The Impact of Peer Pressure on Self-Reported Alcohol and Other Drug Use

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THE IMPACT OF PEER PRESSURE ON SELF-REPORTED ALCOHOL AND OTHER DRUG USE

by

Daniel D. White

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in partial fulfillment of the
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Daniel D. White
THE IMPACT OF PEER PRESSURE ON SELF-REPORTED ALCOHOL AND OTHER DRUG USE

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Western Michigan University, 2001

The purpose of this study was to examine the impact of peer pressure upon eighth, tenth, and twelfth grade use of alcohol and other drugs. Data related to the use of cigarettes, alcohol, and marijuana were analyzed to determine the effect that peer pressure has on the use of these substances. Other relationships considered were sex, grade level, and race, based on the literature in this area.

The data that were chosen for this study included 141 Michigan public school districts and were based on the responses of 16,760 students in 1992-93, and 15,283 students in 1994-95.

The results indicate that peer pressure to use drugs, cigarettes, and marijuana moreso than alcohol, had a definite impact on high school drug use for these grades. According to Sutherland (1947) and Akers (1998) premise that peers influence behavior, there is a definite connection between the influence of associations on the behaviors we choose to engage in. The findings have supported the premise that in a adolescents’ approach to learning they do so in the context of others and that these influences, by peers, as a normal socializing force affect drug use behavior.
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CHAPTER I

INTRODUCTION

The high school environment that is experienced by today’s youth presents certain challenges to a successful education. The school climate has a powerful socializing and influential role in the decisions that students make to use alcohol and other drugs. With present substance use for high school students at such alarming rates, it is important to investigate a wide array of contributing and preventative factors within the school climate regarding this phenomenon.

The use of alcohol and other drugs is becoming an ever-increasing obstacle for young people of high school age. Researchers have been conducting studies to find out why this phenomenon exists and at such high levels across the United States. The use of legal drugs (cigarettes, alcohol) for today’s young people is an ever more prevalent part of young adulthood that leads to use early in life. A billion cigarettes are sold to youths under the legal age, and approximately 3,000 young people become new smokers daily (Stimmel, 1996).

"High school students account for $200 million in revenue for the beer industry" (Stimmel, 1996, p. 8). Contemporary research has also found alcohol use by youth to be major problem (Krohnblum, 1992).
Since the late 1960s marijuana has been a drug that has been gaining acceptance as a borderline legal-illegal drug. This is also evident in the use rates for adolescents who have greater access to marijuana as well as adults who that approve of its use now more then ever. According to the U.S. National Survey on Drug Use (1979), it was estimated that up to 20% of Americans are daily marijuana users. In another study, it was found that one out of six adolescents 12 through 17 years used marijuana regularly (Kozicki, 1986). In a study by Oetting and Beauvais (1990), almost half all high school students have tried marijuana at least once in their lifetime.

Purpose and Significance of Study

The purpose of this study is to examine the relationship between peer pressure and self-reported cigarette, alcohol, and marijuana use. This study will be useful because it examines the impact that peer pressure has within the high school environment on behaviors that are viewed by adults to have negative outcomes.

Literature on alcohol and other drug use by high school students is steadily growing (Potvin & Lee, 1980; Pruitt, Kingery, Mirzaee, Heuberger, & Hurley, 1991; McBroom, 1994). There are national surveys which show alcohol and drug use to be very high though it has been declining such as the American Drug and Alcohol Survey, National Senior Survey, and the National Adolescent Student Health Survey that measure and report drug use (Unal, 1997).
These studies show drug use and peer related influences at one time period. Yet, there have not been any studies that focus on drug use and peer related influences in the same setting at two separate time periods. Nor have there been any studies that look at peer influences from 8th to 10th grade and 10th to 12th grade for differences in the influence of peer pressure and drug use. The need for this research has been noted by Johnston (1993) who is a leading researcher in the field of adolescent substance use. He asserts that, perhaps no area has proven more clearly appropriate for the application of systematic research and reporting than the drug field, given its rapid rate of change, its importance for the well being of the nation, and the amount of legislative and administrative intervention which continues to be addressed to it. Young people are often at the leading edge of social change—and this has been particular true in the case of drug use. The massive upsurge in illicit drug use during the last twenty-five years has proven to be very much a youth phenomenon, with onset of use most likely to occur during adolescence (p. 3).

This research hopes to provide insight into one of the many complex peer influences that effect this nation's youth, called peer pressure. It examines whether peer pressure has a significant impact on adolescent drug use. By further establishing that this relationship is still a contemporary phenomenon, as it has been in the past, will enable administrators and educators to focus on insulating students from the influence that peers have on one another, in order to reduce alcohol and other drug use during their high school years. This study will focus on the explanatory foundations of peer influence found in the theory of Differential Association by Donald Sutherland (1947), and the Social Learning Theory according to
Theoretical Framework and Review of Empirical Research

Theories formulated in an attempt to explain adolescent substance use have combined many factors in varied and complex ways, usually by adapting theories of deviance and delinquency (Marcos & Bahr, 1988). Upon reviewing the literature, Littieri, Sayers and Pearson (1980) found 43 theories explaining adolescent substance use. From their analysis, there are generally three categories of theories: one that focuses on the environment (sociological), one that focuses on the individual (psychological and biological), and one that focuses on the interaction between the individual and the social environment (social psychological).

Kumpfer and Turner (1991) summarized current substance use theories, stating that "[f]ew theoretical models of substance use focus on the larger environment or ecology in which drug use occurs--the family, school or work environment, the peer group, local community, or general society" (p. 436). They support theory that focuses on the sociological and social psychological positions and their ability to look at the school environment and the social interaction between individuals.

During the last ten to fifteen years, explanations of alcohol and substance use have been rooted in the symbolic interactionist
According to Bush and Iannotti (1985), the leading sociological explanations related to peer influences are differential association theory of Edwin Sutherland (1947), and the social learning theory of Ronald Akers (1973). With these two theories as in mind, this research is designed to look at the school environment, the social interaction between students, and how they impact the decision to use alcohol and other drugs.

In the first part of this chapter, the review will discuss the contributions of differential association theory (Sutherland, 1947) and social learning theory (Akers, 1998). Social learning theory (1998) is an extension of Sutherland’s differential association theory. Akers re-emphasizes the key relationships between peers and how they influence one another. There is also a connection between these two theories in that they approach learning in the context of others as a normal socializing force that causes people to behave the way we do. However, differential association theory emphasizes the types of associations we have with peers as the motivating force, social learning theory uses elements contained in operant conditioning as the key factor for behavior. The second part of the chapter will review research that supports the contention that peer pressure may influence behavior.
Differential Association Theory

One of the many theories of crime in American sociology that has been applied to criminal and deviant behavior [alcohol and drug use] is Differential Association Theory by Edwin Sutherland (1939, 1947). Sutherland submerged himself in the symbolic interactionist perspective, most notably the work of W.I. Thomas, George Herbert Mead (Curran & Renzetti, 2001). Later, the writings and research of his friends, colleagues at the University of Chicago would also influence him.

For the field of sociology, Sutherland offered an explanation for the etiology of deviant behavior that was purely sociological which gave new life to the field and propelled it forward on its mission to become a science.

According to Pfohl (1994), when looking at the sociological history of deviance and all learning theory including Differential Association Theory, it can be said that:

the central theme in the learning perspective is simply that deviance is a form of learned behavior.... The learning perspective is a sociological perspective. Yet, unlike the disorganization, functionalist, and anomie perspectives, the learning perspective does not view society as a whole as the cause of deviance. What counts is the collective activity of its members. (p. 298)

Sutherland’s theory (1947) proposed several theoretical statements:

1. Criminal behavior is learned, not inherited, and not individualistic.

2. The learning of criminal behavior occurs largely through
communication with others.

3. Learning takes place in informal, primary group settings.

4. Learning includes specific techniques of committing crimes as well as the specific direction of attitudes, rationalizations, motives, and drives.

5. The nature and specific direction of motives and drives is learned from definitions of the legal norm as favorable or unfavorable to violation of those codes.

6. A person becomes criminal or delinquent because of an excess of exposure to definitions favorable to violation of legal codes over definitions unfavorable to violation of the law.

7. These associations vary in frequency, duration, priority and intensity.

8. The process of learning criminal behavior is through association with criminal and anti-criminal patterns involve all of the mechanisms that are involved in any other learning: imitation, reinforcement, transfer and so on.

9. Even though this criminal behavior is an expression of general needs and values, it does not explain those values since non-criminal behavior is also an expression of the same needs and values.

Sutherland (1947) viewed crime as the outcome of a learning process that included customs, values, and norms conducive to the violation of laws, regulations, and roles (Palmer & Humphrey, 1990). Sutherland (1947) understood that one of the most important things is the interactions that we have with significant others. For
Sutherland, this is where we are going to acquire many of our definitions of situations that are favorable or unfavorable to law breaking. "Sutherland called the process of social interaction by which such definitions are acquired differential association" (Curran & Renzetti, 2001, p. 137).

Sutherland (1947) also held that other variables such as the frequency, duration, and intensity of these associations had a large amount of predictive power in these interactions with others. Two researchers then demonstrated that his theory was internally consistent, able to be stated in a formal, set logic format, and capable of producing testable hypotheses (DeFleur & Quinney, 1966).

As a result, there was a movement to test the theory that Sutherland proposed, which came to be a difficult task. Consequently, the majority soon became dismayed with his theory. Several followers of his work have since attempted to fill in these abstract gaps, yet Sutherland is remembered for these contributions.

These criticisms have arisen, in part, because of the open-ended nature of Sutherland’s own conception of learning. Akers (1998) states "However, beyond a brief comment that more is involved than simple imitation, he made no attempt to explain what the mechanisms of learning are" (p. 43). Glueck charged that Sutherland’s original theory was too vague to be tested empirically. He felt that it was virtually impossible to quantitatively assess the enormous number of prodeviant and antideviant definitions to which one is exposed (1956).
Matza (1969) wrote that Sutherland’s theory ignored the role of human choice in human action. Korn and McCorkle (1959) agreed stating that the 1939 theory was no more than a thesis advocating contamination by exposure and did not specify the learning process by which certain frequencies and consistencies of exposure lead to criminal behavior.

Today, this theory is regarded as one of the major sociological theories of delinquency and has had many revisions since its inception. Unfortunately, though they are worthy of this discussion, our data do not allow us to measure these variables or gain further insight on these elements of his theory. Yet, "[w]hile Sutherland did not focus on the use of drugs, his differential association theory is clearly applicable" (Palmer & Humphrey, 1990, p. 271).

The Social Learning Theory of Ronald Akers

The designation social learning theory has been a guiding framework for a large body of research that has explored both the relationship between deviant behavior and family factors and the relationship between peer influences and deviance. This framework has been used in the social sciences by a large number of researchers, "along with other human service professionals" (Vega & Gil, 1998, pp. 42-43). Most important for our purposes in this study is the work of Ronald Akers (1998). Though the other proponents that followed Sutherland and their explanations are equally valid, the
researcher chose this theory because it best describes his personal life experiences and is closest to his frame of reference with regard to this line of inquiry.

In 1965 Akers (1998), a sociologist who supported the symbolic interactionist stance of Sutherland began to explore its compatibility with operant behavioral psychological concepts with the influence of a colleague in social psychology named Burgess in the early 1960s. Akers felt that Sutherland was correct in his contention that criminal behavior is learned; yet how it was learned was where they (and in the years to follow only Akers) diverged from the work of Sutherland.

Together, they wanted to give clarity to the vagueness of differential association by adding behavioral psychology principles. They settled in on Skinnerian operant principles and merged them with differential association and presented it as Differential Association-Reinforcement Theory. They wrote that it was through direct operant conditioning (or instrumental conditioning), imitation and modeling that one learns to be deviant or criminal.

Still today, Akers (1998) integrates the differential association theory of Sutherland (1947) with psychological principles found in modern behaviorism. He declares that:

The basic assumption of social learning theory is that the same learning process, operating in the context of social structure, interaction, and situation, produces both conforming and deviant behavior. The difference lies in the direction of the process in which these mechanisms operate (p. 50).

