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The relationship between adolescent drinking and driving attitudes and behaviors and selected knowledge, attitudes, and behaviors regarding alcohol and other drugs for adolescents grades 6 through 12

Thomson, Michael McLean, Ph.D.

The Ohio State University, 1990
The Relationship Between
Adolescent Drinking and Driving Attitudes and Behaviors and
Selected Knowledge, Attitudes, and Behaviors
Regarding Alcohol and Other Drugs for
Adolescents Grades 6 Through 12

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate School of
The Ohio State University

By

Michael McLean Thomson, B.S., M.S.

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1990

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CHAPTER 1

INTRODUCTION

This study investigated the relationship among various demographic, attitudinal and behavioral variables and the behavioral intention and self-reported drinking and driving behaviors of Ohio adolescents enrolled in schools participating in a Drug Free Schools Consortium. From these data, recommendations for the most effective education and prevention program activities for addressing their substance use issues were made.

The use of alcohol and other drugs by people of all ages has been the object of investigation in nearly every country in the world. These studies have paralleled the international concern for the use of mind-altering chemicals world-wide. One example of this international concern about drugs other than alcohol use is expressed in the Research Issues Series by the National Institute on Drug Abuse, specifically Research Issues 23, International Drug Abuse, and Research Issues 24, Perspectives on the History of Psychoactive Substance Use (NIDA, 1980). The former contains a summary of 95 research studies conducted on drug use in countries other than the United States. Twenty-three of these studies were conducted in the United Kingdom and 72, in countries on Continental Europe, Scandinavia, Africa and the Near East, Asia, Latin America and the Caribbean.

Many of these studies were purely epidemiological, describing the incidence and prevalence of drug use in the country as a whole or among a particular population within that country. Others focused on specific aspects related to substance use such as personality or background characteristics of the substance users, crime statistics, and issues related to law enforcement. A significant number of these studies focused on adolescent use as the primary age for research (Chafetz and Blane, 1979, Lassey and
Carlson, 1980, and Smart and Fejer, 1984). Few international studies on alcohol or other drug use related those findings to education or prevention in the schools.

Studies similar to the ones on other drugs have been conducted on alcohol use as well. Alcohol has been identified as the most commonly used drug throughout the world. While a large number of these alcohol studies also are epidemiological in nature, a major focus has been on the extent to which alcohol use in particular has become problematic for the user. The National Institute of Alcohol Abuse and Alcoholism (NIAAA) offers a description of some 47 instruments used to survey alcohol use, misuse, and family history (NIAA, Treatment Handbook Series 2. Alcoholism Treatment Assessment Research Instruments. 1985). These instruments reflect the fact that, for the most part, alcohol and other drug assessment tools and surveys are designed for both adults and adolescents. Only recently, however, have survey and assessment instruments been specifically devised to reflect the unique circumstance of alcohol and other drug use and misuse by adolescents.

While the use of psychoactive drugs has been the object of concern for a number of years, the epidemic proportions in recent years have stimulated even more widespread investigation (NIDA Epidemiological Studies of Drug Use, 1980). In particular, adolescent populations have been even more at risk for alcoholism or other drug addiction than other groups. As pointed out by the Research Triangle Institute (RTI, 1974) reports, questions and concerns regarding adolescent drinking behavior have generated increased attention from researchers, agencies and parents. The RTI investigators suggested that numerous studies, concentrating especially on prevalence, have been conducted during the last decade. Their own work included a summary of surveys which describe the use of alcohol and other drugs by adolescents in terms of important demographic, social, and behavioral correlates.
Data on adolescent substance use is elusive. In Alcohol and Health Monograph 1, there is a discussion of a wide range of studies. The monograph points out the diversity, inconsistencies, and, in most cases, technical limitations of research aimed at documenting the extent and nature of adolescent drinking. The investigators suggest that while researchers have made much progress, comparisons and summarizations across studies are difficult and uncertain. To address this issue, a number of investigators have carefully reviewed the literature on alcohol and youth. They found that almost all have paid some attention to common variables related to their subjects' use of substances. Since 1975, at least five major reviews of the youth and alcohol literature have been conducted (Barnes 1980; Blane and Hewitt 1977; Mandell and Ginzburg 1977; Marden and Kolodner 1976; Schuckit 1978).

A landmark summary of surveys was conducted by Blane and Hewitt in 1977. They concluded that the quality, scope and methods have varied widely with studies characterized as diverse and uneven with only a small proportion of them being well conceived and well conducted. Mandell and Ginzburg (1977) in their review focused on the literature on the use of alcohol by youth, the prevalence of the various patterns of alcohol use among youth, and recent changes in these patterns. They did this because an earlier study (Mandell 1962) found that more detailed drinking questions resulted in more accurate reports of actual drinking behavior. Mandell and Ginzburg (1977) concentrated on surveys that asked about consumption of individual beverages (beer, wine, and distilled spirits or whiskey). Although 57 citations were listed in the review, conclusions about prevalence and changes in drinking patterns appear to be based mostly on the summarization of 12 studies that were conducted between 1951 and 1973. Seven of the 12 studies cited were in the 1965-75 decade discussed by Blane and Hewitt (1977).

The NIAAA monograph, a review by Marden and Kolodner (1976), was prepared as a report under a contract with NIAAA to examine the patterns of alcohol use and abuse
of American youth. They drew conclusions based on a careful examination of 23 surveys conducted between 1941 and 1974; 11 of the surveys were conducted between 1968 and 1974. The Marden and Kolodner survey paid considerable attention to the 1974 RTI study (Rachal, Williams, Brehm, Cavanaugh, Moore, and Eckerman, 1975). Specific to the incidence of adolescent alcohol and other drug use, Marden and Kolodner cited four factors contributing to the commonly held notion that adolescent drinking is widespread and has been increasing during recent years. They said that these were (1) because there have been more people in the younger age groups in recent years, their behaviors are more visible; (2) more attention is being paid to problems of youth (including alcohol-related problems); (3) there is better "casefinding" with regard to substance abuse and other health problems; and (4) there is clear evidence that young people are using alcohol beverages with increasing frequencies.

A particularly important review was conducted by Schuckit (1978) in which he suggested that drinking practices and drinking problems were two of the central concerns facing adolescents. He suggested that a third issue was alcoholism in youth. This review listed 122 citations and, for the most part, the studies ranged over the 20 years prior to the mid-1970's. Of these studies, the most significant fell within the last 10 years of that period. The summary indicated that unless data on use of alcohol or other drugs is within the past eight years, it would not give an accurate picture of current use patterns of adolescents. Further, unless these data can be linked directly to programs of education and prevention, they merely identify the problem, not address it.

Other studies reviewing substance use by adolescents were prepared for governments in other countries. Barnes' (1980) literature review conducted for the Canadian Department of Health and Welfare presented a summary in tabular form of 62 studies conducted between 1964 and 1979. The studies included 25 Canadian studies, 35 U. S. studies, and two others. Eighty-six references were cited. These studies of foreign
adolescent populations reveal a similar pattern of increased substance use over the recent past. The data tend to show similar patterns of use though ways in which the problem is addressed differs among countries. The United States appears to be in the forefront in its efforts to address the adolescent alcohol and other drug use through education and prevention programs in the schools. At the same time, however, adolescents in the country appear to have a stronger peer influence in that adolescent substance misuse is more likely to be solely within the peer group.

There is a plethora of literature on alcohol use by adults and to a lesser extent, adolescents. The research includes summaries of surveys which compile and interpret those studies already conducted and reported. Although limited largely to the United States, the literature also reveals a large number of studies which describe and assess school programs which address substance use issues among adolescents. Surveys of these programs by Scaggs (1984) and Rodebaugh, (1985) indicate that programs designed to address student use of alcohol and other drugs can be effective in reducing substance use in school settings. They identified in the literature and in their own research the characteristics of those students who can most likely be influenced. They point out that survey data is most useful if it can be related directly from adolescent substance use to specific schools program actions. They also acknowledged the need for even more research to identify criteria for determining high risk and at risk students.

The most recent significant national survey is that conducted under the sponsorship of the National Institute on Drug Abuse. It conducts an annual survey of high school seniors Johnston, Bachman, and O'Malley (1986) and O'Malley, Bachman, and Johnston (1988). It also offers an eight-year plotting of their data for monthly use of various substances. The latest survey indicates that the use of alcohol (beer, wine and liquor) has been fairly consistent since 1975. Present trends also indicate a statistically significant
downward movement for marijuana and cocaine, but that the extent of the change is relatively small for alcohol to date and from 1986 to 1987 it went up slightly.

Drawing from this body of literature and research, this study examined significant adolescent substance use as it relates directly to the relationship among various demographic, attitudinal and behavioral variables and the behavioral intention and self reported drinking and driving behavior. As recommended in the literature, this study focused on a particular population, those students currently enrolled in the 18 schools which comprise Franklin County Drug Free Schools Consortium. The study determined how variables related to student alcohol use and the relationship between drinking and driving behaviors and intent can be predictive of future harmful behaviors and how this information can be used directly in planning and implementing the school and community programs which address chemical health issues for the same adolescents surveyed.

The adolescents to be studied in this research represent the grade levels identified by previous studies as the most significant in the substance use decision making patterns among youth, 6th through 12th grades. The instrument to be used is widely accepted in assessing adolescent substance use in schools. The schools in which the investigation took place have been involved in one of the nations most innovative collaborative program efforts for addressing education and prevention for drug free schools. The study should make a contribution to the national effort for effective education and prevention activities for adolescents.

Statement of the Problem

The purpose of this study was (1) to determine the nature of student intent and reported actual drinking and driving behaviors for 61,257 students across grades 6 through 12 in a 18-school district drug-free schools consortium of all schools in Franklin County; (2) to determine the relationship between intent and self-reported drinking and
driving behaviors and various demographic, attitudinal and behavioral variables and the behavioral intention and (3) to provide recommendations from these substance patterns for activities for a comprehensive K-12 alcohol and other drug education/prevention program.

Specifically this study sought to answer the following questions.

1. What is the nature of the intent and behavior regarding drinking and driving attitudes and behaviors among the 61,257 students enrolled in the Franklin County school districts as determined by the variables which comprise the intent and behavior questions on the Primary Prevention Awareness Attitude and Usage Scales (PPAAUS)?

   a. Intent Questions

   I would drive a car after having two or more drinks. (#51)
   I would ride with someone who has been drinking alcohol. (#53)

   The response options for these questions used to group students were:
   Group 1 (N) Never
   Group 2 (PN) Probably Not
   Group 3 (PY) Probably Yes
   Group 4 (DY) Definitely Yes

   b. Behavior Questions

   How Often Have You:
   been a passenger in a car in which the driver had been drinking alcohol before driving or while driving? (#72)
   driven a car while drinking or after having two or more drinks? (#74)
   felt you should not drive because you had been drinking alcohol but drove anyway? (#76)

   The response options for these questions used to group students were:
   Group 1 (N) Never
   Group 2 (NY) Before But Not In the Last ear
   Group 3 (Y) Once or Twice a Year
   Group 4 (M) Once or Twice a Month
   Group 5 (W) Once or Twice a Week
   Group 6 (D) At Least Once a Day

2. How are the responses of 10th, 11th, and 12th grade students' to the items regarding (a) driving after drinking, and (b) intent to drive after drinking related to the seven descriptive scales of the PPAAUS when examined by the responses groups for each set of questions?
a. Intent to Use and Self-Reported Use of Substances
   - Cigarettes
   - Smokeless Tobacco
   - Menotropins
   - Inhalants
   - Beer
   - Hallucinogens
   - Wine
   - Depressants
   - Liquor
   - Stimulants
   - Marijuana
   - Cocaine

b. School Climate Items
   - Feelings About School
   - Feelings About Subjects
   - Feelings About Teachers
   - Feelings About Classmates

c. Alternative Activities
   - Entertainment/Social
   - Academic
   - Sports
   - Religious
   - ExtraCurricular
   - Vocational

d. Factors Influencing Decision-Making
   - Understand Effects of Substances
   - Self-Confidence
   - Having Friends
   - Being Able to Cope
   - Involved in Alternative Activities
   - Adult Role Models
   - Consistent School Policy

3. How are the responses of 6th, 7th, 8th and 9th grade students to the items regarding intent to drive after drinking related to the same seven scales on the PPAAUS?

4. What recommendations can be made from the data from the relationships between survey data on student drug use and drinking driving/riding behavior in grades 6 through 12 and a K-12 comprehensive education-prevention program consisting of the following?

   a. Three Program Management Areas
      - Policy and Procedures
      - Organization, Coordination, Evaluation
      - Staff Development
b. Seven Program Emphases
   Education
   Prevention
   Early Identification
   Intervention
   Referral
   Treatment
   Follow-up

c. Ten Program Components?
   K-12 Education Curriculum Infusion
   K-12 Written Guidance program
   K-12 Prevention Program
   Student Assistance Program
   Student Athletic/Cocurricular Assistance Program
   Employee Assistance Program
   Student Leadership Program
   Student Support Group Program
   Parent Involvement Programs
   Community Involvement Programs

Significance of the Study

Significance of the study can be identified in three different areas. First, the United States Department of Education (USDOE) points out a need for accurate, valid information regarding the extent of student use of alcohol and other drugs specific to the schools which plan to develop prevention program for substance abuse (Schools Without Drugs, 1986). Second, as Swisher points out, there is a need to identify those factors which contribute to a student being at risk or high risk in the use of alcohol or other drugs in major areas of their lives in order to intervene on their use before difficulties arise (Swisher, 1985). This is especially true in the area of adolescent drinking and driving or riding with a driver who has been drinking. Third, successful K-12 comprehensive programs designed to encourage chemically healthy behavior, to meet the needs of adolescents at risk and, most importantly, to provide prevention services for high risk students are most often based on hard data regarding the patterns of use of the particular students for whom the programs are intended.

With regard to the first emphasis of this study, the USOE Drug-Free Schools Act of 1986, provides funds for each school to develop a program to eliminate the effects of drug use on adolescents. An important part of this Act calls for the identification of
students currently at risk or in high risk of negative effects of their use. Further, the Act calls for specific data on the extent to which adolescents are harmfully involved with the use of alcohol and other drugs in the schools and the means by which this involvement can be addressed. Surveys of adolescent alcohol and other drug use have been rapidly increasing in nearly every nation in the world over the past ten years. Chapter II, Review of Literature, provides summaries of the studies that have indicated that most of the surveys lack comprehensiveness or even, in some cases, validity. For the most part, these surveys are epidemiological over a broad spectrum of society and do not provide sufficient direct information on targeted adolescent groups to be of use in program planning (Bachman, Johnston and O'Malley, 1986, Mann, 1985, Miller, Cisin, and Abelson, 1983).

