

SUBSTANCE USE AMONG FEMALE GRADUATE STUDENTS

by

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(Abstract)

This study examines data from a modified version of the Core Alcohol and Drug Survey to establish the frequency use of alcohol, tobacco, marijuana, and stimulants, which were the four variables used to denote *substance use*. This study also investigates the consequences experienced as a result of substance use among female graduate students (n = 266) in mental health majors, including Counseling Education (n=164) and Other Mental Health majors (n=102). Eight universities located in the southeastern region of the United States participated in the study.

In addition to measuring substance use, the survey also provided a general description of the participants. The participants, who averaged 24.85 years in age, were 48.9% (n=130) Caucasian and 51.1% (n=136) African American. In terms of marital status, were 38.7% (n=103) the respondents single, 18.8% (n=50) in a committed relationship but not married, 28.2% (n=75) married, and 13.5% (n=36) married, but with an absentee spouse. A majority of the respondents (n=178) were employed in a full time capacity.

An ensuing analysis of the data revealed generalized substance use among female graduate students in mental health majors, with alcohol being the most prevalently used

substance among the four. Demographic variables found to be significant in these findings were ethnicity, age, major, marital status and living arrangements. When examining consequences experienced as a result of tobacco, alcohol, marijuana and stimulants use during the past year, the majority of participants did not experience any consequences; frequencies indicated small percentages of consequences experienced by graduate students and are reported herein.

Implications for the profession and recommendations for future research are suggested.

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CHAPTER ONE

OVERVIEW

One need only open the morning newspaper to know that substance use is widespread and a major public health issue in our society (Stevens & Smith, 2001). According to the 1999 National Household Survey on Drug Abuse (NHSDA), 66.8 million reported current use of a tobacco product, 105 million Americans reported current use of alcohol, and 14.8 million Americans reported current use of illicit drugs (e.g., marijuana, cocaine, heroin) (Department of Health and Human Services [DHHS], 2000). Alcohol and other drug use are not discriminatory of age, gender, socioeconomic level, ethnic and racial identity, religion, profession or geographic location. National studies on alcohol and other drug use have been conducted to assess the prevalence of this problem and inform policy makers at the Federal, State and local levels about prevention and treatment needs throughout our nation (DHHS, 2000).

Rationale

According to the relevant literature, men—especially college men—consistently drink and engage in drug use far more frequently than women. However, recent reports suggest that substance abuse is increasing among women, especially among young women in the 18-24-age range. The Center for Substance Abuse Prevention (2000) reports that women comprise one of the fastest growing substance-abusing populations in the U.S., with nearly 3 million American women abusing alcohol and other drugs (25% of all abusers). Ford, Bales and Califano (1996) estimated that 2.5 million women smoke, 4.5 million inappropriately engage in the use of alcohol, and 3.1 million use illicit drugs on a regular basis.

Caetano and Clark (1998) reported trends in alcohol-related problems among Caucasian, Hispanic and African American men and women between 1984-1995. Their results indicated that when drinking increased, women experienced far more alcohol-related risks compared to their male counterparts. Thomasson (1995) noted similar findings in a previous study and attributed the gender differences to body volume, hormones and metabolic rates. Moreover, alcohol consumption among men and women also seems to be perceived differently by society. For instance, Wilsnack and Wilsnack (1995) suggested that society views women's drinking more negatively than men, and that drinking among men has always been more socially accepted.

With respect to undergraduate college students, all the evidence indicates that males use alcohol and drugs more frequently than females (Robinson, Gloria, Roth & Schuetter, 1993). Perkins (1992), however, suggested that college females who abuse alcohol are not the rarity that they once were, and in fact, are catching up to men in terms of negative alcohol related consequences. College administrators have responded to the growing use of alcohol and other drugs on their campuses by developing prevention programs and implementing substance abuse policies. Despite their efforts, substance use and abuse continues to plague college campuses across the country.

Consequences

As a result of alcohol and other substance use, nearly 25% of undergraduate college students reported having experienced academic difficulties such as poor test performance, excessive absences from class, poor concentration, and lower grade point averages. According to the U. S. Department of Education Safe and Drug-Free School Program (2002), people who drink and use drugs are more likely to engage in risky

behaviors such as unprotected sexual encounters, driving under the influence, and engaging in violent behaviors. Even more alarming, individuals who regularly engage in drug and alcohol abuse are more likely to die at an earlier age. In fact, each year 14,000 college students perish from alcohol-related injuries (U. S. Department of Education Safe and Drug-Free School Program, 2002).

Reasons for Substance Abuse

When considering the many complex reasons for substance use, it is necessary to examine the biological tendencies and social behaviors and influences that cause students to use habit-forming substances. For example, recent studies have focused primarily on the genetic predisposition to alcohol use/abuse (Walter-Moss & Ravetti, 2000), while others have stressed the importance of the age of initiation (Madison-Colmore, in press). Walter-Moss and Ravetti (2000) noted that women who began drinking during their teen years were more likely to experience higher rates of alcoholism than women who delayed consumption. With regard to important social pressures, studies have proven that entering college can be a challenging transitional period for many (Sax, 1997). Understanding and accepting one's personal identity—especially when confronted by the pressure associated with trying to fit in with a new group of peers—can be stressful, tense, and require functional coping skills that many young people simply do not have. Unfortunately, many college women are ill prepared for this pressure. Robinson, et al. (1993) noted that peer pressure and perceptions of peer behavior were routinely cited as factors that influenced a college student's decisions to use alcohol and other drugs.

Contemporary theories about the psychology of women emphasize the importance of relational competence in their healthy development, as well as the ensuing anguish

produced by unsuccessful relationships (Gleason, 1994). Additionally, social inequalities experienced by women, minorities, and individuals from lower socioeconomic status pose other challenges for these specific populations within an organized social system (Schultz, Israel, Williams, Parker, Becker & James, 2000). Under such pressure, some college females choose alcohol to help reduce tension, enhance social desirability (Lewis & O'Neill, 2000) and self-perception, augment courage and sexuality (Werner, Walker & Greene, 1995) minimize adversarial encounters, and self-medicate. Although reasons for alcohol and drug use among college females are varied, historical, cultural, psychological distress and genetic predisposition (Madison-Colmore, in press) are all essential factors to be considered when examining this timely issue.

The relationship between a student's attitudes and values and the college environment affects ethical choices for many students, including whether or not to engage in substance use. For instance, Madison-Colmore (in press) attributed marijuana use among African American college women to the belief that marijuana, in some African American communities, is acceptable. In an important international study, Madison-Colmore (in press) reported that a relatively low prevalence rate of substance use among Taiwanese college women was tied to cultural values and expectations stressed by college administrators. Specifically, in order to maintain financial assistance students were expected to act in accordance with established ethical codes of behavior both inside and outside of the classroom. However, if the college women were found to have violated those directives, their financial assistance would be revoked, impacting their college career.

Problem Statement

Alcohol consumption and alcohol-related problems have generated great interest on many college campuses (Gfroerer, Greenblatt & Wright, 1997). Heavy episodic drinking and drug use among college students have been associated with unplanned sexual activity, physical and sexual assaults, criminal violations, poor academic performance, and cognitive impairment and relational issues (Presley, Meilman & Lysterla, 1993; Hanson & Engs, 1992). Despite the many innovative and ongoing programmatic interventions targeted at reducing substance use and the negative consequences associated with alcohol and drugs, national statistics support the fact that college women continue to engage in alcohol use, heavy drinking and binge drinking.

Currently, most of the literature addressing alcohol and drug use among college students tends to focus primarily on the undergraduate female population. However, it is imperative that the available research be expanded in order to implement more effective prevention programs that will discourage alcohol and drug use on college campuses. Therefore, it is appropriate and necessary that experts attempt to identify frequency patterns of alcohol and drug use among female graduate students. Although graduate students are often included in data collection, there is no known literature particularly addressing alcohol and drug use among female graduate students, examining both racial differences and similarities and identifying alcohol and drug related consequences.

Purpose of the Study

The intent of the study was to examine frequency use of multiple substances (e.g., alcohol, tobacco, marijuana and stimulants) among female graduate students in Counseling Education, Psychology, and Social Work, examine demographic variables

associated with multiple substance use, compare frequency use of racial groups, and discuss the consequences of substance use among this cohort.

Research Questions

This study was guided by the following research questions:

1. What is the current frequency of substance use (e. g., alcohol, tobacco, marijuana, and stimulants) among female graduate students in Counseling Education, Psychology, and Social Work?
2. To what extent is there a relationship between race/ethnicity, age, major, employment, marital status and living arrangements and alcohol, tobacco, marijuana and stimulant use among female graduate students in Counseling Education, Psychology, and Social Work?
3. Do female graduate students in Counseling Education, Psychology, and Social Work experience similar consequences to those reported in the literature for undergraduate females as a result of alcohol, tobacco, marijuana, and stimulant use?

Terminology

It is extremely important that key terms used in this study are clearly defined. Although the terms listed below are commonly used in alcohol and other drug research, it is necessary to explain each term in the context of this particular study.

African American: Black, not of Hispanic origin (Core Institute, 1998).

Amphetamine: A psychomotor stimulant, which increase energy and decrease appetite (Stevens & Smith, 2001).

Binge: Five or more drinks in one sitting occurring at least 5 different days within the past month prior to the survey (Department of Health and Human Services, 2000); however for women, the number is lessened to at least four or more drinks on the same occasion (Wechsler, Davenport, Dowdall, & Castillo, 1995).

Caucasian: Caucasian, not of Hispanic origin (Core Institute, 1998).

Demographic variables: For the intent of this proposed study, race/ethnicity, age, major, employment, marital status and living arrangements are the demographic variables for this study.

Heavy use of alcohol: Five or more drinks in one sitting occurring once in the past month prior to the survey (Department of Health and Human Services, 2000, p. 20).

Marijuana: Psychoactive agent, which is used primarily to produce euphoria followed by relaxation (Stevens & Smith, 2001, p.58).

Psychoactive drugs: Drugs that cross the blood-brain barrier and create changes in the brain, altering mind (one's consciousness) and behavior (Porter, 1998, p.69).

Stimulant: Drugs that arouse the central nervous system (CNS), enhancing brain activity (Stevens & Smith, 2001).

Limitations

There are several noteworthy limitations in this study. First, the sample was purposeful and non-random, which could limit the validity of its external generalizability. Secondly, the results will only be generalized to female graduate students with specific ethnic/racial identities, and to individuals in the helping professions of Counseling Education, Psychology and Social Work. Thirdly, the research design is non-experimental and examines relationships rather than cause and effect associations.

It is also necessary to address experimental bias. Being the researcher, data collector and analyzer could pose a threat to external validity; however, the goal of the researcher is to minimize the influence of such factors. Also, the researcher must take into account a participant's honesty. Some participants may be reticent or protective about the information that they are willing to report, while others may experience difficulty accurately recalling specific events (Gall, Borg & Gall, 1996).

Significance

This study has the potential to make significant contributions to the literature on substance use among female students. First and foremost, there is a lack of reliable information focusing on college students beyond the undergraduate experience. Although graduate participants have often been included in such studies, their statistics have frequently been combined with those of their undergraduate counterparts. Secondly, research addressing women's frequency in engaging in substance use and related-problems have not specifically tackled women enrolled in graduate school and addressed plausible motivations for their alcohol and drug consumption. Next, the Department of Health and Human Services (2000) has indicated that substance use continues to increase among college students. Although college administrators, staff, and faculty members are likely aware of these upward spiraling trends, it is imperative that policymakers understand what is contributing to the problem. Only then can they implement more effective alcohol and drug awareness programs and promote alcohol and drug education within all academia curricula—undergraduate *and* graduate. A third significance for this study is the need to focus on substance use in the mental health professions, an area in which further research may be needed. As “wounded healers,” it would be unethical to

deny or rationalize that frequent substance use does not affect the mental health community. With the demands of graduate school, graduate seminars between cohorts could be implemented to discuss unforeseen issues of graduate school and healthy coping strategies. Students could use such opportunities to learn from other successful students, develop support systems, and thrive in graduate school without relying on the use of health-compromising substances.

Summary

This chapter addressed the prevalence of substance use on college campuses and the many negative spinoff effects it produces for college administrators. Background literature regarding college females and alcohol and drug use was presented, along with alcohol and drug related consequences and possible reasons for substance use. The problem statement addressed the importance of expanding the available research literature to include female graduate students, which lead to the purpose of the study. The quantifiable research questions were stated and terminology clearly defined. This chapter concluded with anticipated limitations.

CHAPTER TWO

LITERATURE REVIEW

Chapter Two is divided into six sections. Section One provides an introduction to substance use and abuse. Section Two provides a general overview regarding college students and substance use and abuse. Section Three addresses women and substance use, reasons for substance use, and substance use-related problems. Section Four addresses gender differences, while Section Five examines racial comparisons. Section Six addresses reasons for substance use and substance use-related problems among college females.

What is Substance Abuse?

Substance abuse is defined as *the use of a drug by an individual when there is no legitimate medical need to use it* (Doweiko, 2002, p. 13). Minkoff (1997) noted that although individuals who abuse drugs certainly exhibit poor choices regarding their substance abuse, they might not necessarily be addicted. Portenoy and Payne (1997) characterized addiction as a psychological and behavioral syndrome, in which there is a drug craving, compulsive use, and a strong tendency to relapse after withdrawal (p. 564). Addiction causes the addict to intensely ruminate about the drug and attempt to satisfy their cravings by any means necessary (Portenoy, & Payne, 1997). Moreover, this compulsiveness exists despite psychological, physical and socially harmful risks.

Doweiko (2002) described five levels on the continuum of substance use. Level 0 is the first point on the continuum, representing *total abstinence*. Level 1, *rare/social use*, includes the experimental use of any mind-altering drug. According to Doweiko, a Level 1 individual does not yet experience any financial, interpersonal, social, legal, or medical

problems as a result of recreational use. Level 2, *heavy social use/early problem use of drugs*, is characterized by the more regular use of substances, exceeding the usage frequency of the social user. A Level 2 individual is also beginning to experience financial, interpersonal, and other difficulties associated with his or her substance use/abuse. Level 3, *heavy problem use/early addiction*, is indicative of substance addiction. At Level 4, *severe addiction to drugs*, the user demonstrates classic addiction syndrome, which includes some combination of incapacitating social, legal, occupational, medical, financial, and personal problems. Even at this stage, Doweiko (2002) noted that the individual might still try to rationalize his or her addiction or deny that the problem exists.

At whatever level of usage, drugs and alcohol can potentially alter an individual's mood, behaviors, thoughts and perceptions. Whether the user is attempting to create euphoria or arousal, these psychoactive agents can have many negative effects on the body. If used frequently, alcohol and other drugs (AOD) can become lethal.

Drug Classification

Depressants

Depressants are substances that dampen the central nervous system (CNS) (Erickson, 2001). Depressants include alcohol, barbiturates, methaqualone, and benzodiazepines. Depressants are used to treat various disorders, which include but are not limited to panic attacks, insomnia and epilepsy.

Stimulants

Stimulants are drugs that arouse the central nervous system (CNS), enhancing brain activity. Stimulants include drugs such as cocaine, amphetamines, prescription

weight-reducing products, nicotine, caffeine, some over-the counter (OTC) weight-reducing products, minor stimulants, and amphetamine-like drugs such as Ritalin (Erickson, 2001).

Amphetamines increase energy and decrease appetite. Individuals who abuse amphetamines show signs of irregular heartbeat, rapid breathing, high energy, increased mental alertness, reduced appetite and hallucinations (Publishers Group, 2000, p. 16). According to Erickson, frequent use of these drugs can lead to overdoses, obsessions, and anxious episodes including panic attacks, physical addiction, severe depression and psychoses.

Cannabis (marijuana)

Cannabis is a psychoactive agent, primarily used to produce euphoria (Erickson, 2001). This drug can be smoked or orally consumed. On the streets, marijuana may be referred to as pot, grass, reefer, weed, herb, or Mary Jane (National Institute on Drug Abuse [NIDA], 2002). According to NIDA (2002), most individuals smoke marijuana in hand-rolled cigarettes called joints while others may use pipes or water pipes called bongos. Blunts are marijuana filled cigars. Marijuana is also used in brewed tea and is often mixed into foods (NIDA, 2002). The effect of the plant depends on the quality and potency. Erickson stated that the effect of the drug may produce relaxation after euphoria, loss of coordination, impaired memory, concentration and knowledge retention, and loss of appetite. More potent doses can cause disoriented behavior, psychosis, fragmented thoughts and mood swings.

College Students and Substance Use

According to the 1999 National Household Survey on Drug Abuse (NHSDA), approximately 63% of full-time college students and 52.1% of part-time college students reported alcohol use within the previous month. An additional 18% of full-time college students and 12% of part-time college students reported heavy alcohol use. Nearly 43% of full-time college students and 36% of part-time college students reported binge drinking (Department of Health and Human Services [DHHS], 2000). College students enrolled full-time were more likely than part-time students to report drinking on all three levels: 1) current use of alcohol (a drink consumed at least 30 days prior to the interview), 2) binge use (consumed five or more drinks on one occasion at least 5 of the past 30 days), and 3) heavy alcohol use (consume five or more drinks on one occasion during the past 30-day period (DHHS, 2000).

Wechsler, Davenport, Dowdall, Moeykens, and Castillo (1994) surveyed 17,096 undergraduate students to examine the extent of binge drinking among college students. The authors found that nearly 41% of college students consumed alcohol and 44% were binge drinkers. Among those students who binged, 19% could be classified as frequent binge drinkers.

Globetti, Globetti, Brown and Stem (1993) conducted a study on substance abuse with 967 undergraduate students and found alcohol to be the most commonly used substance, followed by stay-awake pills and marijuana. Nearly all (91.8%) of the participants reported lifetime use of alcohol. Of those 91.8% lifetime users, 84.8% reported yearly use, and 69.2% reported monthly use. With regards to stay-awake pills,

slightly more than half (53.4%) reported lifetime use, 35.4% reported yearly use, and 8.5% reported monthly use.

Robinson, et al. (1994) sampled 472 undergraduate students about their knowledge, attitudes, personal and peer use behaviors of alcohol and other drugs. Alcohol was the most commonly used substance (68.6%), followed by cigarettes (17.6%), and marijuana (13.8%). Nearly 80% of the students were aware of the confirmed hazards associated with alcohol and drug use, but despite that knowledge a substantial amount of substance use existed among undergraduate students.

The College of the Canyons in Santa Clarita, CA, examined alcohol and drug use among college students on their campus in 1996 (Office of Institutional Development, 1996). At that time, 15% reported drinking 3 or more times a week, 80% consumed alcohol within the past year, and nearly 29% reported binge drinking within the two weeks prior to completing the college's survey. Nearly 34% reported marijuana use and 10.9% used amphetamines. The findings also indicated that 1 out of every 7 students admitted that drinking was not confined to the weekends.

Bennett, Miller, and Woodall (1999) examined alcohol and drug use patterns among 2710 college students over a three-year period and found that more than 80% report some drinking. Weekly drinkers increased from 39.4% in 1994 to 45.9% in 1996, while frequent drinkers remained constant, and binge drinkers increased. Bennett et al. found marijuana to be the most frequently used illicit drug among college students at that time. Many of the students who used alcohol and participated in binge drinking reported using both marijuana and alcohol during the same period.

Gledhill-Hoyt, Lee, Strote, and Wechsler (2000) randomly sampled 15,403 college students from 119 schools and found an increase in marijuana and other illicit drug use. A majority of the students who reported any substance use during the 30 days prior to the survey reported using more than one substance. Fifty-seven percent of bingers reported using another substance, while four out of five (79%) students who smoked cigarettes used another substance or binge drank (Gledhill-Hoyt, et al., p. 1662). Moreover, 91% (9 out of 10) who reported marijuana use in the past 30-days also binge drank, smoked cigarettes or used other illicit drugs (p. 1665). Of those students who used illicit drugs, 70% reported smoking cigarettes in the past 30-days, 77% reported binge drinking, and 91% reported at least one of these behaviors (Gledhill-Hoyt, et al., p 1665). Overall, patterns of poly substance use among college students indicated marijuana and other illicit drug use was highly associated with the use of tobacco and alcohol (Gledhill-Hoyt, et al., 2000).

Lanier, Nicholson, and Duncan (2001) examined drug use and mental well being among 456 undergraduate and graduate students attending a small, private, elite college. The results indicated 84% of the students reported lifetime use of alcohol, 82% reported alcohol use in the past year and 68% reported past 30-day usage. In general, students reported consuming an average of 2.8 drinks per week (p. 243). Of the total sample, 17% of the students reported past year marijuana use, 8.3% reported 30-day prevalence, 6.6% of the students used an illegal drug other than marijuana in the past year, and 3.5% of students reported current use of illegal drugs other than marijuana within the past 30-days.

Shillington and Clapp (2001) surveyed 409 undergraduate college students and examined alcohol-only use and alcohol and marijuana use. Within the 30 days prior to the survey, 82.8% (227) of the students surveyed only used alcohol, while slightly more than 41% of all respondents surveyed reported two week heavy episodic drinking. Moreover, nearly 17% (47) of the students reported using marijuana only; however, all students who reported using marijuana also used alcohol during the same 30-day period.

Amphetamines, a derivative of methamphetamines, are stimulants that can produce euphoria lasting anywhere between 12-24 hours (King & Ellinwood, 1997). Since the 1930s, amphetamines have been part of psychiatry's prescription armamentarium (Low & Gendaszek, 2002) to treat numerous medical illnesses such as asthma, depression, narcolepsy, obesity, Attention Deficit Disorder (ADD), and more (Doweiko, 2002). Nicholi (1983), however, indicated that nearly 20% of college students use amphetamines for non-medical purposes.

Low and Gendaszek (2002) surveyed 150 Caucasian middle class undergraduates concerning their illicit use of psychostimulants, which are drugs that speed up activity in the brain and the central nervous system (Doweiko, 2002). The Low and Gendaszek study focused on the following levels of usage: 1) Non-abusers (students who were prescribed psychostimulants, regardless of pattern use); 2) Illicit-amphetamine use (taking adderall, methylphenidate or dextroamphetamine without a prescription); and 3) Illegal amphetamine use (defined as cocaine and MDMA [Ecstasy, 3,4 methylene dioxy N-methylamphetamine]). The results indicated 10% of the sample were prescribed amphetamines and were categorized as non-abusers. Over one third (35.3%) reported using legal amphetamines without a prescription, which the authors referred to as *illicit*

use or abuse. Of this group of illicit users, nearly 10% abused amphetamines monthly, 8% weekly, and 19.3% used amphetamines in combination with alcohol. Nearly 24% reported using the drug to improve intelligence performance, and 22% stated that they wanted to be more proficient on academic assignments. With regards to illegal amphetamine use, 34% used cocaine, MDMA (ecstasy), or both in the previous year. However, the majority of the sample preferred MDMA to cocaine.

Students reported that “Ecstasy is pretty easy to find and sometimes it is more convenient to use than alcohol,” due to strict alcohol policies on campus (Low & Gendaszek, 2002, p. 285). Additionally, Low and Gendaszek (2002) attributed the increase in MDMA usage to its lower cost as compared to cocaine and alcohol. Moreover, students noted that MDMA was difficult to detect and easier to hide than both marijuana and alcohol. Thus, based on these findings, it would appear that the abuse of stimulants—whether prescribed or purchased illegally—might be a serious problem on college campuses.

Type of Institution and Prevalence of Substance Use

The vast majority of studies addressing college students and substance use have been conducted at Predominantly White Institutions (PWIs). Bolek, Debro, and Trimble (1992) examined efforts by the federal government to identify methods of preventing drug abuse. Their investigation featured a brief overview of a report by the National Institute on Drug Abuse (NIDA) on ethnic minority research in this area. Included were excerpts from an article addressing the need for alcohol and drug abuse research at Historically Black Colleges and Universities (HBCUs). Currently, there is limited research addressing the alcohol and other substance use of students attending HBCUs.

Presley, Meilman, and Lyster (1998) noted tailgating, bar hopping, “doing shots,” and *Animal House*-style frat parties are more common among Caucasian students. The National Pan-Hellenic Council of Organization, which governs all African American fraternities and sororities, officially bans alcohol and other drug use at Greek events. Moreover, many of the HBCUs are religiously affiliated and impose campus bans on alcoholic beverages. Another possible reason for the reduced alcohol consumption among African American college students is that many are less adequately prepared for a rigorous college curriculum; therefore, they must study harder than their Caucasian counterparts, allowing less time for partying.

Since 1989, nearly 1,000 colleges and universities have administered the Core Alcohol and Drug Survey to their students (Meilman, Presley, & Cashin, 1995). Among institutions randomly sampled for their results, only 14 were HBCUs. The authors became interested in examining similarities and differences between HBCUs and PWIs. However, in order to make useful comparisons concerning alcohol and other drugs, the authors needed to obtain samples from HBCUs and PWIs according to institutional size, region of the country and other criteria (Meilman, et al, 1995). Their sample consisted of 6,222 students attending HBCUs and 6,129 students attending PWIs.

In general, students of all ethnicities attending HBCUs demonstrated significantly lower usage rates for tobacco, alcohol, marijuana, amphetamines, cocaine, sedatives, hallucinogens, opiates, inhalants, designer drugs, steroids and other drugs (Meilman, Presley, & Cashin, 1995). HBCU students reported drinking an average of 1.8 drinks per week while students attending PWIs averaged 4.6 drinks. Approximately 22% of students

attending HBCUs reported binge drinking, compared to 37.5% of students attending PWIs (Meilman, et al., 1995).

