is time released at a controlled rate. Also recently, in April 2006, the F.D.A. approved a patch to release medication for those who suffer from ADHD. This would guarantee that medication would be time released, making it harder to abuse ADHD medications (Wikipedia Online 2006b). While these new developments in medications offer promising results for decreasing the abuse potential of stimulants, more studies are needed on the benefits and side effects of each drug. Furthermore, this should be considered as only a small part in reducing the recreational use of drugs. Other programs such as social norm prevention programs should be considered the primary tools in stopping the illicit use of prescription drugs.

Another fact that may affect the illicit use of prescription drugs among the population is the media. In 1997 the F.D.A. relaxed the regulations for prescription drug advertisements and stirred up controversy among researchers and health care professionals. Some professionals blame the rise in the illicit use of prescription drugs on these commercial advertisements, since the rise in abuse seemed to coincide with the rise in advertisements. They argue that pharmaceutical companies do not balance their commercials according to F.D.A. regulations, by balancing both the benefits of the drug as well as the risks (Jaramillo 2006). However, advocates who support the
pharmaceutical companies claim that promotion of medications help address under-
diagnosed and under treated problems (Jaramillo 2006).

Regardless of advertising regulations, public education and service
announcements are needed to help warn people about the dangers of using illicit
prescription drugs. This is especially important when the drugs are used with the intent of
obtaining a better high. The dangers of certain activities, such as mixing prescription
drugs and alcohol, need to be brought to the attention of the public.

Conclusion

This is the first study to recognize that social learning theory can contribute to our
understanding of illicit prescription drug use among college students. In fact, one social
learning theory model in this study accounts for 48% of the variance use, which indicates
that this theory is important for understanding the nature of illicit prescription drug use.
Several regression equations in this study have also shown that peer association is one of
the best predictors of use and that ones friends are an important factor in whether a
student will choose to use prescription drug illegally. Consistent with national research
on stimulants and opiates, this study also found that illicit prescription drug users are also
more likely to participate in risky behavior such as: frequent binge drinking, drinking
more alcoholic drinks per an occasion, using other drugs besides marijuana or
prescriptions, smoking cigarettes, and driving under the influence of alcohol or drugs.

While this study has discovered new and important information it is also
important to recognize that it has also generated more questions that must be researched
further in order to understand this phenomenon more clearly. Once more, a longitudinal study that examines prescription drug use before or after college graduation could be useful in further understanding the role that social learning has on illicit prescription drug use. Hopefully this study will serve as a starting point for further investigations into the motivations for illicit prescription drug use so that effective prevention programs and efforts may be put in place on college campuses nationally.
References


Appendix A

Prescription Drug Use on Campus
Ohio University
2006

You must be 18 or older to participate in this study.

Thank you for assisting me with my research on prescription drug use among college students. Please know that your answers are anonymous; therefore do not put your name anywhere on this form. Remember, if at any time, you wish to discontinue your participation in this study, you are free to do so. By completing this questionnaire, you are giving me consent to analyze and report the data that your answers provide.

Again, thank you.
Jennifer Srnick

This is formatted differently in order to fit the department’s standards of electronic thesis. In the original document each section started on a new page.
Prescription Drug Use on Campus

For the purposes of this research, illicit prescription drug use is defined as the use of prescription drugs for non-prescription purposes, specifically recreational use (which includes drug use in order to aid in studying, test taking, and getting high or buzzed).

Please answer the following questions in the space provided:

1. In your opinion is the use of prescription drugs, for recreational or academic purposes, popular on campus?

2. While on campus property have you ever seen any information (bulletins, posters, emails, etc) informing students of the negative or harmful effects of abusing prescription drugs?

Part I

Please check one box to answer to the following questions:

3. Have any of your friends ever pressured you to take prescription drugs for recreational purposes?
   - [ ] none or almost none
   - [ ] about one-fourth
   - [ ] about half
   - [ ] about three-fourths
   - [ ] all or almost all

4. What proportion of your close friends or friends that you associate with most frequently take prescription drugs without a prescription?
   - [ ] none or almost none
   - [ ] about one-fourth
   - [ ] about half
   - [ ] about three-fourths
   - [ ] all or almost all

5. How do you feel your friends view illicit prescription drug use?
   - [ ] very negatively
   - [ ] somewhat negative
   - [ ] neutral
   - [ ] somewhat positive
   - [ ] very positively

6. Hypothetically, how would your family react if they found out you were using or had used prescription drugs for recreational purposes?
   - [ ] very negatively
   - [ ] somewhat negative
   - [ ] neutral
   - [ ] somewhat positive
   - [ ] very positively
7. How would most of your friends react if they discovered that you were using or had used illicit prescription drugs?
   - very negatively
   - somewhat negative
   - neutral
   - somewhat positive
   - very positively