Surveys on student use reported in the literature, moreover, often do not include sufficient information to draw conclusions about patterns of behavior and about characteristics related to harmful involvement of particular students for whom programs can be devised (Niven, 1982, Friedman, 1985). Often this results in the lack of information for use in program development. Several national clearinghouses have been established to make this information more readily available to schools (Schools Without Drugs, 1986). These operate in cooperation with NIAAA and NIDA. The Drug Free Schools Act of 1986 funded five regional information and training centers as well as over one hundred projects to be implemented in communities, local schools and universities. In addition, the Act provided funds directly for schools to use in their efforts to address issues related to adolescent drug and alcohol use. This study will contribute to the information clearinghouses and to the Drug Free Schools program.

A second emphasis in this study was on identifying students who are at risk or currently having negative effects in their lives from alcohol or other drug use, and those students who are at high risk for having such negative effects in the near future. The early
identification of these students can provide sufficient warning of potential difficulty to plan and implement environmental strategies for prevention or treatment. As pointed out in the review of literature, a number of characteristics have already been identified as predictive of alcohol or other drug misuse (Newton, 1981, DuPont, 1984, MacDonald, 1984). In this study, the PPAAUS identifies school climate, alternative activities, decision making skills, sources and use of substances as significant variables to be examined. The data from these items provide guidance for implementing those activities which seem most likely to produce positive behaviors.

In this study, a specific targeted group of adolescents were surveyed on their alcohol and other drug use and behaviors were identified as they occur in their own school and community. From these data conclusions were drawn regarding student use and linked directly to action to be taken to address current or potential problems. The literature which indicates differences among types of schools, communities, and sections of the country, would suggest the importance of targeting specific adolescent groups and the particular environment in which they study and socialize (Polich, 1984, Manatt, 1983). Data from this study were provided directly to the schools in which the students are enrolled. Implications for program development were targeted specifically to the needs of students surveyed and identified on the basis of the characteristics most predictive of their harmful involvement with mood altering substances. The means by which these recommendations were implemented are spelled out in more detail in Chapter III as a part of the procedures of the study.

The use of alcohol and other drugs has begun much earlier in the lives of students (Bandura, 1983). This suggests the importance of determining those characteristics which predict future difficulties. This study determined those characteristics of positive school climate, support resources, self-perceptions, and students selected activities which are recommended for schools in their development of prevention programs. It is anticipated
that while some variables identified as a part of the survey were common to a wide range of school and community settings, this study identified those variables which may be associated with a specific school or grade level or even class. From these data, unique programs can be tailored to meet the needs of a specific group of adolescents.

The third emphasis of this study addressed the needs assessment or program development aspects of this research. The investigation provided data that can be used for program development based upon actual information regarding student use in specific circumstances. For purposes of this study, four significant attributes for needs assessment were considered. These are utility, feasibility, propriety, and accuracy (Stufflebeam, 1986). First, the study demonstrated its utility on the basis of concrete recommendations for program development which emerged from data on students enrolled in schools. Second, it demonstrated its feasibility by the successful completion of pilot student surveys conducted in three of the eighteen schools in the Consortium and by the implementation of pilot recommendations from those studies. Third, the study demonstrated propriety by meeting the obligation schools have for assessing and addressing student needs while at the same time following all guidelines for ethical use of student data and rights of the individuals involved. Finally, it insured accuracy by adhering to guidelines for sound data collection and analysis, and by involving those school personnel who are responsible for the program directly in the needs assessment itself.

Chapter II contains a review of the significant research and literature which further describes the three major emphases of this study and reinforces its significance. Studies which provide assessments of the surveys conducted worldwide as well as those which address needs of populations similar to that of this study are presented in the review. Those characteristics which have been determined by research to be predictive of negative effects of alcohol and/or other drugs are examined. Particular attention is given to those
studies which appear to examine student populations most like those of this study. Finally, a examination of the programs which have used surveys of student use to guide the planning and implementation of their services is offered. The significance of this study, therefore, emerges directly from the review of literature about alcohol and other drug use by adolescents and the efforts of school personnel to provide programs of education, prevention and intervention.

**Definition of Terms**

The following terms are offered as definitions used throughout the study.

**Drugs**—Drugs refers to all psychoactive chemicals, both licit and illicit which are commonly used by adolescents. The categories of drugs included in this study are stimulants, including nicotine and cocaine; depressants, including alcohol; hallucinogens, including marijuana; hypnotics, narcotics, tranquilizers and inhalants. All drugs identified for study are considered "mood altering" or "psychotropic" in nature. These drugs typically are referred to as either "over-the-counter drugs," "street drugs," prescription drugs, "legal drugs," "mood altering substances" or as "substances." A more complete description of the drugs used in this study is found in Chapter 3.

Operationally defined, drugs refers to those which are specifically identified in the PPAAUS scales.

**Behavioral Intention**—A sum of an individual's attitude toward performing a particular act in a given situation with respect to a given object, plus the influence of the social environment on behaviors; the decision to attempt the performance of said behaviors (Ajzen and Fishbein, 1973).

Operationally defined, behavioral intention refers to the score on the PPAAUS for those items which identify intents.
**DUI**—Driving an automobile under the influence of alcohol. This is defined in this study as having two or more drinks prior to the time of driving an automobile. No statement was made regarding the time frame of the drinking, but it was assumed to be in the course of a single event.

**DWI**—Driving while intoxicated. In Ohio a blood alcohol level of .10 defines a driver as legally intoxicated.

Operationally defined drinking while driving refers to the score on the PPAAUS items which identify reported drinking and driving behavior.

**Limitations of the Study**

The limitations of this study are identified in five areas. These include the population and sample used for investigation, the instruments selected for data collection, the procedures used to collect and analyze the data, and the relationships drawn from the data to program initiation or improvement. These limitations reflect the parameters of the study within which conclusions can be drawn from the data.

This study examined the alcohol and other drug use of adolescents in grades six through twelve in a midwestern county consisting of schools in urban, suburban and semi-rural communities. The data indicated that student use varies across sections of the country with the use of adolescents in the midwest being at about the mean (NIAA, Health Reports, 1978). Substance use also varies among urban, suburban and rural areas, with the rural being slightly higher with regard to alcohol use. Since the major city in the study cannot be considered a truly urban city in size nor can the semi-rural areas be considered truly rural in their proximity to a metropolitan area, conclusions drawn from the study recognized those limitations to generalizability.

The grade levels of the sample studied were selected because they represent the first most likely age of intention to engage in adolescent use, grade six, the beginning of
high school patterns, grade nine, and the heaviest use of adolescents in high school, grade
twelve (RTI, 1981). All schools in each district were selected. Data were collected from
all students, boys and girls, at each grade level in each school. Data on boys and girls
were analyzed separately and as a group.

A second set of limitations involves the instrument selected for survey of student
use. A complete description of the development of the Primary Prevention, Awareness,
Attitude and Usage Scale is found in Chapter III. This description of the instrument
includes details on the establishment of the reliability and validity of this tool. The
variables used for this study represent those which seem to have the most promise for
drawing conclusions and making recommendations for program planning and
implementation. Further, the survey instrument has been widely used throughout the
country and data are available for making comparisons to other schools and student groups
at these grade levels.

The nature of this instrument, a self-report survey, presents another limitation.
The literature on student use provides sufficient evidence that self-reports are generally
valid for eliciting information from students about alcohol or other drug use. The
conditions under which self-reports are considered most accurate were followed. In this
study the students were provided with an orientation to the use of the data, were informed
that all data were confidential. Students were provided with an opportunity to refuse the
survey at their request. Those students who refused were described through school record
data to determine whether they in fact represented a sufficiently unique population to bias
the sample. All restrictions and guidelines for conducting research in each of the school
districts studied were adhered to. The guidelines for Human Subjects Research of the The
Ohio State University were applied.

A third set of limitations involves the procedures used for data collection and
analysis. The data were collected within the randomly selected classrooms of the students
selected for study. The instruments were administered by a team of five trained administrators under the supervision of the substance abuse coordinator or designee in each district. The training for administration were provided by the investigator over a three hour period. The training included attention to the orientation provided the students, the instructions given for survey completion, observation of significant student behavior during the administration, and the logging of questions or reactions from student to the experience. All administrations were conducted under identical instructions to students and with the same orientation provided. Administrators had a checklist to log any student behaviors which can be determined to influence the validity of the data.

Responses from the PPAUS were analyzed by two student groups, grades six, seven, eight, and nine and grades nine, ten, eleven, and twelve. These two groupings providing a basis for analysis of those students who were unable to drive legally because of age, and those who were able to drive. No analyses were made of the subgroups by grade level. Four research groups were formed based on the responses to the PPAAUS on items of intent and six groups were formed on the basis of responses to items on actual drinking and driving. These groups comprised the chi square analyses. Group 6, the group that reported drinking and driving at least once a day was eliminated from analysis because of low cell sizes.

Data analyses provided crosstabulations of substance use variables by demographic and personality variables identified on the PPAAUS instrument. Significance of differences among groups was determined by an applicant of the chi square analysis of expected and observed frequencies for each of the variables examined.

A final set of limitations involves the conclusions, and recommendations drawn from the data. The study drew direct relationships between the data and specific program activities. Since the study focused specifically on a unique consortium of school districts and students enrolled in their schools, the conclusions drawn were limited to those factors
which appear to be most relevant to the specific program activities conducted within these districts. Differences among the school districts, schools and grade levels may be related to the extent to which programs have been in existence in the schools. Conclusions reflected those common current program efforts and proposed programs. Recommendations for program planning and development were limited to those which reflect the program model used among the consortium school districts and the common planning grid used to assess and plan program activities.

Organization of the Remainder of the Study

This chapter contains the introduction to the study, the statement of the problem, the significance of the study, the definition of terms, and limitations of the study. Chapter II includes a review of the relevant research and literature in the areas of adolescent survey, characteristics related to student use and abuse, and school prevention programs. Chapter III contains a description of the population and the survey sample, the instruments administered, and procedures used to collect and analyze the data.

Chapter IV contains the findings of the study as they pertain to the four questions posed in the statement of the problem. In Chapter V are found conclusions and implications drawn from the findings and recommendations for program development beyond that identified in Chapter IV and recommendations for further research.
CHAPTER II

REVIEW OF LITERATURE

It was the purpose of this study to investigate the relationship among various demographic, attitudinal and behavioral variables and the behavioral intention and self reported drinking and driving behaviors of Ohio adolescents enrolled in eighteen school districts participating in a Drug Free Schools Consortium in Franklin County Ohio and determine from these data the most effective education and prevention program activities for addressing their substance use issues.

This chapter presents a review of literature related to the study. This review is organized in the three areas of (1) literature on self-report surveys, including the Primary Prevention Awareness, Attitudes and Usage Scales (PPAAUS), (2) literature which is related to adolescent drinking and driving, (3) literature which relates to the other variables in the study including use, intent to use, negative/disruptive behaviors, reasons for use, school climate, to whom they would turn for help, grade level, reported grades, and gender.

Self-Report Surveys and the PPAAUS

The instrument of this study, the PPAAUS, has been administered to approximately 300,000 junior and senior high students since 1982. Reliability and validity data were reported by Swisher, Shute and Bibeau (1984) and Swisher and Bibeau (1987). Based on analysis of results from 17 school districts, reliabilities from .80 to .90 were reported by Swisher and Bibeau (1987) for the Intention to Drink and Drive Subscale. This behavior intention subscale is the summation of the answers to six questions about an
individual's willingness to ride with a drinking driver, drive while drinking or smoking pot and/or stop someone from driving. Similarly, reliabilities from .86 to .93 were found for the Self-reported Drinking and Driving Subscale (ibid). This self-reported behavioral subscale is the summation of the answers to six questions about an individual's frequency of riding with a drinking driver, drive while drinking or smoking pot and/or stop someone from driving. The Negative Behavior Subscale had lower but acceptable reliabilities ranging from .68 to .77 (ibid). This subscale is the summation of the frequency of self-reported behaviors such as taking things from a store or staying out all night without permission. Individual items and not the scale score were used in this analysis.

Surveys of drug use behaviors among various populations including school, institutional, and therapeutic target audiences, often rely on self-report measures (Johnston, Bachman, and O'Malley, 1979). Self-report measures are also less time consuming to administer and score, and some have been standardized through repeated administration on large samples (Greist, Klein, VanCura, and Erdman, 1975). Assurance of confidentiality appears to be the best strategy for encouraging accurate reporting of personal use (Horan, Wescott, Vetovich, and Swisher, 1974). Johnston, Bachman and OMalley (1982) have also noted high degrees of correspondence between the aggregate level data among seniors' self-reports of their own drug use, their reports of friends use, and their exposure to use patterns.

Specifically with regard to external validity constructs, Rachal, Guess, Hubbard, Maisto, Cavanaugh, Waddell, and Bernhard (1980) have concluded that relative to external sources of information, i.e., public or private records, reports by others, and biochemical blood, urine, saliva test, self-reports "all are sufficiently valid to warrant reliance on them as a primary source of data in social science research" (p. 9). These conclusions were drawn based on populations other than high school-based adolescents (Rachel, et al., 1980).
Johnson (1973) found that drug use was correlated with a broad spectrum of factors, including attitudes toward drug use, friends' use of drugs, and school performance, while Kandel's (1975) stage theory approach provides another example of construct validity. Jessor and Jessor (1977) and their colleagues have extensively documented the role of marijuana use in overall theory of problem behavior, and Wingard, Huba, and Bentler (1979) have suggested a framework for an interactive theory of drug use that has demonstrated results consistent with self-report validity. It appears from these studies that self-report measures of adolescent substance use behavior demonstrate considerable construct validity (O'Malley, Bachman, and Johnston, 1983).

Survey data have been useful in program development. The motivation to plan school and community services for substance abusers related behaviors has typically been the result of some critical incident, i.e., a drug- or alcohol-related traffic fatality, rather than a systematic data gathering, planning, and decision-making (Swisher, Shute, and Bibeau, 1984). School-based samples generate statistics on a majority of the population, including individuals who avoid such crisis situations as well as those who do not, thus providing an accurate and efficient means of estimating and monitoring patterns of substance behavior in the general population (Johnston, Bachman, and O'Malley, 1979). Gathering of accurate data by reliable and valid means serves to avoid misconception and misallocation of the resources of social and governmental commitment, time, and money (Johnston, Bachman, and O'Malley, 1979).

The use of survey data extends to other institutions as well. The NIDA-sponsored household surveys of drug use and the Monitoring the Future program remain the leading sources of information on drug use trends in the United States. Information on children age 12 and over is available only to those children residing in the households sampled. Monitoring the Future surveys high school seniors, thus excluding school dropouts. In the 1984 Interagency Conference on Child and Family Statistics (Zill et al., 1984), which
involved all Federal agencies collecting data on families and children, the major problem was lack of information on children: some information exists on children 12 to 18; almost no information on children from infancy to age 12. The reason for these gaps in data between birth and adolescence is the problem of acquiring information from or about children. As an example, parents do not serve as good respondents regarding their child's behavior away from home. Parents rarely know what their child had for lunch (Davidson and Kandel 1981).