The authors also found racial differences in alcohol consumption between African American and Caucasian students attending the *same* type of institution. For example, with respect to students attending HBCUs, African American students reported consuming 1.4 drinks per week compared to Caucasians who consumed 2.6 drinks per week (Meilman, Presley & Cashin, 1995). However, that number increased for Caucasians (4.6%) attending PWIs, while it remained constant for African American students regardless of the type of institution. Bingeing rates, on the other hand, were similar for Caucasians (22.3%) and African American (22.5%) students attending HBCUs. Among students attending PWIs, 19.6% of African Americans reported binge drinking, compared to 39.6% of Caucasians. Meilman, et al. argued that the social climate of HBCUs appeared to reduce the desire of the Caucasian students to drink (p. 99).

When examining other substances used at HBCUs and PWIs, PWI rates of usage were significantly higher in all drug categories (tobacco, marijuana, cocaine, sedatives, amphetamines, hallucinogens, designer drugs and other illegal drugs), except for opiates and steroids. Among all students attending HBCUs, 22.6% reported tobacco use within the previous year, 12.8% reported marijuana use, and 2.9% reported amphetamine use (Meilman, Presley & Cashin, 1995). Among those students attending PWIs, 40.1% reported past year tobacco use, 22.9% reported using marijuana during the reporting period, and 5.1% reported using amphetamines.

Fennell (1997) examined the health behaviors of 996 students attending eight HBCUs in seven states. The results indicated that 75% of all students reported consuming alcohol during their lifetime (with first-time alcohol intake occurring prior to the legal drinking age of 21), and over the 30 days prior to completing the survey, 45.6% had had at least one alcoholic beverage (current use). Nearly 16% reported binge drinking in the past 30 days, with 14.3% reporting current cigarette use. Nearly half of those students reported their first-time cigarette use was when they were 14 years or older (p. 112), and among those who indicated they had smoked a whole cigarette (35.9%), 32.6% reported smoking for the first time before the age of 13. Approximately 10% of all students were regular smokers. Nearly 38% reported marijuana use during their lifetime, and 18.2% reported marijuana use within the past 30 days. Nearly 2.2% used cocaine once during the past 30 days, 3.3% had tried cocaine during their lifetime, and 2.6% of the respondents used crack or freebased.

Summary

The research literature has consistently demonstrated that over the past decade college students at both PWIs and HBCUs use—and in some cases abuse—alcohol and other substances. Alcohol is the most commonly used substance, followed by tobacco and marijuana. According to various studies, this population has demonstrated an obvious and recent use (within the past year and over the 30 days prior to being surveyed) of alcohol and other substances. Other research has demonstrated that some of the students are becoming poly-substance users, and that alcohol and tobacco use was found to be strongly correlated with poly-substance use.

Meilman, Presley, and Cashin (1995) indicated that the institutional environment contributes to AOD use among college students and that Caucasian students who attend HBCUs are less “at risk” for AOD use. This pattern of reduced alcohol and drug use was attributed to the social environment of HBCUs. Nonetheless, as demonstrated in their report, college administrators must continue to confront the problems of drug and alcohol use on their campuses. To assist in this effort, it is imperative that researchers continue to monitor student substance use at HBCUs. Although the prevalence of substance use may appear to be less frequent among students attending HBCUs, the problem still exists. One should also note that none of these above cited studies reported usage rates exclusively among graduate student, thus indicating a serious gap in the literature.

Women and Substance Use

Historical Perspective of Women and Substance Use

To grasp the complexity of the growing predicament of women and alcohol/drug use, counselors and those working in related fields must understand the historical context of this area and its influences on women and substance use today. Belenko (2000), for example, reported that many psychoactive drugs—now known to be both dangerous and addictive—were completely legal in this country until the end of the 19th century. In fact, physicians often prescribed medicines containing opium, morphine, or cocaine to women for any number of ailments.

Over-the-counter (OTC) drugs were originally used for self-medication (Lisansky-Gomberg, 1982), and women were routinely given these “soothing syrups” as home remedies for “women’s troubles,” which included menstrual and menopausal discomforts, ovarian neuralgia, vaginismus, vomiting due to pregnancy, and more

(Kandall, 1998). To deliver that calming effect, most OTCs contained alcohol or opiates. It wasn't until the Pure Food and Drug Act of 1906, the Opium Smoking Act in 1909, and the Harrison Act of 1914 that policy makers were forced to implement change (Belenko, 2000; Doweiko, 2002).

Women have long enjoyed social interactions accompanied by alcohol – although historically much less visibly than men. Despite women's temperance movements beginning in the late 1800s, women drank secretly in order to prevent the grim social stigmatization associated with drinking (Murdock, 1998). Between the Prohibition period and World War II approximately 38% of women drank alcohol. By the late '40s and early '50s, this percentage increased to 56% (Kandall, 1998) and significantly rose during the 1960s and 1970s.

Today, the use of alcohol and other drugs among women continues to increase despite a growing awareness of the many physical and psychological risks associated with these substances. Although this is especially valid for women between 18 and 24 years of age (DHHS, 2000), experts suspect that as many as 3 million women abuse alcohol and that 25% of those who abuse alcohol also abuse other drugs (Center for Substance Abuse Prevention, 2000).

Psychosocial Factors

While no single factor thoroughly explains why women engage in the use and abuse of alcohol and other drugs, most contemporary theories attribute substance abuse to racial and gender inequalities. For example, Schultz, et al. (2000) noted that some women's subjective experiences in an institutionalized society unjustly characterized by racial and gender inequalities can negatively impact their health. Other factors such as

separation fears, over dependence, escapism, and low self-esteem may also contribute to substance use and abuse (Wingo, 2001). Any number of life stressors such as divorce, single parenting, caring for elderly parents, etc. (Boyd, Hill, Holmes, & Purnell, 1998), as well as poor socioeconomic and socio-environmental conditions (Wingo, 2001) probably also contribute to substance use and abuse.

The research literature indicates the lack of well-defined social roles among women to be highly associated with substance use and alcohol-related problems. Lozina, Russell and Mudar (1995) found that single women drank and experienced alcohol-related problems in greater numbers than did married women. Corroborating those findings, Newcomb (1997) noted that young adult women who have prepared themselves since adolescence for marriage and childbearing—but then who are unable to fulfill those roles—have an increased likelihood of using drugs or alcohol to overcome resulting feelings of failure (pg. 83). Hanna, Faden & Harford (1993) noted that women who married or remarried decreased drinking, whereas women who separated or divorced increased their alcohol consumption. Walton-Moss and Ravetti (2000) also examined the relationship between marital status and substance use among women and confirmed that a positive relationship does exist. Specifically, they pointed out that single women tend to drink more and experience more alcohol-related problems than widowed or married women.

A number of researchers have examined whether a genetic predisposition contributes to substance use among women. Gomberg (1994) found women with a family history of alcoholism were at a greater risk for becoming alcoholics than those without that family history. Van der Walde, Urgenson, Weltz, and Hanna (2002) noted that

routine life stresses, which most women handle in constructive ways, are sometimes overwhelmingly complex for female children of alcoholics (p. 146). Thus, adult female children of alcoholics have an increased tendency to self-medicate as a coping mechanism (Gomberg, 1994). Unfortunately, these women often partner with men who are alcoholics or addicted to other drugs (Miller & Downs, 1993). Moreover, these partnerships are frequently verbally and physically abusive, reinforcing her lack of self-worth, hopelessness, and powerlessness (Van der Walde, et al., 2002). According to Van der Walde, et al., women are at an extremely high risk for becoming alcoholic when these feelings are combined with poor coping-skills.

Physical, emotional and sexual abuse can have a profound effect on a woman's ability to function as an adult. For example, Eliason and Skinstad (1995) observed a discernible history of childhood sexual abuse among many women addicts, which damagingly impacted their sense of self worth and ability to totally self-actualize.

Sociodemographics Associated with Women and Substance Use

Age, race, education, religion and employment are all factors associated with alcohol-related problems (Lozina, Russell, & Mudar 1995, pg. 25). Caetano and Clark (1995) found drinking and alcohol-related problems to be associated with marital conflict, education, household income, employment status, and religion. Lozina, et al. found that a lack of education, unemployment and childlessness (each role facilitates a sense of responsibility), a family history of alcoholism, and regular psychoactive drug use to be associated with alcohol-related problems among women. Lastly, Herd's (1997) research indicated that Caucasian women who were younger, divorced, unemployed, not

affiliated with a conservative Protestant religious group, and who lived in larger cities drank more frequently.

Summary

Women turn to alcohol and other drugs to self medicate for a great many reasons. Whether due to the challenges of living in a sometimes discriminatory society, the daily struggles of life, lack of social roles, minimal education, lack of religious beliefs/support, abusive upbringing, or the genetic predisposition or alcoholism, there is little doubt that the use of alcohol and other drugs among women tend to bring about alcohol-related problems (Lozina, Russell & Mudar, 1995).

Consequences Associated with Substance Use

Biological

The research literature has addressed numerous health risks associated with women and AOD. For instance, as a result of psychoactive drug use, women can experience amenorrhea and anovulation, and are also more susceptible to sexually transmitted diseases and abuse (Jones, Velez, McCaul, & Svikis, 1999). Jones et al. indicated that women who inject specific psychoactive drugs increase their rates of risky medical consequences including endocarditic, skin abscesses, and liver disease. Exposure to nicotine increased cardiovascular risk and mortality (Rigotti & Polivogianis, 1995) among women. As noted by Walton-Moss, & Ravetti, (2000) smoking continues to be a primary contributor to cardio and cerebrovascular problems, cancer, and osteoporosis. Women who smoke may also increase their risks of cervical cancer, early menopause (Ward, 1999), vaginal bleeding, and a 30% decrease in fertility (American College of Obstetricians and Gynecologists (AOG), 1993).

Women metabolize alcohol differently from their male counterparts, which has been attributed to a higher percentage of fatty tissue in women and lower percentage of water (Madison-Colmore, Ford, Cooke, & Ellis, 2003). The possible health consequences of alcohol use include circulatory disorders, organ damage, fetal alcohol syndrome, alcohol-related accidents, and more (National Institute on Alcohol Abuse and Alcoholism [NIAAA], 1998).

Psychosocial

Women substance users significantly increase their risk for negative psychosocial consequences. Newcomb (1997), for example, examined three important developmental consequences of engaging in substance as an adult (p.77). Newcomb's initial concern was the negative effect of alcohol and drug use on maintaining a fulfilled, intimate relationship. Alcohol and other drug use (AOD) during a marriage can create marital distress and impose undeniable strains on a relationship. Newcomb's second concern was intoxication on the job, which has serious economic and security consequences – not just for the substance user, but also for any family members that may be relying on that individual's income to survive. A third concern of Newcomb is that drug and alcohol use could inhibit an individual's ability to maintain sex-role expectations. In other words, substance use could hinder a woman from marrying, or delay or even prevent her from bearing healthy children, thereby causing feelings of failure and inadequacy.

Summary

There are numerous psychosocial and biological consequences associated with women and substance use. Additionally, it is noteworthy to acknowledge that each aspect does not occur in isolation of the other. Indeed, they are usually inextricably linked. For

instance, women who abuse alcohol during pregnancy increase the risk of their unborn child developing fetal alcohol syndrome, the most preventable cause of mental retardation (NIAAA, 1998), which is likely to impact family dynamics (psychosocial). As a result of substance-induced biological damage, women might experience reduced fertility, spontaneous abortions, or ectopic pregnancies (ACOG, 1993), all of which could impact their psychosocial health. Moreover, women who use or abuse AOD run the risk of heart disease, various forms of cancer, osteoporosis, higher mortality rates, and more. And as Newcomb has shown (1997) these health risks have the potential to impact job security and marital and family stability (Newcomb, 1997).

Gender Differences

It is important to address the relationship between sexism and health care. McDonough, Williams, House and Duncan (1999), for example, described the generally accepted relationship between lower social class and reduced health indices, but pointed out that this relationship becomes even more pronounced among the female population.

Gender differences are apparent in AOD research. Normally, women tend to have lower prevalence rates of substance use disorders than their male counterparts, and men are more likely than women to report past-year and lifetime use of substances (Department of Health and Human Services, 2000). However, women experience substance use disorders differently and nearly one in five women will be seriously affected (Walton-Moss & Ravetti, 2000).

The literature addressing alcohol use consistently shows that men drink more often than women; however, the literature also indicates that the use of alcohol and other drugs is steadily increasing among women (Engs & Hansen, 1990). While men's drinking

has slightly increased over the past decade, women's rates have dramatically increased (Engs & Hansen, 1990). In 1999, alcohol was the most widely used mood altering psychoactive substance among women (Department of Health and Human Services, 2000). Forty one percent of women reported past month alcohol use, 49.3% currently used alcohol and 19.4% binged. Among pregnant women, 13.8% used alcohol and 3.4% were binge drinkers.

Until recently, men and women were held to the same operational definition for binge drinking. Initially, binge drinking was defined as consuming five or more drinks in one sitting for both genders (Johnston, O'Malley, & Bachman, 1995; Presley, Meilman, & Lyeria, 1994). However, this designation has been amended so that binge drinking among women is now defined by the consumption of four or more drinks in one sitting (Wechsler, Davenport, et al., 1995) while for men it continues to be five. This change was linked to the information contained in the blood alcohol tables that determine the legal definition of driving while intoxicated (O'Brien & Chafetz, 1982), which is based on gender and weight (Wechsler, Dowdall, Davenport, & Rimm, 1995, pg. 982). Moreover, because women metabolize alcohol differently than men (Frezza, diPadova, Pozzato, Terpin, Baraona, & Lieber, 1990), women are not biologically capable of functioning with the same amount of alcohol as their male counterparts. On average, women can become intoxicated with less alcohol due to lower body weight and a higher fat-to-water ratio (Perkins, 1992, p.458).

Nicotine is the second most commonly used drug among women, although males were more likely than females to report past month use of a tobacco product (Department of Health and Human Services, 2000). Department of Health and Human Services

indicated 36.5% of males were current users of any tobacco product compared to 24.3% of women. Moreover, males were ten times more likely than females to report current use of smokeless tobacco, and males were more likely than females to report past month cigar use (Department of Health and Human Services, 2000). These rates, however, should be considered somewhat situational, since Hourani, Yuan, Bray and Vincus (1999) observed no gender differences in past-year of smoking rates among the nearly 10,000 military personnel that they surveyed for nicotine usage.

Despite the growing cross-gender evidence correlating mental health problems and substance abuse, comorbidity data have shown that alcoholic women remain more likely than alcoholic men to experience a dual diagnosis, i.e., another mental diagnosis combined with a substance abuse diagnosis (Walton-Moss, & Ravetti, 2000). Blume (1997) foreshadowed those later results by reporting that 19% of women met the diagnostic criteria for alcohol abuse/dependence and major depression at some period during their lifetime, as compared to only 5% of men. Blume (1998) also reported that among alcoholic women, major depression was four times more common among alcoholic women than among their alcoholic male counterparts (Blume, 1998).

Overall, women are far more likely than men to be treated for mood disorders (Schwartz & Schwartz, 1993). Accordingly, women are prescribed psychotropic drugs (prescription medication) earlier than men (Bigby & Cyr, 1995), and at nearly twice the rate of men (Schnoll & Weaver, 1998), and thus are at greater risk for prescription drug abuse (Abbott, 1994). In fact, specific classes of drugs, such as anxiolytics and sedative hypnotics, are more likely to be prescribed and abused by women (Bigby & Cyr, 1995;

Schnoll & Weaver, 1998). Despite their higher rates of depression, women are more often treated inappropriately (Walton-Moss, & Ravetti, 2000) or misdiagnosed.

Gender Differences in Attitude Towards AOD

Spigner, Hawkins, and Loren's (1993) research indicated that women viewed substance abuse more negatively and were less tolerant of it than men. This has been attributed to the historical social stigma associated with women and substance use, and thus has had a marked impact on shaping women's attitudes toward AOD use and abuse (Kauffman, Silver, Poulin, 1997). Kauffman et al. interviewed 1,019 adult men and women to examine gender differences in attitudes toward alcohol, tobacco, and other drugs, which revealed a number of gender-related differences. As an example, women were more likely than men to believe that substance abuse was influenced by biological and environmental factors, genetic predisposition or family history, and stressful interpersonal relationships. With respect to perceived severity, women were also more likely than men to view AOD as having severe and powerful effects and significantly more harmfully prevalent consequences. Regarding gender differences and perceived benefits of intervention, women were more likely to be optimistic about the efficacy of treatment. No gender differences were found in views toward prevention (Kauffman, et al., 1997).

Thombs, Beck, and Mahoney (1993) examined the effects of social context and gender on drinking patterns of young adults. Women who reported heavy use of alcohol were strongly motivated by emotional suffering, whereas men appeared to be highly motivated by social facilitation. Capraro (2000) noticed similar gender differences within the college population. College men were more likely than college women to associate

alcohol with gender-identity and viewed drinking as a male domain. Alcohol use, according to college men, demonstrated social power and feelings of adventure (Capraro, 2000). In addition, alcohol was used to generate feelings of euphoria and enhanced camaraderie among college men (Thombs, 1993). Conversely, women tended to use alcohol to feel better and manage emotional distress.

Summary

The literature strongly supports the existence of gender differences among substance users. Since women tend to be overrepresented as clinical patients, they are more likely than men to use and abuse medically prescribed psychotropic drugs, and to receive dual diagnoses. For this reason, comorbidity is more common among women than men.

In addition, women's attitudes towards AOD differed from men's. Women tended to view substance use more negatively and appeared to be less tolerant of the behavior than their male counterparts. Research has generally attributed women's attitudes regarding AOD to long-standing social stigmas. Moreover, the literature has indicated that women's drinking tends to be motivated by emotional distress, which has not been shown to be true of men. Women used alcohol to self-medicate, whereas men drank to be social and for camaraderie.

Racial Comparisons among Women Substance Users

Previous research examining racial differences and the prediction of alcohol-related problems among women of different ethnic backgrounds remains inconsistent. On the one hand, Bailey, Haberman, and Alksne (1965) suggested that there appeared to be greater tolerance of drinking among African American women than among Caucasian

females, which they attributed to the increased responsibilities of African American women within the typical household. On the other hand, Lozina, Russell and Mudar (1995) suggested that African Americans are more community-oriented and as a result are more likely to exhibit a lower tolerance for women who drink. In keeping with that earlier finding, Herd (1997) reported conservative drinking norms among African American women (p. 146) as compared to Caucasians, which he attributed to the African American culture and lifestyle. In an older study, Caetano (1984) found that African American women were more likely to report spousal and/or family dissatisfaction when they drank than did Caucasian women.

There were also several reporting disparities with regard to alcohol-related problems among the African American and White female communities. While some studies insisted that African American women experienced alcohol-related problems at higher frequencies (Williams & Debakey, 1992; Barr, Farrell, Barnes & Welte, 1993), others (Caetano, 1984; Herd, 1993; and Russell, Mudar, Cooper and Frone, 1992) suggested that African American women experienced fewer alcohol-related problems than Caucasian females, despite similar levels of alcohol consumption. Barnes and Welt (1988) reported the *same* level of alcohol-related problems for both races. It should also be noted that Herd (1988) indicated that African American women were more likely than Caucasian women to abstain from alcohol use; nonetheless, when African American women did drink, they had higher rates of “heavy drinking” along with alcohol-related problems.

Caetano and Kaskutas (1995) conducted a longitudinal study and examined changes in drinking patterns among Caucasians, African Americans and Hispanics between 1984 and 1992. Their results indicated the following trends:

- Abstinence among both Caucasians and African American women increased;
- Infrequent drinking remained stable among Caucasian women, but increased among African Americans;
- Less frequent drinking increased among Caucasian women and decreased among African American women.

Within this cohort of women, however, Caetano and Kaskutas reported that Caucasians increased their average number of drinks consistently throughout the study.

Caetano and Clark (1998), through a study conducted by the Institute for Survey Research of Temple University, reported national trends of alcohol consumption patterns among Caucasians, African Americans and Hispanics from 1984 and 1995. Among women, while all three ethnic groups increased their abstinence levels, the level reported for African Americans increased by 10 percentage points, indicating that African American women abstain from drinking more frequently than Caucasian and Hispanic women. Trends for infrequent, less frequent and frequent drinking were mixed, showing decreases, increases, and stability, respectively, in patterns of consumption (p. 662).

Young and Harrison (2001) focused on ethnic and racial differences in the sequential patterns of alcohol and drug use. When examining the proportion of Caucasian and African American who used alcohol during their lives, Young and Harrison found that Caucasians were more likely (83%) to have used alcohol than African Americans, (68%). Young and Harrison also found that Caucasian women were more likely (73%)

than African American (55%) to have smoked cigarettes. Moreover, nearly 1/3 of Caucasian females reported some type of illicit drug use at some period in their lives compared to 1/4 of African Americans. In conclusion, a higher proportion of Caucasian women used alcohol, cigarettes, marijuana, and cocaine than African American women.

Humara and Sherman (1999) examined gender, race, binge status and situational differences in alcohol consumption among Caucasian and African American college students. The authors found no statistical differences between Caucasians and African Americans in alcohol consumption. The data did yield evidence that binge-drinking Caucasians were more likely to report higher rates of interpersonal problems than binge-drinking African Americans; however, binge-drinking African Americans were more likely to report higher rates of intrapersonal problems.

Summary

Research addressing racial differences of substance use and alcohol-related problems among women remain inconclusive. While some investigators have noticed higher rates of alcohol use and alcohol-related problems among African American women as compared to Caucasian women, others have found the opposite. And still others do not find any statistical differences. When examining racial difference and substance use among women, the literature addresses such issues as culture, lifestyle, intrapersonal and interpersonal issues. These contextual factors have been proven to influence substance use among women.

Undergraduate College Females Substance Use

Studies on substance use and college students consistently demonstrate that college men drink and use drugs more frequently, in larger quantities, and at earlier ages

than college women (Sax, 1997; Perkins, 1992; Wechsler, Davenport, et al., 1994; Robinson, Gloria, Roth, & Schuetter, 1993; Helm, Boward, McBride & Del Rio, 2002). Nonetheless, Madison-Colmore, Ford, Cooke, & Ellis (2003) noted that substance abuse is increasing among women, particularly among 18-25 years-olds. Among college women enrolled full-time, nearly 34% engaged in binge drinking and 10.7% reported heavy alcohol use (Department of Health and Human Services [DHHS], 2000). Among college women not enrolled full-time, 26.3% binge drank and 6% reported heavy alcohol use. Moreover, Wechsler (2002) reported a 125% increase in frequent binge drinking, which he defined as three or more times in the two weeks prior to the survey.

Madison-Colmore, et al. (2003) surveyed 445 college women, 317 African Americans and 138 Caucasians, attending 10 colleges and universities located in the Eastern region of the United States regarding their prevalence of tobacco, alcohol, marijuana, and cocaine use. The results showed that alcohol was the most frequently used substance, followed by tobacco, marijuana, and cocaine. At the time of the study, more than 73% of female college students used alcohol, 25% used tobacco, 23% used marijuana, and less than 2% used cocaine. Within the 30-day period prior to being surveyed, 53% of college women reported alcohol use, 17% reported tobacco use, 13% reported marijuana use and less than 1% used cocaine. Disaggregated analysis of the frequency usage patterns within that period revealed that Caucasian female college students reported drinking alcohol and using tobacco more frequently than did their African American counterparts. These findings were consistent with previous studies (Caetano, & Kaukutas, 1995; Caetano, 1984; Herd, 1988; Russell, et al., 1992; Darrow, Russell, Cooper, Mudar, & Frone, 1992), which also found alcohol use and alcohol-

related problems to be more frequent among Caucasian women compared to African American women

Conversely, the Madison-Colmore, et al. (2003) study reported more frequent usage of marijuana among African American college women than among Caucasian women. Madison-Colmore et al. attributed the increased marijuana use among African American female college students to cultural differences. In other words, despite its illegal drug status marijuana is more frequently viewed among African Americans as a socially acceptable behavior (Madison-Colmore et al., 2003).

Consequences

Heavy episodic drinking among college students has been consistently associated with higher rates of unplanned sexual activity, academic difficulties, trouble with local and campus police, strained intrapersonal relationships, and many other negative outcomes. Some college females reported skipping class (Wechsler, et al., 1994) as a result of drinking, while others reported poor scores on tests and projects (Shillington & Clapp, 2001). Moreover, unsafe/unplanned sex has also been associated with alcohol consumption on college campuses (Wechsler, et al., 1994). In fact, according to Pierce (2000), the majority of date rape cases typically involved alcohol. Shillington and Clapp (2000) reported that many college women admitted to having damaged property, being physically injured, getting into physical altercations and being involved in serious verbal disputes—all as a result of disproportionate alcohol consumption. Despite many intervention attempts by college administrators and others, the magnitude of binge drinking among college students has not decreased within the past decade (Schuckit, Klein, Twitchell, & Springer, 1994).