Akers’ (1998) reformulation of Sutherland’s theory presented these
propositions:

1. Criminal behavior is learned according to the principles of operant conditioning.
2. Criminal behavior is learned both in nonsocial situations that are reinforcing or discriminative and through social interaction in which the behavior of other persons is reinforcing or discriminative for criminal behavior.
3. The principal part of the learning of criminal behavior occurs in those groups which comprise the individuals major source of reinforcement.
4. The learning of criminal behavior, including specific techniques, attitudes and avoidance procedures, is a function of the effective and available reinforcers, and the existing reinforcement contingencies.
5. The specific class of behaviors which are learned and their frequency of occurrence are a function of the reinforcers which are effective and available, and the rules or norms by which these reinforcers are applied.
6. Criminal behavior is a function of norms, which are discriminative for criminal behavior, the learning of which takes place when such behavior is more highly reinforced than noncriminal behavior.
7. The strength of criminal behavior is a direct function of the amount, frequency, and probability of its reinforcement. (p. 45).

According to Akers (1998), the underpinning cognitive processes in social learning theory are described by these words:

These primary mechanisms are differential reinforcement, in which behavior is a function of the frequency, amount, and probability of experience and perceived contingent rewards and punishment, and imitation in which the behavior of others and it’s consequences are observed and modeled. The content of the learning achieved by these mechanisms includes the simple and complex behavioral sequences and the definitions that in turn become discriminative for engaging in deviant and criminal behavior. These learning mechanisms operate in a process of differential association-direct and indirect, verbal and nonverbal communication, interaction, and identification with others. The principle learning is through differential association with those persons and groups that comprise or control the individuals major sources of reinforcement, most salient behavioral models, and most effective definitions and other discriminative stimuli for committing and repeating behavior. (pp. 52-53)

According to Akers (1998), social learning theory builds on
differential reinforcement as its primary causal agent for deviance. Akers (1998) used behavioral principles to connect the ability of an individual to behave and continue behaving. More importantly, to be well received is the goal or catalyst for behaving prior to this conditioning. It is here that peer influence is revealed in Akers' theory.

Whether deviant or conforming behavior is acquired and persists depends on the past and present rewards or punishments for the behavior and the rewards and punishments attached to alternative behavior. This is the principle of differential reinforcement (Akers, 1979).

Akers has applied it to minor forms of deviance, more specifically to drug and alcohol use, which is the focus of this study. Akers (1998) theory has been praised for its practical implications in the areas of counseling and corrections (Curran & Renzetti, 2001). Its general principles have been used to explain drug and alcohol use and with much research support. "The basic learning principles on which this theory is based have received empirical support under laboratory and applied experimental conditions" (Akers, 1979; p. 637).

Unfortunately, the work of both Burgess and Akers has not been as well received as Sutherland (Pfohl, 1994). They have been criticized for borrowing ideas from another discipline other than Sociology. It appears that the foundation of his theory has substituted psychological content for sociological content. They were later
called theoretically illiterate by others for their attempt to blend behaviorism and Sutherland (Taylor, 1973).

His theory possesses other potential weaknesses as well. First, according to Curran and Renzetti, most attempts to test Akers’ (1998) theory have examined relatively minor forms of deviation and offending (2001). Second, in the same text they also state that his theory does not address the question of how or where criminal or deviant definitions and labels originate (2001). Third, it ignores "the differential access of certain groups to a society’s resources and rewards, as well as their differential power to escape punishment, to punish others, and to label others as criminal or deviant" (Curran & Renzetti, 2001, p. 145).

In summary, differential association theory (Sutherland, 1947) and social learning theory (Akers, 1998) focus on peer associations as their primary explanatory foundation. They discuss the strength of peer influence as an important element in the formation of behaviors that are deviant which includes alcohol and drug use by high school students. For this study, this “peer” related connection will be used to examine the strength of the influence of peers and their role in the formation of drug use behaviors. This section shows the connections of these two theories to peer influence and factors that lead to delinquent behavior in the form of alcohol and other drug use. This theoretical connection indicates a clear relationship between peers that suggests that peers influence one another. This is the primary premise that leads this researcher
to predict that the socialization experiences in school and with peers are going to be influence drug and alcohol using behavior. The second part of this chapter looks at research that further adds to our contention that peers influence one another to behave in new ways, which may lead to alcohol and other drug use.
Peer related influence is thought to be one of the most influential forces within and outside of school (Cullingford & Morrison, 1997). The American school system is a structured component of our society that is a primary agent of socialization. As the social unit devoted to providing an education, the school provides continuity both in cognitive skills and in the indoctrination of values. The school also provides many subject areas of knowledge that may or may not be available at home, or that the modern home is ill equipped to provide. Unlike the family, which is based on personal relationships, in school the child’s environment broadens to include people of a variety of different social backgrounds and influences. With these broadening social experiences and new peer group influences, peer pressure has more of an effect on students due to their need to fit in with others (Muisener, 1994). For many years social scientists have been researching how much influence peer pressure has on behavior. Peer pressure and peer related influence is thought to be one of the most influential forces in the lives of young adults (Akers, 1998). Reed and Roundtree (1997) give this statement when referring to peer influence and young adults:

"...because most people, especially adolescents, have a strong need to affiliate with others, adolescents will engage in
behaviors that are recognized and approved by peers. The need to ‘fit in’ or the desire to be ‘accepted’ by one’s peers may mean that adolescents will engage in behaviors, conventional or delinquent, in an effort to be liked and respected and to foster and maintain friendships. (p. 149)

Adolescence is a critical period in the transference from childhood to adulthood. For many adolescents, the characteristics of adulthood that are to be learned do not always come from adults but from other teens and adolescents who are perceived to be more mature. It is these mature adolescents and peers that younger teens choose to imitate. Braunstein, Hatry, Altschuler and Blair (1990) wrote that "[I]ndividuals gauge their attitudes and behavior by the standard of some reference group. The initial reference group is parents. Yet, as adolescents mature parents are slowly replaced by peers, particularly in new areas of experience" (p. 58).

Cullingford and Morrison (1997), in their discussion on the environment of school as it relates to peer influence, wrote that the influence of peer groups is strong both within and outside school and within and outside the academic work of classrooms. Rather than a constant in the lives of adolescents, peer groups are dynamic forces whose functions and influences shift across adolescence and vary according to the characteristics of the adolescent’s school or community and their level of involvement in crowds. In school, peer groups are both friendship and academic groups and there is competition in both spheres.

The influence of peer groups is one of the significant factors in the school experience of school. Schools are social centers where friendships and relationships are constantly tested. What is significant is the way that pupils relate their peers to the culture of the school, whether they are a part of a larger society or an alternative to it. (p. 64)

It is here that the influence of peers is strongest, therefore, it is here that we would want to study what effect these influences
have on alcohol and drug use. With this justification, the researcher views the school environment, as one of the primary settings where drug use behavior should be studied. It is typically in peer group contexts that alcohol and drugs first become available and behaviors form that are reinforced or punished (Akers, 1998).

Though peer pressure is generically used to describe these peer associations, we will refer to them in a broader context called peer influence.

In a study by Akers (1979) and his colleagues of 3,000 male and female teens regarding alcohol and drug use found that those who used drugs and alcohol did so to the extent the behavior was reinforced by their peers (Curran & Renzetti, 2001). In fact, Curran & Renzetti (2001) go even further to quote and paraphrase Johnson after his study done in 1987 on adolescent alcohol and drug use stating:

[I]t is situational pressures that to use drugs, not peers' prodrug definitions, that play the dominating mediating role in adolescents' drug use. "In other words, most of the impact from friends' drug behavior to personal behavior seems to bypass the definitions or attitudes variable. (p. 140)

According to Newcomb and Bentler (1988),"[D]rug using high school students are often perceived as hip, mature, streetwise, and more adult than their non-drug using peers" (p. 36). They assert that this image of maturity and adult likeness of the drug user is then validated by their drug-using peers and confirmed by the respect from their non-drug user classmates.

According to Akers (1998),
virtually every cross sectional and longitudinal study that incorporates one or more peer association variables finds them to be significantly and strongly related to delinquency and other forms of deviance. That such findings tend to support social learning theory is obvious. (p. 164)

Contemporary research shows one of the primary predictors of adolescent alcohol and drug use for males and females is association with peers (Joe, Barrett & Simpson, 1991; Kempfer & Turner, 1990; McGraw, Smith, Schensel & Carillo, 1991; Krohn, Massey & Zielinski, 1988; McAlister, Krosnick & Milburn, 1984; Lopez & Jose, 1989; Parrish, 1994.)

In a study by Flannery and his colleagues (Flannery, Vazsonyi, Torquati, & Freidrich, 1994) on ethnic and gender differences in risk for early adolescent substance use, they found that susceptibility to peer pressure and peer alcohol use were the best predictors of individual substance use. Also in a study of 4,983 adolescents where peer factors were related to alcohol, cigarettes, and drugs, Zimmerman and Gil (1995) found that peer factors were more powerful predictors of substance use than the other factors. Another study examined factors related to initiation and patterns of alcohol and drug use among adolescents, such as peer pressure and peer-related influences. Of the 64 adolescents that received structured telephone interviews, 84% of those students reported that they had tried drugs because of peer pressure. Multiple alcohol or drug use also appears to have commonly started in early adolescence (Dupre, Miller, Gold, & Rospenda, 1995). Another study was done in 1986 (marcos, Bahr & Johnson) in which a theoretical model of adolescent
drug use was developed that integrated propositions from social control and differential association theories. Using questionnaire data from a sample of 2,626 adolescents in the southwestern United States, this model revealed that the best single predictor of drug use is association with drug-using friends.

McGraw (1991) and her colleagues researching sociocultural factors associated with smoking behavior by Puerto Ricans found that patterns of smoking were associated with teen's social networks. They noted that adolescents were more likely to smoke when their friends and household members smoked. Joe, Barrett, & Simpson (1991) found similar results with interview data from 110 Mexican Americans, ages 13-17, collected at intake into a drug abuse prevention program and at follow up four years afterward. In their research, they found that involvement with drug-using peers was the primary influence in inhalant drug use at intake and follow-up, while psychological vulnerability had only an indirect effect.

Marcos, et al., (1986) tested bonding association theory in an article titled Test Of A Bonding/Association Theory of Adolescent Drug Use in 1986. They used questionnaire data from a sample of 2,626 adolescents in the southwestern United States. The model explained 34% of the variance in self-reported lifetime alcohol use, 27% in lifetime cigarette usage, 42% in lifetime marijuana use, 26% in lifetime amphetamine and depressants usage, and 50% in overall lifetime use of alcohol and other drugs. The path model included parental attachment, conventional values, and drug using friends.
as precursors. More importantly, they found that the best single predictor of drug use was association with drug using friends. Also that this process leading to the involvement with drugs and alcohol was similar across all drug types. Other articles suggest that peer pressure, family influences, and social environment influences were the major factors related to alcohol and drug use (Muesener, 1994; Johnson & Marcos, 1988). Still, another study done by Lassey and Carlson (1979), and Pruitt, Kingery and Mirzaee (1991) found that the influence of friends that use alcohol was strong for rural and urban teenagers. This suggests further that peers influence one another across many different areas as well.

Gender and Drug Use

There are many studies that have examined the relationship that gender has on drug and alcohol use. Yet this relationship has been shown to vary given the substance of choice for young adults (Unal, 1997; Segal & Stewart, 1996; Pruitt et al., 1991; Dobkin, Tremblay, Masse, & Vitaro, 1995; 25th Annual Survey of High Achievers, 1994). Researchers state that it is unclear if there are significant gender differences for substance use (Yarnold, 1997), and abuse (Dobkin et al., 1995). Some even state that gender influences both age of initiation and degree of use, with males being more vulnerable to early and greater levels of use than females (Alberts et al., 1992). On the other hand, researchers generally conclude that males still exceed females in the use of all
drugs, except stimulants, tranquilizers, and tobacco (Segal & Stewart, 1996). For this reason, to understand how the impact of gender affects the influence of peers, one must look at different types of drugs separately.

Sutherland (1947) and Akers' (1998) propose that peers influence behavior. If there are different use rates for any substance when controlling for gender, it is reasonable to assume that the influence of peers is different as well. To extend this premise to gender, a review of the literature for cigarettes, alcohol, and marijuana will be done to explore the relationships that the peer influence, when combined with gender, will have on substance use behavior. This will allow us to formulate research questions based on these predictions.

