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Prevalence of substance use in high school students from the United States

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PREVALENCE OF SUBSTANCE USE IN HIGH SCHOOL STUDENTS FROM THE UNITED STATES

By

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Dedications

I would like to dedicate this work to my parents, Marc and Eileen Damato. Without your guidance, love, and consistent faith in me this work would have never been a thought.

I would also like to dedicate this to Daniel Kinkler, who inspires me everyday to love what I do. I appreciate your support in every way.

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Abstract

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Substance use and abuse have become a rising epidemic all around the United States. Using the data of the 2013 Youth Risk Behavior Survey (YRBS), this study examined the prevalence of substance use in high school students in the United States. This study hoped to find answers to three questions: 1) Are there gender differences in substance use among high school students in the United States? 2) Are there grade level differences in the substance use? And 3) Are there race differences in substance use? Data for the study included responses from 13,583 students on the 2013 YRBS that were publicly available at the Centers for Disease and Control website. In general, results of chi-Square ($\chi 2$) tests indicated significant grade level and race differences in smoking, alcohol drinking, and drug use. Gender differences in substance use were generally not apparent.

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Chapter 1

The Problem

Being a teenager in high school can be challenging. Having many pressures to be cool, popular, or a large group of friends that can control how a teenager behaves. What many students may realize is that teenage years are a critical period in their development. Adolescence is a period of development, and some of that development may involve substance use, which could have consequences into adulthood. National data indicated that a proportion of adolescents use alcohol, tobacco, and other drugs. (Parker & Bradshaw, 2015). Adolescence is a critical period of physical and cognitive development, and it is vital to understand the consequences these choices have over time. We must know these emerging patterns of substance use, to understand how this may affect adolescents into adult life. It is common for youth to use more than one substance. Before reaching the age of 16 years, adolescents begin to use one or multiple substances (Parker & Bradshaw, 2015).

According to the Centers for Disease Control and Prevention (2016), our nation has seen an extreme increase in drug abuse and use in the past 10 years. The national average of overdose deaths related to drug use has gone up in the United States by 137% since 2000. There was a 200% increase in overdose deaths caused by opioid pain relievers and heroin. Gervais, O'Loughlin, Meshefedjian, Bancej, and Tremblay (2006) found that participants who smoked their first puff and inhaled smoke thereafter had a higher chance of nicotine dependence, well before the daily smoking habits began to emerge. Windle (1999) reported that adolescent alcohol use was widespread in the United States, with many adolescents having consumed alcohol by their senior year of high

school. There is very little public knowledge of the prevalence of the patterns of use however, which can be a few drinks to heavily drinking on a regular basis. Alcohol use among teens has been associated with the three most common forms of adolescent mortality. These include homicides, suicides, and more specifically accidental deaths, like car or boat crashes.

If people in our country are using drugs at that volume, how is this affecting our adolescents and our school systems? Do adolescents make up a large population of these users and overdose deaths? These are important questions to ask regarding adolescents and their substance use habits.

Purpose of the Study

Using the data of the 2013 Youth Risk Behavior Survey (YRBS), the purpose of this study was to determine the prevalence of substance use in high school students in the United States, in regard to their gender, race, and grade level.

Research Questions

The study hoped to find answers to three questions:

1) Are there gender differences in substance use among high school students?

2) Are there grade level differences in the substance use?

3) Are there race differences in substance use?

Hypothesis

The study predicted that substance use was prevalent among males more than females, students in higher (i.e. 12^{th}) than lower (i.e., 9^{th}- 11^{th}) grade levels, and in Whites than Black and Hispanic students.

Significance of Study

The main significance of this study was to gain information about the prevalence of drug use among student that can be used as basis for school psychologists, counselors, social workers, and other school administrators to implement programs and policies to decrease or eliminate smoking, alcoholic drinking, and drug use in high school students. This study hoped to understand deeper the demographic risk factors of substance use among students so that high school students. In turn, the implications of the study can hopefully raise awareness in youth and their families, schools, and community agencies to collaboratively work together in promoting protective factors to the general well-being of students.

Limitations

This study was conducted with some limitations. First, data used to describe the prevalence of substance use among high school students in the United States were collected in 2013 as part of the YRBSS. It is claimed that the data may not be accurate to capture current practices and behaviors of students on substance use behaviors. Second, the sample in the 2013 YRBSS only high school students in the United States therefore, not representative of all high school students in the world, including those enrolled in private schools. Third, data were collected from adolescents (i.e., grades 9^{th}-12) who were attending school and do not represent all adolescents in this age group. Lastly, substance use practices and behaviors were self-reported by students and responses can be biased. CDC cannot determine the degree to which response bias was present in terms of underreporting or over-reporting of behaviors.

Assumptions

In this study, the researcher assumed that substance use can influence academic and behavioral-emotional functioning of students. Alcohol drinking, smoking, and drug use are risky behaviors that can cause academic, behavioral, and emotional problems in high school students. The use of substances by high school students is assumed to be occurring, but understanding the rate at which it is happening is important.

Definition of Terms

Cocaine. An addictive drug derived from coca or prepared synthetically, used as an illegal stimulant and sometimes medicinally as a local anesthetic.

Ecstasy. A synthetic amphetamine used illicitly for its mood-enhancing and hallucinogenic properties. It is also called *MDMA* (abbreviation of the chemical name *methylenedioxymethamphetamine*)

Hallucinogen. A drug that causes hallucinations, such as LSD (a synthetic crystalline compound, lysergic acid diethylamide that is a potent hallucinogenic drug)

Heroin. A highly addictive analgesic drug derived from morphine, often used illicitly as a narcotic producing euphoria.

Inhalant. A medicinal preparation for inhaling.

Methamphetamines. A synthetic drug with more rapid and lasting effects than amphetamine, used illegally as a stimulant and as a prescription drug to treat narcolepsy and maintain blood pressure.

Overdose. An excessive and dangerous dose of a drug.

Prescription drugs. Is a pharmaceutical drug that legally requires a prescription from a doctor.

Overview of the Study

Chapter 2 provides a review of literature relevant to substance use and abuse. The literature provides information regarding substance use and gender. Review of literature concerning race focused on White, Hispanic, and Black people. The literature that focused on age provided in depth understanding of substance use at all ages.

Chapter 3 describes the methodology and procedures used in this study in terms of setting and participants, the instrumentation used, and statistical strategies for data analysis.

Chapter 4 reports the statistical findings of the study presented in tables and their interpretations.

Finally, Chapter 5 provides a discussion of the salient findings, implications, and recommendations for future research.

Chapter 2

Literature Review

Theories on Substance Use

Petraitis, Flay, & Miller (1995) provide an explanation of substance use in terms of social control theory. This theory states that mechanisms related to neighborhood disorganization, our specific attachment to our families, and what our neighborhoods' social values are, contribute directly to our initial start and use of the use of substances. The social control theory speaks to how our environment and our caregivers affect our substance use behaviors. If our neighbors, our parents, and our friends use, and we live in drug dealing, poverty stricken neighborhood, there may be a higher probability that we start using substances. McDonough, Jose, & Stuart (2015) found that as negative peer influence increased, there was an increase in use for all substances they tested. They found the more that a student used alcohol, cigarettes, or marijuana, the more negative peer influence on their friends. These findings align with the theories that our environment, such as friends and family, can contribute to substance prevalence. These theories do not support the biological influence as to why adolescents might begin to use substances. For example, if a neighborhood is "disorganized", meaning poor neighborhood relationships and a high level of substance use, then individuals in that neighborhood will start using substances. Moreover, if an individual's attachment to their family is poor and they are connected to peers who do not have a positive substance relationship, that individual will be more likely to use. Lastly, neighborhood values are

also an influence, meaning an individual lives in a drug infested, poor, uneducated neighborhood, we may not have the resources to prevent substance use in adolescents.

Similarly, social learning theory can be used to explain substance use. Social learning theory states that experimental substance use originates in "substance-specific attitudes and behaviors of people who serve as an adolescent's role models." (Petraitis, Flay, & Miller, 1995, p. 68). This theory proposes support in the belief that when adolescents begin to use substances in an experimental way, it is because of their environment and the behaviors that their caregivers exhibit. When individuals see parents using substances, the children who are witnessing these behaviors will mimic what they have seen. Mays, Gilman, Rende, Luta, Tercyak, & Niaura (2014) examined parents who exposed their children to the substance nicotine. This study identified parental nicotine dependence as critical factors influencing a child's use of nicotine. Further more, adolescents with nicotine-dependent parents are susceptible to more intense smoking patterns. The children of parents who smoke (29% of participants overall) were categorized into two groups: regular smokers and early experimenters. These results indicated that social learning theory has some grounding, specifically as parents have high influence on their children's use of substances in the future. Mays et al. (2014) also found that the longer a parent uses nicotine as seen by their children, the higher the risk grows for the child to imitate their behavior. These behaviors, explained by the social learning theory, seem to be avoidable if the parents do not expose their children to substance use or if the exposure is for a short period of time. Markham, Aveyard, Bisset, Lancashire, Bridle, & Deakin (2007) found that there is a relationship between smoking prevalence at schools and disengagement at school. They found that a negative social

environment within a school will result in higher truancy behaviors, such as smoking at school, then compared to a school that has a more positive and well-liked environment. Thrash & Warner (2016) found that a permissive attitude from teachers and administration towards alcohol use was linked to significant risk factors in mixed urban/rural schools. For example, if a student speaks about drinking on the weekends or even is drinking during school hours, on school grounds, and there is a permissive attitude from school leaders, there is a higher risk for substance use from these students. Again, previous findings in the literature support social control theory. Teachers, administrators, and leaders at a school can have a huge impact on a child's behavior and future endeavors. If an individual in a community are not showing a care for their students, and an overall lack of positive interactions, individuals might see a higher rate of truancy, specifically for drinking and smoking. If individuals see parents smoking in front of their children, you see a much greater number of children who go on to smoke, then if a child had no early exposure to smoking. Individuals see similar outcomes for drinking as well.