Wechsler, et al. (1994) examined the extent of binge drinking among college students and behavioral problems associated with AOD. Their results indicated a positive relationship between drinking (particularly bingeing) and driving. For non-bingeing college women (n=4393), 13% reported driving after drinking alcohol, 1% reported driving after having five or more drinks, and 7% reported riding with a driver who was either high or drunk. For infrequent bingeing college women (n=2132), 33% reported driving after drinking, 7% reported driving after five or more drinks, and 22% rode with someone who was high or drunk. With regard to those female college students who were categorized as frequent binge drinkers (n=1684), 49% drove after drinking, 21% drove after five or more drinks and 48% rode with a driver who was high or drunk.

Buelow & Koeppel (1995) noted that after binge drinking, some college females even experienced blackouts, which they defined as loss of memory or amnesia. Moreover, while in a blackout state, the college females they surveyed drove, engaged in sexual activity and experienced physical altercations, only to regret these actions later. Lanier, Nicholson, and Duncan's (2001) findings indicated that nearly 26% (n=196) of the students surveyed reported memory loss or blackout due to alcohol abuse.

Feelings of nausea, being criticized for drinking, hangover and passing out are additional consequences associated with alcohol and drug use (Shillington & Clapp 2001). These and other negative consequences of AOD use can be devastating (Wingo, 2001). Despite this fact, college women continue to use and abuse AOD. As reported by Wechsler, et al. (1994), heavy episodic or binge drinking poses serious health threats for both the drinker and for others in the immediate environment. In short, excessive use of

alcohol and drugs could impact every aspect of a student's life (Welchsler et al., 1994; Robinson et al., 1993; Buelow, & Koeppel, 1995).

Reasons for Substance Use Among College Women

During her college years, a student encounters a variety of hurdles and stresses that challenge her coping skills (Gleason, 1994, p. 279). Gleason (1994) noted that developmental transitions such as leaving home, going to college, and getting married are among the most difficult challenges that a woman can encounter. It is often during the transitional period of attending college that a woman first begins to define her unique sense of self. This internal process requires analytical thinking, which may contradict previous values and thereby create conflicts between desire for relationships and academic success and career expectations (Gleason, 1994). Gleason noted that the biggest challenge for the college female is to be internally, socially, and academically balanced.

College women often report anguish over failed romantic relationships. The shame associated with such poignant experiences can sometimes be overwhelming for young women with inadequate coping skills. For these women, shame increases one's feelings of inadequacy and self-esteem, which is exacerbated by her inability to successfully cope—sometimes resulting in the mollifying use of alcohol (Gleason, 1994, p. 285). In this scenario, these college women will use alcohol and other drugs to self-medicate, paralleling many of the same reasons that women generally use and abuse mind-altering substances.

The literature also indicates, however, that college women often get together to drink socially. Hunter (1990) found that college women's social use of alcohol was often integrated with activities like camping, listening to music, and other specific pastimes,

such as celebrating special events or a holiday. Hunter also noted that college women also tended to drink to relax.

Social support appears to be extremely valued among college women, especially during this transition from home. As Gleason (1994) reported, the presence or absence of a relationship significantly contributes to a college woman's capacity to bear stress.

While some college women drink in response to stress, others drink to be social and to relax. Alcohol is used to facilitate social interaction and female bonding.

Based on the research literature presented in Chapter Two, as well as the scarcity of research specifically addressing female graduate students and substance use, the following quantitative research questions are deemed appropriate:

1. What is the current frequency of substance use (e. g., alcohol, tobacco, marijuana, and stimulants) among female graduate students in Counseling Education, Psychology, and Social Work, and are there racial/ethnic differences within this cohort?
2. To what extent is there a relationship between age, major, employment, marital status and living arrangements and alcohol, tobacco, marijuana and stimulant use among female graduate students in Counseling Education, Psychology, and Social Work?
3. Do female graduate students in Counseling Education, Psychology, and Social Work experience similar consequences as literature reports for undergraduate females as a result of alcohol, tobacco, marijuana and stimulant use?

Summary of the Chapter

Women have historically used drugs for medicinal purposes. However, many of these over-the-counter drugs contained opium, morphine, cocaine and alcohol and resulted in women becoming addicted. The implementation of the Harrison Act of 1914 alleviated those problems – at least until the middle of the 20th Century when women began to more actively and openly engage in alcohol and other substance use.

Today, there are many factors that contribute to substance use among women. Sexism, racism and gender inequality may influence a women's health or the availability of services. Many women are forced to cope with stressful socioeconomic and socio-environmental conditions. Unfortunately, some of these women may choose to self-medicate via alcohol and substance use. As a result of continuous self-medication, many experience numerous health risks, both physically and psychosocially. In addition to facing potentially life-threatening diseases, a woman's marital and family relationships and job environment may also suffer. Moreover, many women are not able to maintain sex-role expectations.

Although the research literature consistently shows that men drink and use drugs more frequently than women, women experience substance use disorders differently. Due to their unique fat-to-water ratio, women metabolize alcohol and other drugs at a different rate than their male counterparts. The literature also demonstrates that women view drugs more negatively than men. This has been attributed to societal norms and role expectations of women.

Racial comparisons among women substance users continue to be inconsistent. Some researchers have found Caucasian women to use more alcohol and experience more

alcohol-related problems than African American, while others have reported opposite findings. Still other research has indicated that there is no difference between the two.

However, the research literature consistently demonstrates that college women are using and abusing alcohol and other drugs. Alcohol is the most frequently used drug followed by tobacco and marijuana. In addition, college women are experiencing negative consequence associated with substance use/abuse including unplanned sexual activity, date rape, academic difficulties, damaged property, engaged verbal altercations, etc.

College is a transitional period for many women, at which time they begin to develop a sense of self. This process usually involves analyzing values that may contradict current relationships, academic and career success. Without functional coping skills, many college women use drugs to self-medicate and relieve feelings of failure, hopelessness, inadequacy and pain.

CHAPTER THREE

METHODOLOGY

Chapter Three provides an overview of the research methodology used in this study, and addresses the following specific areas: quantitative research questions, description of research, research design, selection of participants, demographic data, instrumentation, background literature regarding the Core Alcohol and Drug Survey, data collection, data analysis and methodological assumptions. Chapter Three will conclude with a brief summary of the information discussed herein.

Quantitative Research Questions

The purpose of the proposed study was to examine multiple substance use (e.g., alcohol, tobacco, marijuana, and amphetamines) among female graduate students, in addition to determining if there were ethnic/racial differences between African American and Caucasian female graduate students. Additional demographic variables (e.g., age, major, employment, marital status and living arrangements) were also examined. Accordingly, the following quantitative research questions were developed to facilitate the study:

1. What is the current frequency of substance use (e. g., alcohol, tobacco, marijuana, and stimulants) among female graduate students in Counseling Education, Psychology, and Social Work?
2. To what extent is there a relationship between race/ethnicity, age, major, employment, marital status and living arrangements and alcohol, tobacco, marijuana and stimulant use among female graduate students in Counseling Education, Psychology, and Social Work?

3. Do female graduate students in Counseling Education, Psychology, and Social Work experience similar consequences as literature reports for undergraduate females as a result of alcohol, tobacco, marijuana, and stimulant use?

Methodology

Description of Research

The study is descriptive in nature and utilized a modified version of the Core Alcohol and Drug Survey (CADS). To aid in data analysis, this investigator considered two widely accepted forms of descriptive research collection found in the literature, both of which involve the *time* when the variables of interest are measured. The first type involves identifying variables at a single point in time, while the second *longitudinal* type measures the variables of interest over a longer duration (Gall, Borg & Gall, 1996). However, for this study, the first method—obtaining the needed information at a single point in time—was used. By describing the current frequency of alcohol, tobacco, marijuana and stimulant use among female graduates, the researcher was able to collect detailed factual information, identify problems and current conditions, make comparisons and evaluations, and suggest future implications (Huxley, 1995).

Research Design

To adhere to important statistical considerations, it was imperative that the researcher be able to dichotomize the concept of variables (Howell, 1997). The independent variables (variables manipulated by the experimenter), were race/ethnicity; demographic factors including age, marital status, living arrangements, and employment status; and consequences experienced by frequency use of alcohol, tobacco, marijuana and amphetamines. The four dependent variables, namely what was to be measured in

this study, were frequency of alcohol use, frequency of tobacco use, frequency of marijuana use, and frequency of amphetamine use.

Selection of Participants

The sample consisted of 266 master's level female graduate students, 51.1% ($n=136$) African Americans and 48.9% ($n=130$) Caucasians, enrolled in Counselor Education, Psychology, and Social Work programs, which provided the researcher with a moderate effect restricting sampling error (Isaac & Michael, 1995). Universities were chosen based on location and convenience. Thus, for the purpose of this study, eight universities located in the southeastern region of the U.S. were included. Four of the eight universities included were, Predominantly White Institutions (PWI) and four were Historically Black Colleges and Institutions (HBCU). Approximately 85% of the Caucasian participants included in this study attended PWI and 80% of the African American participants included in this study attended an HBCU.

Demographic Data

When choosing specific items to be included in the Core Alcohol and Drug Survey (CADS), items were constructed to account for important demographic information. For the purpose of this study, only those relevant demographic variables were included, while other less pertinent demographic items were excluded. Thus, the variables selected for this study were age, race, major, marital and employment status, and living arrangements. It should be pointed out that although the variable *major* is the only variable not included on the CADS, it was used in this study. This variable included Counseling Education, Psychology and Social Work. All adjustments to the demographic items were based upon research questions specific to this study.

Instrumentation

The selection of a reliable and valid instrument is a crucial decision in conducting sound both qualitative and quantitative research. Inadequate measures can lead to findings that are not replicable or interpretable, and therefore of little use to researchers and clinicians. Substance abuse research has many reliable and valid instruments that are used throughout the literature. As noted earlier, for the purpose of this study, the Core Alcohol and Drug Survey was employed after slightly altering it to include only those questions that were of particular interest to the researcher.

Core Alcohol and Drug Survey

The Core Alcohol and Drug Survey (CADS) was developed by the Core Institute Student Health Program at Southern Illinois University and funded by the United States Department of Education. The Fund for the Improvement of Postsecondary Education (FIPSE) Core Institute Advisory Group was formed in 1988 to develop an evaluation instrument that would assist universities in examining the nature, scope, and consequences of alcohol and drug use on college campuses (Core Institute, 1998). The survey was originally developed in 1990 and revised in 1994 (Presley, Meilman & Lysterla, 1994). The first iteration, also referred to as the *short version*, included information concerning perceptions of campus norms, quantity and frequency of alcohol and drug use, and personal characteristics of the students (Madison-Colmore, in press). The expanded form, also referred to as the *long version*, included content from the short form but also focused on campus violence, perceptions of the campus, sexuality, institutional climate and extracurricular activities (Madison-Colmore, in press). Both versions of the survey were developed using APA standards for test development to

insure reliability and validity (Core Institute, 1998). Again, for the purpose of this study, only those questions related to the research theme were included. It is important to note that the researcher included two additional questions not found on the original survey. These questions were intended to generate explanations for a participant's rationale in choosing to consume alcohol and other substances, as well as to attempt to explain her motivation in avoiding these substances.

Content Validity

The meaningfulness and usefulness of items included on a survey is critical. In other words, it is vital that any given instrument accurately measure whatever it is designed to measure. After scrutinizing the existing literature pertaining to appropriate research instruments, types of alcohol and other drug use, and the many consequences of using these substances, the researcher and her committee agreed upon the content (types of alcohol and drugs to be included on the survey), selected the appropriate sample, and designed the survey and evaluation protocol. The content-related validity of the CADS was established and then reviewed by a panel of professionals with an inter-rater agreement of .90 (Core Institute, 1998). The panel also identified and rated the content, selected the content sample and specified the item format and scoring system (p. 60).

Construct Validity

Construct validity is extremely important when selecting an assessment instrument for data collection. Construct validity is the extent to which inferences from a test's scores accurately reflect the construct that the test is intending to measure (Gall, Borg & Gall, 1996). For this study, construct validity was determined through intercorrelations among items supporting the measurement construct, which were the

highest for alcohol, marijuana, and hallucinogens (.49, .51, .51, respectively) (Core Institute, 1998).

Test-Retest Reliability

Test-retest reliability is used to estimate test score reliability. In essence, a test-retest coefficient is a statistical measure that is obtained by administering the same test twice (with a certain amount of time between administrations), and then correlating the two score sets (Gall, Borg & Gall, 1996, p. 256). The Core Alcohol and Drug Survey's Pearson product-moment correlation coefficient was significant, ranging from .61 to 1.0 (Core Institute, 1998). The Cronbach alpha and item-to-item correlations were performed on items 16 – 18 and 20 and met the inclusion criteria in almost all cases (.3 to .7) (Lanier, Nicholson & Duncan, 2001, p. 243).

Factor Analysis

This statistical procedure combines variables that are moderately or highly correlated with each other (Gall, Borg, Gall, 1996). Factor analysis was conducted on the Core Alcohol and Drug Survey using a minimum eigenvalue of 1.0 and a three-factor structure, which accounted for 67% of the total variance. The three factors that emerged were (a) consequences of alcohol and drug use, (b) students' perceptions of other students' use of drugs on campus and age of first use, and (c) the inverse relation to binge drinking and age of first-use.

Data Collection Procedure

Conducting the Studies

A pilot study was conducted in order to develop and assess data-collection methods and other procedures (Gall, Borg & Gall, 1996). The resulting information

alerted the researcher whether or not to revise the instrument for the larger study. Fifteen to twenty students were included in the pilot study.

Included in this study were 266 master's level female graduate students enrolled in Counseling Education, Psychology, and Social Work at universities located in the southeastern region of the U.S. completed the modified CADS. The researcher administered surveys in the classrooms of eight universities and followed all guidelines of the university's Institutional Review Board and ethical procedures to ensure that replication would be possible. Each participant was administered an informed consent sheet, and all participants were made aware of procedures, risks, benefits, anonymity, and freedom to withdraw without penalty. Those participants who chose not to complete the survey remained quietly in the room for approximately 20 minutes to maintain confidentiality. To ensure anonymity, all participants were identified by a code. Once the data was collected, it was stored in a locked file cabinet to which only the researcher had access.

As note earlier, the study examines racial/ethnic differences, particularly between African American and Caucasian female graduate students, and the frequency use of alcohol, tobacco, marijuana and stimulants. Thus, only those surveys completed by students who met the criteria of the study, namely African American and Caucasian female graduate students in Counseling Education, Psychology, and Social Work programs, were analyzed. All others were discarded.

Analysis

A cross sectional survey was distributed among Caucasian and African American female graduate students in specific majors. Because the researcher was interested in

determining group differences on one dependent variable, an *analysis of variance* (ANOVA) was utilized. The analysis of variance (ANOVA) examined the relationship between age and prior year alcohol, tobacco, marijuana and stimulant use. When homogeneity was not violated, a post-hoc Tukey HSD specified which groups differed. However, when homogeneity was violated, the *F* was not interpreted and the Games-Howell indicated which groups differed.

A *multivariate analysis of variance* (MANOVA) is a statistical technique for determining whether groups differ on a linear combination of dependent variables (Gall, Borg & Gall, 1996). The MANOVA examined group differences regarding substance use as defined by tobacco, marijuana and amphetamine use. For the purpose of this study, the researcher was interested in determining alcohol use *separately* from the other substances. The quantitative data were analyzed using the statistical program SPSS 12.0 for Windows. Descriptive statistics on demographic variables provided a sample profile.

As noted previously, the researcher included two additional questions, which were analyzed using multiple methods. Descriptives and frequencies were evaluated. Additionally, these questions were analyzed for emerging themes or concepts.

Methodological Assumptions

The first basic assumption underlying the analysis of variance (ANOVA) to be investigated was homogeneity of variance. This is the assumption that every population has the same variance (Howell, 1997). The second assumption underlying the analysis of variance is normality (Howell). An ANOVA is a very robust statistical procedure, and the assumptions frequently can be violated with relatively minor effects (p. 321) especially when ns are equal or range 1-1.5 ratio.

One basic assumption underlying the multivariate analysis of variance (MANOVA) is the equality of group dispersions (Gall, Borg & Gall, 1996). If an insignificant F is obtained, the assumption has been met. However, a more common test to determine equality of group dispersion is the Wilk's lambda test (Gall, Borg & Gall, 1996). In multivariate analysis, the Wilk's λ tests the main effects and interactions in a linear combination of dependent variables (Tabachnick & Fidell, 1996). This test yields an F value, which can be looked up in an F ratio table to determine its level of significance (p. 396). However, groups are not always equal and do differ in significant ways. In these instances, there are more appropriate tests (i.e. Pillai's Trace) to test for the difference between variances, such as testing for homogeneity of independent variances, testing for homogeneity of related variance, and conducting the F maximum test for homogeneity of variance (Gall, Borg & Gall, 1996).

Summary

This chapter assessed the methodology for the proposed study. The quantifiable research questions were stated, and a description of the research and research design was addressed. The selection of participants was discussed, along with target population, demographic data and instrumentation. The history of the Core Alcohol and Drug Survey was addressed and the instrument's validity and reliability was evaluated. The analysis section discussed using an ANOVA to determine group differences and frequency use of alcohol, while a MANOVA was used to determine group differences on the frequency use of tobacco, marijuana and amphetamines. Lastly, methodological assumptions of each statistical analysis were evaluated.

CHAPTER FOUR

RESULTS

The results of the data analysis are presented in this chapter in three sections. Section One provides a description of the sample in terms of demographic data. Section Two examines the survey description along with research questions, while Section Three looks at the rationales reported by the participants. This chapter concludes with a brief summary.

The original rendering of the Core Alcohol and Drug Survey (CADS) included the following demographic information: gender, ethnic origin, marital status, employment, living arrangements and student enrollment. For the purpose of this study, however, data on major was also collected.

Demographic Data Information

Ethnicity

Participants in the study were Caucasian American (n=130) and African American (n=136).

Marital Status

Participants' marital status was originally coded as single, committed relationship/not married, married, separated, divorced, and widowed. Due to low response rates, the investigator collapsed the separated, divorced, and widowed categories into the single category, *spouse absent*. Final frequencies indicated 38.7% (n=103) were single, 18.8% (n=50) were in committed relationships but not married, 28.2% (n=75) were married, 13.5% (n=36) were identified as spouse absent and .8% (n=2) chose not to answer.

Age

Age was coded 1, 2, 3 and 4 for the ages 21-24, 25-29, 30-34, and 35 and above, respectively. Frequencies indicated 17.3% (n=46) were 21-24, 39.5% (n=105) were 25-29, 20.7% (n=55) were 30-34 and 22.6% (n=60) were 35 and above.

Major

Initially, major included Counselor Education (n=164), Psychology (n=63), and Social Work (n=39). Due to lower responses for the variable Psychology and Social Work, the investigator collapsed the two variables into *Other Mental Health Programs* to lessen error. Final frequencies indicated 61.7% (n=164) Counselor Education majors and 38.3% Other Mental Health Programs (n=102).

Living Arrangements

Living arrangements consisted of two parts. The first part included the variables of house/apartment (n=247), residence hall (n=9), approved housing (n=3) and other (n=7). Because a majority of the respondents (92.9%) identified their residence as a house or apartment, the investigator decided not to include Part One in the analysis.

The second part of the *living arrangements* section asked respondents to identify with whom they lived. Their summative replies concerning habitation arrangements were as follows: roommates (53 out of 266), alone (51 out of 266), parents (41 out of 266), spouse (81 out of 266), children (83 out of 266) and other (46 out of 266).

Survey Response

As previously described, 312 graduate students from 8 universities located southeastern region of the United States completed a modified version of the CADS. The investigator analyzed Caucasian American and African American Master's level female

graduate students (n=266) majoring in Counselor Education, Psychology, and Social Work. The data were analyzed according to the following research questions.

1. What is the current frequency of substance use (e. g., alcohol, tobacco, marijuana, and stimulant) among female graduate students in Counselor Education, Psychology, and Social Work, and are there racial/ethnic differences?
2. To what extent is there a relationship between age, major, employment, marital status and living arrangements and alcohol, tobacco, marijuana and stimulant use among female graduate students in Counselor Education, Psychology, and Social Work?
3. Do female graduate students in Counselor Education, Psychology, and Social Work experience similar consequences as the literature reports for undergraduate females as a result of alcohol, tobacco, marijuana and stimulant use?

Research Question One: Frequency of Substance Use

Again, the first area of inquiry targeted the frequency of substance use (e. g., alcohol, tobacco, marijuana, and stimulant) among female graduate students in Counselor Education, Psychology, and Social Work, as well as examining any possible racial and ethnic differences in substance use patterns.

Prior-Year Substance Use

To determine the current frequency of substance use among female graduate students in Counselor Education, Psychology and Social Work, the researcher examined descriptive statistics of both previous-year and previous-month usage rates of alcohol,

tobacco, marijuana and stimulants separately. For previous-year substance use, participants were asked to select a response from among the following nine possible answers, which the researcher had previously coded (noted parenthetically): *did not use* (1), *once a year* (2), *six times a year* (3), *once a month* (4), *twice a month* (5), *once a week* (6), *three times a week* (7), *five times a week* (8), and *everyday* (9). The following results are depicted in Table 1.

Prior-year tobacco use frequency was reported as follows: 65% (n=173) indicated never using, 3.4% (n=9) used once a year, 2.3% (n=6) used six times a year, 1.1% (n=3) used once a month, 1.1% (n=3) used twice a month, 1.9% (n=5) used once a week, 2.6% (n=7) used three times a week, 1.5% (n=4) used five times a week and 21.1% (n=56) used tobacco everyday.

Prior-year alcohol frequency use indicated 19.5% (n=52) did not use, 5.6% (n=15) used once a year, 13.9% (n=37) used six times a year, 9.8% (n=26) used once a month, 13.9% (n=37) used twice a month, 19.2% (n=51) used once a week, 13.2% (n=35) used three times a week, 3.8% (n=10) used five times a week, and 1.1% (n=3) used alcohol everyday.

Prior-year marijuana frequency use indicated 75.6% (n=201) did not use, 9.8% (n=26) used once a year, 3.8% (n=10) used six times a year, 4.9% (n=13) used once a month, 1.9% (n=5) used twice a month, 1.5% (n=4) used once a week, 1.1% (n=3) used three times a week, 0.4% (n=1) used five times a week, and 1.1% (n=3) used marijuana everyday.

Prior-year stimulant frequency use indicated 48.5% (n=129) did not use, 1.9% (n=5) used once a year, 1.5% (n=4) used six times a year, 0.8% (n=2) used once a month,

0.8% (n=2) used twice a month, 4.1% (n=11) used once a week, 5.3% (n=14) used three times a week, 8.3% (n=22) used five times a week, and 28.9% (n=77) used stimulants everyday.

Prior Month Substance Use

With respect to prior month substance use, participants were asked to select a response from among the following seven possible answers, which the researcher had previously coded (noted parenthetically): *0 days* (1), *1-2 days* (2), *3-5 days* (3), *6-9 days* (4), *10-19 days* (5), *20-29 days* (6), and *everyday* (7). The ensuing results are represented in Table 2.

Prior month tobacco frequency use indicated 70.3% (n=187) never used, 1.5% (n=4) used 1-2 days, 1.5% (n=4) used 3-5 days, 2.3% (n=6) used 6-9 days, 2.6% (n=7) used 10-19 days, 1.1% (n=3) used 20-29 days, and 20.7% (n=55) used tobacco everyday.

Prior month alcohol frequency use indicated 30.8% (n=82) never used, 22.2% (n=59) used 1-2 days, 20.3% (n=54) used 3-5 days, 10.9% (n=29) used 6-9 days, 11.7% (n=31) used 10-19 days, 3.0% (n=8) used 20-29 days, and 1.1% (n=3) used alcohol everyday.

Prior month marijuana frequency use indicated 87.6% (n=233) never used, 5.3% (n=14) used 1-2 days, 4.9% (n=13) used 3-5 days, 0.8% (n=2) used 6-9 days, 0.8% (n=2) used 10-19 days, 0.4% (n=1) used 20-29 days, and 0.4% (n=1) used marijuana everyday.

Prior month stimulant frequency use indicated 51.5% (n=137) never used, 4.5% (n=12) used 1-2 days, 3.4% (n=9) used 3-5 days, 3.4% (n=9) used 6-9 days, 5.6% (n=15) used 10-19 days, 4.1% (n=11) used 20-29 days, and 27.5% (n=73) used stimulants everyday.

With respect to last year substance use, majority of participants did not use tobacco and marijuana. Approximately half used stimulants and nearly 80% reported alcohol use. With respect to past month substance use, majority of participants reported never using tobacco and marijuana. On the other hand, nearly 50% indicated using stimulants and approximately 70% reported alcohol use.

Table 1
Prior Year Substance Use

Frequency	Tobacco	Alcohol	Marijuana	Stimulants*
Did not use	65.0% (n=173)	19.5% (n=52)	75.6% (n=201)	48.5% (n=129)
1x year	3.4% (n=9)	5.6% (n=15)	9.8% (n=26)	1.9% (n=5)
6x year	2.3% (n=6)	13.9% (n=37)	3.8% (n=10)	1.5% (n=4)
1x month	1.1% (n=3)	9.8% (n=26)	4.9% (n=13)	0.8% (n=2)
2x month	1.1% (n=3)	13.9% (n=37)	1.9% (n=5)	0.8% (n=2)
1x week	1.9% (n=5)	19.2% (n=51)	1.5% (n=4)	4.1% (n=11)
3x week	2.6% (n=7)	13.2% (n=35)	1.1% (n=3)	5.3% (n=14)
5x week	1.5% (n=4)	3.8% (n=10)	0.4% (n=1)	8.3% (n=22)
Everyday	21.1% (n=56)	1.1% (n=3)	1.1% (n=3)	28.9% (n=77)

Note. Stimulants include diet pills, speed, and caffeine. Code 1 = did not use, code 2 = once a year, code 3 = 6 times a year, code 4 = once a month, code 5 = twice a month, code 6 = once a week, code 7 = 3 times a week, code 8 = 5 times a week and code 9 = everyday.