Since school-based studies omit individuals who are likely to be the heaviest drug users, i.e., school drop outs, transients, and those residing in institutional settings, it must be noted that these figures most probably underestimate actual drug use patterns among the total adolescent population (Kandel, 1980). The Boston-area survey conducted by Wechsler et al., (1984) indicates that 82% of the teens in the 16+ age group have used alcohol at some time in their lives. Most students using alcohol during the school year did so fairly infrequently--approximately 42% said they consumed alcoholic beverages less that one time per month. Thirty-five percent of the boys and 19% of the girls in this survey who used alcohol during the school year reported drinking alcohol once or more a week. Most of the respondents reported that they did not drink in large quantities (one or two drinks) per drinking occasion. No data were provided for the students who dropped out but were still of high school age.

A significant aspect of alcohol and other drug use is the claimed intention to use. This study examined both the intent to use and the actual reported use of drugs by adolescents. The relationship between behavioral intention to use drugs and the actual substance use is strongest when the behavior is under the volitional control of the individual (Fishbein and Jaccard, 1973). Ryan (1970) asserts that there is considerable evidence that most human behavior is under volitional control, including drug use patterns. It is also imperative that for behavior to be highly correlated with intention, the measure of
both should be comparable in terms of specificity. Finally, time interval becomes a factor of importance, as the greater the time elapsed between the measure of intention and the observation of behavior, the greater the likelihood that intentions will change.

Such researchers as Downey and O'Rourke (1976), Huba, Wingard, and Bentler (1981), Schlegal, Crawford, and Sanborn (1977), and Swisher and Hu (1983) have discovered statistically significant relationships between a variety of drug use behaviors and the stated intention to engage in such behavioral patterns. An examination of the cognitive plans to engage in drug use behaviors could facilitate the identification of high-risk individuals, as well as the design of prevention and intervention strategies (Huba, Wingard, & Bentler, 1981).

Wolford and Swisher (1986) found in their study that as behavioral intention to use increased, so did the self-reported use of cigarettes, beer, wine, liquor, marijuana, inhalants, PCP, depressants, hallucinogens, and stimulants. As grade level increased so did reported drug use. It was also found that the more time a student spent on academics, and the higher the grade average, the less drug use was likely to be reported. Lastly they found that the more a student held favorable attitudes toward his or her teachers, the less reported use there was of cigarettes and or alcoholic beverages.

Survey data have been used to examine the drug use intent and actual behaviors of adolescent in nearly all the major studies conducted to date. The reports from these findings as all remarkably similar in pattern. As grade level increases, so does use of alcohol and other drugs. The majority of experimentation occurs prior to the 11th grade. Alcohol use appears to be relatively stable in use patterns. The intention to use alcohol and other drugs appears to relate to actual use since as behavior intention to use increases, so does the self-reported use of alcohol and other drugs.

Regarding self-report surveys, it appears that they are less time consuming to administer and score, assure confidentiality, and appear to an accurate measure of
behavior. The more simple, descriptive, and direct they are, generally the higher their reliability.

**Drinking and Driving**

Young persons, especially young males, play a large role in traffic accidents. Among persons aged 15 to 24 there were 25,619 deaths due to traffic accidents in 1979. Of these, 20,101 were males and 5518 were females. Of the 29.7 million drivers involved in traffic accidents, 18% were less than 20 years of age and another 20% were between 20 and 24 years old (Accident Facts, 1980).

In a 1980 Californian survey, 84% of those aged 18 to 24 and 85% of those 25 and older thought traffic crashes and deaths were a major problem. And when asked how important a factor they thought alcohol was, 88% of the younger group and 85% of the older group thought that alcohol was a major factor in traffic crashes and deaths (Cameron, 1981). In another California study, data from a 1979 San Francisco Bay Area survey indicated that youth aged 12 to 17 were asked if they had ever driven when they had had a few drinks. Not surprisingly, none of the 12 or 13-year olds and only 2% of the 14 and 15-year olds responded affirmatively. However, 25% of the 16 and 17-year olds indicated that they had driven after having had a few drinks. (California Highway Patrol, 1975).

Farrow (1988) found in his study that subjects convicted of driving while intoxicated and juvenile offenders without DWI citations more often endorsed feelings of powerlessness and stressful events than did drivers without DWI citations. DWI offenders were more likely to indicate that alcohol made them loud, unafraid, daring, and aggressive than were non-offenders.

DiBlasio (1988) in his findings suggested that the predriving period is a significant time when youths develop riding behaviors. An examination of control variables indicated that gender, age, race, geographic location, religiosity, academic performance, economic
status and accessibility of rides did not increase explained variance of riding. He found in
his study of predriving riders and drinking drivers that more than two-thirds (69%) of the
predriving youth have at some time ridden in a vehicle operated by a drinking driver.
About one-fifth (21%) of the subjects reported riding on a regular basis (once or twice a
month to once a week or more). In the study on riding activity of high school students,
78% reported riding behavior, with 36% reporting it on a regular basis (DiBlasio, 1986).
There were no significant gender differences in riding.

Traffic crashes have been cited as the cause of about half of all traumatic deaths and
spinal cord injuries among persons 15 to 19 years old (Robertson, 1981). A growing
body of evidence suggests that the probability of crash involvement increases with
increasing blood alcohol concentration (BAC), and that, for young drivers, risk begins to
increase at very low BAC's (Borkenstein, Crowther, Shumate, 1964; Perrine, Waller,
Harris, 1971; and Farris, Malone, Lilliefors, 1976. Teens have also been found to be
responsible for about five times as many crash deaths per license holder as are drivers aged
35 to 64, and these deaths occur disproportionately to people other than the teen driver
(Williams and Karpf, 1984).

Drinking and driving accidents and fatalities have been identified as a major health
problem of adolescents and young adults (Department of Health, Education, and Welfare
year old age group account for a disproportionate number of alcohol related crash fatalities
(National Institute on Alcohol Abuse and Alcoholism, 1983; National Highway Traffic
Safety Administration, 1984). To combat the problems of drinking and driving with this
age group both the Presidential Commission on Drunk Driving (1983) and the Department
of Health and Human Services (1984) have identified state and local institutions that
should be involved. The institutions suggested included state departments of health and of
education, local school districts, and various other youth organizations. The Presidential
Commission, the Department of Health and Human Services, and the Insurance Institute for Highway Safety (1984) have also stated that programs to reduce adolescent drinking and driving should focus on other behaviors as well, such as other drug use, riding with drunk drivers, social assertiveness to prevent drunk driving, and seat belt use.

Swisher and Bibeau (1987) found in their research that beginning with grade 10, the drinking-and-driving frequency increases as more students become licensed to drive, the percentage of students who report ever having ridden with a driver who was drinking was much higher than the percentage who indicate a willingness to do so. More than one-half of the juniors and seniors have been passengers of a drinking driver within the last year. More than one-half of the seventh through ninth grades have - at least once - been passengers of a drinking driver. The Presidential Commission on Drunk Driving (1983) indicates that a high percentage of the alcohol-related highway fatalities happen to those who are simply riding in the cars involved.

Swisher (1988) presented a study that tested the assumption that risk status as a drinker or passenger is an extension of the problem-behavior theory. His study presented an overview of the extent and type of adolescent drinking patterns and identified factors associated with risky driving and riding practices. Alcohol was shown to be the number one drug of choice and it was demonstrated that the typical pattern of use is excessive. The factors associated with risky driving practices provided support for the problem-behavior theory. Risky driving and riding practices appear to be part of a larger cluster of negative behaviors. Twenty percent of the seniors reported drinking and driving while grades nine through twelve indicated that they probably would drink and drive in greater proportion than self-reported behavior. The data indicated that approximately 10% of seventh graders indicated the monthly or more behavior of riding with a drinking driver while this percentage stairsteps up to nearly 40% by the twelfth grade. The percentage that have never ridden with a drinking driver fell to approximately 20% by the twelfth grade.
The negative behavior that Swisher (1988) associated with drinking and driving and/or driving while using marijuana included: staying out all night without permission, shoplifting, classroom disruption, participation in vocational activities and taking things from others. Conversely the positive behaviors that protect from drinking and driving or driving and using marijuana included religious activities and time in academics. Alcohol drivers were more active in entertainment and sports participation while marijuana drivers were less active in these two areas. Staying out all night without permission, being in an upper grade, shoplifting, and property destruction, as well as general participation in entertainment activities, were strong predictors of willingness to be a passenger with a drinking driver. Positive behaviors (time in academics and religious activities) were predictive of not being willing to ride with a drinking driver. Regarding intervening, females appeared to be more willing to stop another passenger or to stop a driver from risky behavior. Also, younger people appeared to be more willing to stop others from risky behavior.

Drinking and subsequent driving among teenagers presents a significant social problem in this country. In 1980 alone there were 1,289,443 persons arrested for driving under the influence of alcohol. Of those, 29,957 were under the age of 18 and 696 were under 15. In one account, 43% of the approximately 50,000 persons killed in motor vehicle accidents were correlated with adolescent DUI (Alcohol Health and Research World, 1983). In an address at the NIAAA Alcohol and Drug Education Conference on October 4, 1982, former Health and Human Services Security Director Richard S. Schweider stated that over 10,000 young people die in alcohol-related motor vehicle crashes each year (Allen, 1983, p.4).

The statistics bear witness to the gravity of the problem. Youth, along with people of all ages, are dying at an alarming rate on the highways, while at the same time, society is accepting and condoning drinking and driving among teens and others (West, Maxwell,
Noble, and Solomon, 1984). Statistics reveal that drivers ages 16 to 24 are over-represented in traffic accidents and fatalities, especially those traffic fatalities involving alcohol (Farrow, 1985).

Auto accidents are the leading cause of death among 15-34 year olds. Further, it is estimated that between 45% and 60% of all fatal crashes involving a young driver are alcohol related (Wechsler, Rohman, Kotch, and Idelson, 1984). Alcohol use is a significant contributing factor to youthful death and disability in traffic crashes, and that alcohol plays a disproportionate role in traffic crashes involving youth (Cameron, 1982). Wodarski (1987) found through the nine items related to drinking and driving attitudes that students perceived that the probability of being stopped by the police is low, and even if they are stopped by the police, the probability of subsequent application of negative consequences is also low.

A special concern of policy makers and the general public has been writing of laws directed at the prevention of drinking and driving among young people. These efforts often use the latest statistics to support such legislation (Snow and Cunningham, 1985). Motor vehicle crashes have been the leading cause of serious injury and death among the young, and youth aged 15 to 24 have a motor vehicle crash death rate that is more than twice that of older persons (Wagenaar, 1983). Boys were more likely to drink and drive than girls (Wechsler, Rohman, Kotch, and Idelson 1984). Girls drank less often and in smaller amounts per drinking episode than boys (Rachal et al., 1982). Males at this age also drove more than females (Douglass, 1982). Farrow (1985) found that girls reported drinking more at home and at parties than boys. Boys reported drinking more in a car, were more likely to use the car to "get away," to race, or to be more daredevils, and as a place to get high than girls.

Data from a 1979 U.S. nationwide (Clark and Midanik, 1980) showed that 29% of 18- to 20-year old current drinkers reported that they had at some previous time driven a
car after drinking; in many of these cases (91%) the event had occurred during that year. These survey results suggested that about 40% of male drivers and 10% of female drivers under the age of 20 have driven after drinking at some time (Mayhew, Donelson, Beirness, and Simpson, 1986). Findings from these questionnaire-based surveys suggested, according to Mayhew et al. (1986), that driving after drinking was frequent, if not normative, among young people. Mayhew et al. (1986) reported data from roadside surveys which provided objective estimates of alcohol use among young drivers.

There is literature which describes some of the characteristics of the youthful drinking driver and alcohol-related accident involvement. According to the Boston-Area study conducted by Wechsler et al. (1984), the characteristics most descriptive of those adolescents who drank and drove were that they frequently rode with a drinking driver. Regarding knowledge and beliefs about auto safety, about one half (48%) of the respondents surveyed in the Boston study did not know that auto accidents were the leading cause of death among teenagers. One in three of the respondents believed that "some people can drive safely after drinking" (Wechsler et al., 1984).

Wechsler et. al, 1984 found that 50% of 10th grade students reported having been a passenger in a car driven by someone who had had too much to drink. Cameron (1982), suggested that such findings support the idea that drinking drivers have friends who engage in the same behavior, while abstainers are less frequently involved in drinking-driving situations. Nusbaumer and Zusman (1981) found that high-school riding students are likely to become drinking drivers themselves.

Hayes (1987) found in his study that the behavioral intention to and self-reported practice of drinking and driving was greater for males than females. Females, however, were more likely than males to be passengers in a car driven by a driver who had been drinking alcohol before or while driving. He also found that as grade level increased, drinking and driving intentions and practice also increased. Being a passenger in a car
driven by a drinking driver also increased with grade level. As frequency in participation of negative social behaviors increased, the drinking and driving intent and self-reported practice increased. Similarly, being a passenger in a car with a drinking driver increased, but the intention to try to stop others from riding with a drinking driver decreased. Hayes (1987) found that with regard to activity participation, as social, sports, and vocational activity participation increased, drinking and driving behavior increased. As academic, religious, and hobby activity participation increased, drinking and driving intentions and self-reported practice decreased. Likewise, being a "passenger" decreased with an increase in academic, religious, and hobby activities.

The problem of adolescent fatalities and disabilities resulting from risky driving practices is the foremost problem confronting adolescents today (Simpson and Mayhew, 1987). National data on alcohol use, health, and motor vehicle accidents have shown that alcohol consumption, driving under the influence of alcohol, and involvement in alcohol-related accidents were extensive among youth, many of whom were under the legal drinking age (Lowman, 1983).

Driver characteristics likely to be associated with dangerous driving while intoxicated among young drivers are: being male, married, low academic success at school, dropping out and absences from school, having held several different jobs, car ownership, spending a lot of time around cars, smoking cigarettes, driving in excess of 10,000 miles the previous year and doing much of one's driving after midnight (Harrington, 1972). These studies have been substantiated in previous studies (Farrow, 1985). As suggested by Pelz and Shuman (1974), quantity of alcohol consumed does not itself strongly predict the tendency to have accidents and/or violations, although self-reported frequency of drinking and driving does.