Marijuana

When looking at marijuana use for high school age students, there is a clear trend for the two sexes as well. In 1991, The Center for Disease Control completed a Youth Risk Behavior study that reported that male student use of marijuana in the past 30 days and in lifetime use were significantly higher than that of females. Johnston and O'Malley (1986) also found higher rates of use for marijuana with males over females at 6.9% over 2.8% in 1986.

Johnston et al., (1996) later found that the proportion of 12th graders using marijuana was higher among males at 38.0%, where use was only 31.0%. Males (6.5%) reported higher rates of daily
use than females (2.4%). Research on use rates show that males use marijuana more than females. We can predict that the impact of peer pressure is greater for males than females. For this reason, a research question will be included that explores the relative impact that gender and peers have on marijuana use.

Cigarettes

If we apply this to marijuana, the researcher must also apply it to cigarettes to explore the impact of gender on peer pressure as well. Though the research has shown that females smoke cigarettes as much as males, the impact of peer pressure could be different for males and females, or the amount of peer pressure could be the same, or both.

Studies reveal that there is not a significant difference in use of tobacco for males and females. In 1986, there was not a significant amount of difference in use rates for cigarettes reported between males and females (Johnston & O'Malley, 1986). In 1995, Johnston and his colleagues show a similar pattern of greater use for males compared to females for daily smoking but not by much. Similarly, in a study by Smith (1991) and his colleagues found that male (12%) and female (10%) students between the ages of fourteen and twenty had smoked at least one cigarette prior to their in-home interview. In contrast, a study of attitudes and opinions of high school students, The 25th Annual Survey of High Achievers (1994), concluded that more females (5.6%) than males (4.2%) now
smoke. Additionally, after a study was completed by Hillman and Sawilowsky (1991) in which they found gender to be insignificantly related to substance abuse, with regard to smoking they suggest that by the time adolescents reach the age of fifteen, females are more likely to smoke than males. For this reason, a research question will be included that explores the relative impact that gender and peers have on cigarette use.

**Alcohol**

Since the researcher explored the impact of gender on peer pressure for marijuana and cigarettes, the researcher must also apply it to alcohol as well. Though the research has shown no clear patterns for greater use by males when compared to females, the impact of peer pressure could be different for males and females, or the amount of peer pressure could be the same, or both.

Researchers have looked at gender differences and the use of alcohol. In 1991, The Center for Disease Control--Youth Risk Behavior Study--found that males (62.2%) consumed more alcohol than females (55.0%) during the past 30 days. In addition, a study by McBroom (1994) found that females might be more influenced by peers than males to use alcohol. Johnston and O'Malley (1986) showed daily use of alcohol to be higher for males over females at 7.0% over 3.0% in 1986. In 1995, the same study again showed that males are more likely to consume alcohol than females in prevalence of occasions of drinking with 37.0% for males, and 23.0% for females.
(Johnston et al., 1996). Similarly, daily alcohol use was higher as well with 5.5% over 1.6%. Newcomb and Bentler (1988) found that significant differences between males and females for alcohol use. The 25th Annual Survey of High Achievers (1994) showed that males exceed females on alcohol use on both 'sometime' use (27.0% vs. 23.9%) and 'a lot' use (12.3% vs. 12.1%). This reveals that females do not use alcohol as much or as often as males. On the other hand, a study by Grady (1986) concluded that though females are slower to initiate, caught up by the eighth grade with their male counterparts with regard to alcohol. It should be clearly noted that use rates do not imply that there is an impact of peer pressure on use.

If there are differences in use of because of gender, and if peer pressure influences use, then it is likely that the peer influence on use differs by gender. This does allow the researcher to do is ask whether or not gender modifies Sutherland (1947) and Akers (1998) contention that peers influence behavior with regard to gender. The research previously reviewed shows no clear pattern of greater use for alcohol for males over females. Thus, it is reasonable to predict that males will not be impacted by the influence of peers to a greater degree than females. With this in mind, this thesis will examine the impact of peer pressure on substance use to measure the strength of this relationship. For this reason, a research question will be included that explores the relative impact that gender and peers have on alcohol use.
Race and Drug Use

Sutherland (1947) and Akers' (1998) contend that peers influence behavior. If there are different use rates for any substance when controlling for gender differs, it is reasonable to assume that the influence of peers on use will be different as race differs as well. This will allow us to formulate a research question based on this reasoning.

According to Vega and Gil (1998) there are racial differences in the use of alcohol and other drugs for Blacks and Whites. Vega and Gil (1998) do note the differences in socialization patterns for different ethnic groups by stating:

In American society, developing a sense of affirming personal identity may be particularly problematic for adolescents who are members of ethnic minority groups. Awareness of differences of treatment and internalization of social distinctions based on affluence, physical features, and culture are part of adolescent social learning that becomes a foundation for identity formation, self-esteem, and peer association. (p. 5)

In cities with large minority populations, cultural ties that sustain civic interconnectedness and social integration are illusory, and residential segregation by income and ethnicity provides the environmental framework for the socialization of adolescents. In fact, the age and onset of drug experimentation and preferences are suggested to be influenced by culture. Vega and Gil (1998) go on to state that Black adolescents have a later onset of experimentation with illicit and illicit drugs when compared to other ethnic groups. In addition, The 25th Annual Survey of High Achievers (1994) also found that 95.6% of African Americans have never smoked and less
than one percent now smoke compared to Caucasians 86.1% who have never smoked. This survey also found Caucasian students drink alcohol; 26.3% some times, 13.1% 'a lot', compared with; 16.5% 'some' times, and 7.7% 'a lot' for African American students. While others studies demonstrate that White students have higher use rates at all levels, for cigarettes, alcohol, and marijuana (Yarnold, 1997; Reza et al., 1997; Segal & Stewart 1996). Due to the continued myths regarding minority substance use, specifically Blacks in America, this study includes race.

As stated previously with regard to use rates/frequencies, they do not imply that there is an influence of peer pressure on use of these substances. Yet, this does allow the researcher to revisit Sutherland (1947) and Akers’ (1998) contention that peers influence behavior, and apply it to race to examine whether it modifies the impact of peer pressure on substance use. Thus it is reasonable to predict that Whites will be impacted by the influence of peers to a greater degree than Blacks. With this in mind, this thesis will examine the impact of peer pressure on substance use to measure the strength of this relationship.

This thesis will also, examine whether sex and race together modify the relationship of peer pressure on substance use. If Sutherland (1947) and Akers’ (1998) contention that peers influence behavior is true, there are different use rates for both sex and race, it is reasonable to assume that the influence of peers will differ when both sex and race categories as well. Thus, a
research question will examine this strength of this relationship.

**Grade and Drug Use**

According to Sutherland (1947) and Akers' (1998), peers influence behavior. If there are different use rates for any substance when controlling for gender and race, it is reasonable to assume that the influence of peers will be different as grade level differs as well. This will allow us to formulate a research question based on this review as well.

Oetting and Beauvais (1990) give an explanation for the rise in drug use by aging adolescents. Their contention is that the rise in use from sixth to ninth grade is due to the developmental changes that occur as these students transfer from the elementary school to junior high, and junior high-to-high school. It is a conjecture on the part of the researcher that the pressure for conformity is higher among younger high school students. This pressure to be accepted begins to fade in the later high school years may because students begin orienting themselves toward college and the adult world, rather than the world of youth (Dialogue with Dr. Ronald Kramer, 1996). For this reason, they feel less pressure to conform to the high school environment and peer groups. Therefore, the influences of post high school influences and groups will have more of an effect than high school influences and groups during the later high school years (Dialogue with Dr. Ronald Kramer, 1996).

Other researchers suggest similar perspectives. According
to Yarnold (1997), it is the socialization process in which students participate as a result of being placed into an environment in which more of their role models and friends use, and are more accepting of drug use. She cites the work of other researchers while suggesting "that the presence of older students in the school had an impact on the younger students' attitudes and involvement in drugs" (p. 7).

Along with the proposed perspectives that support this contention, research in support of this framework has been done. In a study of 9,403 seventh through twelfth grade students in five different types of schools in Pennsylvania, researchers found that as grade level increases, so also does drug use by students (Yarnold, 1997). On the other hand, Brounstein (1990) and his colleagues found significant percentages for alcohol, cigarettes, and marijuana one time use for tenth grade students. For alcohol it was 70%, cigarettes 32%, and 24% for marijuana. They also found that these percentages were greater for 10th graders than 8th grade percentages for alcohol, cigarettes and marijuana.

The reason for the scope of the predicted progression from 8th to 10th grade is because the researcher wanted to have a reasonable amount of time between the first and second time periods when examining this relationship. The researcher also chose 8th to 10th grade because the explanation given by Yarnold (1997) and her research best apply to these grade levels. Simply, it would not be reasonable to examine the influence of older peers on the older peers
themselves. According to Yarnold (1997), cigarettes, alcohol, and marijuana are essentially driven by peer influences and the ready availability of these substances by older students and significant others in the adolescent’s life.

As stated previously with regard to use rates/frequencies, they do not imply that there is an influence of peer pressure on use of these substances. Yet, this does allow the researcher to revisit Sutherland (1947) and Akers’ (1998) contention that peers influence behavior, and apply it to grade level to examine whether it modifies the impact of peer pressure on substance use. This reasoning allows for the exploration of the relationship that grade level (from 8th to 10th) has on the impact of peer pressure on substance use. With this in mind, this thesis will compare the strength of this relationship in the 8th and 10th grades.

From this section we have a picture of gender, race and grade level (8th, 10th), for all categories of drugs to be used in this study. More importantly, it permits the researcher, upon examining the same cohort, from aggregate school data, of students from 8th to 10th grade, to reasonably predict that 10th grade will not be impacted by the influence of peers to a greater degree than 8th grade students. With this in mind, this thesis will examine the impact of peer pressure on substance use to measure the strength of this relationship.

In summary, this section reveals that adolescents in high school are in a unique environment where the need to adapt for
acceptance is high, thus making them vulnerable to cues to conform to other peers (Muisener, 1994). This research and literature review provides an adequate justification for us to believe that those socialization experiences in schools and with peers are very influential. According to Sutherland (1947) differentially associating with others, given the type of relationship, is where learning new behaviors takes place. For Akers (1998), the influence of peers via reinforcement and punishment influences behavior/s. Though they don’t agree on how peers influence one another, what is important for this research is their common premise that peers influence behavior.

Thus, this research will examine the relationship between the impact of peer pressure on the use of these three substances. This chapter has provided a general theoretical premise along with research that supports our research question. Along with the significant relationships drawn from the literature, such as sex and race, these are the research questions to be examined:

1. The impact of peer pressure to use cigarettes, alcohol, and marijuana, will be statistically significant for both 1992-93 and 1994-95. I expect this to be true for 8th, 10th, and 12th grades.

2. The impact of peer pressure on substance use will not be greater for Males than Females for cigarettes, alcohol, but will be greater for marijuana.

3. The impact of peer pressure on substance use will be greater for Whites than African Americans (Blacks) for cigarettes,
alcohol, and marijuana.

4. The impact of peer pressure on substance use will be greater for Whites than Blacks for all substances when controlled for race and sex for both data sets.

5. The impact of peer pressure on substance use will increase from 8th grade (T1) to 10th grade (T2) for all substances. T1 equals (Time one=1992-93) and T2.
CHAPTER IV

METHODS

The method for this study included analyzing data from the Michigan Alcohol and Other Drug Use Survey (MAOD) obtained for 8th, 10th and 12th grade students from various school districts in the state of Michigan for the periods of 1992-1993 and 1994-1995. The frequency of cigarette, alcohol, and marijuana usage were the dependent variables. The effects of student peer pressure, sex, and race on these types of drugs were examined via logistic regression. This study tested relationships related to reported peer pressure and these substances looking for comparisons by grade level. Race and sex have also been found to influence alcohol and drug use; therefore, they were examined as well. This type of regression is being utilized for analysis purposes because the dependent variables are dichotomous/nominal.