Table 2

Prior Month Substance Use

Frequency	Tobacco	Alcohol	Marijuana	Stimulants*
0 days	70.3%	30.8%	87.6%	51.5%
	(n=187)	(n=82)	(n=233)	(n=137)
1-2 days	1.5%	22.2%	5.3%	4.5%
	(n=4)	(n=59)	(n=14)	(n=12)
3-5 days	1.5%	20.3%	4.9%	3.4%
	(n=4)	(n=54)	(n=13)	(n=9)
6-9 days	2.3%	10.9%	0.8%	3.4%
	(n=6)	(n=29)	(n=2)	(n=9)
10-19 days	2.6%	11.7%	0.8%	5.6%
	(n=7)	(n=31)	(n=2)	(n=15)
20-29 days	1.1%	3.0%	0.4%	4.1%
	(n=3)	(n=8)	(n=1)	(n=11)
Every Day	20.7%	1.1%	0.4%	27.5%
	(n=55)	(n=3)	(n=1)	(n=73)

Note. Stimulants include diet pills, speed, and caffeine. Code 1 = 0 days, code 2 = 1-2 days, code 3 = 3-5 days, code 4 = 6-9 days, code 5 = 10-19 days, code 6 = 20-29 days and code 7 = 30 days.

Alcohol Binge

As shown in Appendix A, Question 8 stated, “Think back over the last two weeks. How many times have you had four or more drinks at a sitting?” The responses were coded as follows: 1 = none, 2 = once, 3 = twice, 4 = three to five times and 5 = six to nine times. As indicated in Table 3, 66.2% (n=176) indicated never, 17.7% (n=47) indicated once, 11.3% (n=30) indicated twice, 4.5% (n=12) indicated 3-5 times and 0.4% (n=1) indicated 6-9 times.

Table 3

Alcohol Binge

Frequency	Number	Percentage	Cumulative Percentage
None	n=176	66.2%	66.2%
Once	n=47	17.7%	83.8%
Twice	n=30	11.3%	95.1%
3-5 times	n=12	4.5%	99.6%
6-9 times	n=1	0.4%	100.0%

Research Question Two

To examine relationships between race/ethnicity, age, major, employment, marital status and living arrangements and substance use among female graduate students Counselor Education, Psychology, and Social Work, a multivariate analyses (MANOVA) were run on the data to assess whether the means of the dependant variables were significantly different. Variables (i.e., age, marital status) with two or more levels required multiple comparison post-hoc tests to determine exactly where the differences existed. Research Question Two will guide the following sections.

Ethnicity

As the data revealed, there were indeed racial differences between Caucasian and African American participants with regard to prior-year substance use. As shown in Table 4, prior-year tobacco frequency usage data indicated that 46.9% (n=61) Caucasians never used, 0.8% (n=1) used once a year, 3.1% (n=4) used six times a year, 1.5% (n=2) used once a month, 0.8% (n=1) used twice a month, 3.1% (n=4) used once a week, 4.6% (n=6) used three times a week, 1.5% (n=2) used five times a week, and 37.7% (n=49) used tobacco everyday. On the other hand, 82.4% (n=112) of African Americans indicated never using tobacco, while 5.9% (n=8) used once a year, 1.5% (n=2) used six times a year, 0.7% (n=1) used once a month, 1.5% (n=2) used twice a month, 0.7% (n=1) used once a week, 0.7% (n=1) used three times a week, 1.5% (n=2) used five times a week, and 5.1% (n=7) used tobacco everyday.

As shown in Table 5, prior year alcohol frequency use among Caucasians indicated 10.0% (n=13) did not use, 3.8% (n=5) used once a year, 6.9% (n=9) used six times a year, 9.2% (n=12) used once a month, 17.7% (n=23) used twice a month, 23.8%

(n=31) used once a week, 19.2% (n=25) used three times a week, 6.9% (n=9) used five times a week, and 2.3% (n=3) used alcohol everyday. On the other hand, 28.7% (n=39) of African Americans indicated never using alcohol within the reporting year, 7.4% (n=10) used once a year, 20.6% (n=28) used six times a year, 10.3% (n=14) used once a month, 10.3% (n=14) used twice a month, 14.7% (n=20) used once a week, 7.4% (n=10) used three times a week, 0.7% (n=1) used five times a week, and 0.0% (n=0) used alcohol every day.

As shown in Table 6, prior year marijuana frequency usage among Caucasians indicated 66.2% (n=86) did not use, 13.8% (n=18) used once a year, 5.4% (n=7) used six times a year, 5.4% (n=7) used once a month, 3.8% (n=5) used twice a month, 3.1% (n=4) used once a week, 1.5% (n=2) used three times a week, 0.0% (n=0) used five times a week, and 0.8% (n=1) used marijuana everyday. On the other hand, 84.6% (n=115) of African Americans indicated never having used marijuana, 5.9% (n=8) used once a year, 2.2% (n=3) used six times a year, 4.4% (n=6) used once a month, 0.0% (n=0) used twice a month, 0.0% (n=0) used once a week, 0.7% (n=1) used three times a week, 0.7% (n=1) used five times a week, and 1.5% (n=2) used marijuana every day within the prior year.

As shown in Table 7, prior year stimulant frequency use among Caucasians indicated that 29.2% (n=38) did not use, 0.0% (n=0) used once a year, 0.8% (n=1) used six times a year, 0.0% (n=0) used once a month, 0.0% (n=0) used twice a month, 4.6% (n=6) used once a week, 8.5% (n=11) used three times a week, 12.3% (n=16) used five times a week, and 44.6% (n=58) used everyday. On the other hand, 66.9% (n=91) of African Americans indicated never having taken stimulants, 3.7% (n=5) used once a year, 2.2% (n=3) used six times a year, 1.5% (n=2) used once a month, 1.5% (n=2) used twice

a month, 3.7% (n=5) used once a week, 2.2% (n=3) used three times a week, 4.4% (n=6) used five times a week, and 14.0% (n=19) used stimulants every day during the prior year.

There were also racial differences between Caucasian and African American with respect to prior month substance use. As shown in Table 8, prior month tobacco usage frequency among Caucasians indicated 50% (n=65) never using, 0.8% (n=1) used 1-2 days, 2.3% (n=3) used 3-5 days, 3.8% (n=5) used 6-9 days, 3.8% (n=5) used 10-19 days, 0.8% (n=1) 20-29 days, and 38.5% (n=50) used tobacco everyday. Among African Americans, however, 89.7% (n=122) never used, 2.2% (n=3) used 1-2 days, 0.7% (n=1) used 3-5 days, 0.7% (n=1) used 6-9 days, 1.5% (n=2) used 10-19 days, 1.5% (n=2) used 20-29 days, and only 3.7% (n=5) used tobacco every day during the prior month.

As shown in Table 9, prior month alcohol frequency use among Caucasians indicated 17.7% (n=23) never used, 20.0% (n=26) used 1-2 days, 23.1% (n=30) used 3-5 days, 12.3% (n=16) used 6-9 days, 19.2% (n=25) used 10-19 days, 5.4% (n=7) 20-29 days, and 2.3% (n=3) used alcohol everyday. Among African Americans, 43.4% (n=59) never used, 24.3% (n=33) used 1-2 days, 17.6% (n=24) used 3-5 days, 9.6% (n=13) used 6-9 days, 4.4% (n=6) used 10-19 days, 0.7% (n=1) used 20-29 days, and 0.0% (n=0) used alcohol every day during the previous month.

As shown in Table 10, prior month marijuana frequency use among Caucasians indicated 83.1% (n=108) never using, 7.7% (n=10) used 1-2 days, 7.7% (n=10) used 3-5 days, 0.0% (n=0) used 6-9 days, 1.5% (n=2) used 10-19 days, 0.0% (n=0) 20-29 days, and 0.0% (n=0) used marijuana everyday. Among African Americans, 91.9% (n=125) never used, 2.9% (n=4) used 1-2 days, 2.2% (n=3) used 3-5 days, 1.5% (n=2) used 6-9

days, 0.0% (n=0) used 10-19 days, 0.7% (n=1) used 20-29 days, and 0.7% (n=1) used marijuana every day during the past month.

As shown in Table 11, prior month stimulant frequency use among Caucasians indicated 31.5% (n=41) never using, 3.8% (n=5) used 1-2 days, 3.1% (n=4) used 3-5 days, 3.8% (n=5) used 6-9 days, 7.7% (n=10) used 10-19 days, 6.2% (n=8) 20-29 days, and 43.9% (n=57) used stimulants every day. Among African Americans, 70.6% (n=96) never used, 5.1% (n=7) used 1-2 days, 3.7% (n=5) used 3-5 days, 2.9% (n=4) used 6-9 days, 3.7% (n=5) used 10-19 days, 2.2% (n=3) used 20-29 days, and 11.8% (n=16) used stimulants every day during the prior month.

Table 4

Ethnicity and Prior Year Tobacco Use

Frequency Use	Caucasians	African Americans
Did not use	46.9%	82.4%
	(n=61)	(n=112)
1x year	0.8%	5.9%
	(n=1)	(n=8)
6x year	3.1%	1.5%
	(n=4)	(n=2)
1x month	1.5%	0.7%
	(n=2)	(n=1)
2x month	0.8%	1.5%
	(n=1)	(n=2)
1x week	3.1%	0.7%
	(n=4)	(n=1)
3x week	4.6%	0.7%
	(n=6)	(n=1)
5x week	1.5%	1.5%
	(n=2)	(n=2)
Every Day	37.7%	5.1%
	(n=49)	(n=7)

Note. Code 1 = did not use, code 2 = once a year, code 3 = 6 times a year, code 4 = once a month, code 5 = twice a month, code 6 = once a week, code 7 = 3 times a week, code 8 = 5 times a week and code 9 = everyday.

Table 5

Ethnicity and Prior Year Alcohol Use

Frequency Use	Caucasians	African Americans
Did not use	10.0%	28.7%
	(n=13)	(n=39)
1x year	3.8%	7.4%
	(n=5)	(n=10)
6x year	6.9%	20.6%
	(n=9)	(n=28)
1x month	9.2%	10.3%
	(n=12)	(n=14)
2x month	17.7%	10.3%
	(n=23)	(n=14)
1x week	23.8%	14.7%
	(n=31)	(n=20)
3x week	19.2%	7.4%
	(n=25)	(n=10)
5x week	6.9%	0.7%
	(n=9)	(n=1)
Every Day	2.3%	0.0%
	(n=3)	(n=0)

Note. Code 1 = did not use, code 2 = once a year, code 3 = 6 times a year, code 4 = once a month, code 5 = twice a month, code 6 = once a week, code 7 = 3 times a week, code 8 = 5 times a week and code 9 = everyday.

Table 6

Ethnicity and Prior Year Marijuana Use

Frequency Use	Caucasians	African Americans
Did not use	66.2% (n=86)	84.6% (n=115)
1x year	13.8% (n=18)	5.9% (n=8)
6x year	5.4% (n=7)	2.2% (n=3)
1x month	5.4% (n=7)	4.4% (n=6)
2x month	3.8% (n=5)	0.0% (n=0)
1x week	3.1% (n=4)	0.0% (n=0)
3x week	1.5% (n=2)	0.7% (n=1)
5x week	0.0% (n=0)	0.7% (n=1)
Every Day	0.8% (n=1)	1.5% (n=2)

Note Code 1 = did not use, code 2 = once a year, code 3 = 6 times a year, code 4 = once a month, code 5 = twice a month, code 6 = once a week, code 7 = 3 times a week, code 8 = 5 times a week and code 9 = everyday.

Table 7

Ethnicity and Prior Year Stimulant Use

Frequency Use	Caucasians	African Americans
Did not use	29.2% (n=38)	66.9% (n=91)
1x year	0.0% (n=0)	3.7% (n=5)
6x year	0.8% (n=1)	2.2% (n=3)
1x month	0.0% (n=0)	1.5% (n=2)
2x month	0.0% (n=0)	1.5% (n=2)
1x week	4.6% (n=6)	3.7% (n=5)
3x week	8.5% (n=11)	2.2% (n=3)
5x week	12.3% (n=16)	4.4% (n=6)
Every Day	44.6% (n=58)	14% (n=19)

Notes. Stimulants include diet pills, caffeine and speed. Code 1 = did not use, code 2 = once a year, code 3 = 6 times a year, code 4 = once a month, code 5 = twice a month, code 6 = once a week, code 7 = 3 times a week, code 8 = 5 times a week and code 9 = everyday.

Table 8

Ethnicity and Prior Month Tobacco Use

Frequency Use	Caucasians	African Americans
0 days (did not use)	50% (n=65)	89.7% (n=122)
1-2 days	0.8% (n=1)	2.2% (n=3)
3-5 days	2.3% (n=3)	0.7% (n=1)
6-9 days	3.8% (n=5)	0.7% (n=1)
10-19 days	3.8% (n=5)	1.5% (n=2)
20-29 days	0.8% (n=1)	1.5% (n=2)
30 days (every day)	38.5% (n=50)	3.7% (n=5)

Note. Code 1 = 0 days, code 2 = 1-2 days, code 3 = 3-5 days, code 4 = 6-9 days, code 5 = 10-19 days, code 6 = 20-29 days and code 7 = 30 days.

Table 9

Ethnicity and Prior Month Alcohol Use

Frequency Use	Caucasians	African Americans
0 days (did not use)	17.7% (n=23)	43.4% (n=59)
1-2 days	20.0% (n=26)	24.3% (n=33)
3-5 days	23.1% (n=30)	17.6% (n=24)
6-9 days	12.3% (n=16)	9.6% (n=13)
10-19 days	19.2% (n=25)	4.4% (n=6)
20-29 days	5.4% (n=7)	0.7% (n=1)
30 days (every day)	2.3% (n=3)	0.0% (n=0)

Note Code 1 = 0 days, code 2 = 1-2 days, code 3 = 3-5 days, code 4 = 6-9 days, code 5 = 10-19 days, code 6 = 20-29 days and code 7 = 30 days.

Table 10

Ethnicity and Prior Month Marijuana Use

Frequency Use	Caucasians	African Americans
0 days (did not use)	83.1%	91.9%
	(n=108)	(n=125)
1-2 days	7.7%	2.9%
	(n=10)	(n=4)
3-5 days	7.7%	2.2%
	(n=10)	(n=3)
6-9 days	0.0%	1.5%
	(n=0)	(n=2)
10-19 days	1.5%	0.0%
	(n=2)	(n=0)
20-29 days	0.0%	0.7%
	(n=0)	(n=1)
30 days (every day)	0.0%	0.7%
	(n=0)	(n=1)

Notes Code 1 = 0 days, code 2 = 1-2 days, code 3 = 3-5 days, code 4 = 6-9 days, code 5 = 10-19 days, code 6 = 20-29 days and code 7 = 30 days.

Table 11

Ethnicity and Prior Month Stimulant Use

Frequency Use	Caucasians	African Americans
0 days (did not use)	31.5%	70.6%
	(n=41)	(n=96)
1-2 days	3.8%	5.1%
	(n=5)	(n=7)
3-5 days	3.1%	3.7%
	(n=4)	(n=5)
6-9 days	3.8%	2.9%
	(n=5)	(n=4)
10-19 days	7.7%	3.7%
	(n=10)	(n=5)
20-29 days	6.2%	2.2%
	(n=8)	(n=3)
30 days (every day)	43.9%	11.8%
	(n=57)	(n=16)

Note. Stimulants include diet pills, caffeine, speed, etc. Code 1 = 0 days, code 2 = 1-2 days, code 3 = 3-5 days, code 4 = 6-9 days, code 5 = 10-19 days, code 6 = 20-29 days and code 7 = 30 days.

Ethnicity and Prior Year Substance Use

Among the study participants in the year prior to completing the survey, Caucasian Americans used tobacco, alcohol, marijuana and stimulants more frequently than African Americans. To evaluate differences among centroids for a set of dependent variables when there are two or more levels of an independent variable, the investigator employed a multivariate analysis (MANOVA) (Tabachnick & Fidell, 1996). In multivariate analysis, the Wilk's λ tests the main effects and interactions in a linear combination (Tabachnick & Fidell). The Wilk's $\lambda = .71$ is significant, $F(4, 261) = 26.24$, $p < .01$, $\eta^2 = .287$ indicating that 28.7% of the variance can be attributed to race/ethnicity. The Box's test of equality of covariance matrices (test of homogeneity of variance-covariance matrices) was significant, $F = 6.038$, $p < .01$; however when sample sizes are approximately equal, the multivariate statistics tends to be robust (Tabachnick & Fidell).

The Levene's test of homogeneity was significant for last year tobacco ($p < .01$), marijuana ($p < .01$) and stimulants ($p < .05$) use. For those variables, a more conservative F was reported, derived from squaring t , not assuming equal variance (with two variable $F = t^2$). A t test was run and squaring the t for equal variance to report a more conservative F . As indicated in Table 12 with respect to prior year substance use, specific results of the analysis were: prior year tobacco frequency use is significant, $F(1, 264) = 61.66$, $p < .01$, $\eta^2 = .192$; prior year alcohol frequency use is significant, $F(1, 264) = 47.09$, $p < .01$, $\eta^2 = .151$; prior year marijuana frequency use is significant, $F(1, 264) = 5.26$, $p < .05$, $\eta^2 = .020$ and prior year stimulants frequency use is significant, $F(1, 264) = 64.88$, $p < .01$, $\eta^2 = .198$. Means are reported in Table 13.

Ethnicity and Prior Month Substance Use

Among the study participants during the month prior to the survey, Caucasian Americans used tobacco, alcohol and stimulants more frequently than African Americans. To evaluate differences among centroids for a set of dependent variables when there are two or more levels of an independent variable, the investigator employed a multivariate analysis (MANOVA) (Tabachnick & Fidell, 1996). In multivariate analysis, the Wilk's λ tests the main effects and interactions in a linear combination (Tabachnick & Fidell). The Wilk's $\lambda = .71$ is significant, $F(4, 261) = 26.53, p < .01, \eta^2 = .289$ indicating that 28.9% of the variance can be attributed to race/ethnicity. The Box's test of equality of covariance matrices (test of homogeneity of variance-covariance matrices) was significant, $F = 6.038, p < .01$; however when sample sizes are approximately equal, the multivariate statistics tends to be robust (Tabachnick & Fidell).

Levene's test of homogeneity was significant for prior month tobacco ($p < .01$), alcohol ($p < .01$) and stimulants ($p < .01$) frequency use. For those variables, a more conservative F was reported, derived from squaring t , not assuming equal variance (with two variable $F = t^2$). As indicated in Table 12, the prior month substance use specific results of this analysis were: prior month tobacco frequency use is significant, $F(1, 264) = 67.32, p < .01, \eta^2 = .208$; prior month alcohol frequency use is significant, $F(1, 264) = 39.46, p < .01, \eta^2 = .131$ and prior month stimulant frequency use is significant, $F(1, 264) = 59.66, p < .01, \eta^2 = .186$. Prior month marijuana frequency use is not significant, $F(1, 264) = .961, p > .05, \eta^2 = .004$. Means are indicated in Table 14.

Table 12

Univariate for Ethnicity and Substance Use

Frequency Substance Use	<i>df</i>	<i>F</i>	η^2
Prior Year Tobacco	1	61.66**	.192
Prior Year Alcohol	1	47.09**	.151
Prior Year Marijuana	1	5.26*	.020
Prior Year Stimulants	1	64.88**	.198
Prior Month Tobacco	1	67.32**	.208
Prior Month Alcohol	1	39.46**	.131
Prior Month Stimulants	1	59.66**	.186

Notes. Non-significant substances were excluded. Stimulants include diet pills, caffeine and speed. * $p < .05$. ** $p < .01$.

Table 13

Ethnicity and Prior Year Substance Use Among Caucasians and African Americans

Substance	<i>M</i>	<i>SD</i>	<i>n</i>
Tobacco			
Caucasians	4.70**	3.75	130
African Americans	1.76	2.08	136
Alcohol			
Caucasians	5.18**	2.08	130
African Americans	3.43	2.06	136
Marijuana			
Caucasians	1.87*	1.59	130
African Americans	1.45	1.39	136
Stimulants			
Caucasians	6.18**	3.47	130
African Americans	2.93	3.11	136

Note. Non-significant substances were excluded. Stimulants include diet pills, caffeine and speed. Last year substance use was coded 1 = did not use, 2 = once a year, 3 = 6 times a year, 4 = once a month, 5 = twice a month, 6 = once a week, 7 = 3 times a week, 8 = 5 times a week and 9 = everyday. * $p < .05$. ** $p < .01$.

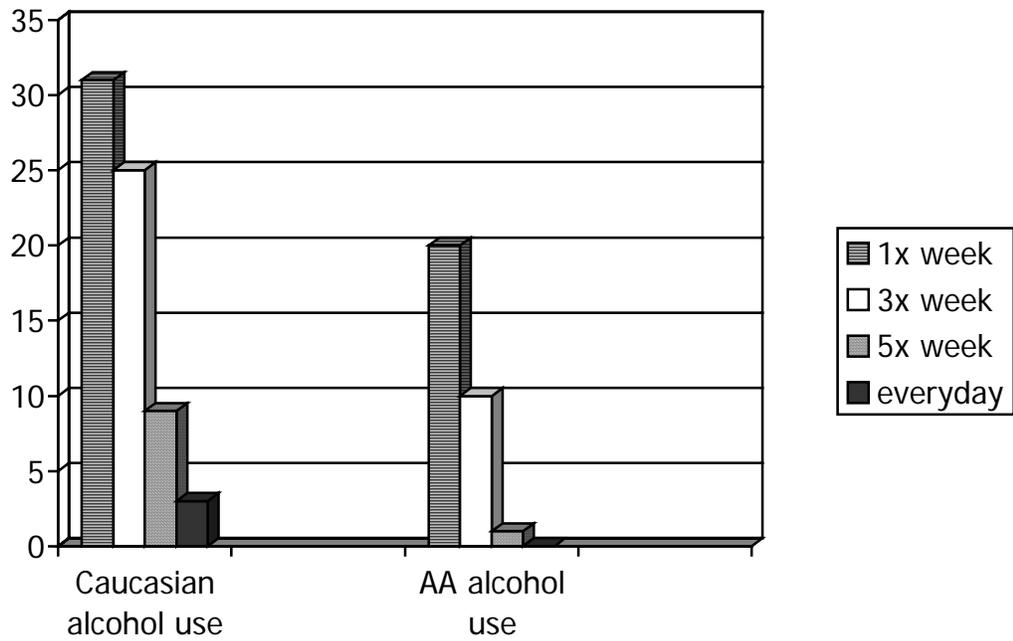
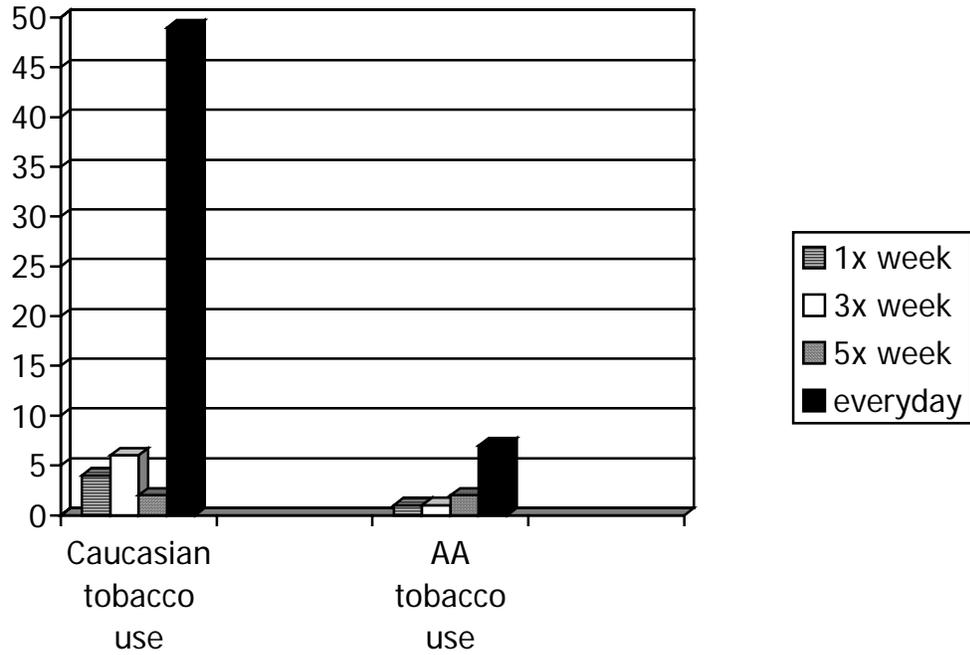
Table 14