Youth involved in alcohol-related crashes were likely to have more than average difficulties in school, work, social relationships, family relationships, and other social
indicators (Rachal, Maisto, Guess, and Hubbard, 1982). Kraus, Steele, Ghent, and Thompson (1970) suggested that academic performance, early full-time employment outside of school (at or before age 17), and juvenile offense convictions were associated with increased risks of alcohol-related crash involvement. Opposing this view, however, Grey Advertising (1975) purported that studies have found that adolescents who frequently drank, and drove after drinking were not necessarily deviant regarding academic performance, school sports involvement, social behaviors, liberalism, or impulsivity.

Hingson, Heeren, Mangione, Morelock, and Mucatel (1982) randomly surveyed 16- to 19-year-olds about their drinking and driving behaviors and found that those respondents who did not live with their parents were involved in more alcohol- or marijuana-related traffic accidents. Farrow (1985) found in his study, that adolescents aged 16 to 19 were surveyed regarding car ownership, use of a car, time spent in a car, reasons for driving, and types of traffic fines received. He found that 38% of the alcohol respondents owned their own cars, 27.2% of the respondents had no restrictions on the use of a car, 41.1% of the respondents drove one to five hours per week, 16.7% of the respondents drove after alcohol or drug use, and 46.9% of the respondents had received traffic violations or citations.

Farrow (1985) also reported that drinkers received more traffic citations than non-drinkers. The most prevalent violations among drinkers in this study were speeding (44%), running a red light (18.1%), reckless driving (11.1%), driving a defective automobile (12.1%), accidents (5%), and one citation for DUI. He also found that drinkers spent more driving time than non-drinkers, however, there was no significant correlation between the number of hours spent in a car and with the type of alcohol consumed. Wine drinkers drove less than beer or distilled spirit drinkers. Heavier drinkers of distilled spirits appeared to drive more hours. Those who spent the greatest number of hours in the car drove to "blow off steam" were more likely to have been
drinkers, and the majority of the drinkers (68%) use the car to get away (Farrow, 1985). A national study of adolescent drinking behavior notes that 40% of all respondents reported occasional drinking while driving or sitting in a parked car at night (Lowman, 1983). He found that 20% of the small-town student respondents reported that they often drank when sitting or driving around in cars at night, as compared to 12% of big city students.

Young people use their cars and alcohol as an expression of youthful independence and social development (Bureau of Alcohol and Other Drug Abuse, 1978). The importance of the car used for recreational driving and drinking has led to increased numbers of alcohol-related traffic crashes among young drivers (Lazar & Lazar, 1976). Traffic accidents are responsible for more fatalities among youth than any other cause of death (Douglass, 1982). According to Waller (1972), alcohol has turned up clearly and consistently in studies as the most important human factor contributing to the occurrence of severe to fatal crashes. It is estimated that approximately one-half of all traffic fatalities are alcohol related (Donovan, Marlatt, and Salzburg, 1983). Approximately 8,000 persons between the ages of 15 and 24 die annually from this type of accident (Lightsey & Sweeney, 1980). Over 50% of drivers in fatal crashes are, by accepted standards, intoxicated (Vingilis and DeGenova, 1984). Drivers aged 16 to 24 are over represented in alcohol-involved traffic accidents and fatalities (Smart, 1980; Cameron, 1982; Cameron, 1985).

According to the results of a survey of Boston-area teenagers, Wechsler, Rohman, Kotch, and Idelson (1984) estimate that between 45% and 60% of all fatal crashes involving a young driver are alcohol related, and in any traffic accident, young drivers are more likely than older drivers to have been drinking. This compares with the National Center for Health Statistics (1981), one out of every four senior high school students was at risk for alcohol-related accidents at least once during the previous year and over one-half
million 10th- to 12th-grade students were estimated to have driven after they had had a "good bit" to drink ten or more times during that previous year.

The epidemiology of alcohol and highway safety can be traced from the first review of the problem presented in 1933 (Miles, 1934). An estimated 4.8% of deaths in the U.S.A. during 1980 (approximately 98,000) were directly or indirectly attributable to alcohol (National Institute on Alcohol Abuse and Alcoholism, 1987). Of these, motor vehicle crashes were the largest single cause of death. For example, approximately 26,000 deaths in 1980 were attributed to alcohol in motor vehicle crashes, and these individuals comprised approximately 98,000 (NIAAA, 1987, p.6). This amount is about two times greater than the second largest single cause of alcohol-involved death, namely, homicide (approximately 12,000 or 12%) (NIAAA, 1987, p.6).

In 1986, more than 40% of all teenage deaths resulted from motor vehicle crashes. Over half of these were alcohol-related, making alcohol-related traffic crashes the leading cause of death for teenagers. For traffic crash victims aged 20-24, close to 70% of the 8,000 who died in 1986 were in alcohol-related crashes (National Highway Traffic Safety Administration, 1988). The probability that a given death is due to a traffic fatality is 55 times as great for a 20-year-old male as for a 65-year-old male; the corresponding ratio for females is 43 (Evans, 1987).

The data from Ohio records on drinking and driving are similar. The 1987 Annual Report And Crash Facts from the Ohio Department of Highway Safety indicated that since 1980, there has been a total of 310, 950 alcohol-related crashes in Ohio. These crashes resulted in 5,994 deaths, 237,054 injuries, and an economic loss estimated in excess of $2 billion. Drinking drivers are usually, but not always, the drivers at fault. In crashes identifying the drinking driver as having caused the incident, 86% of the persons killed and 70% of the persons injured were either drivers or passengers in the "at fault" vehicles. Typically, a drinking driver is between the ages of 18 and 35 (68%), and 79%
are males. In fatal crashes, 88% of the drivers are male. More than three-fourths of the drinking drivers were driving between 6 p.m., and half of them were driving on Friday, Saturday or Sunday.

The 1988 Annual Report And Crash Facts from the Ohio Department Of Highway Safety indicated that drivers age 16-20 were involved in 114,737 crashes in 1988 of which 5,656 were drinking drivers and 120 of those drivers died in those crashes. Drivers ages 16 through 20 account for only 8.1% of all licensed drivers, but comprise 17.3% of all drivers in crashes. Records for 1988 show that this age group caused 18.5% of all crashes, 20.3% of all deaths, and 22.2% of all injuries. The DUI profile from 1986-1988 showed for first-time and previous 16-20 year old DUI offenders that 91.6% were first-time DUI offenders while 8.4% were previous DUI offenders. The 1987 and 1988 Highway Department statistics show that the number of drinking drivers in crashes and drinking drivers in fatal crashes increases each year.

**Summary**—The review of literature indicates that young people are playing a larger role in all traffic crashes with the passing of each year. There is also an increase in the number of drinking related crashes involving young people. Males appear to be drinking and driving more often than females. The predriving behaviors and riding with a drinking driver increase the risk of injury for adolescents and riding with a drinking driver appears to increase with age. Adolescents who ride with a drinking driver appear more likely to become drinking drivers themselves. Females appear to be more willing to stop drinkers from driving than do males.

**Demographic Correlates Drug Use**

This study examined selected demographic characteristics of students and their drinking and driving intent and actual behaviors. These variables were reviewed as they appeared in the literature.
Age--Past studies of adolescent drinking have consistently shown strong associations between various demographic correlates and adolescent drinking (Barnes 1980; Blane and Hewitt 1977; Mandell and Ginzburg 1977; Marden and Kolodner 1976; Schuckit 1978). Almost without exception, studies of adolescent drinking have reported that older adolescents are more likely to drink. The general relationship is also shown in the data from the 1974 and 1978 Research Triangle Institute (RTI) studies. The RTI studies provide detailed data on changes in drinking patterns with age; however, data for the lower end of the adolescent age range (12-14) are available for 1974 only. Drinking levels appear to increase rapidly with age at the lower level of the age range. Although 17-18 year olds drink more than 15-year-olds, a substantial number of 15-year-olds drink larger amounts. Generally, the RTI studies indicate that adolescent drinking increases rapidly between the ages of 13 and 15, increasing less rapidly thereafter. The drinking patterns of 17-year-olds are not much different from the patterns of 18-year-olds.

A variety of researchers, including Hochman and Brill (1971), have found age to be statistically significantly related to drug use behaviors, with age at first use serving as a factor of particular importance in individuals who develop chronic use patterns. Shearn and Fitzgibbons (1972), in a supporting study, compared the drug use behaviors of 167 psychiatric patients with a sample of college students. This analysis revealed that at least among those who are psychologically vulnerable, the use of any drug before age 15 predicts future drug involvement with great accuracy, i.e., the eventual use of barbiturates and narcotics. It has been demonstrated that initial experimentation with most illicit drugs occurs during the first three years of high school, while first experience with marijuana, alcohol, and cigarettes often occurs prior to tenth grade (Johnston, Bachman, & O'Malley, 1982).

Gender--In terms of alcohol drinking behaviors for adolescents, girls drank less often and in smaller amounts per drinking episode than boys (Rachal et al., 1982).
Historically, adolescent boys have been reported to drink more than girls. Data from the 1974 and 1978 RTI studies support this assertion. Reports often contend that girls drink less often and in smaller amounts at each drinking episode than boys. This discussion should not be construed as indicating that drinking among girls is uncommon. For both RTI studies, more than seven out of ten 10th and 12th-grade girls are drinkers. The Institute For Social Research studies' annual prevalence data indicate that over 80 percent of 12th-grade girls had one or more drinks in the 12 months prior to the survey, and over 60 percent had used alcohol in the 30 days prior to the survey.

In a variety of studies, a fairly consistent relationship between the sex of adolescents and their respective drug use patterns has evolved, with males generally being more likely than females to engage in drug use behaviors (Hochman and Brill, 1973; Johnson 1973). However, it has been suggested by Block, Goodman, Abellan, and Revenson (1974) that one half of the cities included in a feasibility study which was conducted, sex did not reliably relate to drug use patterns. The average female who does use drugs takes a lesser variety of substances, and with less frequency, than her male counterpart (Johnston, Bachman, and O'Malley, 1982).

Regardless of sex, approximately 85% of all tenth graders and 90% of twelfth graders have used alcohol (Lowman, 1981-1982b). He suggests that drinking context, however may differ as more senior high school boys than girls drink in unsupervised settings. Also reports contend that girls drink less often, and in smaller quantities than boys (Rachel, Maisto, Guess and Hubbard, 1982).

Females are more likely to smoke cigarettes than males (Swisher & Hu, 1983). Adolescent females smoke up to one-half a pack of cigarettes more than their male counterparts on a daily basis, and report both more monthly as well as regular smoking behaviors than males (Johnston, Bachman, & O'Malley, 1982).
While overall marijuana use is somewhat higher among males than females, the daily use of this particular substance is twice as high among males. Prevalence rates for use of inhalants, hallucinogens, and PCP are higher among males, who also account for a greater share of the frequent and heavy users of these substances. Females do, however, show higher annual prevalence rates for stimulant use. This reversal of use patterns is commonly attributed to the perception that use of stimulants for weight loss serves an instrumental rather than recreational function (Johnston, Bachman, and O'Malley, 1982). Many researchers consequently assert that for intervention purposes, sex differences are too small, subtle, or confounded by other variables to justify differential interpretations or program designs (Gersick, Grady, Sexton, and Lyons, 1981).

Ethnic Group/Race--While the ethnic group or race were not included for this study, the population examined included Caucasian, African American, Oriental, Native American, Hispanic, Latino, and other ethnic groups. Several studies are included in this section. The usual contention that black youths drink less than white youths is supported by the RTI studies. For the 1978 study, black youth had markedly higher abstainer rates and lower heavier drinker rates than whites. The percentage of blacks classified as heavier drinkers was only about one-third that of whites. Except for heavier drinker categories, Spanish Americans exhibited drinking patterns similar to whites. The 1978 RTI study results were consistent with results for the 1974 RTI study, which included 7th-12th graders. The NIDA studies have also consistently reported higher drinking rates for whites than nonwhites (for the month before the survey).

Blane and Hewitt (1977) found that the correlation between socioeconomic status and teenaged drinking are mixed, with little more than a weak relationship demonstrated in any study, and with only slightly more studies showing the relationship to be positive than studies showing a negative or neutral relationship. Crudeeness of the measures and questionable ability of teenagers to report accurately parents' socioeconomic attributes may
certainly contribute to these findings, but the consistently weak association across most studies and over time may also mean that socioeconomic status makes little difference.

Blane and Hewitt (1977) found religious affiliation to be consistently and repeatedly related to adolescent alcohol use. Most studies show that use is least prevalent among teenagers affiliated with fundamentalist denominations such as the Mormons and Baptists and most prevalent among the liberal Protestants (i.e. Presbyterians, Episcopalians), Catholics, and Jews. Usually, the proportion of adolescents in these groups reporting heaviest use is highest for Catholics and lowest for Jewish youth.

In summary, it appears that drinking increases with age and grade level. Males are more likely to drinking than females. The older youth are more likely to be drinkers. Females are more likely to smoke cigarettes. Young African-American boys in school appear to consume less alcohol than their counterpart white youth. The religious preference as well as the attendance at religious events appear to be related to the use of alcohol.

Variables Surveyed in This Study

Entertainment and Social--Barnes and Olson (1977) investigated the remedies junior and senior high school students used to relieve negative states or achieve positive states. They gave a questionnaire that listed fourteen remedies (six drug and eight nondrug remedies) and positive and negative states or moods. The negative states were anxiety, depression, and hostility and the positive states were adventure, camaraderie, and pleasure. Their goal was to identify which alternatives were physical activity, personal contemplation, discussions with friends or parents, counseling, social activities, and risk-taking behaviors.

One major finding was that alternatives used to reduce the negative states were seldom used to achieve positive states and vice versa (Barnes and Olson 1977).
Distracting activities, discussions with friends, and personal contemplation were used most frequently to relieve negative states. Social activities, risk-taking behaviors, and physical activities were used significantly more to achieve positive states. The authors also found that illicit drugs and alcohol were used significantly more to achieve positive states than to relieve negative states. They recommended that alternatives should be paired with the state (need) that they have highest likelihood of facilitating.

Another model of alternative programming involved the application of reinforcement techniques to encourage and expand existing alternative activities in small groups (e.g., Swisher, Warner, and Herr, 1972). The process involved discussions with students regarding current nondrug activities which were positively responded to by the group leader. Individuals who were involved in positive alternatives served as role models for the group members who were less involved. The assumption was that it would be possible to increase the overall level of participation in alternatives which, in turn, would reduce involvement with various substances.

This approach was evaluated at the junior high level by Warner, Swisher, and Horan (1973), at the senior high level by Swisher et al. (1972), and at the college level by Swisher, Warner, Spence, and Upcraft (1973). All of these studies were true experimental designs with random assignments of students to experimental and control conditions, random assignment of group leaders to experimental and control conditions and pre- and post-testing with reliable and valid instruments. However, this first series concluded the following:

1. Regardless of approach, the knowledge level of participants significantly increased
2. Regardless of approach, the use levels did not change
3. Regardless of approach, the attitudes of students did not change
The most positive finding was among the college students who reported lower levels of use as a function of being in humanistically oriented group processes.