In contrast, Karoly, Harlaar, & Hutchinson (2013) proposed that substance use disorders (SUDs) are chronic neurobiological disorders characterized by the compulsion to find and use substances, the loss of control over the use of these substances, and the emergence of a negative emotional state when a person is denied access to the substance. This theory proposes that environmental behaviors are not directly related to substance use. This theory speaks to substance use disorder, which is the chronic use of substances. Unlike substance use disorders, individuals see a biological urge to use substances. For example, a student could grow up in a household where their parents never drank,

consumed drugs, or smoked, but an innate urge to use substance could still result. In this, the trigger is unknown. Maybe the child experimented with a substance once and that is where we see the Substance use begin. For adolescents, this may be an issue. Other people may utilize substances as a way to have fun, but either way this theory speaks to the overall desires that drive us to use substances. Again, unlike social learning theory**,** these behaviors are theorized as a biological part of our human make up.

Morganstern & Leeds (1993) stated that substance use is motivated by narcissistic crisis, specifically "the value of the self is called into question." This is an interesting idea since many adolescents are going through such a transition in young adulthood. Adolescents starting high school, balancing friendships, sports, homework, and hormonal changes; these differences in life and stress level can affect the way in which we view ourselves. Carter, Johnson, Exline, Post, & Pagano (2012). states: notably, narcissistic adolescents that show erroneous behavior are at increased risk for developing substance use disorders which continues steadily into adulthood. The narcissistic crisis theory, although not as widely accepted, provides a different perspective on what processes may be occurring in an adolescent's brain. This theory strays away from environmental and biological features affecting a child's substance use, and focuses more on an internal crisis going on that many adolescents face. Young adult hood can be a very confusing time, and can throw young individuals into a tailspin. The narcissistic crisis theory may explain further as to why a teenager might begin to use a substance.

There are various theories that can be applied to adolescents using substances, but there will never be just one to describe why a high school student would turn to drugs. Each student is different and has a different life experience and a worldview that cannot

be explained or measured by one specific theory or reason. Understanding, and diving deeper into research about each perspective can potentially help us understand what might be going on as an adolescent's brain continues to develop.

Gender and Substance Use

The study conducted by Simões, Matosa, & Batista-Foguetb (2012) explored various risk factors and how they affect substance use in school aged children from 11-18 This study hypothesized that for girls, the most important factor that pulled them to substance use was predicted to be social and interpersonal conflict. For insistence, if a girl felt bullied or isolated from her peers**,** these aggressions played a bigger role than it did for boys. This study found that girls tended to have a stronger tie to human interactions and feel a stronger connection to their personal relationships, and if these relationships are in turmoil it is harder to cope. It was also found that girls showed a higher rate of being rejected by peers than boys. Notably, results suggested that girls might be more reactive to interpersonal conflicts with parents or peers. Also, girls tended to display more conflict with peers, and have more vulnerability when it comes to peer rejection. As for the boys, the major factor that was hypothesized to affect a turn to substance use was not interpersonal relationships, but things out of their control, like depression, or other psychological problems. Substance use conflict is associated with risk for depressive symptoms for boys. For boys of this study, they did not seem to be rejected, or bullied as much as the girls, and if a personal relationship was at odds, the boys did not feel a strong enough pull to substance use. This study found that as related to gender, girls had a high association of family and friends and symptoms, whereas for boys, it was found that association between alcohol and tobacco was higher than for girls.

On the other hand, there was a greater association between alcohol and friendship in girls than in boys. Family, friends, and classmates were more strongly associated with psychological symptoms in girls than in boys.

As predicted, girls will feel a stronger vulnerability to substances when it relates to family, friends, and classmates. A study done by Carli (1989) found that social influence had the ability to impact gender. Research has shown that gender does have an effect on how groups interact. Women are shown to exhibit a greater amount of agreement and other acceptable social behaviors compared to men, who in turn show greater amount of group disagreements. These findings align with the study of Simones et al. (2012) that gender of student can greatly influence substances use. Carli (1989) showed that females put a great deal of pressure on themselves to be liked and be in agreement with others, and when that is compromised, like in a fight with a friend or family, it can lead them to substance use. Walitzer & Dearing (2006) found a notable association between gender and relapse, which had to do with marital issues. This gender-specific finding shows that women are at more of a risk due to marital stress. Just like findings by Simones et al. (2012), interpersonal conflict appeared to be more risky for women in regards to relapse. A different outcome is seen in men. Men appeared to be saved by marriage but are at more of a risk of relapse when they are alone. These findings related to sobriety and relapse and not general substance use, suggest that women are found to have difficulties with substance use when it came to interpersonal conflicts.

After reading through the above research, it seemed that the findings leaned towards some gender biases as to why women and men might be attracted to substance use. Maricic, Sucic, & Sakic (2013) suggested gender differences in substance use could

be attributed to gender socialization. It is suggest that women are taught to put more value on personal relationships, such as family, peers, or sexual relationships. Brady and Randall (1999) found that there are a number of social factors differentiating women from men when it comes to substance use. There is a harder social response to women using substances. In some cases, it is thought that people with substance use disorder are seen in a negative light, and with that, women experiences a lot more social judgment compared to men. This, again, seems like gender biases within theories of substance use. Hecksher & Hesse (2009) indicate that women do not display externalizing behavior problems (physical aggression, rule breaking, stealing, and cheating) has serious implications for women with addiction problems. Hecksher & Hesse (2009) suggested that it is socially unacceptable for women to show these externalizing behavioral problems. Furthermore, women might show them, but it is seriously frowned upon. There is an image of how women should act and women with substance issues are seen by society and themselves as "fallen women" incapable of being the women society needs them to be. Understanding the differences of why women and men turn to substances is important, but it is also important to understand biases that go along with some research. Women may turn to substances to cope with bad relationships or a break up of a marriage, but they also might be turning to drugs because of a more biological and environment issue, that developed over time.

Choo, Beauchamp, Beaudoin, Bernstein, Bernstein, & Bernstein (2014) stated that, as a whole, women move more rapidly from initial drink to problem drinking. This transition is quicker then men and is referred to as telescoping. (p.1439) .The term telescoping was used in a study done by Nolen-Hoeksema & Hilt (2006), which stated

that the progression from first time use of alcohol to a real problem with drinking appears to be a faster progression in women than in men. These women go from getting drunk regularly to having diagnoses of alcoholism, very rapidly. Telescoping explains how different genders use substances. Through the theory of telescoping, men seem to try holding onto some control and stick to their normal routine. Women "telescope" and find a rapid route to destruction. Research done by Alexander Diehl, Bernhard Croissant, Anil Batra, Götz Mundle Helmut Nakovics, & Karl Mann (2006) state: while women start to consume alcohol, and become dependent later in life compared to men, their developmental course of alcoholism in terms of periods between onset of continuous alcohol consumption, onset of dependence and first inpatient treatment is significantly shorter compared to that seen in men. (pg.349) This study was focused on finding if telescoping behaviors affected gender differences in drinking. The finding was that yes, they saw a difference, and confirm that telescoping is a style of dependency that women, specifically with the use of alcohol.

To understand telescoping at a deeper level Audrey M. Shillington, Susan I. Woodruff, John D. Clapp , Mark B. Reed & Hector Lemus (2012) created a study, which looked at the first age of use of cigarettes, alcohol, and marijuana. They stated that telescoping could be explained through "intentional distortions (e.g., exaggerating at baseline), cognitive errors, developmental or maturational factors, forgetting, or carelessness." Individuals may fabricate reports when it comes to self-reported age of use of tobacco and other substances. Telescoping may also come from adolescent's idea of what is first time use or distortion of that time line. They also stated that because of different memories related to each substance, meaning first time cigarette use may not be

as memorable as first time marijuana use, telescoping can vary by the substance. The findings of this study suggest that telescoping has a lot to do with whether or not the person remembers the exact first time use of the specific substance, and if this is reliable and not distorted self-reported information.

Telescoping has many different findings that support its affect on women and substance use. It is important to explore the affects and reasoning behind men and using substances. As stated in previous research by Simones, et al. (2012) men, specifically adolescent boys use substances because of mental health issues. Shannon, Havens, Oser, Crosby, & Leukefeld (2010) found that men had higher rates for the use of drugs, specifically: alcohol, marijuana, cocaine, and hallucinogens. Men also reported earlier age of first use of these drugs compared to women. Shannon et al. (2011) state that again, reasoning behind higher levels of men using drugs than women are due to "traditional gender stereotypes, differing social stigma, as well as disparate opportunities to use." Women are theorized to use at a lower rate and start later because of the stigma attached to this idea and through this theory men don't have this social shame or stigma attached. Whaley, Hayes-Smith, & Hayes-Smith (2010) researched gender pathways associated with substance use. This study found that students, of both genders reported peer disapproval for using substances, but that there was a higher degree of peer approval for boys. This research suggested that even though boys sense a degree of disapproval from their peers, individuals see a higher rate of approval from their peers than girls do. Boys are seen as cool, whereas girls it is a risky behavior that they probably should not participate in. Boys may see a high level of peer disapproval, but it is not high enough to stop them from doing it. For girls, it is seen that a higher disapproval rate from their

peers, which seem to stop the use of substances, for now. Since individuals do see changes in societies in the past few decades, it is important to note that Johnston, O'Malley, Bachman, & Schulenberg (2008) found that the gap in binge drinking, still favorable to boys, has been on the decline over the past few years. It is proposed that girls are starting to approach boys in this drinking pattern. These findings may suggest that the modern woman may not feel the pressures of society as they once did. This is what our research is hoping to find. Are these women growing in the 21st century different then men when it comes to using substances? The research presented above attribute societal pressure as a big deterrent for woman to not drink, it is important to understand how these pressures have changes and what affect it has had on the modern woman.