Ethnicity and Past Month Substance Use Among Caucasians and African Americans

Substance	<i>M</i>	<i>SD</i>	<i>n</i>
Tobacco			
Caucasians	3.68**	2.85851	130
African Americans	1.41	1.37421	136
Alcohol			
Caucasians	3.21**	1.62202	130
African Americans	2.10	1.22854	136
Stimulants			
Caucasians	4.48**	2.69140	130
African Americans	2.18	2.11829	136

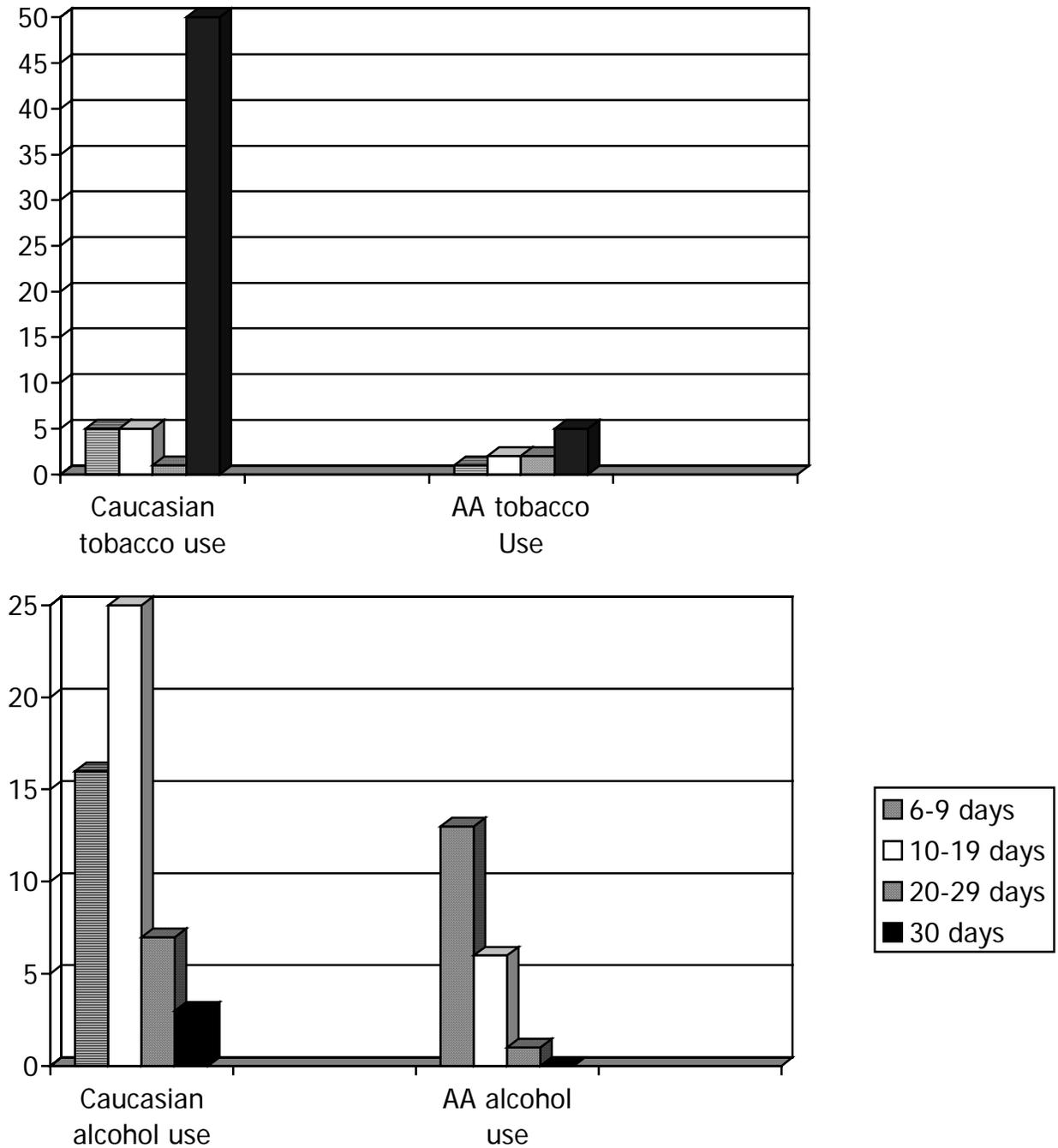
Note. Non-significant substances were excluded. Stimulants include diet pills, caffeine and speed. Past month substance use was coded 1 = 0 days, code 2 = 1-2 days, code 3 = 3-5 days, code 4 = 6-9 days, code 5 = 10-19 days, code 6 = 20-29 days and code 7 = 30 days. * $p < .05$. ** $p < .01$.

Figure 1. Ethnicity and Prior Year Tobacco and Alcohol Use.



Note. Numbers indicating prior year tobacco and alcohol use. AA is the abbreviation of African American.

Figure 2. Ethnicity and Prior Month Tobacco and Alcohol Use.



Note. Numbers indicating prior year tobacco and alcohol use. AA is the abbreviation of African American.

Age

Prior Year Substance Use

There were significance differences in tobacco, alcohol and marijuana frequency use as reported by younger participants versus older participants. Younger participants used more frequently than older participants. The analysis of variance (ANOVA) examined the relationship between age and prior year substance use. When homogeneity was not violated, a post-hoc Tukey HSD specified significance. However, when homogeneity was violated, a post-hoc Games-Howell indicated significance.

Levene's test of homogeneity was significant for tobacco and marijuana ($p < .01$) frequency use. ANOVA results are included in Table 15. Regarding prior year tobacco frequency use, participants aged 21-24 used tobacco more frequently than participants aged 30-34 and 35 and above, $p < .05$. Prior year alcohol frequency use indicated participants aged 21-24 and 25-29 consumed alcohol more frequently than 35 and above, $p < .01$. Prior year marijuana frequency use indicated participants aged 21-24 used marijuana more frequently than ages 30-34 and 35 and above, $p < .01$. Prior year stimulant frequency use was not significant, $p > .05$. Mean results are presented in Table 16.

To evaluate differences among centroids for a set of dependent variables when there are two or more levels of an independent variable, the investigator employed a multivariate analysis (MANOVA) (Tabachnick & Fidell, 1996). In multivariate analysis, the Wilk's λ tests the main effects and interactions in a linear combination (Tabachnick & Fidell). There are unequal ns and the assumption is violated, Pillai's criterion in terms of robustness is the criterion of choice (p. 401). The Pillai's Trace = .17 and is not

significant, $F(12, 783) = 3.86, p < .01, \eta^2 = .056$ indicating that 5.6 % of the variance can be attributed to age. The Box's test of equality of covariance matrices (test of homogeneity of variance-covariance matrices) were significant, $F = 3.10, p < .01$ (Tabachnick & Fidell).

Levene's test of homogeneity was violated for prior year tobacco and marijuana ($p < .01$) frequency use. For those variables, a more conservative F was reported, derived from squaring t , not assuming equal variance (with two variable $F = t^2$). As indicated in Table 15 specific results of this analysis were: prior year tobacco frequency use is significant $F(3, 262) = 3.53, p < .05, \eta^2 = .039$, prior year alcohol frequency use is significant, $F(3, 262) = 9.05, p < .01, \eta^2 = .094$, prior year marijuana frequency use is significant, $F(3, 262) = 7.326, p < .01, \eta^2 = .077$, while prior year stimulant frequency use is not significant, $F(3, 262) = .48, p > .05, \eta^2 = .005$.

Prior Month Substance Use

There were significance differences in tobacco, alcohol and marijuana use as reported by younger participants versus senior participants. Younger participants used more frequently than older participants. As shown in Table 15, the analysis of variance (ANOVA) examined the relationship between age and prior year substance use.

Levene's test of homogeneity was significant for tobacco, alcohol and marijuana ($p < .01$) frequency use. Regarding prior month tobacco frequency use, participants aged 21-24 used tobacco more frequently than 30-34, $p < .05$. Prior month alcohol frequency use indicated participants aged 21-24 used more than ages 30-34 and 35 and above, $p < .01$. Additionally, participants aged 25-29 used alcohol more frequently than 35 and above, $p < .05$. With regard to prior month marijuana frequency use rates, participants

aged 21-24 indicated using more frequently than 30-34 and 35 and above, $p < .05$. Also, participants aged 25-29 used marijuana more frequently than 30-34 within the prior month, $p < .05$. Prior month stimulant frequency use is not significant, $p > .05$. Mean results are presented in Table 17.

To evaluate differences among centroids for a set of dependent variables when there are two or more levels of an independent variable, the investigator employed a multivariate analysis (MANOVA) (Tabachnick & Fidell, 1996). In multivariate analysis, the Wilk's λ tests the main effects and interactions in a linear combination (Tabachnick & Fidell). However, as unequal n 's appear and the assumption is violated, Pillai's criterion in terms of robustness is the criterion of choice (p. 401). The Pillai's Trace = .14 and is not significant, $F(12, 783) = 3.30, p < .01, \eta^2 = .048$ indicating that 4.8% of the variance can be attributed to age. The Box's test of equality of covariance matrices (test of homogeneity of variance-covariance matrices) were significant, $F = 6.63, p < .01$ (Tabachnick & Fidell).

Levene's test of homogeneity was violated for prior month tobacco, alcohol and marijuana ($p < .01$) frequency use. For those variables, a more conservative F was reported, derived from squaring t , not assuming equal variance (with two variable $F = t^2$). As indicated in Table 15 specific results of this analysis were: prior month tobacco frequency use is significant $F(3, 262) = 3.17, p < .05, \eta^2 = .035$, prior year alcohol frequency use is significant, $F(3, 262) = 9.60, p < .01, \eta^2 = .099$, prior year marijuana frequency use is significant, $F(3, 262) = 5.50, p < .01, \eta^2 = .059$, while prior year stimulant frequency use is not significant, $F(3, 262) = .809, p > .05, \eta^2 = .009$.

Table 15

Analysis of Variance for Age and Substance Use

Drug	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Prior Year Tobacco (BG)	115.61	3	38.54	3.53*
Error	2862.83	262	10.93	
Total	2978.44	265		
Prior Year Alcohol (BG)	125.27	3	41.76	9.05**
Error	1209.01	262	4.62	
Total	1334.28	265		
Prior Year Marijuana (BG)	46.29	3	15.43	7.33**
Error	551.89	262	2.11	
Total	598.18	265		
Prior Month Tobacco (BG)	57.84	3	19.28	3.17*
Error	1594.53	262	6.07	
Total	1652.37	265		
Prior Month Alcohol (BG)	61.96	3	20.65	9.61**
Error	563.39	262	2.15	
Total	625.35	265		
Prior Month Marijuana (BG)	9.55	3	3.18	5.50**
Error	151.57	262	.58	
Total	161.12	265		

Note. Non-significant substances were excluded. BG represents between groups. * $p < .05$. ** $p < .01$.

Table 16

Prior Year Substance Use and Age Differences

Substance	<i>M</i>	<i>SD</i>	<i>n</i>
Tobacco			
21-24	4.39	3.74	46
25-29	3.37	3.40	105
30-34	2.47	2.91	55
35 and above	2.65	3.13	60
Alcohol			
21-24	5.00	2.34	46
25-29	4.76	2.11	105
30-34	3.99	2.16	55
35 and above	3.18	2.05	60
Marijuana			
21-24	2.41	1.95	46
25-29	1.76	1.66	105
30-34	1.25	.89	55
35 and above	1.25	.95	60

Note. Non-significant substances were excluded. Last year substance use was coded 1 = did not use, 2 = once a year, 3 = 6 times a year, 4 = once a month, 5 = twice a month, 6 = once a week, 7 = 3 times a week, 8 = 5 times a week and 9 = everyday. * $p < .05$. ** $p < .01$.

Table 17

Prior Substance Use and Age Differences

Substance	<i>M</i>	<i>SD</i>	<i>n</i>
Tobacco			
21-24	3.39	2.88	46
25-29	2.61	2.5	105
30-34	1.98	2.17	55
35 and above	2.20	2.31	60
Alcohol			
21-24	3.35	1.79	46
25-29	2.89	1.48	105
30-34	2.29	1.40	55
35 and above	1.98	1.20	60
Marijuana			
21-24	1.59	1.22	46
25-29	1.30	.84	105
30-34	1.05	.23	55
35 and above	1.07	.36	60

Note. Non-significant substances were excluded. Past month substance use was coded 1 = 0 days, code 2 = 1-2 days, code 3 = 3-5 days, code 4 = 6-9 days, code 5 = 10-19 days, code 6 = 20-29 days and code 7 = 30 days. * $p < .05$. ** $p < .01$.

Major

Prior Year Substance Use

During the reporting year, participant in *other* mental health programs used tobacco, alcohol, marijuana and stimulants more frequently than those in Counselor Education majors. To evaluate differences among centroids for a set of dependent variables when there are two or more levels of an independent variable, the investigator employed a multivariate analysis (MANOVA) (Tabachnick & Fidell, 1996). In multivariate analysis, the Wilk's λ tests the main effects and interactions in a linear combination (Tabachnick & Fidell). The Wilk's $\lambda = .95$ is significant, $F(4, 261) = 26.24$, $p < .05$, $\eta^2 = .053$ indicating that 5.3% of the variance can be attributed to major. The Box's test of equality of covariance matrices (test of homogeneity of variance-covariance matrices) was not significant, $p > .05$ (Tabachnick & Fidell).

Levene's test of homogeneity was significant for prior year tobacco and marijuana ($p < .01$) frequency use. For those variables, a more conservative F was reported, derived from squaring t , not assuming equal variance (with two variable $F = t^2$). As indicated in Table 18 specific results of this analysis were: last year tobacco frequency use is significant, $F(1, 264) = 10.04$, $p < .01$, $\eta^2 = .040$, last year alcohol frequency use is significant, $F(1, 264) = 8.74$, $p < .01$, $\eta^2 = .032$, last year marijuana frequency use is significant, $F(1, 264) = 3.85$, $p < .01$, $\eta^2 = .016$ and last year stimulant frequency use is significant, $F(1, 264) = 7.00$, $p < .01$, $\eta^2 = .026$. Mean results are presented in Table 19.

Prior Month Substance Use

During the prior month, participants in other mental health majors use tobacco and alcohol more frequently than those in Counselor Education majors. Prior month

substance use Wilk's λ and The Box's test of equality of covariance matrices were the same as prior year substance use.

Additionally, Levene's test of homogeneity was significant ($p < .01$) for past month tobacco frequency use. For those variables, a more conservative F was reported, derived from squaring t , not assuming equal variance (with two variable $F = t^2$). As indicated in Table 18, the specific results for this analysis were: prior month tobacco frequency use is significant, $F(1, 264) = 11.02, p < .01, \eta^2 = .044$ and prior month alcohol frequency use is significant, $F(1, 264) = 7.43, p < .01, \eta^2 = .027$. Prior month marijuana frequency use is not significant, $F(1, 264) = 1.311, p > .05, \eta^2 = .005$ and prior month stimulant frequency use is not significant, $F(1, 264) = 1.792, p > .05, \eta^2 = .007$. Mean results are presented in Table 20.

Table 18

Univariate Analysis for Major and Substance Use

Drug	<i>df</i>	\underline{F}	η^2
Prior Year Tobacco	1	10.04**	.040
Prior Year Alcohol	1	8.74**	.032
Prior Year Marijuana	1	3.85**	.016
Prior Year Stimulants	1	7.00**	.026
Prior Month Tobacco	1	11.02**	.044
Prior Month Alcohol	1	7.43**	.027

Notes: Non-significant substances were excluded. Stimulants include diet pills, caffeine and speed. * $p < .05$. ** $p < .01$.

Table 19

Major and Prior Year Substance Use

Substance	<i>M</i>	<i>SD</i>	<i>n</i>
Tobacco			
Counseling Education	2.67**	3.01	164
Other	4.05	3.70	102
Alcohol			
Counseling Education	3.97**	2.25	164
Other	4.79	2.15	102
Marijuana			
Counseling Education	1.51*	1.38	164
Other	1.90	1.66	102
Stimulants			
Counseling Education	4.05**	3.67	164
Other	5.26	3.55	102

Notes. Non-significant variables were not included. Stimulants include diet pills, caffeine and speed. Last year substance use was coded 1 = did not use, 2 = once a year, 3 = 6 times a year, 4 = once a month, 5 = twice a month, 6 = once a week, 7 = 3 times a week, 8 = 5 times a week and 9 = everyday. * $p < .05$. ** $p < .01$.

Table 20

Major and Prior Month Substance Use

Substance	<i>M</i>	<i>SD</i>	<i>n</i>
Tobacco			
Counseling Education	2.11**	2.22	164
Other	3.19	2.77	102
Alcohol			
Counseling Education	2.44**	1.50	164
Other	2.96	1.55	102

Notes. Non-significant variables were not included. Past month substance use was coded 1 = 0 days, code 2 = 1-2 days, code 3 = 3-5 days, code 4 = 6-9 days, code 5 = 10-19 days, code 6 = 20-29 days and code 7 = 30 days. * $p < .05$. ** $p < .01$.

Employment

Prior Year Substance Use

There was a significant difference in frequency of alcohol use as reported by part-time employed participants versus full-time participants. Part-time workers used alcohol more frequently than full-time workers in this study. To evaluate differences among centroids for a set of dependent variables when there are two or more levels of an independent variable, the investigator employed a multivariate analysis (MANOVA) (Tabachnick & Fidell, 1996). In multivariate analysis, the Wilk's λ tests the main effects and interactions in a linear combination (Tabachnick & Fidell). The Wilk's $\lambda = .98$ and is not significant, $F(4, 259) = 1.18, p > .05, \eta^2 = .033$. The Box's test of equality of covariance matrices (test of homogeneity of variance-covariance matrices) was not significant, $F = 1.31, p > .05$ (Tabachnick & Fidell).

Levene's test of homogeneity was not violated. As indicated in Table 21, the specific results of this analysis were as follows: prior year alcohol frequency use is significant $F(1, 262) = 4.61, p < .05, \eta^2 = .017$ while prior year tobacco frequency use is not significant, $F(1, 262) = 1.42, p > .05, \eta^2 = .005$, prior year marijuana frequency use is not significant, $F(1, 262) = .41, p > .05, \eta^2 = .002$, and prior year stimulant frequency use is not significant, $F(1, 262) = 1.58, p > .05, \eta^2 = .006$. Mean results are presented in Table 22.

Prior Month Substance Use

There was a significant difference between employment and prior month alcohol use as reported by part-time employed participants versus full-time participants. Part-time participants used alcohol more frequently than full-time participants. To evaluate

differences among centroids for a set of dependent variables when there are two or more levels of an independent variable, the investigator employed a multivariate analysis (MANOVA) (Tabachnick & Fidell, 1996). In multivariate analysis, the Wilk's λ tests the main effects and interactions in a linear combination (Tabachnick & Fidell). However, as unequal n 's appear and the assumption is violated, Pillai's criterion in terms of robustness is the criterion of choice (p. 401). The Pillai's Trace = .02 and is not significant, $F(4, 259) = 1.18, p > .05, \eta^2 = .018$. The Box's test of equality of covariance matrices (test of homogeneity of variance-covariance matrices) were significant, $F = 4.05, p < .01$ (Tabachnick & Fidell).

Levene's test of homogeneity was violated for prior month alcohol use ($p < .05$). For those variables, a more conservative F was reported, derived from squaring t , not assuming equal variance (with two variable $F = t^2$). As indicated in Table 21 specific results of this analysis were: prior month alcohol frequency use is significant $F(1, 262) = 6.71, p < .01, \eta^2 = .025$, while prior month tobacco frequency use is not significant, $F(1, 262) = .71, p > .05, \eta^2 = .003$, prior month marijuana frequency use is not significant, $F(1, 262) = .28, p > .05, \eta^2 = .001$ and prior month stimulant frequency use is not significant, $F(1, 262) = 1.72, p > .05, \eta^2 = .007$. Mean results are presented in Table 22.

Table 21

Univariate Analysis for Employment and Substance Use

Drug	df	F	η^2
Prior Year Alcohol	1	4.61*	.017
Prior Month Alcohol	1	6.71**	6.71**

Notes: Non-significant substances were excluded. * $p < .05$. ** $p < .01$.

Table 22

Employment and Substance Use

Substance	<i>M</i>	<i>SD</i>	<i>n</i>
Prior Year Alcohol			
Full-Time	4.1067*	2.15890	178
Part-Time	4.7326	2.33855	86
Prior Month Alcohol			
Full-Time	2.4831**	1.41511	178
Part-Time	3.0000	1.71499	86

Notes. Non-significant substances were excluded. * $p < .05$. ** $p < .01$. Last year substance use was coded 1 = did not use, 2 = once a year, 3 = 6 times a year, 4 = once a month, 5 = twice a month, 6 = once a week, 7 = 3 times a week, 8 = 5 times a week and 9 = everyday. Past month substance use was coded 1 = 0 days, code 2 = 1-2 days, code 3 = 3-5 days, code 4 = 6-9 days, code 5 = 10-19 days, code 6 = 20-29 days and code 7 = 30 days.

Marital Status

Prior Year Substance Use

There were significance differences in tobacco, alcohol, marijuana and stimulant frequency use when considering marital status. The analysis of variance (ANOVA) examined the relationship between marital status and prior year substance use. When homogeneity was not violated, a post-hoc Tukey HSD specified significance. However, when homogeneity was violated, a post-hoc Games-Howell indicated significance. As indicated in Table 23, prior year alcohol frequency use indicated participants in committed relationships, but not married, used alcohol more frequently when compared to single and spouse absent participants ($p < .05$), as well as married participants ($p < .01$). Prior year marijuana frequency use indicated participants in committed relationships, but not married, used marijuana more frequently than married and spouse absent participants ($p < .01$). Singles used marijuana more frequently than did married individuals ($p < .01$) and spouse absent ($p < .05$). Prior year frequency use of tobacco was not significant ($p > .05$) nor was last year stimulant use ($p > .05$). Mean results are presented in Table 24.

Prior Month Substance Use

There were significance differences in tobacco, alcohol, marijuana and stimulant and marital status. The analysis of variance (ANOVA) examined the relationship between marital status and prior year substance use. When homogeneity was not violated, a post-hoc Tukey HSD specified significance. However, when homogeneity was violated, a post-hoc Games-Howell indicated significance. Levene's test of homogeneity was significant for marijuana; therefore, variance was not assumed. As indicated in Table 23,

the specific results of this analysis are as follows. With regard to prior month alcohol frequency use, participants in committed relationships, but not married, drank more frequently than married and spouse absent participants ($p < .05$). Prior month marijuana frequency use indicated singles used more frequently than married individuals ($p < .01$) and spouse absent participants ($p < .05$). Participants in committed relationships, but not married, used marijuana more frequently than spouse absent participants ($p < .05$). Prior month frequency use of tobacco was not significant ($p > .05$), and prior month stimulant was not significant, $p > .05$. Mean results are presented in Table 24.

Table 23

Analysis of Variance for Marital Status and Substance Use

Drug	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>
Prior Year Alcohol (BG)	62.58	3	20.86	4.34**
Error	1249.95	260	11.06	
Total	1312.53	263		
Prior Year Marijuana (BG)	53.87	3	17.96	8.59**
Error	543.45	262	2.09	
Total	597.32	265		
Prior Month Alcohol (BG)	32.97	3	10.99	4.87**
Error	586.97	260	2.26	
Total	619.94	263		
Prior Month Marijuana (BG)	7.93	3	2.64	4.48**
Error	153.07	260	.58	
Total	161.00	263		

Note. Non-significant substances were excluded. (BG) signifies between groups. * $p <$

.05. ** $p <$.01.

Table 24

Marital Status and Substance Use

Substance	<i>M</i>	<i>SD</i>	<i>n</i>
Prior Year Alcohol			
Single	4.18	2.28	103
Committed	5.30	1.84	50
Married	3.99	2.89	75
Spouse Absent	3.97	2.16	36
Prior Year Marijuana			
Single	1.85	1.77	103
Committed	2.34	2.00	50
Married	1.13	.47	75
Spouse Absent	1.25	.60	836
Prior Month Alcohol			
Single	2.66	1.60	103
Committed	3.32	1.45	50
Married	2.35	1.44	75
Spouse Absent	2.33	1.41	36
Prior Month Marijuana			
Single	1.37	.99	103
Committed	1.44	.99	50
Married	1.04	.20	75
Spouse Absent	1.06	.23	36

Notes. Non-significant substances were excluded. Last year substance use was coded 1 = did not use, 2 = once a year, 3 = 6 times a year, 4 = once a month, 5 = twice a month, 6 = once a week, 7 = 3 times a week, 8 = 5 times a week and 9 = everyday. Past month substance use was coded 1 = 0 days, code 2 = 1-2 days, code 3 = 3-5 days, code 4 = 6-9 days, code 5 = 10-19 days, code 6 = 20-29 days and code 7 = 30 days.

Alone

Prior Year Substance Use

Fifty-one (n=51) participants responded *yes* to living alone. Participants responding *no* to living alone used stimulants more frequently during the prior year than participants living alone. To evaluate differences among centroids for a set of dependent variables when there are two or more levels of an independent variable, the investigator employed a multivariate analysis (MANOVA) (Tabachnick & Fidell, 1996). In multivariate analysis, Wilk's λ tests the main effects and interactions in a linear combination (Tabachnick & Fidell). The Wilk's $\lambda = .96$ and is significant, $F(4, 261) = 2.91, p < .05, \eta^2 = .043$ indicating that 4.3% of the variance can be attributed to living alone. The Box's test of equality of covariance matrices (test of homogeneity of variance-covariance matrices) was not significant, $p > .05$ (Tabachnick & Fidell).