8. How would your best friends react if they discovered that you were using or had used illicit prescription drugs?
   - very negatively
   - somewhat negative
   - neutral
   - somewhat positive
   - very positively

9. While in college have you ever known another classmate or friend who has taken prescription drugs for the purpose of recreational use?
   - yes, know one
   - yes know more than one
   - don’t know anyone who has
   - don’t know

10. While in college have you ever been involved in an intimate relationship with someone who has taken prescription drugs without a prescription?
    - yes
    - no

11. While in college have you ever used over the counter medications for recreational purposes?
    - yes
    - no
**Part II**

Below is a list of things that might happen if a person decided to take prescription drugs without first consulting a physician. Please indicate, by checking the box, how likely you think each of these would be to happen to you personally if you were to use prescription drugs that were not prescribed to you by a doctor.

<table>
<thead>
<tr>
<th>Event</th>
<th>Very unlikely</th>
<th>somewhat unlikely</th>
<th>somewhat likely</th>
<th>very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will become sick</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Get arrested</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If arrested; severely punished</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Develop an addiction</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Fit into the group better</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relief from boredom</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have a good time</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Achieve better grades</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feel buzz or high</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Suffer a serious physical side effect that can affect one’s health</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suffer from a serious mental side effect that can affect one’s mental health</td>
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<td></td>
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<tr>
<td>Lose weight or look more attractive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improve focus</td>
<td></td>
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</tbody>
</table>
**Part III**
The following list below is designed to find out your own behavior and attitudes, as well as your opinion of the behavior of other college students. Please check one box for each statement.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Agree</th>
<th>Somewhat Agree</th>
<th>Slightly Agree</th>
<th>Slightly Disagree</th>
<th>Somewhat Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>College students should not be held responsible for using prescription drugs without a prescription, such as Ritalin, to get ahead in school because they are under so much pressure</td>
<td></td>
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<tr>
<td>Older adults have no right to condemn students for taking prescription drugs since they take pills for their problems everyday</td>
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</tr>
<tr>
<td>Using prescription drugs without a prescription is not really that dangerous</td>
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<tr>
<td>Taking prescription drugs without a prescription does not hurt anyone</td>
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<td></td>
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<tr>
<td>Using prescription drugs is not as bad as using illegal drugs such as cocaine, heroin, etc.</td>
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<td></td>
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</tr>
<tr>
<td>Prescription drugs are less addictive than other illegal drugs such as cocaine, heroin, etc.</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Have your friends ever offered or suggested the above reasons in order to persuade you to take prescription drugs for recreational purposes?
Have you ever suggested the above reasons to your friends in order to persuade them to take prescription drugs for recreational purposes?

- Yes
- No

Part IV

The following section contains questions regarding your individual prescription drug use. Please note that in these questions are regarding prescription drug use without a prescription from a doctor and are used recreationally. In this section please check all the categories that apply.

13. Have you ever taken the following without a prescription from a physician? If yes, check the box.

- Oxycodone
- Oxycontin (hillbilly heroin)
- Percodone
- Oxycet
- Percocet
- Darvon
- Propoxyphene
- Hydrocodone
- Vicodin
- Lortab
- Loracet
- Codeine (Captain Cody)
- Fentanyl
- Meperidine
- Demerol
- Ritalin (smart drug)
- Concerta
- Adderall
- Methyphenidate
- Dexedrine
- Ativan
- Valium
- Librium
- Xanax
- Halcion
- Amytal
- Seconal
- Phenoarbital
- Nembutal
- Prescription diet pills (phentermine, adipex, merida, tenuate, didret, Xenical, Ionamin, Bontril, Phendinnetrazine, diethylpropion)
- Other (please list, even if you know only the street name)

If yes to any of the previous question then please answer the following. If no, than please move on to question #20.

14. How many occasions in the last 30 days have you used illicit prescription drugs?

- 0
- 1-2
- 3-5
- 6-9
- 10-19
- 20-30
15. How many occasions in the last 3 months have you used illicit prescription drugs?
☐ 0  ☐ 10-19
☐ 1-2  ☐ 20-30
☐ 3-5  ☐ more than 30
☐ 6-9

16. How many occasions in the last year have you used illicit prescription drugs?
☐ 0  ☐ 10-19
☐ 1-2  ☐ 20-30
☐ 3-5  ☐ more than 30
☐ 6-9

17. At what age did you first use prescription drugs recreationally? (Please circle one age)
☐ 11 and younger  ☐ 17
☐ 12  ☐ 18  ☐ 24
☐ 13  ☐ 19  ☐ 25
☐ 14  ☐ 20
☐ 15  ☐ 21
☐ 16  ☐ 22
If 26 or older please indicate age on line_______