Swisher and Bibeau (1987) found in their research that social, sports, and vocational activities were significant predictors of higher level of beer use; whereas, academic, religious, and extracurricular activities were associated with lower levels of consumption of beer.

Physical/Sports--Participation in sports is associated with less use of cigarettes, marijuana, depressants, hallucinogens, and stimulants (Swisher and Hu, 1983). Interestingly, however, it was revealed that the more time students spend in sports, the greater their use of beer (Swisher, Shute, and Bibeau, 1984). Participation in extracurricular activities is statistically significantly related to more use of cigarettes, beer, marijuana, inhalants, depressants, and stimulants (Swisher and Hu, 1983).

Religious--Religious participation as an alternative activity has always fared well in the literature. For example, Bowker (1975), Turner and Willis (1979), and Yohe (1981) all found that greater participation in religious activities was associated with lower levels of use of substances. Similarly, Jessor and Jessor (1977) and Kandel (1978) have also concluded that involvement with religion is associated with less use of various substances.

In analyzing a part of the data from an earlier 1983 youth life style study, involving 13,878 junior and senior high school students in a western city with a population of about 250,000, the authors (Lorch and Hughes, 1985) found that church members have a lower percentage than those who are not members for the use of all substances studied except one--heavy use of cocaine.

According to Lightsey and Sweeney (1980), a vast majority of youthful DUI offenders in their study had church preferences. Interestingly, these denomination preferences were those which traditionally discourage the use of alcohol. Those who attended or preferred churches that discourage alcohol use comprised a larger percentage of
high problem drinkers than either those who belonged to a nonprohibitionist church or those who had no religious preference.

Factors Influencing Decision Making—The following reviews are included to provide information which is related to the items on the PPAAUS examined in this study.

Understanding the Effects of Substance Use.—Most teens are aware of the dangers involved when a driver operates a motor vehicle while under the influence of alcohol. However, teenagers often believe that the negative consequences will not happen to them, therefore warnings and increased knowledge do little to deter their behavior (DiBlasio, 1986).

Drug information programs assume that drug abuse results from inadequate knowledge of the negative consequences of drug use. This approach seeks to provide youths with information about drugs and their effects in hopes that such knowledge will make clear the risks of drug use and will, thereby, discourage use. While drug information programs dominated early drug abuse prevention efforts (Schaps et al., 1981), these programs did not address the risk factors for adolescent drug use identified in etiological studies. While evaluations have shown that the programs were effective in increasing knowledge about drugs, the evaluations have not shown desired effects on drug use behavior (Janvier et al., 1979; Kearney and Hines, 1980; Polich et al., 1984; Schaps et al., 1981). Stuart (1974) and Grizzle (1974) found that the drug information programs which they evaluated not only increased knowledge regarding drugs, but also increased initial experimentation with drugs.

Swisher and Bibeau (1987) found in their research that the more important students rated understanding the effects of alcohol and other drugs, feeling self-confident, and being involved in alternative activities, the less likely they were to use beer. Conversely, they found that the more important peer acceptance and seeing adult role models is, the
more beer use. The only variable in the two models that failed to predict use of beer was coping with school pressure.

**Self-Confidence**—Of variables which relate to self-concept, self esteem has received the most attention in children's health promotion programs. In adolescents, low self-esteem has been related to subsequent substance use (Kaplan 1975), but other studies have not found self-esteem to be an important correlate of substance use (Jessor and Jessor 1977; Kandel 1978).

Lewis and Lewis (1983) listed self-concept and self-reliance (a measure of self-efficacy) among five variables measured at the level of the child which, based on anecdotes and descriptive information during the past nine years, are the most important determinants of children's health orientations and behaviors. However, they state that these concepts have never been measured as part of a longitudinal or a child-family investigation.

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**Having Friends and Peer Influence**—Although parental influence is more important for some young people than for others, peer influence is the dominant factor for many teenagers' entrance into problem behaviors. Since peer influence is so clearly part of the problem, it must also be part of the solution. If this is to happen, then it is important to understand how peers can influence each other in positive ways. Peers not only influence each other negatively by manipulation and coercion, but also positively by offering advice, support, and the opportunity to discuss conflicting points of view (Kiesler and Kiesler 1969; Shute 1975).
The association between peers and alcohol use among adolescents has been investigated beyond the description of drinking company. In most studies, measures of peer influence have included such variables as perceptions of peer pressure to drink, perception of peer behavior and attitudes related to drinking, and peer group drinking behavior. Peer pressure has been found to be only weakly related to the level of alcohol use, though there is indirect evidence that drinking onset may be influenced by peers. It has been found, for example, that abstainers report less pressure to drink and that drinkers, especially heavier drinkers, report more pressure. On the other hand, conformity, acceptance, approval, and avoidance of ridicule have not been found to be primary reasons for drinking among most adolescents, although overt endorsement of drinking is prevalent among heavy drinkers. Perhaps the strongest and most consistent univariate relationship between alcohol use and any correlate is the one between alcohol use and peers' attitudes and behavior related to drinking. Prevalence, frequency, and level of drinking all vary directly with the number of friends who drink, the extent of friends' drinking, and the degree of consensus among friends approving drinking. A few studies, which described closely knit peer groups, found that alcohol and alcohol use have specific meanings within such groups, that the groups exhibit different levels and styles of drinking related to those meanings, and that member status in such groups is related to the degree to which personal alcohol use corresponds to group norms.

The results of the RTI studies were generally consistent with the extant literature on peer influences. Peers' drinking-related behavior and attitudes are fairly strongly related to drinking levels among adolescents. Few abstainers associate exclusively with peers, most or all of whom drink, and a disproportionately large number of abstainers "hang around" with other abstainers.

Findings from prior studies are inconsistent with respect to the relationship between participation in school and social activities and alcohol use. Moderate
relationships have been consistently demonstrated, but the direction varies, suggesting the influence of other variables on both social participation and drinking. A weak negative relationship has been found between academic achievement and prevalence and level of drinking. Church attendance and religious involvement were negatively related to the prevalence of drinking, though not consistently to level of drinking. Both employment and number of working hours were related to the level of alcohol use, although the number of studies that examined this relationship was small.

Globetti (1977) states that "in American society parents and peers are the primary socializing agencies in the onset and emergence of teenage attitudes and behavior regarding school" (p. 167). Teenagers most strongly influence each other regarding dress and appearance, choice of leisure-time activities, language, and use of alcohol and drugs (Hedin and Simon, 1980).

In the past two decades, dependency on peers relative to parents for security and approval has increased as a result in part of withdrawal by parents from the lives of their youngsters (Bronfenbrenner, 1972). Adolescents, even those who are relatively autonomous, typically comply with peer standards up to a point to achieve status and identity within the peer group. In 1961, Coleman observed that leading social cliques among adolescents tended to discourage academic strivings, and this fact may not have changed substantially in the past 20 years.

Association with drug-using peers during adolescence is among the strongest predictors of adolescent drug use (Akers, 1977; Akers et al., 1979; Elliott et al., 1982; Hirsh 1969; Jensen 1972; Jessor et al., 1980; Kandel and Adler, 1982; O'Donnell and Clayton, 1979; Kandel 1982; Catalano, 1982; Huba et al., 1979; Winfree et al., 1981; Meier and Johnson, 1977; Ginsberg and Greenley, 1978; Orcutt 1978; Smart et al., 1978; Jessor and Jessor, 1977; Goldstein, 1975; O'Donnell et al., 1976; Kaplan et al., 1982). Drug behavior and drug-related attitudes of peers are among the most potent predictors of
drug involvement (Kandel, 1978). Peer influences are particularly important for initiation into the use of marijuana (Kandel et al., 1978). Perceived use of substances by others is also a strong predictor of use (Jessor and Jessor, 1978; Robins and Ratcliff, 1979; Kandel, et al. 1978). Use of marijuana is strongly associated with use by closest friends and perceived support for use (Penning and Barnes, 1982). Jessor et al., (1980) found that perceived environmental predictors (such as friends as models for use) accounted for twice the variance in drug use as compared to personality factors.

In their longitudinal study of the National Youth Panel, Elliott et al., (1982) found that social bonds to family and school influenced drug use indirectly through peer associations. Strong bonds to family and school decrease the likelihood of involvement with drug using and delinquent peers. They found only indirect effects of family and school bonding on drug use, and suggest that this reflects the time ordering of youths' experiences in the social contexts they encounter. The strength of bonding to family and school is determined before exposure to drug using peers in adolescence. However, the extent to which youth have become bonded to family and school is likely to be a factor in the selection of prosocial or drug using companions in early adolescence (Kandel et al., 1976, 1978; Elliott et al., 1982).

Albrecht (1973) asserts that the influence of significant others appears to be the most powerful determinant of experimentation with marijuana. Referred to as the distortion effect, this reflection of the perception that a majority of peers, seniors, and teachers are smoking may influence their decision to smoke, or serve to justify current smoking behaviors (Duryea and Martin, 1981).

**Being Able to Cope**—According to Lewis and Lewis (1983, p. 259), "children are far more competent in a variety of dimensions, including decision-making, than adults perceive (or want) them to be." Decision-making and coping skills, e.g., resistance to peer pressures, are included in most children's contemporary health promotion programs,
particularly those intended to prevent substance abuse. Examples are the Life Skills Training developed by Botvin et al (1980). These programs have been successful in promotion children's healthful behaviors and in preventing harmful ones, but it has not been determined if decision-making and coping skills are the essential components of these programs. In addition, there is little in the literature to substantiate that children who are the most successful in performing healthful behaviors, or that children who do not acquire decision-making skills not only fail to perform healthful behaviors, but engage in harmful ones.

Pittel (1971) took the position that drug dependence was most likely to occur among individuals who lacked the psychological resources needed to deal adequately with inner conflicts and/or environmental frustrations. Some individuals appeared to become drug dependent in spite of having previously achieved a reasonable degree of personality organization, or when they were subjected to unusually severe situational stress, chronic pain or anxiety. Brook, et al., (1976) implied that a majority of adolescents used drugs as a coping mechanism with which to relieve stressful conditions already present in their life situation. Kilpatrick, et al., (1976) offered data which suggest that the polydrug abuser is one who tends to overrespond to stressful stimuli and also is one that requires more time than the nonuser to return to a prestress baseline of anxiety following stimulation. Interestingly, these persons also exhibit a greater need to engage in activities involving danger, to encounter a broad variety of inner experience, to live a hedonistic life, and to seek out situations which will raise arousal to more optimal levels. The concept of stress is a concern of Klerman (1975) when he notes that most persons do cope when confronted with stress, yet it is important to search for the factors within persons that differentiate those who cope from those who develop clinical symptomatic states. The problem of adjustment for the habitual drug user is indicated in the work of Chein, et al. and that of Gerard and Kornetsky (Hill, 1960) which made mention of the fact that it is individuals
unable to adjust adequately even within their subculture who continue with drug use to the point of addiction.

The ideal program should have two foci: first, the information transmission approach to provide basic knowledge and awareness, and second, the responsible decision approach that will teach youngsters the basic coping and decision making skills (Schinke & Gilchrist, 1984)

**Being Involved in Alternative Behaviors**—Another model involved the self-directed youth projects, known as Channel One. Young people will initiate activities of their own choosing. This self-directed process assumes that young people will elect responsible courses of action and by generating meaningful alternatives they will ultimately become less involved with substance abuse.

Resnick and Adams (1981) reported that, as of May, 1981, there were 3,748 youth involved in 132 Channel One task forces in almost every state in the country. As self-directed groups, 79 have elected vocational skill projects, 44 alternative projects, 19 social service projects, 14 educational projects, 11 historic preservation projects and 5 environmental projects. The Resnick and Adams (1981) survey also revealed that two-thirds of the groups were assisted by businesses other than the Prudential Insurance Company, the sponsoring company for this project.

Graefe (1981) conducted a comprehensive process evaluation of a Channel One replication and concluded that the community, parents, and students had positive attitudes toward their experiences. Some data suggested reduced truancy among "active" Channel One members. The evaluation did not include control groups and data on drug use behaviors were not collected.

The Channel One program was evaluated by Hue et al. (1982) and included the essential components of natural group formation, group interaction, involvement in alternative activities, youth-initiated activities, the opportunity for decision-making, and the
necessity for taking responsibility for one's own decisions. Channel One participants identified their own program activities and goals. The evaluation focused on the extent to which Channel One increased participation in alternative activities, improved decision-making and problem-solving skills, improved self-concepts, increased creativity, and reduced substance use.

The outcomes varied across the three sites, with site 1 becoming significantly more democratic in its group problem-solving, while site 2 became significantly more involved in positive alternatives. There were no significant changes in self esteem for any site. There were, however, negative findings for sites 2 and 3. In these sites, use of inhalants and hallucinogens, and the frequency of being drunk increased (Hu et al., 1982).

The findings of this evaluation indicate that this particular alternative program partially achieved the intended effects on the affective goals of the groups. On the negative side of the ledger, it appears that the process has a negative effect on the substance use levels of the participants.

**Family Factors/Role Models**--Family factors are strongly implicated in the etiology of adolescent drug abuse. To the extent that adolescent drug abuse is part of a constellation of deviant behaviors, including delinquency, the literature on the prediction of delinquency appears salient. Among the most important childhood predictors of delinquency are composite measures of family functioning (Loeber and Dishio, 1983), parental family management techniques (West and Farrington, 1973), and parental criminality or antisocial behavior (Langner et al., 1983; Loeber and Dishion, 1983; Osborn and West, 1979). Disruptions in family behavior management are a major mediating variable for antisocial behavior in children (Patterson, 1982). Variables associated with antisocial problems include households that are disorganized and have poorly defined rules and inconsistent, ineffective family management techniques. In a sample of 195 boys, Loeber and Schmaling (in press) found that boys who engaged in both overt antisocial
behaviors (fighting) and covert antisocial behaviors (e.g., stealing and drug use) came from families with the greatest disturbance in child-rearing practices.

Looking more specifically at adolescent drug use, positive family relationships, involvement, and attachment appear to discourage youths' initiation into drug use (Adler and Lutecka, 1973; Wechsler and Thum, 1973; Shibuya, 1974; Jessor and Jessor, 1977; Kim, 1979). Kandel (1982) found that parental influence varies with the stages of drug use she identified. Parental role modeling of alcohol use is positively associated with adolescent use of alcohol, while the quality of the family relationship is inversely related to the use of illicit drugs other than marijuana. According to Kandel, three parental factors help to predict initiation into drug use; parent drug using behaviors (see also Kim, 1979); parental attitudes about drugs; and parent-child interactions. The later factor is characterized by lack of closeness (see also Mercer et al., 1976; Kandel et al., 1978; Kim, 1979; Brooks et al., 1980), lack of maternal involvement in activities with children, lack of, or inconsistent, parental discipline (see also Braucht et al., 1973; Blum et al., 1972; Penning and Barnes, 1982), and low parental educational aspirations for their children. Stanton and Todd (1979) and Ziegler-Driscoll (1979) suggest that familial risk factors include high rates of parental substance use, and a pattern of overinvolvement by one parent and distance or permissiveness by the other. Similarly, families with drug abusing children are described by Kaufman and Kaufman (1979) as ones in which fathers are "disengaged" and mothers are "enmeshed."