Levene's test of homogeneity was significant for prior year tobacco and stimulant ($p < .01$) frequency use. For those variables, a more conservative F was reported, derived from squaring t , not assuming equal variance (with two variable $F = t^2$). As indicated in Table 25, which examines specific results when comparing those living alone with those living with someone else, prior year stimulant frequency use is significant, $F(1, 264) = 9.24, p < .01, \eta^2 = .034$; however, prior year tobacco frequency use is not significant, $F(1, 264) = 1.37, p > .05, \eta^2 = .005$, prior year alcohol frequency use is not significant, $F(1, 264) = .012, p > .05, \eta^2 = .000$ and last year marijuana frequency use is not significant, $F(1, 264) = .581, p > .05, \eta^2 = .034$. Mean results are presented in Table 26.

Prior Month Substance Use

Fifty-one (n=51) participants responded *yes* to living alone. Participants responding *no* to living alone used stimulants more frequently during the prior month than participants living alone. To evaluate differences among centroids for a set of dependent variables when there are two or more levels of an independent variable, the investigator employed a multivariate analysis (MANOVA) (Tabachnick & Fidell, 1996). In multivariate analysis, Wilk's λ tests the main effects and interactions in a linear combination (Tabachnick & Fidell). The Wilk's $\lambda = .97$ and is not significant, $F(4, 261) = 2.91, p > .05, \eta^2 = .043$. The Box's test of equality of covariance matrices (test of homogeneity of variance-covariance matrices) was not significant, $p > .05$ (Tabachnick & Fidell).

Levene's test of homogeneity was significant for prior year tobacco and stimulant ($p < .01$) frequency use. For those variables, a more conservative F was reported, derived from squaring t , not assuming equal variance (with two variable $F = t^2$). As indicated in Table 25, the specific results of this analysis were: past month stimulant frequency use is significant, $F(1, 264) = 8.15, p < .01, \eta^2 = .030$; however, past month tobacco frequency use is not significant, $F(1, 264) = 1.21, p > .05, \eta^2 = .005$, past month alcohol frequency use is not significant, $F(1, 264) = .069, p > .05, \eta^2 = .000$, and past month marijuana frequency use is not significant, $F(1, 264) = .085, p > .05, \eta^2 = .000$. Mean results are presented in Table 26.

Table 25

Univariate Analysis of Living Alone and Substance Use

Drug	<i>df</i>	<i>F</i>	η^2
Prior Year Stimulant	1	9.24**	.034
Prior Month Stimulant	1	8.15**	.030

Note. Non-significant substances were excluded. Stimulants include diet pills, caffeine and speed. * $p < .05$. ** $p < .01$.

Table 26

Living Alone and Substance Use

Substance	<i>M</i>	<i>SD</i>	<i>n</i>
Prior Year Stimulant			
Alone	3.14**	3.24	51
Not Alone	4.85	3.69	215
Prior Month Stimulant			
Alone	2.35**	2.23	51
Not Alone	3.53	2.72	215

Note. Non-significant substances were excluded. Stimulants include diet pills, caffeine and speed. Last year substance use was coded 1 = did not use, 2 = once a year, 3 = 6 times a year, 4 = once a month, 5 = twice a month, 6 = once a week, 7 = 3 times a week, 8 = 5 times a week and 9 = everyday. Past month substance use was coded 1 = 0 days, code 2 = 1-2 days, code 3 = 3-5 days, code 4 = 6-9 days, code 5 = 10-19 days, code 6 = 20-29 days and code 7 = 30 days. ** $p < .01$.

Roommate

Prior Year Substance Use

Fifty-three (n=53) participants responded *yes* to living with a roommate. Participants responding *yes* to living with a roommate used tobacco, alcohol and marijuana more frequently during the prior year than participants responding *no* to living with a roommate. To evaluate differences among centroids for a set of dependent variables when there are two or more levels of an independent variable, the investigator employed a multivariate analysis (MANOVA) (Tabachnick & Fidell, 1996). In multivariate analysis, the Wilk's λ tests the main effects and interactions in a linear combination (Tabachnick & Fidell). However, as unequal n 's appear and the assumption is violated, Pillai's criterion in terms of robustness is the criterion of choice (p. 401). The Pillai's Trace = .07 and is significant, $F(4, 261) = .496, p < .01, \eta^2 = .071$ indicating that 7.1% of the variance can be attributed to living with a roommate. The Box's test of equality of covariance matrices (test of homogeneity of variance-covariance matrices) were significant, $F = 4.36, p < .01$ (Tabachnick & Fidell).

Levene's test of homogeneity was significant for prior year tobacco and marijuana ($p < .01$) frequency use. For those variables, a more conservative F was reported, derived from squaring t , not assuming equal variance (with two variable $F = t^2$). As indicated in Table 27 specific results of this analysis were as follows: prior year tobacco frequency use is significant, $F(1, 264) = 4.15, p < .05, \eta^2 = .018$, prior year alcohol frequency use is significant, $F(1, 264) = 4.82, p < .01, \eta^2 = .018$ and marijuana is significant, $F(1, 264) = 9.43, p < .01, \eta^2 = .064$ while prior year stimulant frequency use

is not significant, $F(1, 264) = .42, p > .05, \eta^2 = .002$. Mean results are presented in Table 28.

Prior Month Substance Use

Participants living with a roommate used tobacco, alcohol and marijuana more frequently during the prior month than participants living alone. To evaluate differences among centroids for a set of dependent variables when there are two or more levels of an independent variable, the investigator employed a multivariate analysis (MANOVA) (Tabachnick & Fidell, 1996). In multivariate analysis, the Wilk's λ tests the main effects and interactions in a linear combination (Tabachnick & Fidell). However, as unequal n 's appear and the assumption is violated, Pillai's criterion in terms of robustness is the criterion of choice (p. 401). The Pillai's Trace = .09 and is significant, $F(4, 261) = 6.39, p < .01, \eta^2 = .089$ indicating that 8.9% of the variance can be attributed to living with a roommate. The Box's test of equality of covariance matrices (test of homogeneity of variance-covariance matrices) were significant, $F = 8.07, p < .01$.

Levene's test of homogeneity was significant for prior month tobacco, alcohol and marijuana ($p < .01$) frequency use. For those variables, a more conservative F was reported, derived from squaring t , not assuming equal variance (with two variable $F = t^2$). As indicated in Table 27, specific results of this analysis were: prior month tobacco frequency use is significant, $F(1, 264) = 3.50, p < .05, \eta^2 = .015$, prior month alcohol frequency use is significant, $F(1, 264) = 15.23, p < .01, \eta^2 = .070$ and marijuana frequency use is significant, $F(1, 264) = 4.98, p < .01, \eta^2 = .043$ while prior month stimulant frequency use is not significant, $F(1, 264) = 1.610, p > .05, \eta^2 = .006$. Mean results are presented in Table 29.

Table 27

Univariate Analysis for Roommate and Substance Use

Drug	<i>df</i>	<i>F</i>	η^2
Prior Year Tobacco	1	4.15*	.018
Prior Year Alcohol	1	4.82**	.018
Prior Year Marijuana	1	9.43**	.064
Prior Month Tobacco	1	3.50*	.015
Prior Month Alcohol	1	15.23**	.070
Prior Month Marijuana	1	4.98**	.006

Note. Non-significant substances were excluded. * $p < .05$. ** $p < .01$.

Table 28

Roommate & Prior Year Substance Use

Substance	<i>M</i>	<i>SD</i>	<i>n</i>
Tobacco			
Roommate	4.09*	3.65	53
No Roommate	2.98	3.24	213
Alcohol			
Roommate	4.89*	2.44	53
No Roommate	4.13	2.17	213
Marijuana			
Roommate	2.41**	2.17	53
No Roommate	1.46	1.22	213

Note. Non-significant substances were excluded. Last year substance use was coded 1 = did not use, 2 = once a year, 3 = 6 times a year, 4 = once a month, 5 = twice a month, 6 = once a week, 7 = 3 times a week, 8 = 5 times a week and 9 = everyday. ** $p < .01$. * $p < .05$.

Table 29

Roommate & Prior Month Substance Use

Substance	<i>M</i>	<i>SD</i>	<i>n</i>
Tobacco			
Roommate	3.13*	2.70	53
No Roommate	2.37	2.43	213
Alcohol			
Roommate	3.45**	1.76	53
No Roommate	2.44	1.41	213
Marijuana			
Roommate	3.72**	2.75	53
No Roommate	3.20	2.65	213

Note. Non-significant substances were excluded. Past month substance use was coded 1 = 0 days, code 2 = 1-2 days, code 3 = 3-5 days, code 4 = 6-9 days, code 5 = 10-19 days, code 6 = 20-29 days and code 7 = 30 days. ** $p < .01$. * $p < .05$.

Parents

Forty-one participants responded *yes* to living with parents. This analysis did not indicate any significance between living with parents and prior year substance use. Nor was any significance assigned to living with parents and prior month substance use.

Spouse

Prior Year Substance Use

Eighty-one participants responded *yes* to living with a spouse. Participants living with a spouse used tobacco and marijuana less frequently during the prior year than participants not living with a spouse. To evaluate differences among centroids for a set of dependent variables when there are two or more levels of an independent variable, the investigator employed a multivariate analysis (MANOVA) (Tabachnick & Fidell, 1996). In multivariate analysis, the Wilk's λ tests the main effects and interactions in a linear combination (Tabachnick & Fidell). However, as unequal n 's appear and the assumption is violated, Pillai's criterion in terms of robustness is the criterion of choice (p. 401). The Pillai's Trace = .06 and is significant, $F(4, 261) = 4.15, p < .01, \eta^2 = .060$ indicating that 6% of the variance can be attributed to living with a spouse. The Box's test of equality of covariance matrices (test of homogeneity of variance-covariance matrices) was significant, $F = 8.00, p < .01$.

Levene's test of homogeneity was significant for prior year tobacco and marijuana ($p < .01$) frequency use. For those variables, a more conservative F was reported, derived from squaring t , not assuming equal variance (with two variable $F = t^2$). As indicated in Table 30, specific results of this analysis were: prior year tobacco frequency use is significant, $F(1, 264) = 6.29, p < .05, \eta^2 = .021$, prior year marijuana

frequency use is significant, $F(1, 264) = 18.48, p < .01, \eta^2 = .038$ while prior year alcohol frequency use is not significant, $F(1, 264) = 3.23, p > .05, \eta^2 = .012$ and prior year stimulant frequency use is not significant, $F(1, 264) = .084, p > .05, \eta^2 = .000$. Means are presented in Table 31.

Prior Month Substance Use

Participants living with a spouse used tobacco and marijuana less frequently during the prior month than participants not living with a spouse. To evaluate differences among centroids for a set of dependent variables when there are two or more levels of an independent variable, the investigator employed a multivariate analysis (MANOVA) (Tabachnick & Fidell, 1996). In multivariate analysis, the Wilk's λ tests the main effects and interactions in a linear combination (Tabachnick & Fidell). However, as unequal n 's appear and the assumption is violated, Pillai's criterion in terms of robustness is the criterion of choice (p. 401). The Pillai's Trace = .04 and is significant, $F(4, 261) = 2.55, p < .05, \eta^2 = .038$ indicating that 3.8% of the variance can be attributed to living with a spouse. The Box's test of equality of covariance matrices (test of homogeneity of variance-covariance matrices) was significant, $F = 11.49, p < .01$.

Levene's test of homogeneity was significant for prior year tobacco and marijuana ($p < .01$) frequency use. For those variables, a more conservative F was reported, derived from squaring t , not assuming equal variance (with two variable $F = t^2$). As indicated in Table 30, specific results of this analysis were: prior month tobacco frequency use is significant, $F(1, 264) = 5.02, p < .05, \eta^2 = .017$, prior month marijuana frequency use is significant, $F(1, 264) = 10.75, p < .05, \eta^2 = .021$ while prior month alcohol frequency use is not significant, $F(1, 264) = 3.60, p > .05, \eta^2 = .013$ and prior

month stimulant frequency use is not significant, $F(1, 264) = .047, p > .05, \eta^2 = .000$.

Means are presented in Table 31.

Table 30

Univariate Analysis for Spouse and Substance Use

Drug	<i>df</i>	<i>F</i>	η^2
Prior Year Tobacco	1	6.29*	.021
Prior Year Marijuana	1	18.48**	.038
Prior Month Tobacco	1	5.02*	.017
Prior Month Marijuana	1	10.75*	.021

Note. Non-significant substances were excluded. * $p < .05$. ** $p < .01$.

Table 31

Spouse and Substance Use

Substance	<i>M</i>	<i>SD</i>	<i>n</i>
Prior Year Tobacco			
Spouse	2.47*	2.99	81
No Spouse	3.52	3.46	185
Prior Year Marijuana			
Spouse	1.21**	.72	81
No Spouse	1.85	1.70	185
Substance	<i>M</i>	<i>SD</i>	<i>n</i>
Prior Month Tobacco			
Spouse	2.04*	2.22	81
No Spouse	2.74	2.59	185
Prior Month Marijuana			
Spouse	1.07*	.31	81
No Spouse	1.32	.90	185

Note. Non-significant substances were excluded. Last year substance use was coded 1 = did not use, 2 = once a year, 3 = 6 times a year, 4 = once a month, 5 = twice a month, 6 = once a week, 7 = 3 times a week, 8 = 5 times a week and 9 = everyday. Past month substance use was coded 1 = 0 days, code 2 = 1-2 days, code 3 = 3-5 days, code 4 = 6-9 days, code 5 = 10-19 days, code 6 = 20-29 days and code 7 = 30 days. ** $p < .01$. * $p < .05$.

Children

Prior Year Substance Use

Eighty-three (n=83) participants responded *yes* to living with children. Participants living with children used alcohol and marijuana less frequently during the prior year than participants not living with children. To evaluate differences among centroids for a set of dependent variables when there are two or more levels of an independent variable, the investigator employed a multivariate analysis (MANOVA) (Tabachnick & Fidell, 1996). In multivariate analysis, the Wilk's λ tests the main effects and interactions in a linear combination (Tabachnick & Fidell). However, as unequal n 's appear and the assumption is violated, Pillai's criterion in terms of robustness is the criterion of choice (p. 401). The Pillai's Trace = .06 and is significant, $F(4, 261) = 4.38$, $p < .05$, $\eta^2 = .063$ indicating that 6.3% of the variance can be attributed to living with children. The Box's test of equality of covariance matrices (test of homogeneity of variance-covariance matrices) was significant, $F = 1.86$, $p < .01$.

Levene's test of homogeneity was significant for prior year alcohol and marijuana ($p < .01$) frequency use. For those variables, a more conservative F was reported, derived from squaring t , not assuming equal variance (with two variable $F = t^2$). As indicated in Table 32, specific results of this analysis were: prior year alcohol frequency use is significant, $F(1, 264) = 6.09$, $p < .05$, $\eta^2 = .02$, prior year marijuana frequency use is significant, $F(1, 264) = 4.67$, $p < .05$, $\eta^2 = .015$ while prior year tobacco frequency use is not significant, $F(1, 264) = .172$, $p > .05$, $\eta^2 = .001$ and prior year stimulant frequency use is not significant, $F(1, 264) = 2.647$, $p > .05$, $\eta^2 = .010$. Means are presented in Table 33.

Past Month Substance Use

Participants living with children used alcohol less frequently than participants not living with children. To evaluate differences among centroids for a set of dependent variables when there are two or more levels of an independent variable, the investigator employed a multivariate analysis (MANOVA) (Tabachnick & Fidell, 1996). In multivariate analysis, the Wilk's λ tests the main effects and interactions in a linear combination (Tabachnick & Fidell). However, as unequal n 's appear and the assumption is violated, Pillai's criterion in terms of robustness is the criterion of choice (p. 401). The Pillai's Trace = .09 and is significant, $F(4, 261) = 6.57, p < .01, \eta^2 = .091$ indicating that 9.1% of the variance can be attributed to living with children. The Box's test of equality of covariance matrices (test of homogeneity of variance-covariance matrices) was significant, $F = 6.57, p < .01$.

Levene's test of homogeneity was significant for prior year alcohol and marijuana ($p < .01$) frequency use. For those variables, a more conservative F was reported, derived from squaring t , not assuming equal variance (with two variable $F = t^2$). Specific results of this analysis were: prior month alcohol frequency use is significant, $F(1, 264) = 18.62, p < .01, \eta^2 = .052$ while prior month tobacco frequency use is not significant, $F(1, 264) = .005, p > .05, \eta^2 = .000$, prior month marijuana frequency use is not significant, $F(1, 264) = 1.98, p > .05, \eta^2 = .007$ and prior month stimulant frequency use is not significant, $F(1, 264) = 1.42, p > .05, \eta^2 = .005$. Means are presented in Table 33.

Table 32

Univariate Analysis for Children and Substance Use

Drug	<i>df</i>	<i>F</i>	η^2
Prior Year Alcohol	1	6.09*	.020
Prior Year Marijuana	1	4.67*	.015
Prior Month Alcohol	1	18.62**	.052

Note. Non-significant substances were excluded. * $p < .05$. ** $p < .01$.

Table 33

Presence of Children and Substance Use

Substance	<i>M</i>	<i>SD</i>	<i>n</i>
Prior Year Alcohol			
Children	3.82*	1.95	83
No Children	4.50	2.34	183
Prior Year Marijuana			
Children	1.39*	1.25	83
No Children	1.78	1.78	183
Prior Month Alcohol			
Children	2.12**	1.15	83
No Children	2.87	1.63	183

Note. Non-significant substances were excluded. Last year substance use was coded 1 = did not use, 2 = once a year, 3 = 6 times a year, 4 = once a month, 5 = twice a month, 6 = once a week, 7 = 3 times a week, 8 = 5 times a week and 9 = everyday. Past month substance use was coded 1 = 0 days, code 2 = 1-2 days, code 3 = 3-5 days, code 4 = 6-9 days, code 5 = 10-19 days, code 6 = 20-29 days and code 7 = 30 days. ** $p < .01$. * $p < .05$.

Other

Prior Year Substance Use

Participants living with *other* individuals used stimulants more frequently over the prior year than participants who specifically reported not living with other individuals. To evaluate differences among centroids for a set of dependent variables when there are two or more levels of an independent variable, the investigator employed a multivariate analysis (MANOVA) (Tabachnick & Fidell, 1996). In multivariate analysis, the Wilk's λ tests the main effects and interactions in a linear combination (Tabachnick & Fidell). The Wilk's $\lambda = .97$ is not significant, $F(4, 261) = 2.01, p > .05, \eta^2 = .030$ and the Box's test of equality of covariance matrices (test of homogeneity of variance-covariance matrices) was not significant, $p > .05$.

Levene's test of homogeneity was not violated. As indicated in Table 34, specific results of this analysis were: prior year stimulant frequency use is significant, $F(1, 264) = 6.99, p < .01, \eta^2 = .026$ while prior year tobacco frequency use is not significant, $F(1, 264) = 2.09, p > .05, \eta^2 = .008$, prior year alcohol frequency use is not significant, $F(1, 264) = .25, p > .05, \eta^2 = .001$, and prior year marijuana frequency use is not significant, $F(1, 264) = .73, p > .05, \eta^2 = .003$. Mean results presented in Table 35.

Prior Month Substance Use

Participants living with *other* participants used stimulants more frequently over the prior month than participants not living with other individuals. To evaluate differences among centroids for a set of dependent variables when there are two or more levels of an independent variable, the investigator employed a multivariate analysis (MANOVA) (Tabachnick & Fidell, 1996). In multivariate analysis, the Wilk's λ tests the

main effects and interactions in a linear combination (Tabachnick & Fidell). The Wilk's $\lambda = .98$ is not significant, $F(4, 261) = 1.53, p > .05, \eta^2 = .023$ and the Box's test of equality of covariance matrices (test of homogeneity of variance-covariance matrices) was not significant, $p > .05$.

Levene's test of homogeneity was violated for prior month tobacco ($p < .01$) frequency use. For those variables, a more conservative F was reported, derived from squaring t , not assuming equal variance (with two variable $F = t^2$). Specific results of this analysis were: prior month stimulant frequency use is significant, $F(1, 264) = 5.75, p < .01, \eta^2 = .021$ while prior month tobacco frequency use is not significant, $F(1, 264) = 1.36, p > .05, \eta^2 = .005$, prior month alcohol frequency use is not significant, $F(1, 264) = .35, p > .05, \eta^2 = .001$ and prior month marijuana frequency use is not significant, $F(1, 264) = .002, p > .05, \eta^2 = .000$. Mean results are presented in Table 35.

Table 34

Univariate Analysis for "Other" and Substance Use

Drug	<i>df</i>	<i>F</i>	η^2
Last Year Stimulant	1	6.99**	.026
Past Month Stimulant	1	5.75**	.021

Note. Non-significant substances were excluded. Stimulants include diet pills, caffeine and speed. * $p < .05$. ** $p < .01$.

Table 35

Other and Substance Use

Substance	<i>M</i>	<i>SD</i>	<i>n</i>
Prior Year Stimulant			
Other	5.80**	3.58	46
Not Other	4.25	3.64	220
Prior Month Stimulant			
Other	4.15**	2.23	46
Not Other	3.12	2.65	220

Note. Non-significant substances were excluded. Stimulants include diet pills, caffeine and speed. Last year substance use was coded 1 = did not use, 2 = once a year, 3 = 6 times a year, 4 = once a month, 5 = twice a month, 6 = once a week, 7 = 3 times a week, 8 = 5 times a week and 9 = everyday. Past month substance use was coded 1 = 0 days, code 2 = 1-2 days, code 3 = 3-5 days, code 4 = 6-9 days, code 5 = 10-19 days, code 6 = 20-29 days and code 7 = 30 days. ** $p < .01$.

In summarizing the results of Research Question Two, significance was observed among the demographic variables and substance use. Among the findings, ethnicity, age, major and marital status appeared to be statistically significant. Caucasian participants engaged in more substance use than African American. In addition, the younger participants used substances more frequently than did the older participants. Participants enrolled in other mental health degree programs used more than those enrolled in Counselor Education graduate programs. Finally, participants in committed relationships, but not married, used more than single, married and absent spouse respondents.

Research Question Three

Consequences

To compare the consequences of alcohol, tobacco, marijuana, and stimulant use among female graduate students in Counselor Education, Psychology and Social Work versus among undergraduate females, frequencies were run. The consequences in question included experiencing a hangover, performing poorly on tests/projects, engaging in fights or arguments, becoming nauseated/vomiting, experiencing memory loss, missing class, and having reported being taken advantaged of sexually or hurt in the prior year due to drinking or drug use. Responses were coded 1=never, 2=once, 3=twice, 4= 3-5 time, 5=6-9 time, and 6=10 time or more. Descriptives were run. Interestingly, a majority of the participants indicated never having experienced consequences due to prior year substance use. Results are indicated in Table 36.

The investigator used three articles to compare female graduate consequences to undergraduate female consequences. There are two explanations for using more than one

resource to provide comparisons. First, the majority of articles addressing negative consequences experienced by undergraduates combines results from *both* college men and women—unless specific gender differences happened to be specified. Secondly, as a result of the 1989 modification of the Core Alcohol and Drug Survey, the literature reports different consequences based on the version of the instrument utilized.

A majority of the consequences reported herein are compared to Perkins' (1992) data, which was drawn from four surveys conducted between 1979 and 1989 (p. 459) and which included both undergraduate men and women. However, gender differences were examined for consequences; therefore, the 1989 female cohort (n=305) will be used for comparisons. Secondly, Dowdall, Crawford and Wechsler (1998) examined undergraduate females' (n=17,592) drinking patterns and alcohol-related problems. Lastly, Cashin, Presley and Meilman (1998) (developers of the CADS) surveyed Greek-affiliated college students to identify drinking patterns and consequences of use. Among the 28,341 included in the sample, 15,604 were females.

Hangovers

As shown in Table 36, 58.6% (n=156) of graduate female participants indicated never experiencing a hangover during the last year, while 41.4% (n=110) indicated experiencing hangovers one or more times during the past year. Among the participants in this study, 17.3% (n=46) indicated once, 11.3% (n=30) indicated twice, 8.3% indicated (n=22) 3-5 time, 1.9% indicated (n=5) 6-9 time, and 2.6% (n=7) indicated 10 time or more. With regard to the undergraduate population, Perkins (1992) surveyed 305 undergraduate females and found 93.7% (n=286) never experienced hangovers, 5.9%

(n=18) experienced hangovers at least once, and 0.3% (n=1) experienced hangovers more than once over the reporting year in question.

Poor Test/Project Performance

As shown in Table 36, 85% (n=226) of the graduate participants indicated never having tested poorly due to prior year substance use, while 15% did indicate poor test or project performance. Among this latter cohort, 8.6% (n=23) indicated once, 4.9% (n=13) indicated twice, 1.1% indicated (n=3) 3-5 times, and 0.4% (n=1) indicated 10 times or more. (There were 0 responses in the 6-9 range.). Comparatively, Perkins (1992) reported 52.5% (n=160) of undergraduates indicated never having done poorly on tests or projects as a consequence of drug/alcohol use, 29.5% (n=90) indicated poor academic performance at least once, and 18% (n=55) indicated experiencing poor academic performance more than once within the prior year.