Race and Substance Use

The opening statement in this article done by Rote & Taylor (2014) was most epidemiological studies have found that African-American adolescents report significantly lower rates of licit and illicit drug use compared to their Caucasian peers. This finding is exactly what the present study hopes to uncover regarding race and adolescent drug use. Since the present study hopes to uncover the prevalence of drug use regarding race, gender, and grade level, we will only focus on the Abstinence/Abuse Hypothesis, The Gender Difference Hypothesis, and The Precocious Initiation Hypothesis presented by the Rote & Taylor (2014) study.

Rote & Taylor (2014) suggest that "compared to whites, blacks are more likely to abstain from drug use, but those who do use drugs are at a greater risk for experiencing drug-related problems." There is evidence to suggest that African Americans experience

a higher level of substance problems, as they grow older. (Rote & Taylor, 2014) This hypothesis explains that, like the present study would like to identify, the older you are the more likely you are to dabble in drug use. It was also found by Whitehead, Trenz & Latimer (2014) that older African Americans who use substances are two times more likely than younger African Americans to use crack and half as likely to have used marijuana. This suggests that in midlife and older, black adults engage in illicit drug use and high-risk drugs at higher rates than black youth. (p.133) This has serious implications for black vs. white drug use in adolescents. Watt (2008) investigated a crossover effect. That black youths use drugs at a lower rate than white youth, but when we speak about black and white people over the age of 35, we see substance use rate traverse to black adults. Also, this research found that black females are less likely to drink heavily in adolescence compared to white females, but once the 35 and older group is analyzed we see that black females surpass white females.

The information discussed found by Watt (2008) coincides with the next hypothesis used in the Rote and Taylor research, the gender difference hypothesis. This hypothesis states: it is seen that the difference in gender use of drugs among the African-American community is largely due to black woman abstaining from drugs all together. Black women seem to be avoiding drugs all together and that is what is driving this disparity between drug use among the races As stated above, we see black women generally avoiding drugs at a young age. Guthrie & Low (2008) stated that most research shows that African American adolescent women are less likely to devise early alcohol and cigarette use compared to Latina, Asian American, and European American adolescent females. Again, here is research saying that black females have such a low

level of substance use, helping the gender difference hypothesis. (p. 365) Johnston, O'Malley, & Bachman (2008) stated that among the three largest race groups in the United States, African American, Whites, and Hispanics, it is shown that African-Americans have the lowest rate of substance use. When looking at cigarette use, African Americans rate to be significantly lower than the White population. As far as Hispanic students, there is a rate that falls between black and white youth. O'Malley, & Bachman (2008) stated that Hispanic youth usually fall closer to white adolescents, and with some illicit drugs, the highest rate of use within the Hispanic group, specifically in 12th grade.

The Precocious Initiation Hypothesis states that African Americans start to use substances at a later age than white people. Researchers using the future survey have consistently reported greater drug use among younger Caucasian respondents compared to African-Americans. (Rote & Taylor, 2014) There is research to show that African Americans and Whites show great differences in the way in which they use substances. A study done by Thompson, Goodman, & Kwate (2016) stated that African Americans are less likely to ever use tobacco and alcohol than white people. But research shows that once African Americans start using these substances, they are less likely to quit compared to Whites. This helps to verify the Precocious Initiation Hypothesis.

The last hypothesis that was analyzed by Rote & Taylor (2014) focused on the differences between black and white substance uses, and it is important to look at what the research says about all different racial groups. Mercado-Crespo & Mbah (2013) found that the two largest groups of substance users are white and Hispanics, when speaking about adolescents. Whites, in this study made up about 45.52% and Hispanics 29.68%, while African-American groups fell further behind. Research conducted by Schmidt, Ye,

& Greenfield (2007) found that overall, the Hispanic population reported the highest severity of difficulties regarding substance dependence. Another study, conducted by Tonin, Burrow-Sanchez, Harrison, & Kircher (2008) stated that the Mexican-American 8th grade students were positively related to actual drug use for all three-drug types looked at within the study (marijuana, inhalants, and alcohol). It seems that when speaking about race we see white participants having the highest use of substances all around, Hispanic participants rating high levels of alcohol use and levels of other substances, and Black participants rating at lower levels of substance use.

To understand all racial and ethnic groups is important in finding out why different races use at different rates. Mason, Mennis, Linker, Bares, & Zaharakis (2013) stated the following: Within the Social Cognitive Theory model put forth in the present study, "culture is conceptualized as one personal factor influencing substance use behavior." (p. 63) Mason et al. (2013) stated that African American culture, within the youth population, there are reports of family members and extended kin being the most influential, compared to European Americans, who show influence from their peers. Furthermore, Hispanic youth demonstrated a higher rate of sibling behavior influencing their drug use, not friends. This finding supports that culture and environmental factors influence substance use. If a community that does not condone youths, specifically minority youth, in the use of drugs it is noted that they are to shy away from substances. As far as white culture is concerned, substance use is thought to be influenced by peers. This is supported by the research done by Mason (2013) Research conducted by Ma et al. (2016) stated that for Hispanic culture, families are potential cultural assets. The close bonds between extended and nuclear families may provide a buffer against the use of

substances. These families provide emotional and instrumental support that promotes resistance to peer pressure. Allem, Lisha, Soto, Garbanati, & Unger (2013) found that Hispanics emerging into adulthood who seek out treatment for substance use problems are advised to strengthen their relationships with family members. It is suggested to have a successful recovery Hispanics are asked to keep commitments towards loved ones. Following these guidelines, it has been shown to help Hispanic substance abusers follow the right path to recovery. In multiple studies, it is shown that if Hispanics don't use substances, it is generally because their family does not and they have strong bonds with them. If Hispanics do end up using substances, it is hypothesized that a treatment for them would be to rekindle their bonds with family members and loved ones. We don't only see family relationships being an important factor in substance use within Hispanic families. A study conducted by Rowan (2016) stated that siblings were found to be statistically significant and strong predictors of experimentation with alcohol and cigarettes, in regard to black adolescents. It was shown that siblings had a strong influence over the introduction and use of alcohol and cigarettes within the black youth community.

Research conducted by Goings, Butler-Bente, McGovern, & Howard (2016) examined the differences between substance use for whites, blacks, and mixed children of both races. "The highest prevalence of lifetime cigarette use was reported by Whites (62.8%), followed by Black–White (57.7%) and Black youth (44.9%). The highest prevalence of lifetime alcohol use was reported by Whites (60.6%), then Black– Whites (53.1%) and Blacks (46.5%). The highest prevalence of lifetime marijuana use was reported by Black–Whites (33.3%), followed by Whites (29.6%) and Blacks (24.7%).

Whites had the highest prevalence of lifetime regular smoking (27%), followed by Black–Whites (19.2%) and Blacks (6.8%).” (Pg. 530) This research wanted to understand the differences between black and white culture as far as substance use, but also the bi-racial youth. It was shown that the bi-racial group still reported higher substance use levels than black youth, but less than white youth.

Tanner-Smith (2011) did interesting research that contradicts many findings, but is consistent with community attitudes within substance use. She stated consistent with the social ecological model and the contextual amplification hypothesis, the alcohol risk seemed to be more advanced with black girls who had early puberty development, who also lived in a highly disadvantaged neighborhoods. (p. 639) These findings are interesting because the next statement found that when girls have relatively low disadvantaged neighborhoods, there is a higher risk for use of alcohol. This finding states that if a black girl develops early and lives in a community with severe disadvantages, they will be at the same risk as girls who live in communities with relatively no disadvantages, who develop early as well. With the research presented, in some cases, race does have a significant outcome on whether or not substance use will be apart of your life. It matters greatly, as far as race, the age you are and whether or not you live in a community that is supportive of a positive, substance free lifestyle.

Age and Substance Use

Different age factors through extensive research was discussed and we see age being an important role when it comes to race differences in substance use, as well as gender.

Whitehead, Trenz, Keen, Rose, & Latimer (2014) states that whites tend to have higher rates of substance use during adolescence, but this rate drops into adulthood. In contrast, African-Americans' substance seems to increase with age, surpasses whites. All participants in this study were African-American, and 59% were female. Age cohorts did not differ on positive urinalysis, with 57% of younger adults and 62% of older adults testing positive for illicit substance use at baseline. Younger and older adults also did not differ on cigarette, alcohol, or nasal heroin use, which had a high prevalence in both groups. (Whitehead et al., 2014 p. 131) In African American population, the difference between substance uses in ages 18-68 had not much difference. These findings suggest that once black adolescents start using drugs around the age of 18 they will have equivalent numbers with their race until around the age of 70. Schuler, Vasilenko, & Lanza (2015) stated that age is a key factor for all races and genders to understand substance use. Specifically, in regard to marijuana use, at around age 17 males were found to have a significantly higher usage rate than females. This trend continues from age 17-31. Data collection completed by The Center for Disease Control (2013) indicated that 8.6% of students trying marijuana for the first time before turning 13. This rate was higher in males than females, and higher among white, black and Hispanic males, compared to female counterparts. This number, although relatively small, indicates that adolescents are already involved in the use of substances.