Data Source

The data for this research were derived from a subset of the data collected by the Michigan Alcohol and Other Drug School Survey. The MAOD is a research project conducted by The Kercher Center for Social Research at Western Michigan University. The data were collected from 8th, 10th, and 12th grade students on their attitudes toward and usage of alcohol and various drugs. The approach used by
the MAOD project was to schedule in advance the times and days for the survey to be administered. On the appointed date, one or more research associates administered the survey to the students. Confidentiality and anonymity were guaranteed to each student and school district that was associated with the survey.

The survey itself was patterned after the national high school senior substance use survey, Monitoring the Future, carried out by Dr. Lloyd Johnston and his staff at the Institute for Survey Research at the University of Michigan (who were consultants in the development of this project). This project has been supported through the Michigan Department of Education since 1988, and has been collecting data since 1989.

MAOD recommends to school districts that they complete the MAOD survey every two years. The first year establishes baseline data, and subsequent administrations provide a tracking mechanism following up the same students (since the survey covers 8th, 10th, and 12th graders). This method of survey research provides school districts with an ongoing evaluation of their drug and alcohol prevention programs, as well as a tool for detecting trends and patterns of substance abuse; providing a way to more accurately target future programs.

Some school districts use the information as an assessment tool for monitoring trends and patterns of drug and alcohol use within their districts. Others use it as technique for targeting prevention and rehabilitation programs that are being assigned.
More importantly, for the purposes of this thesis, others use it to identify student perceptions of attitudes regarding use of and/or access to such controlled substances and to provide an evaluation mechanism for prevention programs currently implemented in their schools.

**Instrument**

The survey instrument consisted of fifty-five questions, adapted from the National Senior Survey instrument (Johnston, 1991). (See attached copy of the instrument in appendix). In this manner, the aggregate school data for each school is the unit of analysis. In this way, the student and the school environment are investigated as opposed to one or the other. This study uses a portion of the 1995 MAOD data set. Because these schools were not randomly selected, but were instead selected due to the availability of their data, these studies is not representative of the districts in Michigan, nor are the results generalizable to the state of Michigan. The results will be generalizable only to area high school districts in the state of Michigan included in this study.

**Data**

The data that were chosen for this study came from a database that included 141 Michigan public school districts. Fifty-one schools were chosen because they were surveyed in both 1992-93 and 1994-95. Most of the school districts (52.0%) were from counties
located in metropolitan areas. The data were mostly collected from districts in the Lower Peninsula of Michigan, with the greatest clustering (26.0%) in the southeastern region of the state.

In order to insure that the most accurate self-reported data are obtained, several research methods are routinely followed during data collection. First, trained research associates are sent to school districts to handle survey administration. This procedure, as opposed to school personnel administering the survey, affords students the opportunity to answer questionnaires without fear that their teachers or principal will see the raw data. Secondly, the survey is administered in an environment that is conducive to honest responses. By spacing students in such a way that they do not crowd one another, thus reducing the degree to which the students feel afraid that other students will see their responses. Thirdly, the SPSS program that analyzes the collected data has built-in mechanisms that detect multiple inconsistent responses. Questionnaires with more than three unbelievable answers are not included in the analysis of the school district. These measures assist in maintaining the high quality of the MAOD self-reported data.

Research Variables

Categorical Variables

Sex and Race

The sex and race of the respondents were utilized as cate
gorical variables in the current study. Sex is dichotomized and coded into male (1) and female (2). Within the original MAOD survey, the student respondents were able to choose from one of seven different race categories. In the current study, we selected two categories, White and Black (African American), because of the numbers of cases for these racial categories were appropriate for our analysis. All of the other racial categories were less than sufficient in size for this analysis. Consequently, race was dichotomized and coded into White (1) and Black (2). This analytical method will help to determine the relationship between the impact of peer pressure to use cigarettes, alcohol, and marijuana.

**Grade Level**

The grade level of the respondents in the survey instrument will also be utilized as categorical variables in the current study. Grade levels to be used are 8th, 10th, and 12th grades. Within the original MAOD survey, the student respondents were able to choose from one of several different grade categories.

**Dependent Variables**

The dependant variables used in this research are cigarette, alcohol and marijuana use of from social learning perspective’s concept of peer association. Therefore, in order to test the three research questions about drug use listed earlier, the frequency of cigarette, alcohol, and marijuana use were chosen as dependent
variables. In the case of alcohol and marijuana use, the scales were constructed on the basis of how many times the students had used drugs, etc. in the past 12 months. In the case of cigarette use, the scale was made on the basis of how many times the students had used in the past 30 days.

**Cigarette Usage**

In the current study, the frequency of cigarette usage was dichotomized into "No Usage" and "Some Usage". Cigarette use is operationalized in the Michigan AOD Survey question 11, which measures reported frequency and extent of cigarette use. Question 11 reads, "How often have you smoked cigarettes during the past 30 days?" According to this question the response for "No Usage" is "Not at all". The range of possible responses for "Some Usage" are collapsed into "less than one cigarette per day," "one to five cigarettes per day," "about one-half pack per day," "about one pack per day," "about one and one-half pack per day," and "two packs or more per day." When coding this variable, we chose the 30-day range, because if cigarettes are smoked, they will be more prevalent in daily use patterns when labeling use behavior. We also believe that for a high school student to smoke less than one cigarette per day over a period of thirty days would not constitute cigarette use for our purposes.
Alcohol Use

The frequency of alcohol usage will be dichotomized into "No Usage" and "Some Usage". Alcohol use is operationalized with a part of Michigan AOD Survey question 15, which says "How many occasions have you had alcoholic beverages to drink during the last 12 months?" The range of possible responses was "No Usage" or "0 occasions", "1-2 occasions". The ranges of possible responses for "Some Usage" are collapsed into "3-5 occasions," "6-9 occasions," "10-19 occasions," "20-39 occasions," "40 or More."

When coding this variable, the 12 month range was chosen because it is likely that a high school student, if experimenting with alcohol, could have used alcohol on 2 occasions or less in this time period, and not have it become a pattern of use. The researcher also assumes that alcohol consumption patterns fluctuate too much to be measured in a "30 day" period. It is also reasoned that the "in your lifetime" parameter is too vague to measure appropriately because students could have used alcohol frequently for a while and then moved on to other drugs, or stopped using alcohol altogether.

Marijuana Use

The frequency of marijuana usage will be dichotomized into "No Usage" and "Some Usage". Marijuana use is operationalized with part of Michigan AOD Survey questions 18, which says, "On how many occasions (if any) have you used marijuana (grass, pot) or hashish (hash, hash oil) during the last 12 months?" The range of possible
responses for "No Usage" is "0 occasions", "1-2 occasions". The ranges of possible responses for "Some Usage" are collapsed into "3-5 occasions," "6-9 occasions," "10-19 occasions," "20-39 occasions," "40 or More."

When coding this variable, the 12 month range was chosen because it is likely that a high school student, if experimenting with marijuana, could have used marijuana on 2 occasions or less in this time period and not have it become a pattern of use. We also believe that marijuana consumption patterns fluctuate too much to be measured in a "30 day" period. It is also of belief that the "in their lifetime" parameter is too vague to measure appropriately because students could have used marijuana frequently for a while and then moved on to other drugs, or stopped using marijuana altogether.

The reason for the dichotomizing and collapsing of these variables were three fold. First, upon inspection of the data it was determined that, given the spread on the ranges of responses for these variables, dichotomizing them made practical sense. This preliminary inspection revealed that the distribution of scores was skewed in several categories. Thus, collapsing them gave us a more representative way to show cigarette, alcohol, and marijuana use that was practical for advanced statistical analysis, 2-allow us to manage the skewedness in the different categories of responses in the data, and 3-was a simpler way to get adequate scores given the large number of cases in the sample which was approximately 32,042.
Independent Variable

Peer Pressure

Peer pressure was conceptually defined as any perceived influence by a student's peers to use cigarettes, alcohol, and marijuana. Peer pressure is operationalized with part of Michigan AOD Survey question 46a which says, "How much pressure do you feel from your friends and schoolmates to...? a. ...smoke cigarettes. b. ...drink alcoholic beverages c. ...smoke marijuana. Peer pressure will be utilized to determine if it has an effect on the frequency of drug usage. The possible responses are "none," "a little," "some," and "a lot". For these three individual peer pressure variables, they were collapsed, dichotomized and coded into (1) "none" and "a little" and (2) "some" and "a lot".

The reason why this variable was collapsed and dichotomized was due to the nature of the question. On the survey instrument, questionnaire participants were never given conceptual definitions for these four ambiguous terms such as 'none', 'a little', 'some' and 'a lot'. Because these four responses are not clearly defined, this made it difficult to accurately draw clear distinctions between these responses. However, what it did do is allow us to ascertain is whether peer pressure was present or not, thus the collapsing of these responses into (1) as "no peer pressure" and (2) as "some peer pressure", as such. The other option, creating implied definitions on the part of the survey instrument designer/s and the stu-
dents who completed the survey, would have been ill advised at best.

As a result, the statistic used will be logistic regression for the analysis. This statistic was chosen for four reasons, given our dichotomized categories of dependent and independent variables. First, this method is preferable because it allows for the analysis of dichotomous (categorical) dependent variables (Fox, 1984). Second, it allows for tests of significance between two dichotomized categories of variables. Third, the sample sizes present in the data set made it a good fit for logistic regression. Fourth, the use of tests of significance can be applied to the data. Though the findings may not be generalized to the population from which they came, due to lack of random sampling, they will be used to infer causal relationships within this fixed population while ruling out "chance processes" (Blalock, 1979).

Logistic Regression

Logistic regression is to be employed as the sole method for the current study. A statistical package that offers a flexible and exhaustive way to perform logistic regression is SPSS. This program (1) allows for the easy inclusion of both continuous and categorical variables; (2) it allows for automatic dummy and effect coding of categorical variables; (3) and it computes many of the diagnostic statistics that are familiar from OLS (Ordinary Least-Squares) linear regression. Before these statistics are examined, pre-requisite steps were conducted.
The first step in performing a logistic regression is to analyze the cross-tabs of each model. Cross-tabs are descriptive percentage tables demonstrating the frequencies of a given independent variable by a given dependent variable. When analyzing these cross-tabs the frequency of each cell in each table should be noted. This is necessary because if there are zero frequencies in any of these cells, the logistic regression results are likely to be biased. According to Fox (1984: 354), zero cell frequencies occur because (1) "Certain combinations of categories may be empty because of logical or definitional situations," and (2) they have arisen by chance "when a particular cell occurs rarely in the population, when the sample is not large compared with the number of cells in the table." If zero frequencies are found, one must collapse categories of the independent variable in question, and re-run the cross-tab with this collapsed variable and dependent variable. On the other hand, if all cells have non-zero frequencies, we need to move onto the next step.

The second step is to determine if the multicollinearity of the model(s) is at an acceptable or an unacceptable level. This is done in SPSS by regressing each dependent variable onto all independent variables in a normal OLS linear regression. (NOTE: One has to click on "Collinearity Diagnostics" in the "Statistics" window). Multicollinearity is "a condition of high or near perfect correlation among the independent variables in a multiple regression equation" (Knoke and Bohrnstedt, 1994: 300). In other words, when a
model has an unacceptable level of multicollinearity two or more independent variables are measuring approximately the same thing. Unemployment and poverty status are typical examples of this situation. To minimize this statistical problem, the model needs to be re-analyzed with the omission of the problematic independent variable. The multicollinearity of the model can then be re-evaluated to determine if multicollinearity has reached an acceptable level.

The three main indicators of multicollinearity are the tolerance level (TOL), the variance inflation factor (VIF), and the Condition Index k values. TOL is the unique variance in each independent variable not shared with the other independent variables. VIF is an indicator of "how many times increases the sampling variance" (McClelland, 1994, p. 162). The Condition Index k is an "index of the global instability of the least-square regression coefficients..." (Fox, 1984, p. 148). In other words, large k values indicate that small changes in the data typically produce large changes in the least-squares solution. When a given model has acceptable levels of multicollinearity, the TOL will upwardly approach a quantitative value of 1.0, the VIF will downwardly approach a quantitative value of 1.0, and the Condition Index k values are typically less than or equal to a quantitative value of 30.0 (Fox, 1984).