The relationship between parents and the peer group as a source of powerful influence on the substance use patterns of adolescents has been highlighted in the work of Utech and Hoving (1969). An analysis conducted by Lanese, Banks, and Keller in 1972 disclosed that such a peer support variable accounted for nearly 41% of the variance in adolescent cigarette-smoking behaviors. The greater the perceived support for drinking
behaviors from others, particularly peers, the more powerful is the signal to shift from abstainer to drinker among this target group (Jessor, Collins, and Jessor, 1972).

Adolescents have reported several places other than cars in which drinking most commonly occurred. Twenty-five percent of the heavy-drinking drivers drank at home. Most of all other drinking drivers drank at the homes of friends. Other sites for drinking included parties and social (not at home or friends' houses), public places and parks (Farrow, 1985). Swisher and Bibeau (1987) found in their research that the number one location of use was at a party.

In a statewide school-based survey conducted in California in 1985, students were asked to indicate where most students at their school who used drugs obtained them. Of the five alternatives provided, the most frequently selected, by 40% of students in 11th grade, was "at school" (Skager et al., 1986). Lowman (1981-1982b) reports that approximately one in four senior high school students consumes alcohol during or after a school activity when supervising adults are not present, or can not observe, i.e., dances, and games. Lowman (1983) also reported that approximately one in four senior high school students consumed alcohol during or after a school activity when supervising adults were not present, or could not observe, i.e., dances and games. It has been further revealed that the less time students spent in academic activities, the greater their use of drug substances, including beer. It was revealed that the more time students spent in sports, the greater their use of beer.

The 1978 RTI study indicates that places or settings where drinking occurs have been categorized as in the home, at parties or friends' homes, in public establishments like bars or restaurants, driving around or parked in a car, at school functions, in teenager hangouts, at "secluded" spots, and in outdoor locations. Not all studies ask about all settings; and studies differ whether they examine the most frequent setting, all the settings where a respondent has ever used alcohol, or several settings and their frequency of use.
Thus, results are difficult to compare across studies. Nevertheless, some general statements seem to be supported. First, the drinker's own home has consistently been reported as the most frequent drinking location; however, settings outside the home are named by more adolescents overall. The number of settings reported increases with alcohol use, and heavier drinking seems to be related to drinking in settings outside the home.

Drinking companions are most often friends or peers, although parents or other relatives are named second most often, followed by mixed peer and adult company, older friends, and alone. Teenagers who drink more tend to drink with peers, not with adults. Although few teenagers drink alone, those who do drink heavily.

**School Experience and Drug Use**

The research on the relationship between school experiences in childhood and adolescent drug use has produced mixed results. Several researchers have attributed an independent effect to school failure as a predictor of drug abuse (Robbins, 1980; Anhalt and Klein, 1976; Jessor, 1976; Brooks et al., 1977; Galli and Stone, 1975). Poor school performance is a common antecedent of initiation into drugs (Jessor and Jessor, 1977; Kandel et al., 1978; Johnston, 1973), and has been found to predict subsequent use and levels of use of illicit drugs (Smith and Fogg, 1978). Drug users and juvenile delinquents appear to perform more poorly in junior and senior high schools than do nonusers and nondelinquents (Kelly and Balch, 1971; Polk et al., 1974; Frease, 1973; Senna et al., 1974; Simon, 1974; Anhalt and Klein, 1976; Jessor, 1976), although this relationship has not been found among college students (Miranne, 1979). Robins (1980) characterizes drug users as having average or better IQs but being underachievers.

What is not clear from the existing research is when, developmentally, school achievement becomes salient as a possible predictor of drug use. While underachievement
and school failure have been positively linked to adolescent substance use and delinquency, Fleming et al., (1982) found that children who scored high on first-grade readiness and IQ tests exhibited earlier and more frequent use of alcohol and marijuana. These students were more than twice as likely to become frequent users. Teacher-rated future substance use when shyness and aggressiveness were controlled. Aggressiveness in the Woodlawn sample of first graders was invariably accompanied by learning problems, but learning problems frequently occurred without aggressiveness and did not alone predict subsequent drug use (Kellam and Brown, 1982). Similarly, Spivack (1983: Spivack et al., 1978) determined that initial signs of academic achievement in the first grade were not predictive of subsequent conduct or delinquent disturbances.

Other studies indicate that by the end of elementary school, low achievement, low vocabulary, and poor verbal reasoning are predictors of delinquency (Farrington 1979; Rutter et al., 1979). Kandel (1981) suggest that low school performance does not itself lead to drug use, but that the factors leading to poor school performance are related to drug involvement. We have already noted that first-grade teacher ratings of antisocial behaviors are good predictors of later drug abuse and delinquency. These findings suggest that social, not academic, adjustment is more important in the first grade as a predictor of later serious drug abuse. Academic performance appears to emerge in importance as a predictor sometime after the first grade. It is possible that early antisocial behavior in school predicts both academic underachievement in later grades and later drug abuse.

Students who are not committed to educational pursuits are more likely to engage in drug use and delinquent behavior (Hirsh, 1969; Elliot and Voss, 1974; Kim, 1979; Friedman, 1983; Galli and Stone, 1975; Robins, 1980; Brooks et al., 1977). The annual surveys of high school seniors by Johnston et al., (1981, 1982, 1984) show that the use of hallucinogens, cocaine, heroin, stimulants, sedatives, or nonmedically prescribed tranquilizers is significantly lower among students who expect to attend college than
among those who do not plan to go on to college. Drug users are more likely to be absent from school, to cut classes, and to perform poorly than nonusers (Brook et al., 1977; Kandel, 1982; Kim, 1979). Greater drug use has been demonstrated among dropouts (Annis and Watson, 1975). Factors such as how much students like school (Kelly and Balch, 1971), time spent on homework, and perception of the relevance of coursework also are related to levels of drug use (Friedman, 1983), confirming a negative relationship between commitment to education and drug use, at least for junior and senior high school students.

Eichberg, Phil, and Bentler (1975) suggest that the nature of the particular school attended, rather than just grades achieved, should be given serious consideration, as the nature of the school can be indicative of drug use context. Swisher (1976) suggests that programs addressing education and prevention should include "all activities which are planned to enrich the personal development of the student...including humanistic education, open education, affective education, values clarification, career education and developmental guidance."

While the measure of choice and expediency in making student surveys is course grades, it can be argued that this singular variable should be substituted with a wider range of measures that may be more socially meaningful (Goldstein, 1975). Haagen (1970) revealed that drug users performed as well or exceeded the performance of nonusers on a variety of scholastic aptitude tests, but that they were less involved in ongoing academic work, and received generally poorer grades than did nonusers. Block et al. (1974) confirm a pattern of consistently higher grades for drug nonusers than users.

Overall, seniors expecting to complete four years of college have lower rates of illicit drug use than those not expecting to go to college for four years. Annual marijuana use of the college-bound individuals use marijuana with this frequency (Johnston, Bachman, and O'Malley, 1982). For most of the specific illicit drugs other than
marijuana, annual prevalence of use is substantially higher among noncollege-bound students. Frequent alcohol use is also more prevalent among this population (Johnston, Bachman, and O'Malley, 1982). Swisher and Bibeau (1987) found in their research that males in upper classes with poor grade averages and who generally feel negative toward school are more likely to be beer drinkers.

**Negative and Disruptive behaviors**--Individuals who use drugs tend to get lower grades in school, are less likely to participate in organized extracurricular activities such as sports or clubs, and are more likely than nonusers to engage in antisocial behaviors such as lying, stealing, and cheating (Demone 1973; Jessor et al. 1972; Wechsler and Thum 1973).

Illicit drug use is related positively to other illegal behaviors (Johnston et al., 1978: Jessor et al., 1980). Delinquency has generally been found to occur prior to drug use (Johnston et al., 1978: Elliott et al., 1982). Frequent drug use is associated with lower personal controls against involvement in problem behavior, greater involvement in other forms of problem behavior, and lesser involvement in conventional behaviors (Jessor et al. 1980). Clausen (1978) has summarized the evidence: "One surmises that the identification of those who were precocious in drug behavior might well be possible in terms of early signs of rebelliousness or precocity" (p. 247).

**Summary**

This chapter has presented a review of the literature pertinent to the study. Chapter Three provides a description of the methodology used to conduct the study.
CHAPTER III

METHODOLOGY

The purpose of this study was (1) to determine the nature of student use of alcohol and other drugs across grades 6 through 12 in a 18-school district consortium consisting of approximately 120,000 students; (2) to determine the relationship between self reported drinking and driving behaviors and various demographic, attitudinal and behavioral variables; and (3) to provide recommendations from these substance patterns for activities for a comprehensive K-12 chemical health education/prevention program.

This chapter has been divided into four sections: (1) the setting, (2) the instrument, (3) the data collection procedures, and (4) the analysis of data.

Setting

The setting for this study is Franklin County, Ohio, in which is located Columbus, the capital of the state. There are 26 cities and communities located in the county with a combined population of the 869,132. Located in these cities are 16 public school districts, three private schools, and a parochial school system. The total enrollment of the schools is 158,533. The district sizes, excluding Columbus with an enrollment of approximately 61,000, ranges from approximately 18,000 to 950. Columbus has sixteen high schools. One district has three high schools and another has two, and each of the other districts has one high school each with feeder middle schools and elementary schools. The median age of the county is 32.6. The area has some farmland with both business and industrial plants located in the county. There are ten colleges and universities.
in the county including The Ohio State University with its enrollment of 53,000. The city of Columbus is often selected by marketing firms as a test market for products because of its generalizable midwestern American characteristics.

The sixteen independent school districts in Franklin County aggregated the monies they received under Drug-Free Schools and Communities Act of 1986. With these funds they established a Drug-Free Schools Consortium. They stated as their mission for the Consortium the promotion of educational initiatives addressing drug and alcohol abuse. Specifically, they point out that the Consortium provides schools with a K-12 framework of education, prevention, and intervention programming which presents drug and alcohol use as a major societal problem and as a local educational concern.

With support from the federal Drug-Free Schools and Communities program funds the Consortium helps member school districts assess the current and future needs of students and staff and strengthen the schools' drug and alcohol abuse prevention program. They provide member schools with effective and cost-efficient collaborative programs and services dedicated to decreasing substance abuse among the school community and fostering positive development. The Consortium uses the program framework used in this study to provide program recommendations from the findings.

Subjects--The subjects selected for this study were all elementary and secondary school students in grades 6 to 12 enrolled during the 1988-1989 academic school years in 18 school districts throughout Franklin County in Ohio. All of the participation school districts are involved in a Drug-Free Schools Consortium. Participating schools had contracted with an independent agency, Data Base, to conduct a survey to determine the nature and extent of drug use and related behaviors within the student population of the school system. Data Base is a consulting firm whose primary emphasis is survey research and evaluation in the area of drug and alcohol abuse prevention. Each school surveyed received an extensive illustrated final report, as well as technical assistance from a Data
Base representative concerning the survey results. The sample was large (N = 61,257), and included 6th through 12th grade students who attended school districts comprised of various socio-demographic characteristics.

For this study, 61,257 students completed the questionnaire: 7970 sixth graders, 9029 seventh graders, 9050 eighth graders, 8831 ninth graders, 8753 tenth graders, 8347 11th graders and 7978 twelfth graders. (1109 students did not fill in their grade). Of this total, 48.5 percent are males, and 51.4 are females. Statistical analyses were conducted on a stratified random sample of approximately eight-percent of participants, yielding a sample population of 4938 students. For this particular study the sample population being used is 4809 students. The composition of the sample is 619 sixth graders, 666 seventh graders, 781 eighth graders, 731 ninth graders, 677 tenth graders, 688 eleventh graders and 630 twelfth graders.

**Instrument**

The instrument used to collect the self-reported data was the *Primary Prevention Awareness, Attitude, and Usage Scales, Form 8R (PPAAUS)* (Appendix A) (Swisher, 1983). Special care was taken in the selection of the instrument to ensure satisfactory reported validity and reliability. The instrument requires approximately 30-35 minutes for completion. The instrument consisted of 13 subscales. These are identified as follows:

1. Factors Influencing Substance Use (demographic, school climate, negative behaviors, alternative activities, and decision-making factors).

2. School Climate Items (feelings about school, feelings about teachers, feelings about subjects, and feelings about classmates).

3. Alternative Activities (entertainment and social, academic, physical, religious, extracurricular, and vocational).
4. Factors Influencing Decision-Making (understanding effects of substances, self-confidence, having friends, being able to cope, being involved in alternative activities, adult role models, and consistent school policy).

5. Resource Persons to Turn to (Peer, Teacher, Parents, School Counselor, School Administrator, Police Officer, Adult, Doctor, Drug Counselor)

6. Primary Location Of Use

7. Primary Sources For Substances

8. Intent To Use And Self-Reported Use Of Substances (cigarettes, smokeless tobacco, beer, wine, liquor, marijuana, menotropins, inhalants, LSD, depressants, stimulants, and cocaine).

9. Trends In Drug Use Among High School Seniors

10. Monthly-Or-More Use Of Substances

11. Driving/Passenger Intent And Behaviors (drive while/after drinking, drive while/after smoking marijuana, passenger of drinking driver, passenger of driver smoking marijuana, and intent to stop impaired driver).

12. Negative/Disruptive Behaviors (sent out of class, damaged something on purpose took something from someone, took something from a store, cheated on a test, was high on drugs, been drunk, stayed out without permission, and broke school property).

13. Student's Perception Of Presence Of Substance Use Problem In The District

The total scale consisted of 79 items (Appendix A). These items assess certain alcohol and other drug behaviors, values, and attitudes. Other items assess different activities in which the student is involved, (e.g. sports, academic, religion, vocational); additional areas assessed by the instrument include driving and alcohol and other drug use attitudes; alcohol and other drug use knowledge; where to go for help regarding alcohol and other drug problems; attitude toward school, teachers, and peers; and perceived peers' alcohol and other drug use patterns. Students did not have to answer any items they considered offensive and were allowed to shuffle their answer sheets with the other answer sheets in folders during the testing. All questions on the scale are objective in
nature, and the subjects were asked to indicate their chosen response by marking a line through the number best representing their selected answer. Students were assured that individual answer sheets could not be identified. Students were asked to respond anonymously to all measures. This procedure was expected to maximize honest reporting (O'Malley, Bachman, and Johnston, 1983; Swisher, Shute, and Bibeau, 1984). The survey proctors had received three hours of training in a workshop designed for questionnaire administration, which emphasized confidentiality of student responses. The workshop was conducted by representatives of Data Base.