Maricic, Sucic, & Sakic (2013) stated that different age groups felt very differently regarding marijuana use. It is found that young people advocating for drug use, particularly cannabis, because they are more prone to be using this substance. As the respondents grew older, there was a less favorable attitude towards its legalization. This

was thought to be because of the high social stakes of smoking marijuana at an older age**.** From about 13-17 years of age is when we see a jump in the numbers, but after age 27 there is a decrease in the usage. (Maricic, Sucic, & Sakic, 2013). Sutherland & Shepherd (2001) stated that at age 11, 5.1% of their overall sample drank regularly, but around age 16 we see 36% of the sample drinking. Regarding cigarettes, 4.8% reported they smoked regularly at age 11, and 24.1% at age 16. Reporting of illegal drug use rose from 0.9% at age 11 to 14.5% at age 16. The rise is rapid from middle to high school, and the attitudes about using drugs become aligned with the usage. Sutherland & Shepherd (2001) go on to say all types of reported substance use increased with age, with alcohol being the most heavily used substance followed by cigarettes and then by illicit drugs. (p. 639) Latimer, Floyd, Vasquez, O'brien, Arzola, & Rivera (2004) found that rates of tobacco, alcohol and marijuana use were high among youths in school. Both genders had high numbers, reporting that one in three middle school student reported they had recently used alcohol. Research conducted by Kosterman, Hawkins, Guo, Catalano, & Abbot (2000) stated that the age when someone first drinks alcohol or tries a substance is predictive of later issues regarding these substances, earlier use placing individuals at greater risk for later abuse. (p. 360). Age is a factor when speaking about substance use, and abuse. When a child uses a substance early in life, it is shown to be more likely that they continue to use this substance. Shannon et al. (2010), state males begin using alcohol at age 13.6, whereas females began using at age 15.1. Research conducted by Pilatti, Godoy, Brussino, & Pautassi (2013) suggested that adolescents who exhibited early drinking onset showed higher levels of alcohol use, more drunk episodes, and more drug use than adolescents who abstained from alcohol longer. Again, we see adolescents who avoid drinking longer

show a higher rate of healthy behaviors with substances, than adolescents who use substances at a young age. Research done by Svingen, Dykstra, Simpson, Jaffe, Bevins, Carlo, DiLillo, & Grant (2016) found that the participants in their study tended to report using drugs at a younger age when their family had a history of substance use problems.

When talking about substances this study will be focusing on cigarette use, alcohol consumption, and illicit drug use. With the research found related to this study, it was noted that white males in high school, specifically 11th and 12th grade would use substances at a higher rate than any other student. Within this research we expect to find some competition with this number from Hispanic males. It seems that for genders, related to substance use, we see telescoping when speaking about women and substances. Women start using substances and it quickly spirals into an issue. For men we see substances being used for a longer period of time without serious repercussions being attached. Nolen-Hoeksema & Hilt (2000) explained telescoping and relevant it is regarding women's substance use behaviors. Although women in high school use substances and found telescoping as a behavior, it was found to be at a lower rate than males still, especially African-American females. Research conducted by Guthrie and Low (2000) stated that black females have the lowest rate of adolescent substance use compared to any other race. Watt (2008) spoke about the crossover effect stating that once African-Americans move away from adolescents, there is a crossover where more black adults using substances than white adults. Theories were discussed and try to explain why substance use is an issue with adolescent development. Petraitis, Flay, and Miller (1995) stated the social control theory, which involves the neighborhood in which we live, and its affects on our substance use habits. This may help explain the crossover

theory. If neighborhoods provide poor education, no jobs, and violent conduct, it may be likely that adolescents becoming adults with no opportunities at hand. Once all opportunities are exhausted we sometimes see adults turn to substances. If an individual lives in a poor underdeveloped neighborhood, we might not see the proper services to get help. This is why we may see more African-American turning to substances later in life. Whitehead el al (2014) stated this when speaking about African American drug use. At middle adult hood until age 70, there is evidence of high numbers of substance use. Since the present research is just speaking on high school students, the hypothesis of substance use will be most prevalent in white male students in grades 11^{th} &12^{th}, seems to be the most logical explanation.

Chapter 3

Method

Sample and Sampling

The YRBS national survey included public school students from grades 9-12 in all 50 states, including the District of Columbia. The sampling procedure in YRBSS survey utilized information from the Market Data Retrieval (MDR) database. This database contained public and private school information, as well as the most recent data from the National Center for Education Statistics. The study employed a three-stage cluster sampling to ensure a national representation of students in grades 9th through 12th. The first cluster contained 1276 sampling units situated in large counties. The second cluster used 193 schools with equivalent enrollment sizes. The third cluster used random sampling of specific classes (e.g., English or homeroom). In areas with higher minority students, samples of two classrooms in each school were selected.

Demographic information such as gender, grade level, and race were included in the YRBS. Gender distribution was equal. As to race/ethnicity, 56% of students were White, 15% were Black, 21% were Hispanic, and the remaining 9% were from other races. Grade level distribution of students was as follows: 27% were 9th grade, 26% were 10th grade, 24% were 11th grade, and 23% were 12th grade.

Instrumentation

The YRBS survey questionnaire covered mainly risk behaviors of youth in the U.S. It included 86 questions pertaining to the following areas/sections: smoking behaviors, alcohol use, marijuana, hallucinogenic, heroin, methamphetamine, inhalant, ecstasy, prescription drug, and injected drug use.

For the purpose of this study, only those questions related to use of tobacco, alcohol, and drug were relevant. Survey questions associated with tobacco use included: 1) Have you ever smoked a cigarette? 2) Are you currently smoking? 3) Have you ever smoked more than 10 cigarettes? Survey questions associated with alcohol use included: 1) Have you ever drank alcohol? 2) Have you drank 5 or more drinks and 3) Are you currently drinking alcohol?

Survey questions associated with illicit drug use included: 1) Have you ever-used marijuana 2) Are you currently using marijuana? 3) Have you ever used cocaine? 4) Have you ever used hallucinogenic drugs? 5) Have you ever used inhalants? 6) Have you ever used ecstasy? 7) Have you ever used heroin? 8) Have you ever used methamphetamines? 9) Have you ever-injected illegal drugs? 10) Have you ever used prescription drugs without a doctor's prescription?

Procedure

An IRB approval for the study was sought from the Rowan University Office of Research Compliance. Then, data were formally requested from the Centers for Disease Control and Prevention (CDC). Only those data on demographics and substance use were utilized to address the purpose of the study.

Data Analysis

Demographic variables of age, gender, grade level, and race/ethnicity were analyzed using frequency and percentage. Chi-Square ($\chi 2$) test was employed to determine if there were gender, grade level, and race differences on alcohol, cigarette, and drug use. A $p \leq .05$ was set as criterion to decide for statistically significant group differences in substance use.

Chapter 4

Results

Prevalence of Smoking

Table 1 displays the percent of adolescents that had ever smoked at least one cigarette every day for 30 days (i.e., ever smoked cigarettes daily) by gender, grade, and race/ethnicity. The prevalence in having ever smoked cigarettes daily between males (42.50%) and females (39.60%) were comparable and thus, gender differences were not statistically significant, $\chi^2 (1) = .14$, $p \geq .05$.

In reference to grade level, prevalence in having ever smoked cigarettes daily was found to be significantly different between 9th and 11th grade students [$\chi^2 (1) = 4.71$, $p \leq .05$] and between 9th and 12th grade students [$\chi^2 (1) = 5.33$, $p \leq .05$]. Compared to 9th grade students (31.70%), higher prevalence of smoking was reported among 11th (47.00%) and 12th (48.10%) students. No significant differences in prevalence of smoking were found in the following groups of students: 9th and 10th [$\chi^2 (1) = 1.07$, $p \geq .05$], 10th and 11th [$\chi^2 (1) = 1.30$, $p \geq .05$], 10th and 12th [$\chi^2 (1) = 1.64$, $p \geq .05$], and 11th and 12th [$\chi^2 (1) = .02$, $p \geq .05$].

Prevalence in having ever smoked cigarettes daily were higher among Hispanic (43.20%) and White (42.90) than Black (34.00%) students. However, these race/ethnicity differences were not statistically significant: White and Black [$\chi^2 (1) = 1.71$, $p \geq .05$], White and Hispanic [$\chi^2 (1) = .00$, $p \geq .05$], and Black and Hispanic [$\chi^2 (1) = 1.71$, $p \geq .05$].

Table 1

Proportion of Adolescents that Ever Smoked

Demographic Variable	Yes	No
Gender		
Male	42.50	57.50
Female	39.60	60.40
Grade		
9th	31.70	68.30
10th	39.00	61.00
11th	47.00	53.00
12th	48.10	51.90
Race/Ethnicity		
White	42.90	57.10
Black	34.00	66.00
Hispanic	43.20	56.80

Table 2 displays the percent of adolescents that were currently smoking cigarettes daily by gender, grade, and race/ethnicity. The prevalence of currently smoke cigarettes daily was comparable for males (16.40%) and females (15.00%) and thus, gender differences were not statistically significant, χ^2 (1) = .038, $p \geq .05$.

In reference to grade level, prevalence in current cigarette use was found to be significantly different between 9th and 11th grade students [χ^2 (1) = 4.62, $p \leq .05$]. Compared to 9th grade students (10.20%), higher prevalence of smoking was reported among 11th (21.10%) grade students. No significant differences in prevalence of smoking were found in the following groups of students: 9th and 10th [χ^2 (1) = .442, $p \geq .05$], 9th and 12th [χ^2 (1) = 3.27, $p \geq .05$], 10th and 11th [χ^2 (1) = 2.27, $p \geq .05$], 10th and 12th [χ^2 (1) = 1.34, $p \geq .05$], and 11th and 12th [χ^2 (1) = .125, $p \geq .05$].

In terms of race/ethnicity, prevalence of adolescents who currently smoke cigarettes daily was significantly higher among White (18.60%) than Black (8.20%)

students, [χ^2 (1)= 5.181, $p \leq .05$]. Differences were not statistically significant between Hispanic (14.00%) and White students, [χ^2 (1) = .907, $p \geq .05$], and between Black and Hispanic students, [χ^2 (1) = 1.84, $p \geq .05$].