The third step consists of running the logistic regression results. The results or values that will be analyzed are Cox & Snell, Nagelkerke, significance level of $P^2$ model, significance level of given independent variable, and the log odds ratio, the logit/
antilog, and the probability difference of given independent variable. The Cox & Snell value is a pseudo-adjusted $R^2$ value, and Nagelkerke is an unadjusted $R^2$ value. These statistics tell us the proportion of variance of the dependent variable(s) explained by the independent variable(s). The third statistic is the significance level of the entire model. It is desired for this value to be less than or equal to 0.05; if this occurs, the model is said to have good fit; otherwise, the model doesn’t have good fit. The fourth set of statistics is the significance level of each independent variable. In SPSS 8.0, these levels are given as a two-tailed test. To get a one-tailed test, divide this value by two. All significance levels on a one-tailed test that are less than or equal to 0.05 signify that a given independent variable explains a statistically significant proportion of the dependent variable.

Next, the logit ($B$) is the natural log (LN) of the odds ratio $[\text{Exp}(B)]$, and the odds ratio is the number by which we multiply the odds of each dependent variable for each one-unit increase in the independent variable (Menard, 1995).

If this statistic is greater than 1.0, this means that a given dependent variable increases per one-unit $X$, or each independent variable varies $X$ times more than the comparison/reference group of the independent variable on the dependent variable (ex. Blacks vs. Whites, Males vs. Females, etc.). If the log odds is less than 1.0, this means that a given dependent variable decreases per one-unit $X$, or a given independent variable varies $X$ times less than the ref-
ference group of the independent variable on the dependent variable. If the log odds is 1.0 then a given dependent variable doesn't vary by one-unit X, or a dependent variable doesn't either increase or decrease by one-unit X. Some researchers prefer the logit over the log odds, because its probability is not restricted by a minimum or maximum value, where the log odds statistic has a minimum value of 0, but has no fixed maximum limit (Menard, 1995:12). Even though such a limitation exists, both the odds ratios and logits of each model along with the probability differences will be provided.

On a more practical level, let's say we want to investigate the effect of race (0 = whites and 1 = minorities) on the likelihood of receiving a jail sentence (0 = no jail sentence and 1 = jail sentence). We find that race explains a statistically significant proportion of the jail sentence, and the log odds ratio is 2.51. This means that minorities are 2.51 times more likely to receive a jail sentence than whites.

The last statistic is the probability difference, a percentage form of the odds ratio. Because it is not provided in SPSS output, it must be calculated by hand. The formula is oddsratio over 1 + oddsratio = 0.5 = 100%. Referring to the above example, the odds ratio is +2.51 and the probability difference = +21.5%. This means that minorities are 21.5% more likely to receive a jail sentence than whites. If the probability difference were negative, minorities would be 21.5% less likely to receive a jail sentence than whites.

The data set was then analyzed via SPSS and all of the sta-
tistical methods were completed. All of the steps were followed and
the data set for both 1992-93 and 1994-95 and were sufficient to
proceed.
CHAPTER V

FINDINGS

The purpose of this research was to examine the relationship between the impact of peer influence pressure to use cigarettes, alcohol and marijuana by 8\textsuperscript{th}, 10\textsuperscript{th}, and 12\textsuperscript{th} graders in Michigan. This study is based on the social learning theory of Akers (1998), which stresses the importance of the influence that peers in new environments have on substance use behavior. Therefore, the data collected were analyzed and interpreted based upon this model, which was guided by the previously outlined 5 research questions.

The independent variable of peer pressure and dependent variables of cigarette, alcohol and marijuana use represent the relationships that were analyzed via logistic regression. Using the 1992-93 and 1994-95 Michigan Alcohol and Other Drugs School Survey data for 8\textsuperscript{th}, 10\textsuperscript{th} and 12\textsuperscript{th} graders which took the survey for both years, the five research questions were developed to examine the independent variables impact upon self-reported cigarette, alcohol and marijuana use. This chapter reports the results from the data analysis regarding research question 1 (see page 31).

Peer Pressure in 1992-93

Table 1 presents odds-ratios for the relationship between peer pressure and the use of cigarettes, alcohol, and marijuana among
8th, 10th, 12th grade students in Michigan who were surveyed in 1992-93 and in 1994-95. In each instance, peer pressure and the use of substances were measured as "None" or "Some". For cigarettes, use of 1 or more per day is measured as "Some", while use of less than one per day is measured as "None". For alcohol and marijuana, 3 or more occasions of use in the last 12 months is measured as "Some", while less than 3 occasions is measured as none.

Table 1
The Impact of Peer Pressure on Substance Use by Grade

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8th Cigarettes</td>
<td>2.28**</td>
<td>2.06**</td>
</tr>
<tr>
<td>10th Cigarettes</td>
<td>2.36**</td>
<td>1.77**</td>
</tr>
<tr>
<td>12th Cigarettes</td>
<td>2.64**</td>
<td>.54**</td>
</tr>
<tr>
<td>8th Alcohol</td>
<td>1.99**</td>
<td>2.08**</td>
</tr>
<tr>
<td>10th Alcohol</td>
<td>1.41**</td>
<td>NS</td>
</tr>
<tr>
<td>12th Alcohol</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>8th Marijuana</td>
<td>3.95**</td>
<td>2.44**</td>
</tr>
<tr>
<td>10th Marijuana</td>
<td>2.56**</td>
<td>1.88**</td>
</tr>
<tr>
<td>12th Marijuana</td>
<td>2.84**</td>
<td>1.61**</td>
</tr>
</tbody>
</table>

**Scores are statistically significant at the .01 Level
NS = No Score

For 8th graders in 1992-93, Table 1 shows that those students who experienced peer pressure to smoke cigarettes were 2.28 times more likely to report cigarette use than those who experienced no peer pressure. Those who experienced peer pressure to drink alcohol were 1.99 times more likely to report alcohol use than those who
experienced no peer pressure. Lastly, 8th grade students who experienced peer pressure to smoke marijuana were 3.95 times more likely to report marijuana use than those who experienced no peer pressure. In each instance, the impact of peer pressure is statistically significant.

For 10th graders in 1992-93, those students who experienced peer pressure to smoke cigarettes were 2.36 times more likely to report cigarette use than those who experienced no peer pressure. Similarly, those who experienced peer pressure to drink alcohol were 1.41 times more likely to report alcohol use than those who experienced no peer pressure. Lastly, 10th grade students who experienced peer pressure to smoke marijuana were 2.56 times more likely to report marijuana use than those who experienced no peer pressure. Again, these results are all statistically significant.

Among 12th grade students, those students who experienced peer pressure to smoke cigarettes were 2.64 times more likely to report cigarette use than those who experienced no peer pressure. In addition, those who experienced peer pressure to smoke marijuana were 3.95 times more likely to report marijuana use than those who experienced no peer pressure. These results were both statistically significant. However, in contrast to both the 8th and 10th grade students, 12th graders who experienced peer pressure to drink alcohol were no more likely to report alcohol use than those who experienced no peer pressure.
Table 1 shows that for 8th graders in 1994-95, those students who experienced peer pressure to smoke cigarettes were 2.06 times more likely to report cigarette use than those who experienced no peer pressure. Similarly, those who experienced peer pressure to drink alcohol were 2.08 times more likely to report alcohol use and those who experienced peer pressure to smoke marijuana were 2.44 times more likely to report marijuana use. Again, all results were statistically significant.

Next, for 10th graders, those students who experienced peer pressure to smoke cigarettes and marijuana were 1.77 and 1.88 times more likely to report cigarette use and marijuana use, respectively, than those who experienced no peer pressure. Moreover, these results were statistically significant. However, 10th graders were equally likely to report alcohol use as a result of peer pressure as those who experienced no peer pressure to drink.

Finally, Table 1 indicates that 12th grade students who experienced peer pressure to smoke cigarettes were .54 times more likely to report cigarette use than those who experienced no peer pressure. Those who experienced peer pressure to smoke marijuana were 1.61 times more likely to report marijuana use than those who experienced no peer pressure. Both results were significant. As was the case with 10th grade students, 12th graders who experienced peer pressure to drink alcohol were no more likely to report alcohol use than those who experienced no peer pressure.
Research Question 1 asserts that the impact of peer pressure on cigarettes, alcohol, and marijuana use will positively effect cigarette, alcohol, and marijuana use in both 1992-93 and 1994-95 for all grade levels represented. The results and Table 1 shows that in 1992-93, the impact of peer pressure had a positive effect on cigarette, alcohol and marijuana use for 8<sup>th</sup> and 10<sup>th</sup> graders. To add, peer pressure positively impacted cigarette and marijuana use for 12<sup>th</sup> graders but had no statistically significant effect for alcohol use. As a result, these findings partially support this research question for 1992-93.

In 1994-95, there were similar results that also indicate partial support of this research question. The impact of peer pressure had a positive effect on cigarette, alcohol and marijuana use for 8<sup>th</sup> grade students. Peer pressure also positively impacted cigarette and marijuana use for 10<sup>th</sup> and 12<sup>th</sup> graders but had no statistically significant effect for alcohol use for these two grade levels.

The Impact of Sex

For Table 2, when looking at cigarette use in 1992-93 8<sup>th</sup> grades, the impact of peer pressure for males exceeded that for females, but the 10<sup>th</sup> and 12<sup>th</sup> grade females exceeded males. However, for 1994-95 we have a somewhat different pattern. Here, the odds ratios for males exceed the scores for females in both 8<sup>th</sup> and 10<sup>th</sup> grades, while they are virtually the same for the 12<sup>th</sup> grade. All
of these results were statistically significant.

Table 2

The Impact of Peer Pressure on Substance Use by Gender

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>8th Cigarettes</td>
<td>2.93**</td>
<td>1.76**</td>
<td>2.39**</td>
<td>1.81**</td>
</tr>
<tr>
<td>10th Cigarettes</td>
<td>2.30**</td>
<td>2.46**</td>
<td>1.84**</td>
<td>1.64**</td>
</tr>
<tr>
<td>12th Cigarettes</td>
<td>2.20**</td>
<td>3.10**</td>
<td>.53**</td>
<td>.55**</td>
</tr>
<tr>
<td>8th Alcohol</td>
<td>2.00**</td>
<td>2.01**</td>
<td>2.62**</td>
<td>1.75**</td>
</tr>
<tr>
<td>10th Alcohol</td>
<td>1.26*</td>
<td>1.61*</td>
<td>1.23*</td>
<td>NS</td>
</tr>
<tr>
<td>12th Alcohol</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>8th Marijuana</td>
<td>4.48**</td>
<td>3.30**</td>
<td>2.84**</td>
<td>2.04**</td>
</tr>
<tr>
<td>10th Marijuana</td>
<td>2.39**</td>
<td>2.63**</td>
<td>2.07**</td>
<td>1.67**</td>
</tr>
<tr>
<td>12th Marijuana</td>
<td>3.26**</td>
<td>2.13**</td>
<td>1.76**</td>
<td>1.44*</td>
</tr>
</tbody>
</table>

**Scores are statistically significant at the .01 Level
*Indicates that the score is statistically significant at the .05 Alpha
NS = No Score

Table 2 also shows that the relationship between peer pressure and alcohol use is almost identical among 8th grade males and females in 1992-93, but changes in the 10th grade to show a stronger relationship among females. Again, a different pattern emerged for 1994-95, where the odds ratios for males exceed those for females for both 8th and 10th grades. There were no significant odds ratio scores for 12th grade students and alcohol use for either year.

Finally, Table 2 indicates that for 1992-93 students, the odds ratios among males exceed the scores for the odds ratios among females in the 8th grade, scores for females exceeded scores for males in the 10th grade, while scores rose for males who exceeded
scores for females again in the 12th grade. Although there is no single pattern between males and females in 1992-93 for marijuana, all of the scores are statistically significant. In contrast, however, peer pressure and marijuana use, males exceeded females for all grade levels.

The Impact of Race

When controlling the variable of race on the relationship between peer pressure and substance use, Table 3 shows that the relationship for cigarette use among 8th grade Whites is higher than among Blacks in 1992-93. Yet in 1992-93, for 10th and 12th grade Black students, the impact of peer pressure to smoke cigarettes occurs at greater levels than Whites.