Fight/Argument

As shown in Table 36, 71.8% (n=191) of the graduate female respondents indicated that they had never gotten into a fight or argument as a result of prior year substance use, while 28.2% (n=75) indicated that they had. Among this second group, 14.3% (n=38) indicated once, 6.8% (n=18) indicated twice, 4.9% (n=13) indicated 3-5 times, 1.5% (n=4) and 0.8% (n=2) indicated 10 or more times. With regard to the undergraduate female population, however, Perkins (1992) found 89.9% (n=274) indicated never, 8.5% (n=26) indicated at least once and 1.6% (n=5) indicated experiencing more than once fight within the prior year as a result of substance use.

Nausea/Vomit

When tabulating the consequence of nausea due to past year substance use, 63.2% (n=168) indicated that they had never felt sick or vomited, while 36.8% (n=98) indicated experiencing some nausea/vomiting. Among this latter group, 14.7% (n=39) indicated once, 10.5% (n=28) indicated twice, 10.2% (n=27) indicated 3-5 times, 0.4% (n=1) indicated 6-9 times and 1.1% (n=3) indicated 10 times or more. Results are presented in Table 36. However, Cashin, et al. (1998) reported that 57.9% of undergraduate women experienced nausea or vomiting within the past year due to substance use, regardless of organization affiliation.

Memory Loss

When examining memory loss due to past year substance use, 82.3% (n=219) indicated never while 17.7% (n=47) indicated memory loss. Among participants in this study, 8.6% (n=23) indicated once, 4.5% (n=12) indicated twice, 4.1% (n=11) indicated 3-5 time, and .4% (n=1) indicated 10 time or more. Participants did not indicate 6-9 times. Results are presented in Table 36. With respect to the undergraduate population, Perkins (1992) found 36% (n=110) indicated that that they had never suffered from drug- or alcohol-induced memory loss, 42% (n=128) experienced memory loss at least once and 22% (n=67) experienced memory loss more than once within the past year.

Missed Class

With respect to missing class due to past year substance use, 86.5% (n=230) indicated never, 9.4% participants (n=25) indicated once, 1.5% participants (n=4) indicated twice, 2.3% participants (n=6) indicated 3-5 times, and 0.4% participants (n=1) indicated 10 times or more. (Participants did not indicate 6-9 times.) Results are

presented in Table 36. On the other hand, Dowdall, et al. (1998) found 53.24% (n=5369) of undergraduate females missed class due to substance use over the prior academic year.

Sexual Consequences

93.6% (n=249) of the surveyed participants indicated that they had never been taken advantage of sexually over the prior year as a result of substance use or abuse, while 5.3% (n=14) responded that they had, and 1.1% (n=3) did not respond. Among those that had, 4.5% (n=12) indicated once and 0.8% (n=2) indicated twice. Results are detailed in Table 36. To compare that data to the female undergrads, Cashin et al. (1998), found 65% (n=10,142) of this cohort reported that they had felt sexually compromised sometime over the prior years as a result of drugs or alcohol.

Injured/Hurt

With respect to injury or being hurt due to past year substance use, 88.3% (n=235) indicated never, 10.5% (n=28) responded affirmatively, and 1.1% (n=3) did not respond. Among that middle cohort, 7.9% (n=21) indicated once, 1.1% (n=3) indicated twice, 1.1% indicated (n=3) 3-5 times, and 0.4% indicated (n=1) 6-9 times. Results are presented in Table 36. Similar data has been reported for the female undergraduate population. Specifically, Perkins (1992) reported that 74.1% (n=226) of female undergraduates indicated never, 19.3% (n=53) indicated being injured/hurt once and 6.6% (n=20) indicated that they had been injured/hurt more than once within the past year.

Table 36

Consequences

Consequence	Never	Once	Twice	3-5 Times	6-9 Times	10 or more
Hangover	58.6%	17.3%	11.3%	8.3%	1.9%	2.6%
	(n=156)	(n=46)	(n=30)	(n=22)	(n=5)	(n=7)
Testing Poorly	85.0%	8.6%	4.9%	1.1%	0.0%	0.4%
	(n=226)	(n=23)	(n=13)	(n=3)	(n=0)	(n=1)
Arguments/Fights	71.8%	14.3%	6.8%	4.9%	1.5%	0.8%
	(n=191)	(n=38)	(n=18)	(n=13)	(n=4)	(n=2)
Nausea/Vomiting	63.2%	14.7%	10.5%	10.2%	0.4%	1.1%
	(n=168)	(n=39)	(n=28)	(n=27)	(n=1)	(n=3)
Memory	82.3%	8.6%	4.5%	4.1%	0.0%	0.4%
	(n=219)	(n=23)	(n=12)	(n=11)	(n=0)	(n=1)
Missing Class	86.5%	9.4%	1.5%	2.3%	0.0%	0.4%
	(n=230)	(n=25)	(n=4)	(n=6)	(n=0)	(n=1)
Taken Sexually	93.6%	4.5%	0.8%	0.0%	0.0%	0.0%
	(n=249)	(n=12)	(n=2)	(n=0)	(n=0)	(n=0)
Being Injured	88.3%	7.9%	1.1%	1.1%	0.4%	0.0%
	(n=235)	(n=21)	(n=3)	(n=3)	(n=1)	(n=0)

Note. Three did not indicate sexually taken advantage of and injured.

Summary

When examining consequences experienced within the prior year due to drinking and drugging, graduate female respondents indicated experiencing similar rates of negative consequences as compared to their undergraduate counterparts. Except for hangovers, the majority of graduate students included in this study indicated never having experienced most of the possible consequences, which was similar to the results reported for female undergraduates. As noted above, however, the female graduate students did experience more frequent hangovers over the prior year compared to the female undergraduate cohort.

Rationales

Abstaining Rationales

In addition to determining the frequency of substance use among female graduate students, examining demographic differences, and reporting the consequences experienced as a result of drinking and taking drugs, it is necessary to analyze possible rationales for using these substances. To establish these motivations, the investigator casually interviewed graduate students attending a social event. As a result of these conversations, the assessment tool was slightly altered and two quantifiable questions were included in an attempt to understand why participants did or did not use drugs, alcohol or tobacco.

The first question listed a number of substance use deterrents and participants were asked to mark all that applied. Possible answers included religious/spirituality, Greek organization membership, family, cultural beliefs, previous negative alcohol/drug experience, health, currently in rehabilitation, or other. Frequencies were run and each

question was analyzed separately. The responses were extremely low for a majority of the categories. For example, 2.3% (6 out of 266) indicated currently in rehabilitation, 9.8% (26 out of 266) indicated Greek organization membership, 15.8% (42 out of 266) indicated cultural beliefs, and 21.8% (58 out of 266) indicated not using due to previous negative alcohol or drug experience. Slightly higher percentages included religious/spirituality (39.5% or 105 out of 266), family values (47.4% or 126 out of 266), and health preferences (45.5% or 121 out of 266).

Approximately, 31% (83 out of 266) indicated the *other* category, which was quantifiable despite its open-ended nature. Of those 83 participants, 75% participants (n=62) wrote explanations rather than merely checking the box. The investigator noticed three themes emerging.

Approximately 33% (27 out of 83) rationales featured some form of *financial constraint*. For instance, eight mentioned the cost of graduate school and that buying and using alcohol, drugs, or tobacco was simply not affordable. Additionally, three specifically indicated working fewer salaried hours in order to complete school assignments, including examinations, homework and internships/fieldwork and thus has fewer discretionary funds. The remaining six simply indicated that they were *poor*.

Approximately 17% (15 out of 83) of the written replies indicated a *physiological* reason for avoiding substance use. For example, six did not like the taste of alcohol and the effects of using alcohol and other substances (they termed it *the morning after*). Four indicated medical issues, and three indicated it was not fun to use substances.

Lastly, 25.3% (21 out of 83) indicated *personal obligations*. For example, 17 indicated difficulties finding available time to use because of family (particularly

children), work and school. The remaining four indicated being responsible for personal choices.

Using Rationales

The second of the multiple-choice questions examined rationales for using tobacco, alcohol or drugs. The respondents were able to choose from the following motivations: relax/unwind, socialize, celebrate personal progression through the graduate process, cope with critical feedback of an academic or personal nature, to be able to meet all expectations (i.e., staying awake or going to sleep), manage a poor relationship with advisor and or other faculty members, help balance personal and academic career, use on weekends, no particular reason, it's a habit, and *other*. The participants marked all that applied.

Frequencies were run and each question was analyzed separately. Approximately 52% (138 out of 266) indicated that they used one or more of the various substances for relaxing and socializing. One third (89 out 266) used because it was the weekend, and one-fourth (67 out of 266) use drugs or alcohol to celebrate progression through their academic program. Approximately 27% (72 out 266) used for no particular reason.

Approximately 18% (47 out of 266) used drugs or alcohol to help meet all their expectations, and 14.7% (39 out of 266) indicated using these substances to balance academic and personal life. Approximately 13% (34 out of 260) used them to cope with critical feedback, and 9.4% indicated using substances because of a poor relationship with an advisor or faculty member. Approximately 14% (36 out of 266) indicating using because it was a habit and 16.3% (43 out of 266) indicated the *other* category.

The investigator noticed that 13 of the respondents did not complete this question. Additionally, the *other* category had fewer written explanations for using (6 out of 43). However, these comments implied *personal choice*. For example, “I am grown and I can do what I want” or “I owe no one any explanations for using.”

Summary

The survey results using an altered form of the Core Alcohol and Drug Survey were presented in this chapter. Two hundred sixty-six female graduate students in Master’s level mental health professional programs were surveyed with regard to their use of tobacco, alcohol, and drugs, as well as possible rationales encouraging abstinence and usage. Included were 130 Caucasian and 136 African Americans women majoring in Counselor Education, Psychology or Social Work, although the majority of the sample was comprised of Counselor Education majors.

CHAPTER FIVE

DISCUSSIONS AND RECOMMENDATIONS

A summary and synthesis of the results of the study are presented in this chapter. The first section reviews the methodology used in this inquiry, and the second section will discuss the results of the research questions. Section Three will address implications for the profession and future research. The chapter concludes with a summary.

Review of Methodology

The purpose of the study was to provide descriptive information regarding frequency use of substances, examine relationships between important demographic variables and substance use, and examine consequences experienced as a result of substance use among female graduate students majoring in Counselor Education, Psychology and Social Work. Participants were from a convenient sample (n=266) and attended universities throughout the southeastern region of United States. Data collection began in December 2003 and terminated in February 2004.

Summary of Results and Conclusion

Information from the Core Alcohol and Drug Survey provided a general description of the participants. Racial percentages indicated 48.9% Caucasian and 51.1% African American. A majority of the respondents (38.7%) were single, 18.8% were in a relationship but not married, 28.2% indicated married, and 13.5% consisted of divorcees, widows and participants who were separated. (Two participants did not indicate marital status.) A majority of the participants were aged 25-29 (39.5%), where there were 17.3% between the ages of 21-24, 20.7% between 30-34, and 22.6% indicating 35 and above. After collapsing majors, there were 61.7% Counseling Ed majors and 38.3% of other

mental health majors. Due to extreme percentages of reported living arrangements, the investigator chose not to use that variable. However, living alone or with others was examined.

Research Question One

Supplementary results will be addressed in terms of the three research questions. For the first research question, substance use will be discussed in terms of prior year use and prior month use. It will conclude with multivariate significance.

1. What is the current frequency of substance use (e. g., alcohol, tobacco, marijuana, and stimulant) among female graduate students in Counselor Education, Psychology, and Social Work, and are there racial/ethnic differences?

While the majority of participants indicated not using tobacco during the prior year, approximately 35% of participants indicated tobacco use. Nearly 20% of participants abstained from alcohol whereas 80.4% of participants reported prior year alcohol use. Regarding prior year marijuana use, 75.6% did not use while 24.4% participants indicated using marijuana. Lastly, approximately half of participants abstained from stimulant use while 51.5% indicated using stimulants during the prior year.

While the majority of participants indicated not using tobacco during the prior month, 29.7% of participants indicated tobacco use. Approximately 31.2% participants abstained from alcohol while 68.8% of participants reported prior month alcohol use. Regarding prior month marijuana use, 87.6% did not use while 12.4% participants indicated using marijuana during the prior month. Lastly, approximately half of participants abstained from stimulant use while 48.5% indicated using stimulants during the prior month.

Research Question Two

For the second research question, substance use will be examined in relation to demographic variables included in the study.

2. To what extent is there a relationship between race/ethnicity, age, major, employment, marital status and living arrangements and alcohol, tobacco, marijuana and stimulant use among female graduate students in Counselor Education, Psychology, and Social Work?

Ethnicity/Prior Year Substance Use

Tables 4, 5, 6 and 7 report specific percentages regarding use of tobacco, alcohol, marijuana and stimulants during the prior year. As shown in Table 12, the analyses indicated that within the last year, Caucasians used alcohol, tobacco, marijuana and stimulants more frequently than African Americans. Mean results are presented in Table 13.

Ethnicity/Prior Month Substance Use

Tables 8, 9, 10 and 11 provide specific percentages regarding tobacco, alcohol, marijuana and stimulant use and ethnic differences within the prior month. As shown in Table 12, the analyses revealed that Caucasians used tobacco, alcohol and stimulants more frequently than African Americans within the prior month. Mean results are presented in Table 14.

Age/Prior Year Substance Use

As indicated in Table 15, participants aged 21-24 and 25-29 consumed alcohol more frequently than 35 and above ($p < .01$), and participants aged 21-24 used marijuana

more frequently than those aged 30-34 and 35 and above ($p < .01$). Past year tobacco and stimulant use was not significant. Mean results are presented in Table 16.

Age/Prior Month Substance Use

As indicated in Table 15, participants aged 21-24 used tobacco more frequently than participants aged 30-34 ($p < .01$). Regarding prior month alcohol use, respondents aged 21-24 used alcohol more frequently than participants aged 30-34 and 35 and above ($p < .01$). Additionally, respondents aged 25-29 consumed alcohol more frequently than the 35 and above age group ($p < .05$). Regarding prior month marijuana use, respondents aged 21-24 used more frequently than those aged 30-34 and 35 and above ($p < .05$) and participants aged 25-29 used more frequently than those in the 30-34 age range within the prior month ($p < .05$). Past month stimulant use was not significant. Mean results are presented in Table 17.

Major/Prior Year Substance Use

As indicated in Table 18, participants in other mental health majors used tobacco, alcohol and stimulants more frequently within the prior year ($p < .01$), as compared to Counselor Education majors. Participants in other mental health majors used marijuana more frequently ($p < .05$) when compared to Counselor Education majors. Mean results are presented in Table 19.

Major/Prior Month Substance Use

As indicated in Table 18, participants in other mental health majors used tobacco and alcohol more frequently ($p < .01$) when compared to Counselor Education majors during the past month. Marijuana and stimulant use was not significant. Means are presented in Table 20.

Employment/Prior Year Substance Use

As indicated in Table 21, during the prior year part-time participants used alcohol more frequently ($p < .05$) than full-time participants. Prior year frequency use of tobacco, marijuana and stimulants was not significant. Mean results are presented in Table 22.

Employment/Prior Month Substance Use

As indicated in Table 21, during the prior month participants employed part-time used alcohol more frequently ($p < .05$) than participants employed on a full-time basis. Previous month frequency use of tobacco, marijuana and stimulants was not significant. Means are presented in Table 22.

Marital Status/Prior Year Substance Use

As shown in Table 23, participants in committed relationships but not married consumed alcohol more frequently when compared to single, spouse-absent participants ($p < .05$) and married participants ($p < .01$). Regarding prior year marijuana use, participants in committed relationships but not married used the substance more frequently than married and spouse-absent respondents ($p < .01$). Singles used marijuana more frequently than married ($p < .01$) and spouse absent respondents ($p < .05$). Prior year frequency use of tobacco and stimulant use was not significant. Means are presented in Table 24.

Marital Status/Prior Month Substance Use

As indicated in Table 23, participants in committed relationships but not married drank more than married and spouse-absent individuals ($p < .05$). Prior month marijuana use indicated singles used more than either married ($p < .01$) or spouse absent respondents ($p < .05$). Also, participants in committed relationships, but not yet married,

used significantly more than married and spouse absent individuals ($p < .05$). Prior month tobacco and stimulant use was not significant. Means are presented in Table 24.

Living Arrangements

Alone

As indicated in Table 25, prior year and prior month stimulant use was significant ($p < .01$). Participants indicating not living alone used stimulants more frequently than participants living alone. Significance was not indicated for prior year and prior month tobacco, alcohol and marijuana use. Means are presented in Table 26.

Roommate

As indicated in Table 27, participants living with a roommate used significantly ($p < .01$) more tobacco, alcohol and ($p < .05$) marijuana during the last year than participants not living with a roommate. Means are reported in Table 28. Prior year stimulant use was not significant. As also shown in Table 27, participants living with a roommate yielded significant results ($p < .01$) regarding prior month tobacco in comparison to participants not living with a roommate. Additionally, participants living with a roommate used significantly ($p < .05$) more alcohol and marijuana. Prior month stimulant usage was not significant. Means are presented in Table 29.

Parents

No significance was found for prior year and prior month substance use and living with parents.

Spouse

As indicated in Table 30, living with a spouse yielded significant results ($p < .05$) regarding prior year tobacco and ($p < .01$) marijuana use. Participants living with a

spouse used tobacco and marijuana less frequently than participants not living with a spouse. Similar results were indicated for prior month tobacco ($p < .05$) and marijuana use ($p < .01$). Prior year and prior month alcohol and stimulant use were not significant. Means are presented in Table 31.

Children

As reported in Table 32, participants living with children yielded significant results ($p < .05$) regarding prior year alcohol and marijuana use. Participants not living with children used alcohol more frequently than participants living with children. Prior year tobacco and stimulants usage was not significant. Prior year means are reported in Table 33. As indicated in Table 32, participants not living with children used alcohol more frequently than participants living with children. Prior month tobacco, marijuana and stimulants use was not significant. Prior month means are presented in Table 33.

Other

As indicated in Table 34, living with *other* was significant ($p < .01$) for prior year and prior month stimulant use. Participants living with other used stimulants more frequently than participants not living with other. Prior year and prior month means are presented in Table 35.

Research Question Three

Research Questions Three will discuss consequences as it relates female graduate students.

3. Do female graduate students in Counselor Education, Psychology, and Social Work experience similar consequences as literature reports for undergraduate females as a result of alcohol, tobacco, marijuana, and stimulant use?

Consequences

As indicated in Table 36, more than half of the students indicated never experiencing hangovers, performing poorly on a test/project, getting into fight/arguments, becoming nauseated, experiencing memory loss, missing class, being taken sexually advantage of and being injured or hurt due to prior year drinking and drug use, However, throughout the prior year a total of 41.4% indicated hangovers, 15% (n=40) indicated poor performance, 28.2% (n=75) got into a fight/argument, 36.8% (n=98) experienced nausea, 17.7% (n=47) had memory loss, 5.3% (n=14) were taken sexually advantage of, and 11.7% (n=31) were injured/hurt.

Discussion

Substance Use

With respect to prior year and prior month tobacco, alcohol, marijuana and stimulant use, participants reported using significantly less marijuana than any of the other substances. This may be attributed to the illegality of the drug and severe ramifications associated with illegal drug use. Additionally, because so many graduate students rely on student loans to get them through school, they may be less likely to engage in illegal drug use since individuals with drug convictions are ineligible for student loans.

Although frequencies indicated a lower percentage of participants using marijuana, the results of this analysis are nonetheless concerning. According to Table 1, prior year marijuana frequency use indicated 4 participants used once a week, 3 used three times a week, 1 used five times a week, and 3 used marijuana every day. According to Table 2, prior month marijuana frequency use indicated 13 used 3-5 days, 2 used 6-9

days, 2 used 10-19 days, 1 used 20-29 days and 1 used every day within the prior month. This information is useful for faculty members. Marijuana impairs short-term memory, attention span, judgment, and other cognitive functions (NIDA, 2002), any of which could impact a student's ability to effectively counsel clients. This, of course, could ultimately lead to liability and ethical issues. As mental health faculty members, it is our ethical and moral responsibility to produce competent therapists.

As revealed in the tobacco usage data presented in Tables 1 and 2, 65% indicated never using tobacco over the prior year, and 70.3% indicated not using tobacco within the prior month. The increase in tobacco abstinence between prior year and prior month may be attributed to the time of year the survey was completed, e.g., related to New Year's resolutions. More probable, however, was the likelihood that participants had succumbed to the social pressure to reduce/quit smoking for improved health, or even to save money.

However, 21.1% (n=56) indicated using tobacco every day during the prior year and 22.3% (n=55) used it every day within the prior month. It is important to note that experts have found that among persons who smoke one-half pack of cigarettes every day, nicotine dependence rates are higher among women than among men (NIDA, 2002). Unfortunately, the survey did not indicate amount smoked; however, the long-term effects of smoking are known to be hazardous or even lethal.

As indicated in Tables 1 and 2, nearly half of the participants indicated never using stimulant over the prior year. However, there was an increase in prior year every day use (n=22) and past month 30-day (n=72) use. As with tobacco cessation, this trend could also be attributed to the time of year. During the winter months individuals may experience seasonal affective disorder, which is often associated with a lack of energy

and fatigue. In order to complete tasks, stimulants, such as caffeine products, may be used as an energy-enhancer. Additionally, women often vow to lose weight as a New Year's resolution. Diet pills (Sax, 1997) and other legal metabolism boosters can assist with this process. Unfortunately, the investigator was not able to determine type of stimulant use among participants.

As reported in Tables 1 and 2, prior year alcohol use indicated 18.1% (n=48) using 3 times a week, 5 times a week and everyday. With respect to prior month alcohol use, 15.8% (n=42) indicated using 10-19 days, 20-29 days and 30 days. Unfortunately, the investigator was not able to determine type or amount of alcoholic beverage in this scenario. A participant drinking a glass of wine three times a week may not experience long-term cognitive impairment. On the other hand, a participant drinking a gallon of whiskey three times a week is likely to experience cognitive and physical ailments over an extended period of time. Moreover, such behavior can negatively impact the profession and the communities it serves. In such cases, faculty members must be aware of potential impairment issues if heavy alcohol use continues over an extended period of time.

Regarding binge use (four more drinks in one sitting), Table 3 clearly indicates 17.7% (n=47) reported once, 11.3% (n=30) reported twice, 4.5% (n=12) reported 3-5 times and 0.4% (n=1) reported 6-9 times over the two-week reportable period. These findings are concerning. Although this behavior may be attributed to the time of year (i.e., Christmas, New Year's, Mardi Gras), some participants may have been bingeing to self-medicate, to enhance her mood, or as result of immaturity. However, large

consumptions of alcohol in one sitting continues to contribute to higher fatality rates, injuries, and increased sexual assaults (Wechsler, 2002).

In this study, the majority of female graduate students abstained from tobacco and marijuana use. However, those who indicated marijuana use, reported using it on a regular basis. Approximately half of female students reported using stimulants. This fact, coupled with the alcohol usage rates reported herein, should be a concern for faculty members when working with female graduate students in mental health programs. For example, during practicum and internship, drinking heavily and drugging may impair a student's judgment (Engs et al., 1994), ability to work effectively with her client, and have legal ramifications if caught under the influence. As faculty members, we are morally obligated to the profession and the communities we serve to educate and graduate cognitively functional and competent therapists.

Ethnicity

When contrasting past and current research regarding ethnicity and substance use, the findings remain inconsistent. Some findings indicate that Caucasians use more alcohol and other drugs as compared to African Americans, while other reports indicate the opposite (Caetano, 1984; Herd, 1993; Lozina et al., 1995; Herd, 1997). However, the current findings reported herein indicate that African American women graduate students in the area surveyed are significantly less likely to consume alcoholic beverages and other substances when compared to Caucasian women. This finding lends support to the findings of more frequent use among Caucasians (Herd, 1997; Herd & Grube, 1993; Young et al., 2001).

Ethnicity crosstabulations indicated 50.7% (69 out of 136) African Americans and 27.7% (36 out of 130) Caucasians did not drink or use drugs due to religious/spirituality reasons, 55.9% (76 out of 136) of African Americans and 38.5% (50 out of 130) of Caucasians indicated family values as a deterrent, 47.8% (65 out of 136) of African Americans and 43.1% (56 out of 130) of Caucasians indicated health reasons, 31.6% (43 out of 136) of African Americans and 30.8% (40 out of 130) of Caucasians indicated *other*, 22.1% (30 out of 136) of African Americans and 9.2% (12 out of 130) of Caucasians indicated culture, 17.6% (24 out of 136) of African Americans and 26.2% (34 out of 130) of Caucasians indicated previous alcohol or drug experience, 16.9% (23 out of 136) of African Americans and 2.3% (3 out of 130) of Caucasians indicated Greek organization affiliation, and 0% of African Americans and 4.6% (6 out of 130) of Caucasians indicated currently in rehabilitation.