Table 2

Proportion of Adolescents that are Currently Smoking

Demographic Variable	Yes	No
Gender		
Male	16.40	83.60
Female	15.00	85.00
Grade		
9th	10.20	89.80
10th	13.20	86.80
11th	21.10	78.90
12th	19.20	80.80
Race/Ethnicity		
White	18.60	81.40
Black	8.20	91.80
Hispanic	14.00	86.00

Table 3 displays the percent of adolescents that smoked 10 or more cigarettes a day by gender, grade, and race/ethnicity. The prevalence in having smoked 10 or more cigarettes a day between males (10.90%) and females (6.30%) were comparable and thus, gender differences were not statistically significant, χ^2 (1) = 1.61, $p \geq .05$.

Grade level differences in adolescents that smoked 10 or more cigarettes daily were not statistically significant. Chi-square findings were: 9^{th} and 10^{th} [χ^2 (1) = .000, $p \geq .05$], 9^{th} and 11^{th} [χ^2 (1) = .272, $p \geq .05$], 9^{th} and 12^{th} [χ^2 (1)= .058, $p \geq .05$], 10^{th} and 11^{th} [χ^2 (1) = .272, $p \geq .05$], 10^{th} and 12^{th} [χ^2 (1) = .058, $p \geq .05$], and 11^{th} and 12^{th} [χ^2 (1) = .579, $p \geq .05$].

Prevalence in having smoked 10 or more cigarettes daily was higher among White (10.60%) than Black (2.90%) students, χ^2 (1) = 4.916, $p \leq .05$. No significant differences were found between Hispanic (5.10%) and White students, χ^2 (1) = 2.45, $p \geq .05$, and between Black and Hispanic students, χ^2 (1) = .521, $p \geq .05$.

Table 3

Proportion of Adolescents that Smoked More than 10 Cigarettes

Demographic Variable	Yes	No
Gender		
Male	10.90	89.10
Female	6.30	93.70
Grade		
9th	9.10	90.90
10th	8.70	91.30
11th	6.70	93.30
12th	10.00	90.00
Race/Ethnicity		
White	10.60	89.40
Black	2.90	97.10
Hispanic	5.10	94.90

Prevalence of Drinking

Table 4 displays the percent of adolescents that have ever drank alcohol at least once in their life by gender, grade, and race/ethnicity. The prevalence in ever drank alcohol between males (64.40%) and females (67.90%) were comparable and thus, gender differences were not statistically significant, χ^2 (1) = .357, $p \geq .05$.

In reference to grade level, prevalence in having ever drank alcohol was found to be significantly different between 9th and 11th grade students [χ^2 (1) = 4.85, $p \leq .05$] and between 9th and 12th grade students [χ^2 (1) = 8.91, $p \leq .05$]. Compared to 9th grade students (55.6%), higher prevalence in ever drinking was reported among 11th (71.20%)

and 12th (75.6%) students. No significant difference in prevalence of ever drinking was found in the following groups of students: 9th and 10th [χ^2 (1) = 1.33, $p \geq .05$], 10th and 11th [χ^2 (1) = 1.12, $p \geq .05$], 10th and 12th [χ^2 (1) = 3.43, $p \geq .05$], and 11th and 12th [χ^2 (1) = .642, $p \geq .05$].

Prevalence in having ever drank alcohol were higher among Hispanic (72.40%) than in White (65.90%) than Black (63.40%) students. However, these race/ethnicity differences were not statistically significant: White and Black [χ^2 (1) = .197, $p \geq .05$], White and Hispanic [χ^2 (1) = .842, $p \geq .05$], and Black and Hispanic [χ^2 (1) = 1.85, $p \geq .05$].

Table 4

Proportion of Adolescents that Ever Drank Alcohol

Demographic Variable	Yes	No
Gender		
Male	64.40	35.60
Female	67.90	32.10
Grade		
9th	55.60	44.40
10th	64.00	36.00
11th	71.20	28.80
12th	75.60	24.40
Race/Ethnicity		
White	65.90	34.10
Black	63.40	36.60
Hispanic	72.40	27.60

Table 5 displays the percent of adolescents that have currently drank alcohol (at least one drink since the 30 days of taking survey) by gender, grade, and race/ethnicity. The prevalence in currently drank alcohol between males (34.40%) and females (35.50%)

were comparable and thus, gender differences were not statistically significant, χ^2 (1) = .060, $p \geq .05$.

In reference to grade level, prevalence in currently drank alcohol was found to be significantly different between 9th and 11th grade students [χ^2 (1) = 5.21, $p \leq .05$] and between 9th and 12th grade students [χ^2 (1) = 11.55, $p \leq .05$]. Compared to 9th grade students (24.4%), higher prevalence of drinking was reported among 11th (39.20%) and 12th (46.8%) students. No significant differences in prevalence of currently drinking were found in the following groups of students: 9th and 10th [χ^2 (1) = 1.23, $p \geq .05$], 10th and 11th [χ^2 (1) = 1.41, $p \geq .05$], 10th and 12th [χ^2 (1) = 5.40, $p \geq .05$], and 11th and 12th [χ^2 (1) = 1.31, $p \geq .05$].

Prevalence in adolescents who currently drank alcohol were higher among Hispanic (37.50%) and White (36.30%) than Black (29.60%) students. However, these race/ethnicity differences were not statistically significant: White and Black [χ^2 (1) = .814, $p \geq .05$], White and Hispanic [χ^2 (1) = .057, $p \geq .05$], and Black and Hispanic [χ^2 (1) = 1.31, $p \geq .05$].

Table 5

Proportion of Adolescents that are Currently Drinking

Demographic Variable	Yes	No
Gender		
Male	34.40	65.60
Female	35.50	64.50
Grade		
9th	24.40	75.60
10th	30.90	69.10
11th	39.20	60.80
12th	46.80	53.20
Race/Ethnicity		
White	36.30	63.70

Table 5 (continued)

Demographic Variable	Yes	No
Race/Ethnicity		
Black	29.60	70.40
Hispanic	37.50	62.50

Table 6 displays the percent of adolescents that have had 5 or more drinks in a row by gender, grade, and race/ethnicity. The prevalence in having drank 5 or more drinks of alcohol between males (22.00%) and females (19.60%) were comparable and thus, gender differences were not statistically significant, $\chi^2(1) = .121$, $p \geq .05$.

In reference to grade level, prevalence in having had 5 or more drinks of alcohol was found to be significantly different between 9th and 11th grade students [$\chi^2(1) = 3.99$, $p \leq .05$] between 9th and 12th grade students [$\chi^2(1) = 6.85$, $p \leq .05$] and between 10th and 12th grade students [$\chi^2(1) = 4.065$, $p \leq .05$] Compared to 9th grade students (13.5%), higher prevalence of drinking was reported among 11th (24.60%) and 12th (29.20%) grade students. Higher prevalence of drinking was reported among 12th grade students than 10th grade students (17.4%). No significant differences in prevalence of drinking 5 or more alcoholic drinks were found in the following groups of students: 9th and 10th [$\chi^2(1) = .379$, $p \geq .05$], 10th and 11th [$\chi^2(1) = 1.93$, $p \geq .05$], and 11th and 12th [$\chi^2(1) = .406$, $p \geq .05$].

Prevalence in adolescents who have drank 5 or more alcoholic drinks were higher among White (23.20%) and Hispanic (22.60%) than Black (12.40%) students. Spefically, significant statistical differences were found between White and Black students [$\chi^2(1) = 4.19$, $p \leq .05$] and between Black and Hispanic students [$\chi^2(1) = 4.190$, $p \leq .05$]. No

significant difference was found between White and Hispanic students, χ^2 (1) = .000, $p \geq$ .05.

Table 6

Proportion of Adolescents who have had 5 or More Alcoholic Drinks

Demographic Variable	*Yes*	*No*
Gender		
Male	22.00	78.00
Female	19.60	80.40
Grade		
9th	13.50	86.50
10th	17.40	82.60
11th	24.60	75.40
12th	29.20	70.80
Race/Ethnicity		
White	23.20	76.80
Black	12.40	87.60
Hispanic	22.60	77.40

Prevalence of Drug Use

Table 7 displays the percent of adolescents that have ever used marijuana by gender, grade, and race/ethnicity. The prevalence in having ever used marijuana between males (42.10%) and females (39.20%) were comparable and thus, gender differences were not statistically significant, χ^2 (1) = .187, $p \geq .05$.

In reference to grade level, prevalence in having ever used marijuana was found to be significantly different between 9th and 11th grade students [χ^2 (1) = 5.43, $p \leq .05$] and between 9th and 12th grade students [χ^2 (1) = 7.55, $p \leq .05$]. Compared to 9th grade students (30.1%), higher prevalence of marijuana use was reported among 11th (46.4%) and 12th (48.6%) grade students. No significant difference in prevalence of having ever used marijuana was found in the following groups of students: 9th and 10th [χ^2 (1) = .1.79,

$p \geq .05$], 10th and 11th [χ^2 (1) = 1.00, $p \geq .05$], 10th and 12th [χ^2 (1)= 2.03, $p \geq .05$], and 11th and 12th [χ^2 (1) = .180, $p \geq .05$].

Prevalence in having ever used marijuana were higher among Hispanic (48.80%) and Black (46.80%) than White (36.70%) students. However, these race/ethnicity differences were not statistically significant: White and Black [χ^2 (1) = 2.05, $p \geq .05$], White and Hispanic [χ^2 (1) = 2.94, $p \geq .05$], and Black and Hispanic [χ^2 (1) = .080, $p \geq .05$].

Table 7

Proportion of Adolescents who Ever Used Marijuana

Demographic Variable	Yes	No
Gender		
Male	42.10	57.90
Female	39.20	60.80
Grade		
9th	30.10	69.90
10th	39.10	60.90
11th	46.40	53.60
12th	48.60	51.40
Race/Ethnicity		
White	36.70	63.30
Black	46.80	53.20
Hispanic	48.80	51.20

Table 8 displays the percent of adolescents that have currently used marijuana by gender, grade, and race/ethnicity. The prevalence in currently used marijuana between males (25.00%) and females (21.90%) were comparable and thus, gender differences were not statistically significant, χ^2 (1) = .250, $p \geq .05$.