Table 3

The Impact of Peer Pressure on Substance Use by Race

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Whites</td>
<td>Blacks</td>
<td>Whites</td>
<td>Blacks</td>
</tr>
<tr>
<td>8th Cigarettes</td>
<td>2.39**</td>
<td>NS</td>
<td>1.99**</td>
<td>2.02*</td>
</tr>
<tr>
<td>10th Cigarettes</td>
<td>2.39**</td>
<td>2.90*</td>
<td>1.63**</td>
<td>7.26*</td>
</tr>
<tr>
<td>12th Cigarettes</td>
<td>2.87**</td>
<td>5.68*</td>
<td>.49**</td>
<td>NS</td>
</tr>
<tr>
<td>8th Alcohol</td>
<td>2.15**</td>
<td>NS</td>
<td>2.22**</td>
<td>2.18*</td>
</tr>
<tr>
<td>10th Alcohol</td>
<td>1.48*</td>
<td>NS</td>
<td>NS</td>
<td>2.94*</td>
</tr>
<tr>
<td>12th Alcohol</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>4.24*</td>
</tr>
<tr>
<td>8th Marijuana</td>
<td>4.72**</td>
<td>NS</td>
<td>2.54**</td>
<td>2.93**</td>
</tr>
<tr>
<td>10th Marijuana</td>
<td>2.38**</td>
<td>2.60**</td>
<td>1.89**</td>
<td>3.26**</td>
</tr>
<tr>
<td>12th Marijuana</td>
<td>3.10**</td>
<td>NS</td>
<td>1.65**</td>
<td>NS</td>
</tr>
</tbody>
</table>

**Scores are statistically significant at the .01 Level
*Indicates that the score is statistically significant at the .05 Alpha
NS = No Score
When the same analysis was performed with the 1994-95 data set, 8th grade White and Black students who experienced peer pressure to smoke cigarettes were similar. Table 3 also indicates that Black students in the 10th grade are three and a half times more likely to smoke cigarettes as a result of peer pressure than Whites. Of more interest in this data set is that there is not a statistically significant relationship between peer pressure and cigarette use for 12th grade Blacks after this drastic climb from 8th to tenth grade. In comparison, 8th and 10th grade Whites are not as likely to smoke cigarettes as Blacks students. Yet they are more likely to do so in the 12th grade.

Table 3 also indicates there was a higher impact of peer pressure on alcohol use for Whites than Blacks for 8th and 10th graders in 1992-93 and no differences for 12th grade. Yet, in 1994-95, 8th graders show almost the same impact for both Blacks and Whites for all grades. Blacks also exceeded the White counterparts in the 10th and 12th grades.

To add, analysis of this data set indicates that in 1992-93, peer pressure and marijuana use among 8th grade White students is almost five times greater than Black students. The relationship among Blacks exceeded Whites in the 10th grade by a small margin, but among 12th graders, again, the relationship among Whites exceeded Blacks. Whites were 3 times more likely to smoke marijuana where peer pressure is present than Blacks in the 12th grade.

In 1994-95, however, Blacks exceeded Whites where peer pres-
sure was present in the 8th and 10th grade, while the opposite was true in the 12th grade for these students.

Impact of Race and Sex

1992-93 and 1994-95 Findings for Females

The analysis of the data was then simultaneously controlled for race and sex to ascertain whether the differences between Whites and Blacks and males and females persist. Table 4 displays substantial differences in impact for Black and White females with respect to cigarette use in 1992-93. The odds ratios for White females far exceed Blacks females in all grades. Moreover, the impact steadily increases as grade level increases. The same is true for 1994-95 Black females with the exception of the 10th grade, where the odds ratios for Black females are more than double those of White females. In addition, where the impact among White females increased as grade level increased in 1992-93, it decreased as grade level increased in 1994-95.

With regard to alcohol, for 8th and 10th grade White females in 1992-93, the relationship for peer pressure was higher than among White females. In contrast in 1994-95, the scores for White females exceeded those for Black females in only the 8th grade. No other scores were statistically significant for the other grades.

Finally, Table 4 shows a clear pattern of impact of peer pressure on marijuana use for females for both years. First, the data show that the impact of peer pressure on marijuana use. Yet, it is
clearly due to the fact that for Black females, in both years, there are no significant relationships between peer pressure and marijuana use.

Table 4

The Impact of Peer Pressure on Substance Use by Race and Females

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8th Cigarettes</td>
<td>1.86**</td>
<td>NS</td>
<td>1.96**</td>
<td>NS</td>
</tr>
<tr>
<td>10th Cigarettes</td>
<td>2.52**</td>
<td>NS</td>
<td>1.52**</td>
<td>4.34*</td>
</tr>
<tr>
<td>12th Cigarettes</td>
<td>3.34**</td>
<td>NS</td>
<td>.52**</td>
<td>NS</td>
</tr>
<tr>
<td>8th Alcohol</td>
<td>2.43**</td>
<td>NS</td>
<td>2.03**</td>
<td>NS</td>
</tr>
<tr>
<td>10th Alcohol</td>
<td>1.72**</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
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<tr>
<td>12th Alcohol</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>8th Marijuana</td>
<td>4.82**</td>
<td>NS</td>
<td>2.41**</td>
<td>NS</td>
</tr>
<tr>
<td>10th Marijuana</td>
<td>2.67**</td>
<td>NS</td>
<td>1.60**</td>
<td>NS</td>
</tr>
<tr>
<td>12th Marijuana</td>
<td>2.49**</td>
<td>NS</td>
<td>1.57**</td>
<td>NS</td>
</tr>
</tbody>
</table>

**Scores are statistically significant at the .01 Level
*Indicates that the score is statistically significant at the .05 Alpha
NS = No Score

1992-93 and 1994-95 Findings For Males

In 1992-93, Table 5 shows that the odds ratios in all grade levels were higher for White males relative to Black males across all substances. However, for the 1994-95 data set, the situation was different. For those situations where the relationship between peer pressure and the use of a substance was significant among Black males, their scores were higher than White males. These include moderately higher scores for 8th grade alcohol and marijuana use,
while there were drastically different scores for 10th grade cigarette and marijuana use. For instance, Black males are seven and a half times more likely to smoke cigarettes in the 10th grade than White males and four and a half times more likely to use marijuana than their White counterparts. For all other circumstances, the odds ratios for White males exceed those of Black males.

Table 5

The Impact of Peer Pressure on Substance Use by Race and Males

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8th Cigarettes</td>
<td>3.10**</td>
<td>NS</td>
<td>2.05**</td>
<td>NS</td>
</tr>
<tr>
<td>10th Cigarettes</td>
<td>2.35**</td>
<td>NS</td>
<td>1.69**</td>
<td>15.17**</td>
</tr>
<tr>
<td>12th Cigarettes</td>
<td>2.49**</td>
<td>NS</td>
<td>.47**</td>
<td>NS</td>
</tr>
<tr>
<td>8th Alcohol</td>
<td>1.92**</td>
<td>NS</td>
<td>2.54**</td>
<td>3.14**</td>
</tr>
<tr>
<td>10th Alcohol</td>
<td>1.32**</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>12th Alcohol</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>8th Marijuana</td>
<td>4.58**</td>
<td>2.88**</td>
<td>2.74**</td>
<td>3.77**</td>
</tr>
<tr>
<td>10th Marijuana</td>
<td>2.11**</td>
<td>NS</td>
<td>2.13**</td>
<td>10.88**</td>
</tr>
<tr>
<td>12th Marijuana</td>
<td>3.59**</td>
<td>NS</td>
<td>1.73**</td>
<td>NS</td>
</tr>
</tbody>
</table>

**Scores are statistically significant at the .01 Level
*Indicates that the score is statistically significant at the .05 Alpha
NS = No Score

The Impact of Peer Pressure from 1992-93 to 1994-95

Table 6 shows that the impact of peer pressure on cigarettes, marijuana, and alcohol use decreased from 8th grade in 1992-93 to 10th grade in 1994-95 for White females and White males. Yet, the impact of peer pressure to smoke cigarettes on cigarettes use in-
creased for Black females and Black males from 8th grade in 1992-93 to 10th grade in 1994-95. To contrast, along with the aforementioned decrease in the impact of peer pressure to drink on alcohol use by White males and females, the impact of peer pressure to drink on alcohol use was not significant at all for Black male and Black females in 1992-93 or 1994-95. When the decreased impact of peer pressure to use marijuana on marijuana use for White males and females was compared to the impact of peer pressure to use marijuana on marijuana use from 1992-93 to 1994-95, the data show that it was still not statistically significant for Black females but increased for Black males.

Table 6
The Impact of Peer Pressure on Substance Use from 10th to 12th Grade

<table>
<thead>
<tr>
<th>Substance/Year</th>
<th>Females</th>
<th></th>
<th>Males</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Whites</td>
<td>Blacks</td>
<td>Whites</td>
<td>Blacks</td>
</tr>
<tr>
<td>8th Cigarettes</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1992-1993</td>
<td>1.86**</td>
<td>NS</td>
<td>3.10**</td>
<td>NS</td>
</tr>
<tr>
<td>1994-1995</td>
<td>1.52**</td>
<td>4.34*</td>
<td>1.69**</td>
<td>15.17**</td>
</tr>
<tr>
<td>8th Alcohol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1992-1993</td>
<td>2.43**</td>
<td>NS</td>
<td>1.92**</td>
<td>NS</td>
</tr>
<tr>
<td>1994-1995</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>8th Marijuana</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1992-1993</td>
<td>4.82**</td>
<td>NS</td>
<td>4.58**</td>
<td>2.88**</td>
</tr>
<tr>
<td>1994-1995</td>
<td>1.60**</td>
<td>NS</td>
<td>2.13**</td>
<td>10.88**</td>
</tr>
</tbody>
</table>

**Scores are statistically significant at the .01 Level.
*Indicates that the score is statistically significant at the .05 Alpha
NS = No Score
Table 6 findings reveal a pattern that is similar for White females and White males. The same is true of Black females and males with the exception of the impact of peer pressure on marijuana use. Interestingly enough, for Black males the impact of peer pressure on cigarettes and marijuana increased dramatically from 8th grade in 1992-93 to 10th grade in 1994-95, and the impact of peer pressure was not statistically significant at all for Black males relative to alcohol for this same period of time.
CHAPTER VI

DISCUSSION AND SUMMARY

The purpose of the final chapter is to discuss the results in relationship to these five research questions, the larger theoretical model from which these five research questions were derived, along with the implications that can be drawn from the findings. First, the analysis of the data will be summarized in relation to each research question. Second, the discussion and implications will include speculation that may explain any variations in the results, if any occurred. Third, the researcher will connect the data and the research questions together to show how they give further insight to Sutherland (1947) and Akers’ (1998) premise that peers influence behavior, and suggestions for future research. Finally, the last section will show the limitations for this study.

These questions were derived and the relationships predicted from the use rates for cigarettes, alcohol and marijuana from current research by grade level, race (for Blacks and Whites) and gender (sex). In the literature review we examined use rates as an indicator of peer pressure. Assuming that peer pressure leads to higher use rates and examining relationships between race, gender and year in school, research questions were derived for the differential effects of peer pressure on use rates within different groups.
According to the first research question, the impact of peer pressure to use cigarettes, alcohol, and marijuana, was expected to be statistically significant for all grades in both 1992-93 and 1994-95. The results show that in 1992-93 and 1994-95, the impact of peer pressure had a positive effect on cigarette, and marijuana use for all grades. Yet, with regard to alcohol, peer pressure impacted 8th grade students in 1992-93 and 1994-95, only 10th graders in 1992-93, and no significant impact was shown for either 10th graders in 1994-95 or 12th graders for both years. Thus, this research question is not supported in the case of alcohol.

The researcher has found no explanation in the literature for the effect of peer pressure on cigarettes and alcohol. This shows that there is an influence of peers on alcohol use in the early years that begins to decrease as they progress through high school. One can speculate that less pressure exists for students in the later years because the majority of them are using alcohol already and don’t feel pressure.