Lower alcohol and drug use among African Americans in this study could be attributed to religion, family values and health. Herd (1985), for example, suggested that many African Americans do not use substances due to religious proscriptions; therefore, African American families may be more likely to object to woman's drinking (Lozina et al., 1995, p. 25). With respect to women's health, the literature suggests African American women are more likely to live in poverty than Caucasian women (Wingo, 2001), and African American women experience greater morbidity and mortality at younger ages than do Caucasian women (Schultz et al., 2000). Additionally Wingo (2001) noted that African American women are likely to have lower incomes, are more likely to be unemployed, have less wealth and receive less pay for equal years of education than Caucasian women (p. 21).

Gilkes (1988) suggested that African American women have a unique perspective of oppression due to double jeopardy, sex and race. Through religion and family values, African American women may be better able to cope and deal with environmental stressors not experienced—or experienced to a lesser degree—by Caucasian women.

Additionally, these coping skills may be applied to other societal challenges. For instance, the stress and pressures of graduate school may parallel greater societal experiences for some African Americans in this study. Therefore, African American female graduate students may cope more effectively with graduate demands than Caucasian women. These coping differences may be culturally engrained for survival and may contribute to less alcohol and drug use among African American female graduate students.

This information may enlighten faculty members. Being sensitive to cultural differences may reduce bias and other preconceived notions regarding a race of people and substance use. Nonetheless, as mental health professionals it is essential to recognize that societal and cultural stressors may contribute to alcohol and other drug use—regardless of one's ethnic background.

Age

With respect to prior year substance use, respondents aged 21-24 and 25-29 used more alcohol than those in 30-34 and above-35 age brackets. Those aged 21- 24 used more marijuana than respondents aged 30-34 and 35 and above. With respect to prior month tobacco use, participants aged 21-24 used more than those in the 30-34 age range. Respondents aged 21-24 used more alcohol within the prior month than their 30-34 and 35 and above counterparts. Participants aged 25-29 also use more alcohol within the prior

month than those 35 and above. Lastly, prior month marijuana use indicated that female graduate students in the 21-24-age range used more marijuana than those aged 30-34 and 35 and above. Moreover, respondents aged 25-29 used more than those in the 30-34 group.

This attenuation of alcohol and drug use may be attributed to maturity. Fillmore (1988) reported that heavy substance use is more likely to be found among young adults, while later in life they tend to “mature out” of these behaviors. This information may be useful for faculty members when screening perspective candidates for mental health programs. Although age does not constitute maturity, graduate school is demanding and being able to cope effectively requires a certain level of emotional know-how and maturity.

Major

Within both the prior-year and prior-month reporting periods, Counselor Education majors consumed less tobacco, alcohol, marijuana and stimulants than participants in other mental health programs. This may be attributed to program requirements, which required graduate students in Counseling Educating to complete a substance abuse course before graduation. Although the American Psychological Association has now instituted a policy requiring graduate students to complete a course in chemical dependency in order to become licensed, many universities do not require the class for graduation. It should also be noted that within the discipline of Social Work, a course on chemical dependency is an elective and is not required.

This information may be useful for American Psychological Association and Council on Social Work Education (CSWE), which is the accreditation organization for

all social work education programs in the United States. To ensure professional and personal development, it may be helpful to include substance use or chemical dependency curricula across all mental health programs. Additionally, departments must be held accountable and meet all requirements for accreditation.

Employment

Previous research has indicated that unemployed women were more likely to consume alcohol (Lozina et al., 1995; Wilsnack & Wilsnack, 1995; Herd, 1997; Hohman, 1998) than their employed female counterparts. The current findings support this theory for prior year and prior month alcohol use. Female graduate students employed less than 40 hours a week consumed more alcohol than students employed full-time.

This behavior may be attributed to time availability. Graduate school is considered by most to be a full-time job. However, time management is particularly crucial when combining the demands of graduate school and full-time employment. Graduate students working 40 hours a week and attending classes by necessity must adhere to a more rigid schedule, and thus will have less time to drink than graduate students only working part-time. Additionally, other factors like marital status and children may also contribute to reduced alcohol use among full-time employed participants.

Marital Status

Within the prior year, single female students in committed relationship but not married used more alcohol and marijuana than single, married and spouse absent graduate students. With respect to prior month use, participants in committed relationships but not married used more alcohol than married and spouse absent females.

Regarding prior month marijuana use, single female respondents used more than married and spouse absent females. Moreover, respondents in committed relationship but not married used more alcohol and marijuana than married and spouse absent women. This data support previous findings indicating marital status is considered a good predictor of potential substance use problems (Hanna, Faden & Harford, 1993; Kunz & Graham, 1998). Women who tend to drink more frequently are less likely to be married (Herd, 1997).

Women in committed relationships but not married appear to be using more substances when compared to the other cohorts. This behavior may be attributed to the stress of maintaining a marital-like relationship without the license. Additionally this group is likely to have included same sex relationships, which may experience additional societal pressure and stress not experienced by heterosexual relationships.

Living Arrangements

Alone

This analysis indicated that participants living alone were less likely to consume stimulants during both the prior-year and prior-month survey periods when compared to participants not living alone. This behavior may be attributed to the lack of negative pressure from within the household. Robinson, Gloria, et al. (1993) indicated that peer pressure and perceptions are influential factors in drinking and drugging.

Roommate

Participants living with a roommate used more tobacco, alcohol and marijuana within the prior year and prior month. Unlike living alone, this behavior may be attributed to peer pressure within the household. Research on women and substance use

has suggested that college women drink to facilitate relationships (peer influence) (Gloria et al., 1993; Gleason, 1994) and tend to drink in the company of others (Hunter, 1990).

Parent

Living with parents was not significant in this study, which may be attributed to the position of the child. In other words, close parental involvement and pressure could reduce the likelihood of substance use in the home.

Children

Participants living with children were less likely to use alcohol and marijuana within both the prior-year and prior-month reporting periods than participants not living with children. This behavior may be attributed to the demands of parenthood and also to the effort by parents to make conscientious decisions not to model dysfunctional substance use behaviors around children. Moreover, previous research clearly indicates that *role-less* women (women without responsibilities) are less likely to be impacted by the demands of social control, which often protects women from problem drinking (Wilsnack & Chenoa, 1987).

Spouse

Participants living with a spouse used less tobacco and marijuana during the prior year and prior month. Similar to children, this behavior may be attributed to the role of marriage. Additionally, substance use can strain a marriage (Hanna, et al., 1993). Lozin et al., (1995) revealed that married women who drank heavily were at higher risk of alcohol related problems than their unmarried female counterparts.

Other

Participants living with others used more stimulants during the prior year and prior month than participants not living with other. As was the case with the presence of roommates, this behavior may be attributed to peer pressure within the household. It should be noted, however, that the researcher was not able to determine the identity of these *others*, which could have included pets.

Being aware of the living arrangements of a perspective graduate student might be useful information. Wilsnack and Cheloha (1987) suggested with the absence of social roles, problem drinking in women might increase due to a lack of social monitoring by others. Therefore, being married and having children are indicators of life stability and commitment. Lozina, et al., (1995) suggested that a lack of a clearly defined social role imparted through cohabitation with a spouse or children might increase a woman's likelihood to engage in substance use or abuse. With regard to the present study, although participants living alone used the substances in question less frequently than those not living alone, this does not necessarily mean drinking and drugging may not be an issue for this cohort.

In the event that faculty members become aware of a substance use issue with a graduate student, living arrangements combined with other factors (i.e., age, ethnicity, consequences) may be useful information in accurately determining proper intervention. Faculty members, however, must be cautioned not to assume drinking and drug use based only the factors discussed in this study. Despite this admonition, the information continued herein could be used to educate faculty members with regard to fostering functionally coping future therapists.

Consequences

The negative behavioral consequences discussed earlier in this study include developing hangovers, missing class, arguing with friends, becoming hurt or injured, getting behind in school work, becoming sick (Welchsler, Davenport, et al., 1994) or even experiencing blackouts (Werner, Walker & Greene, 1995). Excluding blackouts, the other consequences were surveyed, and the results indicated that a majority of the respondents did not experience any serious or long-term negative consequences as a result of drinking and drug use during the prior year. This may be attributed to the increased maturity of being an older student and being held responsible for one's behavior. It should be pointed out, however, that a small minority reported several consequences directly impacting academics. For example, 15% (n=40) performed poorly on a test or project and 13.6% (n=36) missed class within the prior year as a result of alcohol or drug use.

The implications of this information may be useful for faculty members in the "helping" majors. Graduate school can be a demanding endeavor, and when substance use begins to disrupt daily activities, then there may be problem. Missing class in graduate school would be analogous to missing a session when working as a counselor. This would be extremely detrimental to job performance, rapport building and therefore to the profession if this activity continued. Observing changes in classroom performance may indicate a substance use problem requiring clinical treatment.

The information presented herein is also useful for college administrators. The results of this study indicate that while the substance use problem may not be as evident among graduate students as it is in the undergraduate population; nonetheless, alcohol

and substance use behaviors can continue into graduate school. Although campus alcohol and drug education and intervention programs are generally targeted at the undergraduate population, substance use specialists should develop programs that educate the *entire* student body about the effects of substance use and abuse (Walter, Bennett & Noto, 2000).

Lastly, the results of the analyses indicated that differences existed regarding ethnicities, age, major, living arrangements, marital and employment status. Nonetheless, it is imperative not to generalize these findings. The purpose of this study was to examine alcohol and other substance use and expand upon substance use research.

Limitations

1. Due to the nature of the study and the population examined, self-reporting is always a given limitation. Students may have been hesitant to indicate levels of use.
2. The survey did not indicate the amount of consumption and type of beverage consumed; therefore, the investigator was unable to properly examine the impact of alcohol, tobacco, marijuana and stimulant use among the participants in the study. For example, having one cup of coffee in the morning or two glasses of Merlot during a dinner party with friends is quite a different situation, and would produce very different results, from drinking two 8 fluid ounce glasses of scotch in quick succession or using speed.
3. Data were collected between December 2003 and February 2004, which included Christmas, New Years and Mardi Gras. During such holidays, an individual may be more inclined to celebrate with alcohol and other drugs.

Also, New Years resolutions may have a positive impact—if only for a short time—on substance use.

4. The universities and institutions included were located in the southeastern region of the United States. Drinking and drugging norms may vary across regions.
5. The sample was convenient and thus limited generalizability.
6. With relatively small sample size, psychology and social work majors were collapsed to provide better comparisons.
7. It is necessary to remain cautious when comparing groups of people. Although a particular group may outwardly appear similar, they may differ in language, economic status, cultural traditions and other important behavioral factors.

Implications and Recommendations for the Profession

1. Professional organizations could be used to lobby government bodies for increased funding in education in order to implement and mandate substance use curricula in all mental health graduate studies for licensure.
2. With respect to graduate school, mental health curricula should include clearly stated goals and expectations for graduate students. Providing explicit guidelines regarding departmental policies may help graduate students cope with the stress of graduate school.
3. Whenever possible, implementing graduate seminars that address how to thrive within graduate school could be useful in developing coping strategies. Within the mental health profession, special interest groups often form to address the requirements of specific-needs populations. Such groups could facilitate

- cohesiveness among graduate students and allow incoming and newer students to benefit from the experiences of their senior colleagues.
4. Whenever possible, faculty should encourage treatment without penalty.

Recommendations for Future Research

1. Due to the descriptive nature of this research, data was not analyzed for interaction. It may be helpful to employ different statistical procedures to assess the information for interaction among variables, e.g., examining the interaction of employment, marital status and children with tobacco, alcohol, stimulant and marijuana use.
2. This study collected data regarding Social Work and Psychology majors, however due to low survey responses, the majors were collapsed. It is recommended that future research include larger samples of these majors, as well as other majors such as Marriage and Family Therapy.
3. A study employing qualitative aspects, specifically in-depth case studies, with the same population may provide a more complete picture of substance use among female graduate students in mental health programs.
4. It may be useful to employ a qualitative study to determine why Counselor Education students appear to engage in less substance use than graduate students in Psychology and Social Work majors. Is it the educational curriculum alone, or is some other factor(s) at work?
5. Future useful studies might include a wider variety of graduate school majors (outside those in the “helping” fields), as well as expand to other parts of the country and at different times of the year.

6. Future research might examine differences between majors and how those differences attribute.
7. In future research, it would be useful to differentiate between illegal and legal usage of stimulants, and include other illegal substances such as crack/cocaine, heroin, etc.
8. Future studies might consider using the same instrument in this analysis, but exclude those scales not analyzed. This will shorten the time required for survey completion.
9. Due to the nature of the study, having the survey completely in the absence of the professor could increase student participation and/or veracity. This might impact the results of the instrument.
10. For future research, if ethnicity is to be incorporated, then it is recommended to include a more diverse student body in the sampling. For example, a small sampling of ethnic students in a majority institution might be less inclined to participate if they felt their anonymity could be compromised.
11. Lastly, this study should be extended to practicing counselors.

Summary

This chapter began with a review of the methodology employed for the study and a summary of the results, which were examined in terms of the three overarching research question. The study's defining aspects included alcohol, tobacco, marijuana and stimulant substance use among graduates students and consequences experienced as a result of usage. Limitations were listed, and finally, recommendations for mental health programs as well as future research were outlined.

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APPENDIX A

ASSESSMENT TOOL

1.	Major	
2.	Institution	
3.	Age	
4.	Gender	Male <input type="checkbox"/> Female
5.	Ethnic Origin	<input type="checkbox"/> American Indian/Alaskan Native <input type="checkbox"/> Hispanic <input type="checkbox"/> Asian/Pacific Islander <input type="checkbox"/> White (non-Hispanic) <input type="checkbox"/> Black (non-Hispanic)
6.	Marital Status	<input type="checkbox"/> Single <input type="checkbox"/> Committed relationship/not married <input type="checkbox"/> Married <input type="checkbox"/> Separated <input type="checkbox"/> Divorced <input type="checkbox"/> Widowed
7.	Student Status	<input type="checkbox"/> Full-time (9+ credits) <input type="checkbox"/> Part-time (1-8 credits)
8.	Think back over the last two weeks . How many times have you had four or more drinks at a sitting?	<input type="checkbox"/> None <input type="checkbox"/> Once <input type="checkbox"/> Twice <input type="checkbox"/> 3 to 5 times <input type="checkbox"/> 6 to 9 times <input type="checkbox"/> 10 or more times
9.	Are you working? If no, skip question.	<input type="checkbox"/> Yes <input type="checkbox"/> No
9b.		<input type="checkbox"/> Full-time <input type="checkbox"/> Part-time
10.	Living Arrangements	
	a. Where (mark best answer)	<input type="checkbox"/> House/Apartment/etc <input type="checkbox"/> Residence Hall <input type="checkbox"/> Approved Housing <input type="checkbox"/> Fraternity or Sorority <input type="checkbox"/> Other
	b. With whom (mark all that apply)	<input type="checkbox"/> With roommates <input type="checkbox"/> Alone <input type="checkbox"/> Parents <input type="checkbox"/> Spouse <input type="checkbox"/> Children <input type="checkbox"/> Other

19. Mark one answer for each line:

	Yes	No
a. Did you have sexual intercourse within the last year?	<input type="checkbox"/>	<input type="checkbox"/>
b. Did you drink alcohol the last time you had sexual intercourse?	<input type="checkbox"/>	<input type="checkbox"/>
c. Did you use other drugs the last time you had sexual intercourse?	<input type="checkbox"/>	<input type="checkbox"/>

20. During the **past 30 days**, to what extent have you engaged in any of the following behaviors? (Mark one for each line)

	Never	Once	Twice	3-5 times	6-9 times	10 or more times
a. Refused an offer of alcohol or other drug	<input type="checkbox"/>					
b. Bragged about your alcohol or other drug use	<input type="checkbox"/>					
c. Heard someone else brag about his/her alcohol or drug use	<input type="checkbox"/>					
d. Experienced peer pressure to drink	<input type="checkbox"/>					

21. In which of the following ways does other students' drinking interfere with your life on or around campus? (Mark one for each line)

	Yes	No
a. Interrupts your studying	<input type="checkbox"/>	<input type="checkbox"/>
b. Makes you feel unsafe	<input type="checkbox"/>	<input type="checkbox"/>
c. Messes up your physical living space	<input type="checkbox"/>	<input type="checkbox"/>
d. Interferes in other way(s)	<input type="checkbox"/>	<input type="checkbox"/>
e. Prevents you from enjoying events	<input type="checkbox"/>	<input type="checkbox"/>
f. Doesn't interfere with my life	<input type="checkbox"/>	<input type="checkbox"/>

22. What are reasons why you have **NOT** drunk or engaged in drugs? Mark all that apply.

- Religious/spirituality
- Greek organization
- Family values
- Cultural beliefs
- Previous alcohol/drug experience
- Health
- Currently in rehabilitation
- Other:

23. Think back over your graduate experience up till this point. Are any of the responses listed below, reasons you may have chosen **to drink** or use tobacco, marijuana and amphetamines? If so, please mark all those that may apply:

- To relax, to unwind
- To socialize
- Celebrate personal progression through your graduate process
- Coping with critical feedback of academic or personal nature
- To be able to meet all expectations (i.e. staying awake or going to sleep)
- Poor relationship w/advisor and/or faculty members
- Difficulty balancing personal and academic career
- It's the weekend
- No reason at all
- It's a habit
- Other:

APPENDIX B

Informed Consent

Project Title: Alcohol, Tobacco, Marijuana and Amphetamine Use Among Female Graduate Students in Helping Profession

Principal Investigator: Natascha Wilson
Supervising Faculty: Nancy Bodenhorn, Ph.D.
 Gerard Lawson, Ph.D.
 Launcelot Brown, Ph.D.

Purpose: The general purpose of this study is to assess alcohol, tobacco, marijuana and amphetamine use among female graduate students in helping professions, particularly Counselor Education, Psychology and Social Work. The research questions guide this investigation:

1. What is the current frequency of substance use (e. g., alcohol, tobacco, marijuana, and amphetamine) among female graduate students in Counselor Education, Psychology, and Social Work?
2. To what extent is there a relationship between race/ethnicity, age, major, employment, marital status and living arrangements and alcohol, tobacco, marijuana and amphetamine use among female graduate students in Counselor Education, Psychology, and Social Work?
3. Do female graduate students in Counselor Education, Psychology, and Social Work experience similar consequences as literature reports for undergraduate females as a result of alcohol, tobacco, marijuana, and amphetamine use?

II. Procedure: Universities will be selected based on accessibility and located in the southern or southeastern region of the United States. Participants will be surveyed in class at their perspective campus.

III. Risks: There are no known risk in participating in the proposed study above and beyond the risk of students recognizing personal substance use.

IV. Benefits: The major benefit of this proposed study is to expand upon existing literature concerning college students and alcohol and drug use and somewhat introduce an overlooked population to the field; both of which will improve upon women's treatment of substance use. In terms of larger societal benefits, it is beneficial for therapists and other individuals in the helping profession working with this population, and the field of substance abuse. Participants will be welcome to receive the study's results if they request them from the researcher.

V. Anonymity and Confidentiality: Neither universities nor participants will be identified from this study. Universities will be referred to by their location.

VI. Compensation: There will be no compensation given to participants.

VII. Freedom to Withdraw: Participants are free to withdraw from this study at any time without penalty. Participants are free not to answer any questions.

VIII. Approval of Research: The research project has been approved, as required by the Institutional Review Board Involving Human Subjects at Virginia Polytechnic Institute and State University, by the Department of Education.

IX. Participants Permission: I have read and understand the Informed Consent and conditions of the project. I have had all my questions answered. I hereby acknowledge the above and give my voluntary consent for participation in this project.

If I participate, I may withdraw at any time without penalty. I agree to abide by the rules of this project.

Signature

Date

If you have any questions about this research or its conduct you may contact:

Natascha Wilson, Investigator/Researcher at (540) 231-1687; natascha@vt.edu

Nancy Bodenhorn, Supervising Faculty at (540) 231-9704; nanboden@vt.edu

Gerard Lawson, Supervising Faculty at (540) 231-9703; glawson@vt.edu

Launcelot Brown, Supervising Faculty at (412) 396-1046/ Launcelot Brown <brownli@duq.edu>

David M. Moore, Chair IRB at 231-4991/moored@vt.edu



Institutional Review Board

Dr. David M. Moore
IRB (Human Subjects) Chair
Assistant Vice Provost for Research Compliance
CVM Phase II - Duckpond Dr., Blacksburg, VA 24061-0442
Office: 540/231-4991; FAX: 540/231-6033
e-mail: moored@vt.edu

August 11, 2003

MEMORANDUM

TO: Nancy Bodenhorn ELPS 0302
Natascha Wilson ELPS 0302

FROM: David M. Moore 

SUBJECT: IRB EXEMPTION APPROVAL – “ Substance use among female graduate students” – IRB # 03-379

I have reviewed your request to the IRB for exemption for the above referenced project. I concur that the research falls within the exempt status. Approval is granted effective as of August 11, 2003.

cc: file

APPENDIX C

CURRICULUM VITA

NATASCHA MONIQUE WILSON
natascha@vt.edu

Current Address:
 207 Chowning Place
 Blacksburg, VA 24060
 (540) 998-2640

Permanent Address:
 18438 Lake Tulip Avenue
 Baton Rouge, LA 70817
 (225) 756-8181

EDUCATION

Ph.D., Counselor Education, June 2004
 Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA
 (CACREP)

Dissertation: Substance Use Among Female Graduate Students
 Advisor: Nancy Bodenhorn

Master of Education, Counselor Education, May 2000
 Southeastern Louisiana University (SLU), Hammond, LA
 (CACREP)

Bachelor of Arts, Psychology; Minor: Computer Science, May 1997
 Southeastern Louisiana University, Hammond, LA

HONORS/AFFILIATION

- Chi Sigma Iota
- American Counselors Association (ACA)
- Southern Association for Counselor Education and Supervision (SACES)
- American Multicultural Counseling and Development (AMCD)
- Multicultural Academic Opportunities Program Scholarship (MAOP)
- Alpha Kappa Alpha Sorority, Inc. (AKA)

RESEARCH INTEREST

- Substance use and abuse among women and female adolescents
- HIV and substance use
- Group work with sexually and physically abused children
- Group work with adult survivors of sexual abuse

TEACHING INTEREST

- Counseling Education courses

RELATED EXPERIENCE

Peer Mentor Coordinator, MAOP, Virginia Tech
 Blacksburg, VA; August 2001 – present

- Facilitate mentor program for five colleges

- Monitor academic progress
- Organize tutoring sessions
- Facilitate Mentor Workshop
- Provide information regarding available academic resources
- Facilitate mentee workshops (research, writing resumes, developing personal statements, graduate school, grant funding, etc.)

New River Valley Community Services, Clinical Internship
Blacksburg, VA; April 2001 – August 2001

- Co-coordinated six summer youth camps
- Provided individual and group counseling (Oppositional Defiant Disorder, Bipolar, Attention Deficit Disorder (ADD), Borderline Personality Disorder, etc.)

Graduate Assistant, Counseling Education, Virginia Tech
Blacksburg, VA; August 2000 – May 2000

- Participated in establishing a pro-bono clinic affiliated with the university
- Supervised Master's Community/School Counseling Education practicum & intern students

Interim Program Coordinator, Children's Advocacy Center
Hammond, LA; April 2000 – August 2000

- Coordinated cases along with multidisciplinary team (Child Protection Agency & Law Enforcement)
- Modified and compiled monthly and quarterly statistics
- Implemented public awareness program
- Provided counseling for sexually and physically abused children, including non-offending parents
- Co-facilitated sexually and physically abused children's groups
- Provided counseling for adult survivors of sexual abuse

Contracted Counselor, Headstart Centers (4 Centers located in the following counties: Livingston, Springfield, Tangipahoa, & St. Tammany); January 2000 – May 2000

- Provided Individual and group counseling
- Utilized play and art therapy with at risk children

Group Co-facilitator, Southeastern Louisiana University (Counseling Department)

Counselor Intern, Court Appointed Special Advocates (CASA)
Ponchatoula, LA; August 1999 – May 2000

- Provided individual and group counseling for children
- Case management
- In-home therapy
- Collaborated with school officials in developing IEPs

Teaching

Diverse Populations, Department of Counseling Education, Virginia Tech
Roanoke, VA; January 2001 – May 2001

- Prepared syllabus
- Evaluated assignments and projects

WORKSHOPS AND TRAINING:

Identification and Treatment of Adolescent Sexual Offenders
Expressive Therapy
Children in the Middle

Art of Forensic Interviewing
 Parents in Divorce
 Sexual Deviant Behavior
 Adult Survivors of Sexual Abuse
 Using the Reflecting Team in Group Supervision of Practicum and Internship Students
 Supervision Training Materials for School Counselors
 Approaches to Training School Counselor Supervisors
 Grant Writing
 Medication Management New Material Module
 Birth Order: The Part You Play in the Family Circus
 Play Therapy: Implications for School Counselors, Counselors, Educators, and
 Counseling Supervisors
 Sexual Addiction Counseling Competencies: A study of professional addiction clinicians
 Group Play Therapy with Sexually Abused Preschool Children: Group Behaviors and
 Interventions
 Training Teachers to Identify and Report Suspected Child Abuse
 First Generation College Students: Focusing on Needs and Building Strengths
 Counselor Training: Creating a GLBT-Affirmative Environment
 Couple Therapy with Gay Men and Lesbians
 Common Factors and Our Sacred Models

PRESENTATIONS

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