In reference to grade level, prevalence in currently used marijuana in all grade levels were comparable and thus, grade levels were not statistically significant in the following: 9^{th} and 10^{th} [χ^2 (1) = 1.01, $p \geq .05$], 9^{th} and 11^{th} [χ^2 (1) = .1.76, $p \geq .05$], 9^{th} and 12^{th} [χ^2 (1)= 2.82, $p \geq .05$], 10^{th} and 11^{th} [χ^2 (1) = .106, $p \geq .05$], 10^{th} and 12^{th} [χ^2 (1) = .471, $p \geq .05$], and 11^{th} and 12^{th} [χ^2 (1) = .130, $p \geq .05$].

Prevalence in currently used marijuana were higher among Black (28.90%) and Hispanic (27.60%) than White (20.40%) students. However, these race/ethnicity differences were not statistically significant: White and Black [χ^2 (1) = 2.19, $p \geq .05$], White and Hispanic [χ^2 (1) = 1.75, $p \geq .05$], and Black and Hispanic [χ^2 (1) = .025, $p \geq .05$].

Table 8

Proportion of Adolescents who are Currently Using Marijuana

Demographic Variable	Yes	No
Gender		
Male	25.00	75.00
Female	21.90	78.10
Grade		
9th	17.70	82.30
10th	23.50	76.50
11th	25.50	74.50
12th	27.70	72.30
Race/Ethnicity		
White	20.40	79.60
Black	28.90	71.10
Hispanic	27.60	72.40

Table 9 displays the percent of adolescents that ever used cocaine by gender, grade, and race/ethnicity. The prevalence in having ever used cocaine between males

(6.60%) and females (4.50%) were comparable and thus, gender differences were not statistically significant, χ^2 (1) = .376, $p \geq .05$.

In reference to grade level, prevalence in having ever used cocaine in all grade levels were comparable and thus, grade levels were not statistically significant in the following groups: 9th and 10th [χ^2 (1) = .000, $p \geq .05$], 9th and 11th [χ^2 (1) = .866, $p \geq .05$], 9th and 12th [χ^2 (1)= .866, $p \geq .05$], 10th and 11th [χ^2 (1) = .866, $p \geq .05$], 10th and 12th [χ^2 (1) = .866, $p \geq .05$], and 11th and 12th [χ^2 (1) = .000, $p \geq .05$].

Prevalence in having ever used cocaine was significantly higher in Hispanics (9.50%) than Black (2.10%) students, χ^2 (1) = 5.59, $p \leq .05$. Race/ethnicity differences were not statistically significant between White (4.80%) and Black [χ^2 (1) = 1.33, $p \geq .05$] students, and White and Hispanic [χ^2 (1) = 1.75, $p \geq .05$] students.

Table 9

Proportion of Adolescents who Ever Used Cocaine

Demographic Variable	Yes	No
Gender		
Male	6.60	93.40
Female	4.50	95.50
Grade		
9th	4.40	95.60
10th	4.00	96.00
11th	6.80	93.20
12th	7.10	92.90
Race/Ethnicity		
White	4.80	95.20
Black	2.10	97.90
Hispanic	9.50	90.50

Table 10 displays the percent of adolescents that have ever used hallucinogenic drugs by gender, grade, and race/ethnicity. The prevalence in having ever used

hallucinogens between males (8.80%) and females (5.50%) were comparable and thus, gender differences were not statistically significant, χ^2 (1) = .681, $p \geq .05$.

In reference to grade level, prevalence in having ever used hallucinogens in all grade levels were comparable and thus, grade levels were not statistically significant in the following groups: 9th and 10th [χ^2 (1) = .355, $p \geq .05$], 9th and 11th [χ^2 (1) = 1.23, $p \geq .05$], 9th and 12th [χ^2 (1)= 1.23, $p \geq .05$], 10th and 11th [χ^2 (1) = .272, $p \geq .05$], 10th and 12th [χ^2 (1) = .272, $p \geq .05$], and 11th and 12th [χ^2 (1) = .000, $p \geq .05$].

Prevalence in having ever used hallucinogenic drugs were higher among Hispanic (8.40%) and White (7.60%) than Black (2.20%) students. However, these race/ethnicity differences were not statistically significant: White and Black [χ^2 (1) = 3.79, $p \geq .05$], White and Hispanic [χ^2 (1) = .000, $p \geq .05$], and Black and Hispanic [χ^2 (1) = 3.79, $p \geq .05$].

Table 10

Proportion of Adolescents who have Ever Used Hallucinogenic

Demographic Variable	Yes	No
Gender		
Male	8.80	91.20
Female	5.50	94.50
Grade		
9th	4.60	95.40
10th	6.60	93.40
11th	8.70	91.30
12th	8.80	91.20
Race/Ethnicity		
White	7.60	92.40
Black	2.20	97.80
Hispanic	8.40	91.60

Table 11 displays the percent of adolescents that have ever used inhalant drugs by gender, grade, and race/ethnicity. The prevalence in having ever used inhalants between males (7.90%) and females (10.00%) were comparable and thus, gender differences were not statistically significant, χ^2 (1) = .244, $p \geq .05$.

In reference to grade level, prevalence in having ever used inhalants in all grade levels were comparable and thus, grade levels were not statistically significant in the following groups: 9th and 10th [χ^2 (1) = .244, $p \geq .05$], 9th and 11th [χ^2 (1) = .000, $p \geq .05$], 9th and 12th [χ^2 (1)= .244, $p \geq .05$], 10th and 11th [χ^2 (1) = .244, $p \geq .05$], 10th and 12th [χ^2 (1) = .000, $p \geq .05$], and 11th and 12th [χ^2 (1) = .244, $p \geq .05$].

Prevalence in adolescents who ever used inhalants were higher among Hispanic (11.70%) than in White (8.60%) than Black (6.80%) students. However, these race/ethnicity differences were not statistically significant: White and Black [χ^2 (1) = .279, $p \geq .05$], White and Hispanic [χ^2 (1) = .479, $p \geq .05$], and Black and Hispanic [χ^2 (1) = 1.45, $p \geq .05$].

Table 11

Proportion of Adolescents who have Ever Used Inhalants

Demographic Variable	Yes	No
Gender		
Male	7.90	92.10
Female	10.00	90.00
Grade		
9th	10.10	89.90
10th	7.90	92.10
11th	9.90	90.10
12th	7.60	92.40
Race/Ethnicity		
White	8.60	91.40
Black	6.80	93.20
Hispanic	11.70	88.30

Table 12 displays the percent of adolescents that have ever used ecstasy by gender, grade, and race/ethnicity. The prevalence in having ever used ecstasy between males (7.60%) and females (5.50%) were comparable and thus, gender differences were not statistically significant, χ^2 (1) = .329, $p \geq .05$.

In reference to grade level, prevalence in having ever used ecstasy in all grade levels were comparable and thus, grade levels were not statistically significant in the following groups: 9th and 10th [χ^2 (1) = .400, $p \geq .05$], 9th and 11th [χ^2 (1) = 2.00, $p \geq .05$], 9th and 12th [χ^2 (1)= 2.06, $p \geq .05$], 10th and 11th [χ^2 (1) = .648, $p \geq .05$], 10th and 12th [χ^2 (1) = .681, $p \geq .05$], and 11th and 12th [χ^2 (1) = .000, $p \geq .05$].

Prevalence in having ever used ecstasy were higher among Hispanic (9.40%) than in White (5.80%) than Black (4.40%) students. However, these race/ethnicity differences were not statistically significant: White and Black [χ^2 (1) = .421, $p \geq .05$], White and Hispanic [χ^2 (1) = .649, $p \geq .05$], and Black and Hispanic [χ^2 (1) = 2.06, $p \geq .05$].

Table 12

Proportion of Adolescents who have Ever Used Ecstasy

Demographic Variable	Yes	No
Gender		
Male	7.60	92.40
Female	5.50	94.50
Grade		
9th	4.00	96.00
10th	5.50	94.50
11th	8.50	91.50
12th	8.60	91.40
Race/Ethnicity		
White	5.80	94.20
Black	4.40	95.60
Hispanic	9.40	90.60

Table 13 displays the percent of adolescents that have ever used heroin by gender, grade, and race/ethnicity. The prevalence in having ever used heroin between males (2.80%) and females (1.60%) were comparable and thus, gender differences were not statistically significant, χ^2 (1) = .205, $p \geq .05$.

In reference to grade level, prevalence in having ever used heroin in all grade levels were comparable and thus, grade levels were not statistically significant in the following groups: 9th and 10th [χ^2 (1) = .000, $p \geq .05$], 9th and 11th [χ^2 (1) = .000, $p \geq .05$], 9th and 12th [χ^2 (1)= .000, $p \geq .05$], 10th and 11th [χ^2 (1) = .000, $p \geq .05$], 10th and 12th [χ^2 (1) = .000, $p \geq .05$], and 11th and 12th [χ^2 (1) = .000, $p \geq .05$].

Prevalence in having ever used heroin were higher among Hispanic (3.40%) than in White (1.70%) than Black (1.60%) students. However, these race/ethnicity differences were not statistically significant: White and Black [χ^2 (1) = .000, $p \geq .05$], White and Hispanic [χ^2 (1) = .205, $p \geq .05$], and Black and Hispanic [χ^2 (1) = .205, $p \geq .05$].