As for the premise that peers influence behavior by Sutherland (1947) and Akers (1998), this study shows that their contention is true for cigarettes and marijuana. Yet, while this peer influence does impact alcohol use for new high school students, it begins decreases to become non-significant by the 12th grade. As a result, the conclusion can be made that beyond their notion that peers influence behavior, other explanations that account for the differences in the impact of peer pressure on substances would help to
increase our understanding of how peers influence one another. The second research question stated that the impact of peer pressure on substance use would be greater for Males compared to Females for marijuana, but not for cigarettes and alcohol in 1992-93 and 1994-95. The results and Table 2 reveal that in 1992-93 and 1994-95 the impact of peer pressure for males was greater for marijuana for all grades. Yet, for cigarettes and alcohol, no clear patterns could be drawn. Therefore this research question was supported via this analysis.

Regarding these differences in influence for males and females and the impact of peer pressure on marijuana use, some explanations can be applied to the greater impact of peers on males for marijuana than females. Heimer (1996) states that females bring their self-concept into play when it comes to deviance in general and found that it is less socially acceptable for females to commit deviance. This may mean that because marijuana is an illegal substance, and the larger society in which females are socialized does not usually support or accept the use of this substance in public or private, females are less likely to use marijuana. In addition, according to an explanation given by Ford and his colleagues (1999), males and females are more susceptible to peer pressure towards [deviant] behaviors that fit into their general societally accepted roles. From this we can conclude that because marijuana use fits within the societally accepted role for males, males are influenced by peers to use marijuana to a greater degree than females.
We can also conclude that because smoking cigarettes and drinking alcohol have become socially accepted role behaviors for both females and males, that the influence of peers to use these substances will not be greater for males. The data and current research supports this as well (Johnston and O'Malley, 1986; The Center for Disease Control, 1991).

As for the premise that peers influence behavior by Sutherland (1947) and Akers (1998), this study shows that their contention is true for cigarettes and marijuana. Yet, when this premise is extended to include gender, it is possible that the influence of peer pressure for males and females has a greater impact on substance use when the behavior is gender appropriate. As a result, research should be undertaken to further validate this relationship between gender appropriateness and peer influence on behavior.

The third research question stated that the impact of peer pressure on substance use would be greater for Whites than African Americans (Blacks) for all substances. In 1992-93 and 1994-95, Whites were not impacted at greater levels than Blacks for all substances. The analysis failed to support this research question.

As a result of these data being inconsistent with other research in this area, a further review of the literature was undertaken. The researcher found that both sex and race might have an impact on the effects of peer pressure on drugs. For this reason, the researcher chose to forgo further analysis of this issue until I
control for sex and race, via research question four where the impact of peer pressure on substance use is examined.

The fourth research question stated that the impact of peer pressure on substance use would be greater for Whites than Blacks for all substances when controlled for sex in 1992-93 and 1994-95. These data show that in 1992-93 and 1994-95, White males and females were not impacted at greater levels than Black males and females for all substances. As a result, the analysis failed to support this research question.

However, the impact of peer pressure on substance use is greater for White females compared to Black females when controlling for race and sex simultaneously. The data revealed statistically greater impacts for White females for cigarettes, and marijuana in 1992-93 and 1994-95. The impact of peer pressure on alcohol use was also greater for 8th grade Whites females compared to 8th grade Black females in both years. It is also interesting to note that for Black females, the impact of peer pressure to use cigarettes, alcohol and marijuana was not statistically significant at all, with the exception of only 10th grade Black females and cigarette use.

For males, the impact of peer pressure on substance use is not greater for White males compared to Black males when controlling for race and sex simultaneously. The data revealed no clear patterns for the impact of peer pressure to use cigarettes, alcohol and marijuana.

As for the premise that peers influence behavior by Sutherland
(1947) and Akers (1998), this study shows that when race and sex are controlled, the impact of peer influence is greater for White females when compared to Black females. In fact their premise is not supported at all for Black females with the only exception being a significant impact of peer pressure for 10th grade Black females to use cigarettes. For males, their premise that peers influence behavior does apply in general, but no differential patterns of impact were found when White males were compared to Black males. This shows that when sex and race are controlled, the influence of peers on behavior does not work the same for all races and genders.

The researcher found no explanation in the literature that attempted to explain why there is a differential impact of peers on substance use or other behavior/s for White females when compared to Black females. There is also no explanation for the unclear pattern of peer influence for Black and White males as well. Beyond Sutherland (1947) and Akers (1998) notion that peers influence behavior, other explanations that account for these differences via race and sex would help to increase our understanding of how peers influence one another.

The fifth research question contends that the impact of peer pressure and substance use will increase from 8th grade (T1) to 10th grade (T2) for all substances. Simply, peer pressure will increases in impact from 8th to 10th grade. Due to the richness of the data supplied by the analysis in research question 4 that were not present when combining males and females, again race and sex
were controlled for comparative differences. These data also show that it failed to support this research question as it applies to cigarettes, alcohol, and marijuana for students from 1992-93 8th grade to 1994-95 10th grade.

The impact of peer pressure on use did not increase, but in fact decreased from 1992-93 to 1994-95 for White male and female 8th graders as they moved to 10th grade for all substances. Table 5 also shows that for Black males and females, the impact of peer pressure on use increased for cigarettes. In addition, Black males and females were not impacted by peer pressure for alcohol from 8th to 10th grade. Yet, the relative impact of peer pressure on marijuana use was different for Black students based on gender. For Black females from 1992-93 to 1994-95, the impact of peer pressure on marijuana use was not statistically significant, yet it increased for Black males for this same time period. Given the data, we see that where Whites and Black males and females are concerned, the impact of peer pressure to use on substance use from 8th grade in 1992-93 to 10th grade in 1994-95 is different for each group.

As for the premise that peers influence behavior by Sutherland (1947) and Akers (1998), this study shows that their contention is true for cigarettes and marijuana. Yet, when race and sex are controlled at two times periods for the influence of peers on substance use, we can conclude that the grade level of the student has an impact on the relative impact of peer influence for cigarettes and marijuana. We can also speculate beyond their notion that peers
influence behavior that other explanations that account for these differences would help to increase our understanding of how peers influence one another relative to age.

Overall, Sutherland (1947) and Akers (1998) have been supported by other research to date. Yet there have not been many research studies that have attempted to determine which of their explanations is the best predictor of the amount of influence that peers have on each other. Whether using Sutherland’s (1947) idea that differentially associating produces peer influence or Akers’ (1998) idea that reinforced and punished reactions to behavior produce this influence, it is safe to assume that each has some degree of influence.

One may perhaps speculate that, together, these two explanations have more predictive power on peer influence than either would alone. From this, it is recommended that a framework that focuses on differential association (of Sutherland) for the initiation of new behavior/s, that are then shaped by reinforcement and punishment (of Akers) be explored. It is this researchers belief that such a framework may offer a model which predicts greater peer influence on behavior.

Research Limitations

As with any empirical research, there are questions on the subject of research validity, reliability, and limits that necessitate discussion. This aids in placing the conclusions that follow in
their proper perspective. The first limitation that will be addressed is the use of self-reported data. It cannot be known if the students in each school district were completely honest when completing the survey, however, precautions were taken to place students in an atmosphere conducive to honest responses. In support of self-reported data, Johnson (1993) concludes that drug questionnaires produce largely valid data. He found that the data had a high degree of reliability, consistency, and construct validity.

The second limitation is the use of aggregated data. Because this study used aggregate data from schools and not individual data that allow us to track each individual student’s use patterns, this study is not able to conclude at higher level of accuracy the use of alcohol and other drugs from Time One and Time Two. The data, which represent both eighth and tenth graders for 1992-93, 1994-1995, though they represent the same schools that took the survey for both years, they do not represent all of the students that make up these districts. To limit this discussion, but not understate it, it is well known that in surveying aggregate populations that while some may leave, others enter that population for various reasons that decrease its reliability. However, the results of this study can be generalized to the school districts within this survey.

Third, drawing conclusions about high school students’ reasons for using or increasing the use of alcohol and drugs solely on one variable is questionable. This is due to the varied, complex
and numerous factors that simultaneously bombard the world of high school students. To assume that one factor operates inside of a vacuum is not an educated assumption based on the literature and research in this area.

Fourth, this research also does not investigate specific subcultures within the high school environment, which may use alcohol and other drugs more or less than other subcultures. Research has shown that delinquent subcultures could be more likely to engage in drug use (Johnson, 1993). Desmond (1995) states that delinquents and drug users are not the same groups of people. Moreover, association with one group (either delinquents or drug users) tends to reduce the likelihood of association with the other group. From this we can conclude that even though they are somewhat mutually exclusive, they both are related to high drug use.

The fifth limitation lies in the narrow scope of this study into the lives of adolescents. Our definition of peer pressure does not take into account the socio-cultural influences that interact with the personal dispositions of adolescents. Thus, it is overly simplistic when used alone to account for this complex system of interactional variables. These variables include rural vs. urban area, how racially integrated the area is, the areas' disposition on racial integration, cultural integration of the area, the economic, political, and social climate of the area, and the type and amount of conflict among the sexes, and other groups that impact the social fabric of an area.
Sixth, Akers' (1998) modified theory of social learning also lacks an adequate explanation for why young people stop or decline in the level of substance use as they move toward their latter high school years, as this these data show. A seventh major limitation lies in the instrument and its use of the peer pressure question itself. It is used as a generic term that fails to specify if it is (1) Perceived peer pressure; (2) If overt or actual peer pressure; (3) And if so, how it would be defined by those taking this questionnaire; and (4) It’s response categories do not allow us to measure the extent or degree of peer pressure as well.

In conclusion, this study examined how peer pressure as a form of perceived peer influence has impacted substance use among high school students in school districts that have chosen to participate in the Michigan Alcohol and Other Drugs School Survey in the state of Michigan in 1992-93 and 1994-95. After examining the research questions formulated as a result of the social learning theoretical perspective by Akers (1998), we have gained some insight. Overall, these findings support Akers (1998) contention that peer pressure does shape learned behavior.

What this theory does not explain, and the data show, is the differential impact peer influence (in the form of pressure) has on different racial groups and genders within these groups. Some explanations have been offered here, but further research may help to uncover ideas that may serve to add to extant literature. From this, high school administrators can derive some assistance where
substance use is an issue for students. Via this study, educators can give their attention to, and promote issues of acceptance and comfortability for new high school students when they first enter high school rather than toward the end of their high school years. Researchers also can use these results and apply this new understanding of the lack of relationship there is between peer pressure, use rates, and the impact of peer pressure on use to their critical analysis of data and findings. Theorists are also encouraged to continue their explanations for the different impacts of peer pressure on substance use that exist for different races and genders; explanations for the different impacts of peer pressure at two different time periods on substance use that exist for different races and genders; that the combining of males with females in the same category is an unsound categorization due to the differences found in the impact of peer pressure to use drugs and alcohol; and finally, that the categorizing marijuana (illegal substance) with cigarettes and alcohol (legal substances) should not be done due to the differences found in the impact of peer pressure on their use.
Appendix A

Michigan Alcohol and Other Drugs School Survey
This questionnaire was developed for use in secondary schools throughout the state of Michigan to help increase our understanding of a number of important behaviors of students--but in particular, their use of cigarettes, alcohol, and other drugs. It is designed to parallel closely the questionnaire used in the nationwide school surveys conducted each year by the University of Michigan.

This is not a test: the questions simply ask for your experiences and attitudes in a number of areas. It is important that you answer each question as thoughtfully and honestly as you can. If you have trouble understanding a question, raise your hand for assistance. If you do not always find an answer which fits exactly, use the one that comes closest. If a question does not apply to you, leave it blank.

This study is completely voluntary. Also, if there is any question that you or your parents would find objectionable for any reason, just leave it blank.

This questionnaire contains nothing which identifies you. Nobody ever knows who filled out any questionnaire. After you and your classmates complete your questionnaires, they will be taken directly to Western Michigan University where an optical scanner will be used to read the answers onto a computer tape for analysis. All results will be reported in group form--never for individuals or classrooms.

Other students have said that they have found this questionnaire interesting, and that they enjoy filling it out. We hope you will too.
PART A

BEFORE BEGINNING BE SURE YOU READ THE INSTRUCTIONS ON THE COVER.