18. How would you describe yourself:
☐ a regular user  ☐ don’t know
☐ occasional user  ☐ addicted
☐ one-time user

19. Have you ever experienced any of the following negative experiences while using?
(Please check all that apply)
☐ rapid or irregular heart beat  ☐ depression
☐ slowed heartbeat  ☐ feelings of hostility or paranoia
☐ trouble breathing  ☐ impulsive behavior
☐ irritability  ☐ loss of coordination
☐ trouble sleeping/disruption in sleep patterns  ☐ hallucinations
☐ aggressiveness  ☐ seizure
☐ heart attack  ☐ addiction
☐ other_________
Part V
Please select one answer for the following questions:

20. How many occasions in the last 30 days have you consumed alcohol?
   □ 0 □ 1-2 □ 3-5 □ 6-9 □ 10-19 □ 20-30

21. In the last 2 weeks, how many times have you consumed 5 or more drinks in one occasion?
   □ 0 □ 1-2 □ 3-5 □ 6-9 □ 10-19 □ 20-30

22. What was the average number of drinks consumed on these occasions? A single drink will be defined by the survey as “one twelve-ounce beer or wine cooler, one mixed drink/wine glass 6-8oz, or one shot of liquor 1.3oz.”
   □ none □ 1 □ 2 □ 3 □ 4 □ 5 □ 6 □ 7 □ 8 □ 9 □ 10 □ 11 or more

23. While in college have you ever driven drunk?
   □ yes □ no

24. How often do you drive after drinking more than one drink per hour?
   □ very often □ often □ not often □ every once in awhile □ never

25. While in college have you ever driven under the influence of an illegal substance? (ex. Marijuana, coke, ecstasy, etc.)
   □ yes □ no

26. How often do you smoke cigarettes?
   □ never □ occasionally □ often (a pack or less per day) □ a lot (2 or more packs per day)

27. Have you ever used marijuana?
   □ yes □ no
28. Have you ever used any other illegal drugs besides marijuana or prescription drugs?
   □ yes  □ no

29. While in college have you ever known another classmate or friend to have taken illegal drugs? (such as marijuana, cocaine, acid, ecstasy, etc)
   □ yes  □ no

30. How many times in the last 30 days have you attended parties where alcohol was present?
   □ 0  □ 3-5  □ 10 or more
   □ 1-2  □ 6-9

31. Have you ever mixed prescription drugs with alcohol for the purposes of obtaining a better high or buzz?
   □ yes  □ no

32. How many times in the last 30 days have you mixed prescription drugs with alcohol for recreational purposes?
   □ 0  □ 3-5  □ 10-19
   □ 1-2  □ 6-9  □ 20-30

33. How many of your close friends mix prescription drugs with alcohol for the purposes of obtaining a better buzz or high?
   □ none or almost none  □ about three-fourths
   □ about one-fourth  □ all or almost all
   □ about half

Part VI
The next set of questions is about accessing to prescription drugs without a doctor’s approval. Please select all answers that apply.

34. If you chose to access prescription drugs without a prescription from a doctor, the easiest way to obtain your drug of choice would be:
   □ a family member
   □ a friend
   □ a member of an organization you belong to (greek life, intramural sports, etc.)
   □ a drug dealer
   □ the internet
   □ other associates (such as workplace associates)

35. If you know anyone who uses prescription drugs without consulting a doctor, where did they (or do) obtain their prescriptions from?
   □ close family members (mom, dad, siblings, grandparents)
   □ distant family members
Part VII

The following questions ask about individual demographics. Please check one answer for the following questions:

36. What year are you in school?
   □ Freshman
   □ sophomore
   □ junior
   □ 4th year senior
   □ 5th year senior
   □ graduate student
   □ Other (please specify) __________

37. Please indicate your age (in years) on the line provided ______________________

38. What is your marital status?
   □ single, never been married
   □ married
   □ divorced
   □ married but previously divorced

39. Do you belong to a fraternity or sorority?
   □ yes
   □ no

40. What is your overall grade point average?
   □ less than 1.5
   □ 1.5 to 2.0
   □ 2.1 to 2.5
   □ 2.6 to 3.0
   □ 3.1 to 3.5
   □ 3.6 or above

41. What is your gender:
   □ Male
   □ Female
   □ other
42. What is your main racial or ethnic heritage?
   □ Hispanic/Latino-American
   □ White/non-Hispanic
   □ African American/Black
   □ Asian-American
   □ Native American
   □ Pacific Islander
   □ I wish not to answer
   □ other
   □ I don’t know

43. Please circle one. I currently (throughout the school year) reside in:
   □ a campus dorm
   □ an off campus apartment building
   □ a house (not greek)
   □ a fraternity or sorority house
   □ with my parents, or other family members

44. Before my entrance into college I attended
   □ a public high school
   □ a private high school (religiously affiliated)
   □ a private high school (not religiously affiliated)
   □ home school

45. Please estimate your family income in the thousands on the line below. If you do not know or do not wish to answer this question please indicate that on the line provided.
   Family income________________