Hayes (1987) found in his study using the Primary Prevention Attitude Awareness Usage Scale that reliabilities ranging from +.68 to +.93 were reported. The reported reliabilities were calculated for 15 schools spread across the state of Pennsylvania, which reflected a variety of socioeconomic settings. Because the instrument was found to be internally consistent and content areas covering self-reported use of substances, drinking and driving intention, and drinking and driving behaviors, content validity could be established. Further, Swisher, Shute, and Bibeau (1984) conducted a regression analysis based on 22,000 respondents in the 1982-1983 academic year as a means of assessing validity quotients. A regression model was constructed incorporating self-reported drug use as the dependent variable and 23 other items as independent variables.

(Swisher, Shute, & Bibeau, 1984) found that based on the demographic items, the higher the grade level, the greater the use of substance, and the lower the grade average, the more drug use were reported. Males have higher rates of beer, marijuana, and depressant use, while females have higher rates of cigarette and stimulant use. Based on school climate items, the more positive regard students have for teachers, the less likely it is that the students will use substances. Interestingly, as feelings about classmates move in a positive direction, so does use of cigarettes and beer. Under these conditions, however, marijuana, depressant, and stimulant use declines. With regard to the type of
activities in which students spend in academic activities, the greater their use of substances. Also, the less time students spend in sports, the greater the use of all drugs, with the exception of beer. Increased time spent in extracurricular activities is also associated with lower use of cigarettes, beer, marijuana, and stimulants.

The PPAAUS instrument was designed to measure the constructs of negative behaviors in relation to the amount of self-reported substance use, content areas important in primary prevention program planning, and the effect of involvement in social activities on self-reported substance use. Thus, construct validity could be established. Validity for this questionnaire has further been established by comparing the rank order of self-reported use disclosed in the analysis with the self-reported use from a national survey. The rank order of substances, where comparably categorized, is identical with those given by Johnston, Bachman, and O'Malley (1981). In both studies, the rank ordering for substances used monthly or more often was: (1) alcohol, (2) cigarettes, (3) marijuana, (4) stimulants, and (5) depressants (Swisher, Shute, & Bibeau, 1984). The instrument was designed in such a way that awareness of and attitudes toward substance use could be used as predictors or indicators of amounts of self-reported use.

Because the design of the survey does not allow for follow-up assessment or longitudinal study, the ability of the survey to be used as a predictor of long-range behaviors could not be established. The concurrent validity for this instrument was established through a regression analysis in which self-reported use of each substance was the dependent variable and other selected items were the independent variables (Swisher, Shute, and Bibeau, 1984). Honesty in answering the survey questions was determined by eliminating subjects who reported use of a non-available substance (menotropins). When a student identified having used this nonexistent "drug," his or her entire instrument was discarded. Approximately 1.9% of the students who claimed to use this substance were eliminated from the results. The advantage of this item is that it identifies individuals who
may be exaggerating their use or who are careless in their answer patterns. However, there are no means at present for detecting under-reporting of use. Assurance of confidentiality appears to be the best strategy for encouraging accurate reporting of personal use (Swisher, Shute, and Bibeau, 1984).

**Data Collection Procedures**

The collection of data for this survey was conducted by local staff trained by Data Base during the 1988-1989 academic school years. Form (8R) of the PPAAUS was utilized (Swisher, 1983). Two weeks prior to the testing date, individual school coordinators met together for inservice instruction to prepare them for coordinating the data collection in their respective schools. They were informed of the instrument to be used along with the collection procedures to be used. Uniformity in the collection of the data was stressed as was the issue of student confidentiality. Coordinators were instructed to indicate to teachers administering the questionnaire not to circulate in the room during administration of the questionnaire, and students were given permission to shuffle their answer sheets with others when turning them in. This was seen to further emphasize the anonymity of the questionnaire and testing procedures.

Directions to the coordinators also included how to give standardized instruction to the students, along with advice on how to respond to specific problems that may arise. Questions on test instructions were to be clarified for students, but questions about the meaning of specific test questions were not to be interpreted. The answer sheets were then mailed to Data Base, and were individually examined prior to optical scanning, to detect light marks or deliberate mismarking, such as graphic answer patterns.

It was decided that homerooms would be the most suitable site to administer the questionnaires. On the day of testing, homeroom classes were extended to accommodate the time required for this task.
Following optical scanning, several statistical analyses were conducted and a school report was generated for each participating school. This document of approximately 60 pages included comparisons with various norm groups, as well as charts and graphs to facilitate interpretation of the results (Swisher, Shute, and Bibeau, 1984). It was from these eighteen school districts in Franklin County that data for this study were analyzed. All subjects and their responses were totally anonymous to the researcher.

**Drug-Free Schools Program Planning Framework**

The program planning framework used to guide the planning, development and implementation of the education and prevention activities in the schools consists of a program planning framework and a program planning grid. This model is used to plan collaborate efforts among schools. Its value rests in the comprehensiveness of its scope, the effectiveness of it as a guide for identifying gaps and overlaps in program planning, provision for the identification of responsibilities for essential elements, the availability of a grid for identifying the interrelationship among the program components, the provision of a common language across districts for program development collaboration, and the provision of a framework for program process and outcome evaluation planning.

This framework consists of the following elements. All recommendations for from the of the study are made against this framework.

**Program Areas**
- Policy
- Coordination
- Staff Development

**Program Emphases**
- Education
- Prevention
- Early Identification
- Intervention
- Referral
- Treatment
- Follow-up
Program Components
- K-12 Education Curriculum Infusion
- K-12 Prevention Programs
- K-12 Written Guidance Program
- Student Assistance Program
- Student Athletic/Cocurricular Assistance Program
- Employee Assistance Program
- Student Leadership program
- Student Support group Program
- Parent Involvement Programs
- Community Involvement Programs

Analysis Of Data

The following questions were addressed in the analysis of the data.

51. I would drive a car after having two or more drinks

Students were identified by responses in the following categories.

Group 1 (N) Those who responded, "Never"
Group 2 (PN) Those who responded, "Probably No"
Group 3 (PY) Those who responded, "Probably Yes"
Group 4 (DY) Those who responded, "Definitely Yes"

How Often Have You:

72. been a passenger in a car in which the driver had been drinking alcohol before driving or while driving?

74. driven a car while drinking or after having two or more drinks?

Students were identified by responses in the following categories.

Group 1 (N) Those who responded, "Never"
Group 2 (NY) Those who responded, "Before but not last year"
Group 3 (Y) Those who responded, "Once or twice a year"
Group 4 (M) Those who responded, "Once or twice a month"
Group 5 (W) Those who responded, "Once or twice a week"
Group 6 (D) Those who responded, "At least once a day"

The data obtained by means of the PPAAUS Form 8R (Swisher, 1983), were analyzed using SAS. In order to obtain the Chi Square value of each item analyzed, the observed frequency minus the expected frequency, was squared, then divided by the expected frequency for all the cells within this study. From this, the relationship was determined between (1) the four categories of independent variables of the intent to drive
after drinking and the six categories of the self-reported driving after drinking practices and
(2) the categories of the dependent variables of gender, grade, grade average, school
climate, negative behaviors, intent to use substances, actual use of substances, activities
involvement, reasons for not using drugs, and to whom they turn to if they have
problems. Grade level groups were identified and commands were entered into the
analysis protocol to group students into grades 6-9 and grades 10-12.

Summary

This chapter has described the methodology used to conduct the study. Chapter IV
offers the findings of the study as they relate to the questions in the statement of the
problem.
It was the purpose of this study to investigate the relationship among various demographic, attitudinal and behavioral variables and the behavioral intention and self reported drinking and driving behaviors of Ohio adolescents enrolled in schools participating in a Drug Free Schools Consortium and determine from these data the most effective education and prevention program activities for addressing substance use issues.

Data were collected by means of the Primary Prevention Awareness, Attitude, and Usage Scales Form R (PPAAUS) (Swisher, 1983). In the Franklin County Schools, 61,257 students completed the questionnaire: 7970 sixth graders, 9029 seventh graders, 9050 eighth graders, 8831 ninth graders, 8753 tenth graders, 8347 11th graders and 7978 twelfth graders. (1109 students did not fill in their grade). 48.5 percent are males, and 51.4 are females. Statistical analyses were conducted on a stratified random sample of approximately eight-percent of participants, yielding a sample population of 4938 students. For this particular study the sample population being used is 4809 students. The composition of the sample is 619 sixth graders, 666 seventh graders, 781 eighth graders, 731 ninth graders, 677 tenth graders, 688 eleventh graders and 630 twelfth graders.

This chapter offers the findings from the analyses of data. These findings are presented as they relate to each of the research questions posed in the statement of the problem. The data are presented in tables and discussed in the text following each table. The chapter is divided into two sections. The first section contains the findings from the analysis of data for grades 10, 11, and 12. In this first section, the information examined for the PPAAUS survey questions for (1) intent to drink and drive, and (2) actual drinking
and driving. For each of these questions, the responses from seven questions are provided. These cover the areas of (a) Grade, (b) Gender, (c) Grade point average, (d) School climate, (e) Negative behaviors, (f) Intent to use substances, (g) Actual Use, (h) Activities involvement, (i) Reasons for not using drugs, and (j) To whom they would turn for help. The second section presents the findings for the data from grades 6, 7, 8, and 9. For the second section, grades 6, 7, 8, and 9, the questions are examined for Intent to drink and drive.

**Survey Groups by Intent and Actual Driving After Drinking**

The following tables provide the number and percent of Groups by grade levels 10, 11, and 12 and 6, 7, 8, and 9 for the intent and actual driving after drinking.

**Table 1**
Frequency and Percent for Intent to Drink and Drive for Boys and Girls Grades 6, 7, 8, 9

<table>
<thead>
<tr>
<th>Intent to Drive</th>
<th>6</th>
<th></th>
<th>7</th>
<th></th>
<th>8</th>
<th></th>
<th>9</th>
<th></th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>G</td>
<td></td>
<td>B</td>
<td></td>
<td>G</td>
<td></td>
<td>B</td>
<td></td>
</tr>
<tr>
<td><strong>Never</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>218</td>
<td>214</td>
<td>195</td>
<td>210</td>
<td>209</td>
<td>260</td>
<td>171</td>
<td>195</td>
<td>1672</td>
</tr>
<tr>
<td>%</td>
<td>37.5</td>
<td>36.8</td>
<td>30.5</td>
<td>32.9</td>
<td>27.8</td>
<td>34.6</td>
<td>25.2</td>
<td>28.8</td>
<td>63.1</td>
</tr>
<tr>
<td><strong>Probably Not</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>64</td>
<td>60</td>
<td>71</td>
<td>102</td>
<td>108</td>
<td>108</td>
<td>119</td>
<td>113</td>
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</tr>
<tr>
<td>%</td>
<td>11.0</td>
<td>10.3</td>
<td>11.1</td>
<td>15.9</td>
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<td>14.4</td>
<td>17.5</td>
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<td></td>
</tr>
<tr>
<td>N</td>
<td>15</td>
<td>7</td>
<td>38</td>
<td>15</td>
<td>31</td>
<td>27</td>
<td>49</td>
<td>21</td>
<td>203</td>
</tr>
<tr>
<td>%</td>
<td>2.5</td>
<td>1.2</td>
<td>5.9</td>
<td>2.3</td>
<td>4.1</td>
<td>3.6</td>
<td>7.2</td>
<td>3.1</td>
<td>7.6</td>
</tr>
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<td><strong>Definitely Yes</strong></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>5</td>
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<td>26</td>
</tr>
<tr>
<td>%</td>
<td>0.3</td>
<td>0.1</td>
<td>0.9</td>
<td>0.1</td>
<td>0.5</td>
<td>0.4</td>
<td>0.7</td>
<td>0.5</td>
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<td>328</td>
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<td>398</td>
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<td>11.4</td>
<td>10.6</td>
<td>11.7</td>
<td>12.4</td>
<td>13.3</td>
<td>15</td>
<td>13</td>
<td>12.6</td>
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</tbody>
</table>
Table 2
Frequency and Percent for Intent to Drink and Drive
for Boys and Girls Grades 10, 11, 12

<table>
<thead>
<tr>
<th>Intent to Drive</th>
<th>10</th>
<th></th>
<th>11</th>
<th></th>
<th>12</th>
<th></th>
<th>Totals</th>
</tr>
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<td>B</td>
<td>G</td>
<td>B</td>
<td>G</td>
<td>B</td>
<td>G</td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>145</td>
<td>199</td>
<td>153</td>
<td>184</td>
<td>95</td>
<td>164</td>
<td>940</td>
</tr>
<tr>
<td>%</td>
<td>22.7</td>
<td>31.2</td>
<td>23.8</td>
<td>28.6</td>
<td>15.7</td>
<td>27.2</td>
<td>49.9</td>
</tr>
<tr>
<td>Probably Not</td>
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<td></td>
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<td></td>
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<td>579</td>
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<td>%</td>
<td>17.1</td>
<td>15.0</td>
<td>11.9</td>
<td>14.8</td>
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<td>18.7</td>
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</tr>
<tr>
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<td>%</td>
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<td>5.6</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>5</td>
<td>1</td>
<td>19</td>
<td>8</td>
<td>13</td>
<td>6</td>
<td>52</td>
</tr>
<tr>
<td>%</td>
<td>0.7</td>
<td>0.1</td>
<td>2.9</td>
<td>1.2</td>
<td>2.1</td>
<td>1.0</td>
<td>2.9</td>
</tr>
<tr>
<td>Total</td>
<td>305</td>
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<td>313</td>
<td>329</td>
<td>262</td>
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<td>1882</td>
</tr>
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<td></td>
<td>16.3</td>
<td>17.6</td>
<td>16.6</td>
<td>17.4</td>
<td>13.9</td>
<td>18.2</td>
<td></td>
</tr>
</tbody>
</table>

Tables 1 and 2 list the number and percent of boys and girls in the grades for each of the two survey groups. These numbers were derived from the response on the item which lists gender for each grade level. The total number of students for the chi square analyses may vary from these numbers depending on the missing data for that particular chi square analysis.
Table 3 provides the data for boys and girls in grades ten, eleven and twelve for each of the groups formed to represent actual use. These data were also obtained from the item on the survey which identifies gender. The total may differ from that indicated for the actual group used in the chi square analysis of any given question.
**Intent to Drink and Drive Grades 10, 11, 12**

The four groups for grades 10, 11, and 12, identified with regard to intent to drink and drive were determined from the data indicated in the above tables. A chi square analysis was performed for these groups and the PPAAUS variables identified in the statement of the problem. Summary data are reported in Tables 4 through 12 as follows. Chi square data are available from the investigator upon request.