Table 13

Proportion of Adolescents who have Ever Used Heroin

Demographic Variable	Yes	No
Gender		
Male	2.80	97.20
Female	1.60	98.40
Grade		
9th	2.00	98.00
10th	2.00	98.00
11th	2.40	97.60
12th	2.10	97.90
Race/Ethnicity		
White	1.70	98.30
Black	1.60	98.40
Hispanic	3.40	96.60

Table 14 displays the percent of adolescents that have ever used methamphetamines by gender, grade, and race/ethnicity. The prevalence in having ever used methamphetamines between males (3.40%) and females (3.00%) were comparable and thus, gender differences were not statistically significant, χ^2 (1) = .000, $p \geq .05$.

In reference to grade level, prevalence in having ever used methamphetamines in all grade levels were comparable and thus, grade levels were not statistically significant in the following groups: 9th and 10th [χ^2 (1) = .205, $p \geq .05$], 9th and 11th [χ^2 (1) = .687, $p \geq .05$], 9th and 12th [χ^2 (1)= .205, $p \geq .05$], 10th and 11th [χ^2 (1) = .148, $p \geq .05$], 10th and 12th [χ^2 (1) = .000, $p \geq .05$], and 11th and 12th [χ^2 (1) = .148, $p \geq .05$].

Prevalence in adolescents who ever used methamphetamines were higher among Hispanic (4.50%) and White (3.00%) than Black (1.30%) students. However, these race/ethnicity differences were not statistically significant: White and Black [χ^2 (1) = 1.02, $p \geq .05$], White and Hispanic [χ^2 (1) = .500, $p \geq .05$], and Black and Hispanic [χ^2 (1) = 2.71, $p \geq .05$].

Table 14

Proportion of Adolescents who have Ever Used Methamphetamines

Demographic Variable	Yes	No
Gender		
Male	3.40	96.60
Female	3.00	97.00
Grade		
9th	2.40	97.60
10th	3.00	97.00
11th	3.90	96.10
12th	3.30	96.70
Race/Ethnicity		
White	3.00	97.00
Black	1.30	98.70
Hispanic	4.50	95.50

Table 15 displays the percent of adolescents that have ever prescription drugs without a doctor's prescription by gender, grade, and race/ethnicity. The prevalence in having ever used prescription drugs without a doctor's prescription between males (18.30%) and females (17.20%) were comparable and thus, gender differences were not statistically significant, χ^2 (1) = .035, $p \geq .05$.

In reference to grade level, prevalence in having ever used prescription drugs without a doctor's prescription in all grade levels were comparable and thus, grade levels were not statistically significant in the following groups: 9th and 10th [χ^2 (1) = 1.01, $p \geq .05$], 9th and 11th [χ^2 (1) = 2.94, $p \geq .05$], 9th and 12th [χ^2 (1)= 2.94, $p \geq .05$], 10th and 11th [χ^2 (1) = .520, $p \geq .05$], 10th and 12th [χ^2 (1) = .520, $p \geq .05$], and 11th and 12th [χ^2 (1) = .000, $p \geq .05$].

Prevalence in adolescents who ever used prescription drugs without a doctor's prescription were higher among Hispanic (19.20%) and White (18.70%) than Black (13.30%) students. However, these race/ethnicity differences were not statistically significant: White and Black [χ^2 (1) = 1.34, $p \geq .05$], White and Hispanic [χ^2 (1) = .000, $p \geq .05$], and Black and Hispanic [χ^2 (1) = 1.34, $p \geq .05$].

Table 15

Proportion of Adolescents who have Ever Used Prescription Drugs Without a Doctors Prescription

Demographic Variable	Yes	No
Gender		
Male	18.30	81.70
Female	17.20	82.80
Grade		
9th	12.40	87.60

Table 15 (continued)

Demographic Variable	Yes	No
Grade		
10th	17.30	82.70
11th	20.80	79.20
12th	21.30	78.70
Race/Ethnicity		
White	18.70	81.30
Black	13.30	86.70
Hispanic	19.20	80.80

Table 16 displays the percent of adolescents that have ever injected illegal drugs by gender, grade, and race/ethnicity. The prevalence in having ever injected illegal drugs between males (2.20%) and females (1.30%) were comparable and thus, gender differences were not statistically significant, χ^2 (1) = .338, $p \geq .05$.

In reference to grade level, prevalence in having ever used injected illegal drugs in all grade levels were comparable and thus, grade levels were not statistically significant in the following groups: 9th and 10th [χ^2 (1) = .000, $p \geq .05$], 9th and 11th [χ^2 (1) = .000, $p \geq .05$], 9th and 12th [χ^2 (1)= .000, $p \geq .05$], 10th and 11th [χ^2 (1) = .000, $p \geq .05$], 10th and 12th [χ^2 (1) = .000, $p \geq .05$], and 11th and 12th [χ^2 (1) = .000, $p \geq .05$].

Prevalence in having ever injected illegal drugs were comparable among Hispanic (2.20%),White (1.50%) than Black (1.30%) students. Thus, race/ethnicity differences were not statistically significant: White and Black [χ^2 (1) = .328, $p \geq .05$], White and Hispanic [χ^2 (1) = .000, $p \geq .05$], and Black and Hispanic [χ^2 (1) = .338, $p \geq .05$].

Table 16

Proportion of Adolescents who have Ever Injected Illegal Drugs

Demographic Variable	Yes	No
Gender		
Male	2.20	97.80
Female	1.30	98.70
Grade		
9th	1.50	98.50
Table 16 (continued)		
10th	1.70	98.30
11th	1.60	98.40
12th	1.90	98.10
Race/Ethnicity		
White	1.50	98.50
Black	1.30	98.70
Hispanic	2.20	97.80

Chapter 5

Discussion, Conclusion, and Recommendations

Discussion

The current study sought to examine the prevalence of substance use in high school students by gender, race, and grade level. Results showed no significant gender differences in cigarette smoking, alcohol drinking, and drug use. Racial differences were apparent in smoking with higher prevalence in White students compared to Black students. Similarly, higher prevalence in alcohol drinking was seen in White and Hispanic students compared to Black students. In terms of drug use, higher prevalence was known in White and Hispanic students compared to Black students. These findings on racial differences in substance use support earlier findings that among the three largest racial groups (i.e., White, Black, and Hispanic) in the United States, Blacks had the lowest rate of substance use. Specific to drug use, the low rate in Black students is consistent with most epidemiological studies reporting that Black adolescents had significantly lower rates of licit and illicit drug use compared to their Caucasian peers (Rote & Taylor, 2014).

Generally, grade level differences were apparent in substance use, with higher prevalence in higher than lower grade levels. This finding is in accord the study done by Sutherland & Shepherd (2001) that concluded the linear relationship between age (or grade level) and substance use. That is, substance use increased with age, with alcohol being the most heavily used substance followed by cigarettes and then by illicit drugs.

In conjunction to relationship of substance use and age, McDonough, Jose, and Stuart (2015) claimed that as negative peer influence increased, rate substance use was seen to increase for all substances adolescents had tried.

Conclusion

Using a national data on substance use, this study concluded that prevalence of cigarette smoking, alcohol drinking, and drug use can be accounted for by race/ethnicity and grade level (or age) of high school students. Gender was not found to significantly discriminate substance use in students. Hence, race/ethnicity and grade level can be considered as risk factors in substance use among adolescents in the U.S. The findings of the study can have implications for improving design and implementation of educational programs that are intended to decrease or eliminate substance use in high school students. In particular, race/ethnic background and grade level of students can serve as important basis in employing differential instruction in teaching students on protective factors to promote healthy lifestyle and positive well-being.

Recommendations

The study used the 2013 YRBS data; future studies can use more recent data to confirm the findings of this study. It was found in this study that substance use prevalence in Hispanic students was quite high and comparable to White students. Addition studies are suggested to explore further about substance use in Hispanic students. Lastly, the findings of this study can be offered to school, family, and community agencies as a reference in designing prevention programs to decrease or eliminate substance use in youth and thereby, promote protective factors for healthy lifestyle and positive well being.

References

Allem, J., Lisha, N. E., Soto, D. W., Baezconde-Garbanati, L., & Unger, J. B. (2013). Emerging adulthood themes, role transitions and substance use among Hispanics in Southern California. *Addictive Behaviors,38*(12), 2797-2800. doi:10.1016/j.adbeh.2013.08.001

Brady, K. T., & Randall, C. L. (1999). Gender Differences In Substance Use Disorders. *Psychiatric Clinics of North America, 22*(2), 241-252. doi:10.1016/s0193-953x(05)70074-5

Carli, L. L. (1989). Gender differences in interaction style and influence. *Journal of Personality and Social Psychology, 56*(4), 565-576. doi:10.1037//0022-3514.56.4.565

Carter, R. R., Johnson, S. M., Exline, J. J., Post, S. G., & Pagano, M. E. (2012). Addiction and "Generation Me": Narcissistic and Prosocial Behaviors of Adolescents with Substance Dependency Disorder in Comparison to Normative Adolescents. *Alcoholism Treatment Quarterly, 30*(2), 163-178. doi:10.1080/07347324.2012.663286

Choo, E. K., Beauchamp, G., Beaudoin, F. L., Bernstein, E., Bernstein, J., Bernstein, S. L., . . . Boudreaux, E. D. (2014). A Research Agenda for Gender and Substance Use Disorders in the Emergency Department. *Academic Emergency Medicine, 21*(12), 1438-1446. doi:10.1111/acem.12534

Diehl, A., Croissant, B., Batra, A., Mundle, G., Nakovics, H., & Mann, K. (2007). Alcoholism in women: Is it different in onset and outcome compared to men? *European Archives of Psychiatry and Clinical Neuroscience, 257*(6), 344-351. doi:10.1007/s00406-007-0737-z

Gervais, A. (2006). Milestones in the natural course of onset of cigarette use among adolescents. *Canadian Medical Association Journal, 175*(3), 255-261. doi:10.1503/cmaj.051235