1. How happy are you with your life these days?
   - Very unhappy
   - Unhappy
   - Mixed feelings
   - Happy
   - Very happy

2. During a typical week, on how many evenings do you go out for fun and recreation? (Don't count things you do with your parents or other adult relatives.)
   - Less than one
   - One
   - Two
   - Three
   - Four or five
   - Six or seven

3. What is your grade level in school?
   - 7th grade
   - 8th grade
   - 9th grade
   - 10th grade
   - 11th grade
   - 12th grade

4. Now, thinking back over the past year in school, how often did you...
   a. Enjoy being in school?
   b. Hate being in school?
   c. Try to do your best work in school?
   d. Find the school work too hard to understand?
   e. Fail to complete or turn in your assignments?
   f. Get sent to the office, or have to stay after school, because you misbehaved?

5. Which of the following best describes your average grade in the most recent grading period or semester?
   - A (93-100)
   - B (83-92)
   - C (73-82)
   - D (69 or below)

6. During the LAST FOUR WEEKS, how many whole days of school have you missed because you skipped or "cut"?
   - None
   - 1 day
   - 2 days
   - 3 days
   - 4 to 5 days
   - 6 to 10 days
   - 11 or more
   - 11 or more

7. Have you ever had to repeat a grade in school?
   - No
   - Yes

The next questions ask for your opinions on the effects of using certain drugs and other substances.

8. How much do you think people who do these things risk harming themselves (physically or in other ways)? (Mark one circle for each line.)
   a. Smoke one or more packs of cigarettes per day
   b. Use smokeless tobacco regularly (chewing tobacco, snuff, plug, dipping tobacco)
   c. Try marijuana once or twice
   d. Smoke marijuana occasionally
   e. Smoke marijuana regularly
   f. Try LSD ("acid") once or twice
   g. Take LSD regularly
   h. Try heroin once or twice
   i. Try amphetamines (uppers, pep pills, bennies, speed) once or twice
   j. Take amphetamines regularly
   k. Try cocaine in powder form once or twice
   l. Take cocaine powder occasionally
   m. Take cocaine powder regularly
   n. Try "crack" cocaine once or twice
   o. Take "crack" cocaine occasionally
   p. Take "crack" cocaine regularly
   q. Take one or two drinks of an alcoholic beverage (beer, wine, liquor) nearly every day
   r. Take four or five drinks nearly every day
8. CONTINUED...

s. Have five or more drinks once or twice each weekend .......... 0 0 0 0 0

t. Take steroids to increase athletic performance or muscle development .......... 0 0 0 0 0

9. How often have you smoked cigarettes during the past 30 days?

- Not at all
- Less than one cigarette per day
- One to five cigarettes per day
- About one-half pack per day
- About one pack per day
- About one and one-half packs per day
- Two packs or more per day

10. Have you ever smoked cigarettes?

- Never
- Once or twice
- Occasionally but not regularly
- Regularly in the past
- Regularly now

11. How often have you taken smokeless tobacco during the past 30 days?

- Not at all
- Once or twice
- About one and one-half packs per day
- Two packs or more per day

12. Have you ever used or used smokeless tobacco (chewing tobacco, snuff, plug, dipping tobacco)?

- Never
- Once or twice
- Occasionally but not regularly
- Regularly in the past
- Regularly now

13. How often have you taken smokeless tobacco during the past 30 days?

- Not at all
- Once or twice
- Three to five times per week
- About once a day
- More than once a day

14. Next we want to ask you about drinking alcoholic beverages, including beer, wine, wine coolers, and liquor. Have you ever had any beer, wine, wine coolers, or liquor to drink?

- No—GO TO QUESTION 18
- Yes—CONTINUE WITH QUESTION 15

15. On how many occasions have you had alcoholic beverages to drink...

- In your lifetime?
- During the last 12 months?
- During the past 30 days?

16. On occasions that you drink alcoholic beverages, how often do you drink enough to feel pretty high?

- On none of the occasions
- On few of the occasions
- On about half of the occasions
- On most of the occasions
- On nearly all of the occasions
17. Think back over the LAST TWO WEEKS. How many times have you had five or more drinks in a row? (A “drink” is a glass of wine, a bottle of beer, a wine cooler, a shot glass of liquor, or a mixed drink.)

- None
- Once
- Twice
- Three to five times
- Six to nine times
- Ten or more times

18. (A “drink” is a glass of wine, a bottle of beer, a wine cooler, a shot glass of liquor, or a mixed drink.)

- None
- Once
- Twice
- Three to five times
- Six to nine times
- Ten or more times

The next major section of this questionnaire deals with various other drugs. There is a lot of talk these days about this subject, but not enough accurate information. Therefore, we still have a lot to learn about the actual experiences and attitudes of people your age.

We hope that you can answer all questions, but if you find one which you feel you cannot answer honestly, we would prefer that you leave it blank.

Remember that your answers are anonymous; they cannot be connected with your name.

19. On how many occasions (if any) have you used marijuana (grass, pot) or hashish (hash, hash oil)...

- in your lifetime?
- during the last 12 months?
- during the past 30 days?

20. On how many occasions (if any) have you used LSD (“acid”)...

- in your lifetime?
- during the last 12 months?
- during the past 30 days?

21. On how many occasions (if any) have you taken “crack” cocaine (cocaine in chunk or rock form)...

- in your lifetime?
- during the last 12 months?
- during the past 30 days?

22. On how many occasions (if any) have you taken cocaine in any other form...

- in your lifetime?
- during the last 12 months?
- during the past 30 days?

23. Amphetamines have been prescribed by doctors to help people lose weight or give people more energy. They are sometimes called uppers, ups, speed, bennies, dexies, pep pills, and diet pills. Drugstores are not supposed to sell them without a prescription from a doctor.

Amphetamines do NOT include any non-prescription drugs, such as over the counter diet pills (like Dextrim®) or stay awake pills (like No-Doz®), or any mail-order drugs.

On how many occasions (if any) have you taken amphetamines on your own—that is, without a doctor telling you to take them...

- in your lifetime?
- during the last 12 months?
- during the past 30 days?

24. Barbiturates are sometimes prescribed by doctors to help people relax or get to sleep. They are sometimes called downs, downers, goofballs, yellows, reds, blues, rainbows.

On how many occasions (if any) have you used psychedelics other than LSD (like PCP, mescaline, peyote, psilocybin)...

- in your lifetime?
- during the last 12 months?
- during the past 30 days?
On how many occasions (if any) have you taken barbiturates on your own—that is, without a doctor telling you to take them...

25. Tranquilizers are sometimes prescribed by doctors to calm people down, quiet their nerves, or relax their muscles. Librium, Valium, and Miltown are all tranquilizers.

26. On how many occasions (if any) have you taken heroin (smack, horse, skag)

27. On how many occasions (if any) have you taken narcotics other than heroin on your own—that is, without a doctor telling you to take them...

28. On how many occasions (if any) have you sniffed glue, or breathed the contents of aerosol spray cans, or inhaled other gases or sprays in order to get high...

29. Steroids, or anabolic steroids, are sometimes prescribed by doctors to promote healing from certain types of injuries. Some athletes, and others, have used them to try to increase athletic performance or muscle development.

30. On how many occasions (if any) have you taken any of these drugs (like heroin, cocaine, amphetamines or steroids) by injection with a needle. (Do not include anything you took under a doctor’s orders.)

31. How old are you?

32. What is your sex?
33. How do you describe yourself?

- American Indian
- Black or Afro-American
- Mexican American or Chicano
- Puerto Rican or other Latin American
- Oriental or Asian American
- White or Caucasian
- Other

34. How likely is it that you will do each of the following things after high school? (Mark one for each line.)

- Graduate from a two-year college
- Graduate from college (four-year program)

The next two questions ask about your parents. If you were raised mostly by foster parents, step-parents, or others, answer for them. For example, if you have both a step-father and a natural father, answer for the one that was the most important in raising you.

35. What is the highest level of schooling your father completed?

- Completed grade school or less
- Some high school
- Completed high school
- Some college
- Completed college
- Graduate or professional school after college
- Don't know, or does not apply

36. What is the highest level of schooling your mother completed?

- Completed grade school or less
- Some high school
- Completed high school
- Some college
- Completed college
- Graduate or professional school after college
- Don't know, or does not apply

37. How often do you attend religious services?

- Never
- Rarely
- Once or twice a month
- About once a week or more

38. How important is religion in your life?

- Not important
- A little important
- Pretty important
- Very important

Next are some questions about your experience as a driver, or as a passenger in a car.

39. During the LAST TWO WEEKS, how many times (if any) have you been a passenger in a car when...

- the driver had been drinking
- you think the driver had 5 or more drinks

40. During the LAST TWO WEEKS, how many times (if any) have you driven a car, truck, or motorcycle after...

- drinking alcohol
- having five or more drinks in a row

41. When you drive a car, how often do you wear seat belts?

42. When you are riding in the front passenger seat of a car, how often do you wear a seat belt?

PART D

43. In what grade did you FIRST do each of the following things? Don't count anything you took because a doctor told you to; and mark "never" if you have never done it. (Mark one circle for each line.)

- Smoke your first cigarette
- Smoke cigarettes on a daily basis
- Try smokeless tobacco
- Try an alcoholic beverage
- Drink enough to feel drunk
- Try marijuana or hashish
- Try LSD
<table>
<thead>
<tr>
<th>(a)</th>
<th>What do you think your close friends feel (or would feel) about you doing each of the following things?</th>
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<tbody>
<tr>
<td>(1)</td>
<td>a. smoking one or more packs of cigarettes per day</td>
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<td>(2)</td>
<td>b. trying marijuana once or twice</td>
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<td>(3)</td>
<td>c. smoking marijuana occasionally</td>
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<td>(4)</td>
<td>d. using any other illegal drug</td>
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<td>e. trying LSD once or twice</td>
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<td>(6)</td>
<td>f. using smokeless tobacco regularly</td>
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<td>(7)</td>
<td>g. taking heroin with a doctor's prescription or direction</td>
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<td>(8)</td>
<td>h. taking any other form of cocaine</td>
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<td>(9)</td>
<td>i. taking any other type of amphetamine (upper or lower)</td>
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<td>(10)</td>
<td>j. taking any other form of amphetamine (upper or lower)</td>
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<td>r. trying a hallucinogenic drug</td>
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<td>YY. trying anything else</td>
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<td>(52)</td>
<td>ZZ. trying anything else</td>
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</table>

**Note:** Please select all that apply.
48. During the past 30 days how often (if ever) have you used marijuana or any other drugs (like cocaine, amphetamines, etc.) in each of the following places?

a. At your home

b. At friends' houses

c. At a school dance, a game, or other event

d. At school during the day

e. Near school

f. In a car

g. At a party

49. If you ever found yourself "hooked" on drugs, or otherwise needed help related to your drug or alcohol use, would you be likely to turn to any of the following sources for help? (Mark one circle for each line.)

a. Members of your family

b. Friends

c. A teacher

d. A school counselor

e. A doctor

f. A drug clinic

g. A minister, priest, or rabbi

50. Have you had any drug education courses, films, or lectures in school?

1. No—GO TO QUESTION 54

2. Yes—CONTINUE WITH QUESTION 51

51. Would you say that the information about drugs that you received in school classes or programs has...

1. Made you less interested in trying drugs

2. Not changed your interest in trying drugs

3. Made you more interested in trying drugs

52. How many of the following drug education experiences have you had in school? (Mark all that apply.)

1. A special course just about drugs

2. A part of a health course

3. Films, lectures, or discussions in one of my other regular courses

4. Films or lectures, outside of my regular courses

5. Special discussions ("rap" groups) about drugs

53. Overall, how valuable were these experiences to you?

1. Little or no value

2. Some value

3. Considerable value

4. Great value

54. Do you know what your school's policy is for dealing with students caught doing the following things on school property...

a. ... smoking cigarettes

b. ... using (or possessing) alcohol

c. ... using (or possessing) an illegal drug

d. ... selling an illegal drug

55. If a student is caught doing each of the following things on school property by a teacher, how likely is it that something will be done (like punishment, notification of parents, referral to treatment, etc.)?

a. ... smoking cigarettes

b. ... using (or possessing) alcohol

c. ... using (or possessing) an illegal drug

d. ... selling an illegal drug

THANK YOU AGAIN FOR YOUR HELP.

This questionnaire was developed by the Comprehensive School Health Unit of the Michigan Department of Education, the Office of Substance Abuse Services, Western Michigan University, and Dr. Lloyd Johnston of the University of Michigan.