Goings, T. C., Butler-Bente, E., Mcgovern, T., & Howard, M. O. (2016). Prevalence and correlates of substance use in Black, White, and biracial Black–White adolescents: Evidence for a biracial intermediate phenomena. *American Journal of Orthopsychiatry, 86*(5), 527-539. doi:10.1037/ort0000166

Guthrie, B. J., & Low, L. K. (2000). A Substance Use Prevention Framework: Considering the Social Context for African American Girls. *Public Health Nursing,17*(5), 363-373. doi:10.1046/j.1525-1446.2000.00363.x

Hecksher, D., & Hesse, M. (2009). Women and substance use disorders. *Mens Sana Monographs, 7*(1), 50. doi:10.4103/0973-1229.42585

Johnston, L. D., O'Malley, P. M., & Bachman, J. G. (2003). Monitoring the Future: National Results on Adolescent Drug Use: Overview of Key Findings. *Focus, 1*(2), 213-234. doi:10.1176/foc.1.2.213

Karoly, H. C., Harlaar, N., & Hutchison, K. E. (2013). Substance use disorders: A theory-driven approach to the integration of genetics and neuroimaging. *Annals of the New York Academy of Sciences, 1282*(1), 71-91. doi:10.1111/nyas.12074

Kosterman, R., Hawkins, D., Guo, J., Catalano, R., & Abbott, R. (2000). The dynamics of alcohol and marijuana initiation: Patterns and predictors of first use in adolescence. *American Journal of Public Health, 90*(3), 360-366. doi:10.2105/ajph.90.3.360

Latimer, W. W., Floyd, L. J., Vasquez, M., O'brien, M., Arzola, A., & Rivera, N. (2004). Substance use among school-based youths in Puerto Rico: Differences between gender and grade levels. *Addictive Behaviors, 29*(8), 1659-1664. doi:10.1016/j.addbeh.2004.02.038

Ma, M., Malcolm, L. R., Diaz-Albertini, K., Sanchez, J. C., Simpson, B., Cortes, L., & Kibler, J. L. (2016). Cultural Assets and Substance Use Among Hispanic Adolescents. *Health Education & Behavior*. doi:10.1177/1090198116659440

Markham, W. A., Aveyard, P., Bisset, S. L., Lancashire, E. R., Bridle, C. and Deakin, S. (2008), Value-added education and smoking uptake in schools: a cohort study. Addiction, 103: 155–161. doi:10.1111/j.1360-0443.2007.02020.x

Maricic, J., Sucic, I., & Sakic, V. (2013). RISK PERCEPTION RELATED TO (IL)LICIT SUBSTANCE USE AND ATTITUDES TOWARDS ITS' USE AND LEGALIZATION - THE ROLE OF AGE, GENDER AND SUBSTANCE USE. *Drustvena Istrazivanja,22*(4), 579-599.

Mason, M. J., Mennis, J., Linker, J., Bares, C., & Zaharakis, N. (2013). Peer Attitudes Effects on Adolescent Substance Use: The Moderating Role of Race and Gender. *Prevention Science, 15*(1), 56-64. doi:10.1007/s11121-012-0353-7

Mays, D., Gilman, S., Rende, R., Luta, G., Tercyak, K., & Niaura, R. (2014). Parental Smoking Exposure and Adolescent Smoking Trajectories. *Pediatrics, 133*(6). doi:10.1542/peds.2013-3003d

McDonough, M.H., Jose, P.E. & Stuart, J. J Youth Adolescence (2016) 45: 1652. doi:10.1007/s10964-015-0355-4

Mercado-Crespo, M. C., & Mbah, A. K. (2012). Race and Ethnicity, Substance Use, and Physical Aggression Among U.S. High School Students. *Journal of Interpersonal Violence, 28*(7), 1367-1384. doi:10.1177/0886260512468234

Morgenstern, J., & Leeds, J. (1993). Contemporary psychoanalytic theories of substance abuse: A disorder in search of a paradigm. *Psychotherapy: Theory, Research, Practice, Training, 30*(2), 194-206. doi:10.1037/0033-3204.30.2.194

Nolen-Hoeksema, S., & Hilt, L. (2006). Possible Contributors to the Gender Differences in Alcohol Use and Problems. *The Journal of General Psychology, 133*(4), 357-374. doi:10.3200/genp.133.4.357-374

Parker, E. M., & Bradshaw, C. P. (2015). Teen Dating Violence Victimization and Patterns of Substance Use Among High School Students. *Journal of Adolescent Health, 57*(4), 441-447. doi:10.1016/j.jadohealth.2015.06.013

Petraitis, J., Flay, B. R., & Miller, T. Q. (1995). Reviewing theories of adolescent substance use: Organizing pieces in the puzzle. *Psychological Bulletin, 117*(1), 67-86. doi:10.1037//0033-2909.117.1.67

Pilatti, A., Godoy, J. C., Brussino, S. A., & Pautassi, R. M. (2013). Patterns of substance use among Argentinean adolescents and analysis of the effect of age at first alcohol use on substance use behaviors. *Addictive Behaviors, 38*(12), 2847-2850. doi:10.1016/j.addbeh.2013.08.007

Rowan, Z. R. (2016). Social Risk Factors of Black and White Adolescents' Substance Use: The Differential Role of Siblings and Best Friends. *Journal of Youth and Adolescence, 45*(7), 1482-1496. doi:10.1007/s10964-016-0473-7

Schmidt, L. A., Ye, Y., Greenfield, T. K., & Bond, J. (2007). Ethnic Disparities in Clinical Severity and Services for Alcohol Problems: Results from the National Alcohol Survey. *Alcoholism: Clinical and Experimental Research, 31*(1), 48-56. doi:10.1111/j.1530-0277.2006.00263**.x**

Schuler, M. S., Vasilenko, S. A., & Lanza, S. T. (2015). Age-varying associations between substance use behaviors and depressive symptoms during adolescence and young adulthood. *Drug and Alcohol Dependence, 157*, 75-82. doi:10.1016/j.drugalcdep.2015.10.005

Shannon, L. M., Havens, J. R., Oser, C., Crosby, R., & Leukefeld, C. (2010). Examining gender differences in substance use and age of first use among rural Appalachian drug users in Kentucky. *The American Journal of Drug and Alcohol Abuse, 37*(2), 98-104. doi:10.3109/00952990.2010.540282

Shillington, A. M., Woodruff, S. I., Clapp, J. D., Reed, M. B., & Lemus, H. (2012). Self-Reported Age of Onset and Telescoping for Cigarettes, Alcohol, and Marijuana: Across Eight Years of the National Longitudinal Survey of Youth. *Journal of Child & Adolescent Substance Abuse, 21*(4), 333-348. doi:10.1080/1067828x.2012.710026

Simões, C., Matos, M. G., Batista-Foguet, J. M., & Simons-Morton, B. (2014). Substance use across adolescence: Do gender and age matter? *Psicologia: Reflexão E Crítica, 27*(1), 179-188. doi:10.1590/s0102-79722014000100020

Sutherland, I., & Shepherd, J. P. (2001). The prevalence of alcohol, cigarette and illicit drug use in a stratified sample of English adolescents. *Addiction, 96*(4), 637-640. doi:10.1046/j.1360-0443.2001.96463712.x

Svingen, L., Dykstra, R. E., Simpson, J. L., Jaffe, A. E., Bevins, R. A., Carlo, G., . . . Grant, K. M. (2016). Associations Between Family History of Substance Use, Childhood Trauma, and Age of First Drug Use in Persons With Methamphetamine Dependence. *Journal of Addiction Medicine, 10*(4), 269-273. doi:10.1097/adm.0000000000000233

Tanner-Smith, E. E. (2011). Pubertal Development and Adolescent Girls' Substance Use: Race, Ethnicity, and Neighborhood Contexts of Vulnerability. *The Journal of Early Adolescence, 32*(5), 621-649. doi:10.1177/0272431611414061

Thrash, C. R., & Warner, T. D. (2016). The Geography of Normative Climates: An Application to Adolescent Substance Use. *Journal of Youth and Adolescence, 45*(8), 1587-1603. doi:10.1007/s10964-016-0444-z

Thompson, A. B., Goodman, M. S., & Kwate, N. O. (2016). Does learning about race prevent substance abuse? Racial discrimination, racial socialization and substance use among African Americans. *Addictive Behaviors, 61*, 1-7. doi:10.1016/j.addbeh.2016.04.010

Tonin, S. L., Burrow-Sanchez, J. J., Harrison, R. S., & Kircher, J. C. (2008). The Influence of attitudes, acculturation, and gender on substance use for Mexican American middle school students. *Addictive Behaviors, 33*(7), 949-954. doi:10.1016/j.addbeh.2008.02.014

Walitzer, K. S., & Dearing, R. L. (2006). Gender differences in alcohol and substance use relapse. *Clinical Psychology Review, 26*(2), 128-148. doi:10.1016/j.cpr.2005.11.003

Watt, T. T. (2008). The Race/Ethnic Age Crossover Effect in Drug Use and Heavy Drinking. *Journal of Ethnicity in Substance Abuse, 7*(1), 93-114. doi:10.1080/15332640802083303

Whaley, R. B., Hayes-Smith, J., & Hayes-Smith, R. (2010). Gendered Pathways? Gender, Mediating Factors, and the Gap in Boys' and Girls' Substance Use. *Crime & Delinquency, 59*(5), 651-669. doi:10.1177/0011128710389581

Whitehead, N. E., Trenz, R. C., Keen, L., Rose, J., & Latimer, W. W. (2014). Younger Versus Older African Americans: Patterns and Prevalence of Recent Illicit Drug Use. *Journal of Ethnicity in Substance Abuse, 13*(2), 126-138. doi:10.1080/15332640.2014.883581

Windle, M. T. (1999). *Alcohol use among adolescents*. Thousand Oaks, CA: Sage.