Table 4

<table>
<thead>
<tr>
<th>Table 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degrees of Freedom, Chi Square and Significance Level of Items for Intent to Drink and Drive and Gender, Grade and Grade Average Grades 10,11,12 (N=1937)</td>
</tr>
<tr>
<td>DF</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Grade</td>
</tr>
<tr>
<td>Grade Average</td>
</tr>
</tbody>
</table>

Table 1 indicates that significant differences exist between students' intent to drink and drive and gender ($X^2=33.1$, $P<.001$), grade ($X^2=38.2$, $P<.001$) and grade average ($X^2=65.1$, $P<.001$).

With regard to gender differences, it appears that a higher percentage of females intend never to drink and drive, Group 1 (N), as compared to a higher percentage of males that do intend to drive after consuming two or more drinks, Groups 2, 3, 4. Grade differences seem to indicate that as grade level increases so do students' intentions to drive after drinking. However, the overlap of grade level for Groups 1(N) with Group 2(PN) was still evident. Grade average differences appear to indicate that students in Groups 1 and report having higher grade point averages than do Groups 3 and 4.
Table 5

Degrees of Freedom, Chi Square and Significance Level of Items for Intent to Drink and Drive and Attitudes Toward School Grades 10,11,12 (N=1937)

<table>
<thead>
<tr>
<th>School Climate</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feelings About School</td>
<td>6</td>
<td>50.1</td>
<td>.001</td>
</tr>
<tr>
<td>Feelings About Teachers</td>
<td>6</td>
<td>36.8</td>
<td>.001</td>
</tr>
<tr>
<td>Feelings About Subjects</td>
<td>6</td>
<td>57.8</td>
<td>.001</td>
</tr>
<tr>
<td>Feelings About Classmates</td>
<td>6</td>
<td>8.0</td>
<td>.235</td>
</tr>
</tbody>
</table>

Significant differences exist between the intent to drink and drive and Feelings about school ($X^2=50.1$, $P<.001$), Feelings about teachers ($X^2=36.8$, $P<.001$) and Feelings about subjects ($X^2=57.8$, $P<.001$).

The chi square data reflected in Table 5 show that a larger percentage of students who report an intention to never drive after having two or more drinks, Group 1(N), have more positive feelings about school, feel teachers are more helpful, and report their subjects more interesting. No significant differences were found among the four groups and their feelings that their peers were friendly.

Table 6

Degrees of Freedom, Chi Square and Significance Level of Items for Intent to Drink and Drive and Negative Behaviors Grades 10,11,12 (N=1937)

<table>
<thead>
<tr>
<th>Negative Behaviors</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sent Out Of Class</td>
<td>12</td>
<td>149.1</td>
<td>.001</td>
</tr>
<tr>
<td>Damaged Something</td>
<td>12</td>
<td>142.2</td>
<td>.001</td>
</tr>
<tr>
<td>Taken From Someone</td>
<td>12</td>
<td>121.1</td>
<td>.001</td>
</tr>
<tr>
<td>Taken From Store</td>
<td>12</td>
<td>143.7</td>
<td>.001</td>
</tr>
<tr>
<td>Cheated On Test</td>
<td>12</td>
<td>213.3</td>
<td>.001</td>
</tr>
<tr>
<td>Been High On Drugs</td>
<td>12</td>
<td>288.1</td>
<td>.001</td>
</tr>
<tr>
<td>Been Drunk</td>
<td>12</td>
<td>524.2</td>
<td>.001</td>
</tr>
<tr>
<td>Stayed Out All Night</td>
<td>12</td>
<td>166.8</td>
<td>.001</td>
</tr>
<tr>
<td>Broken School Property</td>
<td>12</td>
<td>116.0</td>
<td>.001</td>
</tr>
</tbody>
</table>
Significant differences (P<.001) exist between students' intent to drink and drive and all negative behaviors identified on the survey are shown in Table 6. Chi square values for these variables are as follows: Being sent out of class ($X^2=149.1$), Damaging something ($X^2=142.2$), Taking something from someone ($X^2=121.1$), Taking something from a store ($X^2=143.7$), Cheating on a test ($X^2=213.3$), Being high on drugs ($X^2=288.1$), Being drunk ($X^2=524.2$), Staying out all night ($X^2=166.8$) and Breaking school property ($X^2=116.0$).

With regard to negative and disruptive behaviors, the students who never intend to drink and drive, Group 1(N), were significantly less likely than the other groups to report being sent out of class, never damaging something on purpose, never taking something from someone else, never taking things from a store, never been high on drugs, never breaking school property, and never staying out all night without parents' permission.

The significant differences for two behaviors, cheating on a test and getting drunk, were found between the two groups of students who never intend to drink and drive and those would probably not, Groups 1(N) and 2(PN), who were less likely to report either behavior than were Groups 3(PY) and 3(DY).

Table 7

Degrees of Freedom, Chi Square and Significance Level of Items for Intent to Drink and Drive and Activity Involvement

<table>
<thead>
<tr>
<th>Activity</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entertainment/Social</td>
<td>12</td>
<td>60.3</td>
<td>.001</td>
</tr>
<tr>
<td>Academic</td>
<td>12</td>
<td>105.4</td>
<td>.001</td>
</tr>
<tr>
<td>Sports</td>
<td>12</td>
<td>24.5</td>
<td>.017</td>
</tr>
<tr>
<td>Religious activities</td>
<td>12</td>
<td>40.1</td>
<td>.001</td>
</tr>
<tr>
<td>Extracurricular Activities</td>
<td>12</td>
<td>27.5</td>
<td>.006</td>
</tr>
<tr>
<td>Vocational Activities</td>
<td>12</td>
<td>31.2</td>
<td>.002</td>
</tr>
</tbody>
</table>
Table 7 reports that significant differences exist between students’ intent to drink and drive and their involvement in activities identified on the Survey. Entertainment/social activity involvement ($X^2=60.3, P<.001$), Academic involvement ($X^2=105.4, P<.001$), Sports involvement ($X^2=24.5, P<.017$), Religious activities ($X^2=40.1, P<.001$) Extracurricular Activities ($X^2=27.5, P<.006$). Vocational activities ($X^2=31.2, P<.002$).

Significant differences between Group 1(N) and the other groups indicated less participation in entertainment and social activities, more participation in academic activities, and more participation in religious activities on the part of those Group 1(N) students.

While differences were found for the four groups with regard to sports and extracurricular activities they were differences wherein both Groups 1(N) and 2(PN) were likely to participate in extracurricular activities than the other two. With regard to engaging in vocational activities while differences were fond for the frequency of such activities no clear cut pattern among the four groups emerged.

Participation in sports seemed to be related to intent to drink and drive in that both Group 1(N) and Groups 3(PY) and 4(DY) were less likely to participate in sports than was the probably no group, Group 2(PN).

Table 8

| Degrees of Freedom, Chi Square and Significance Level of Items for Intent to Drink and Drive and Reasons Not To Use Grades 10,11,12 (N=1937) |
|--------------------------------------------------|-----------|-----------|-----------|
| Reasons                                          | DF        | Chi Square| Sig. Level|
| Understanding Of Effects                          | 9         | 163.5     | .001      |
| Self-confidence                                   | 9         | 194.7     | .001      |
| Acceptance By Friends                             | 9         | 73.0      | .001      |
| Ability To Cope                                   | 9         | 98.3      | .001      |
| Fun Things To Do                                  | 9         | 36.1      | .001      |
| Adult Modeling                                    | 9         | 59.7      | .001      |
| School Policy                                     | 9         | 118.9     | .001      |
Significant differences ($P<.001$) exist between intent to drink and drive and students' reported reasons for not using alcohol or other drugs are reported in Table 8. Chi square values for these reasons are Understanding the effects of drugs ($X^2=163.5$), Self-confidence ($X^2=194.7$), Acceptance by friends ($X^2=73.0$), Ability to cope ($X^2=98.3$), Having fun things to do ($X^2=36.1$), Adult modeling ($X^2=59.7$) and Having a strict school policy ($X^2=118.9$).

Significant differences were found between Group 1(N) and the other three groups on their high importance given to knowledge of effects, self-confidence, firm consistent policy, being able to cope with stress, and having fun things to do, and being accepted by others as reasons for not drinking or using drugs. Both Group 1(N) and Group 2(PN) were equally more likely to feel that having adult role models was very important than Group 3(PY) and Group 4(DY).

Table 9

<table>
<thead>
<tr>
<th>Intent to Use</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarettes</td>
<td>9</td>
<td>194.7</td>
<td>.001</td>
</tr>
<tr>
<td>Smokeless Tobacco</td>
<td>9</td>
<td>131.2</td>
<td>.001</td>
</tr>
<tr>
<td>Beer</td>
<td>9</td>
<td>221.3</td>
<td>.001</td>
</tr>
<tr>
<td>Liquor</td>
<td>9</td>
<td>329.6</td>
<td>.001</td>
</tr>
<tr>
<td>Marijuana</td>
<td>9</td>
<td>264.0</td>
<td>.001</td>
</tr>
<tr>
<td>Inhalants</td>
<td>9</td>
<td>153.7</td>
<td>.001</td>
</tr>
<tr>
<td>Menotropins</td>
<td>9</td>
<td>70.4</td>
<td>.001</td>
</tr>
<tr>
<td>Depressants</td>
<td>9</td>
<td>87.9</td>
<td>.001</td>
</tr>
<tr>
<td>LSD</td>
<td>9</td>
<td>117.8</td>
<td>.001</td>
</tr>
<tr>
<td>Stimulants</td>
<td>9</td>
<td>140.1</td>
<td>.001</td>
</tr>
<tr>
<td>Cocaine</td>
<td>9</td>
<td>85.6</td>
<td>.001</td>
</tr>
</tbody>
</table>

Table 9 shows that significant differences ($P<.001$) exist between the intention to drink and drive and students reported intent to use cigarettes, smokeless tobacco, beer,
wine, liquor, marijuana, inhalants, menotropins, depressants, LSD, stimulants and cocaine. Chi square values for these intentions are Intention to use cigarettes ($X^2=194.7$), Intention to use smokeless tobacco ($X^2=131.2$), Intention to use beer ($X^2=335.0$), Intention to use wine ($X^2=221.3$), Intention to use liquor ($X^2=329.6$), Intention to use marijuana ($X^2=264.0$), Intention to use inhalants ($X^2=153.7$), Intention to use menotropins ($X^2=70.4$), Intention to use depressants ($X^2=87.9$), Intention to use LSD ($X^2=117.8$), Intention to use stimulants ($X^2=140.1$) and Intention to use cocaine ($X^2=85.6$).

The significance of differences for the intent to use of alcohol and other drugs seemed to be in two patterns. In one pattern Group 1(N) was significantly less likely than the other three groups to intend to use marijuana, stimulants, cigarettes, smokeless tobacco, inhalants, depressants, or report intending to take the false drug item, menotropins.

In the second pattern, the differences between the groups indicated the same trend that the less likely to drink and drive the less the intent to use all drugs. However, the significant differences with regard to intent use acid, cocaine, beer, wine and liquor indicated an overlap of Group 2(PN) with each the other three groups.
Table 10

Degrees of Freedom, Chi Square and Significance Level of Items for Intent to Drink and Drive and Actual Use Of Drugs Grades 10,11,12 (N=1937)

<table>
<thead>
<tr>
<th>Reported Use</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarette</td>
<td>15</td>
<td>238.8</td>
<td>.001</td>
</tr>
<tr>
<td>Snuff</td>
<td>15</td>
<td>150.4</td>
<td>.001</td>
</tr>
<tr>
<td>Beer</td>
<td>15</td>
<td>579.5</td>
<td>.001</td>
</tr>
<tr>
<td>Wine</td>
<td>15</td>
<td>372.6</td>
<td>.001</td>
</tr>
<tr>
<td>Liquor</td>
<td>15</td>
<td>444.1</td>
<td>.001</td>
</tr>
<tr>
<td>Marijuana</td>
<td>15</td>
<td>313.5</td>
<td>.001</td>
</tr>
<tr>
<td>Inhalants</td>
<td>15</td>
<td>130.7</td>
<td>.001</td>
</tr>
<tr>
<td>Menotropins</td>
<td>3</td>
<td>21.3</td>
<td>.001</td>
</tr>
<tr>
<td>Depressant</td>
<td>15</td>
<td>62.1</td>
<td>.001</td>
</tr>
<tr>
<td>LSD</td>
<td>15</td>
<td>157.9</td>
<td>.001</td>
</tr>
<tr>
<td>Stimulant</td>
<td>15</td>
<td>131.8</td>
<td>.001</td>
</tr>
<tr>
<td>Cocaine</td>
<td>15</td>
<td>106.1</td>
<td>.001</td>
</tr>
</tbody>
</table>

Significant differences (P<.001) exist between student intent to drive after having two or more drinks and self-reported use of cigarettes, smokeless tobacco, beer, wine, liquor, marijuana, inhalants, menotropins, depressants, LSD, stimulants and cocaine as shown in Table 10. Chi square values for self-reported use are as follows: Cigarettes ($X^2=238.8$), Smokeless Tobacco ($X^2=150.4$), Beer ($X^2=579.5$), Wine ($X^2=372.6$), Liquor ($X^2=444.1$), Marijuana ($X^2=313.5$), Inhalants ($X^2=130.7$), Menotropins ($X^2=21.3$), Depressant ($X^2=62.1$), LSD ($X^2=157.9$), Stimulants ($X^2=131.8$), and Cocaine ($X^2=106.1$)

With regard to reported actual use of drugs, the students in Group 1(N) reported more often than the other three groups to use less frequently, stimulants, LSD, depressants, inhalants, smokeless tobacco, and marijuana, and less like to report using the false drug item, menotropins.

While there was still a trend toward more use of drugs with increased likelihood of intention to drinking and driving, there was overlap between Group 1(N) and Group
2(PN) when compared to Group 3(PY) and Group 4(DY) with regard to frequency of use of liquor, wine, beer, cocaine, and cigarettes.

Table 11

Degrees of Freedom, Chi Square and Significance Level of Items for Intent to Drink and Drive and Who To Turn To With A Problem Grades 10,11,12
(N=1937)

<table>
<thead>
<tr>
<th>Turn to with a Problem</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer</td>
<td>3</td>
<td>4.6</td>
<td>.202</td>
</tr>
<tr>
<td>Parent</td>
<td>3</td>
<td>37.8</td>
<td>.001</td>
</tr>
<tr>
<td>Teacher</td>
<td>3</td>
<td>18.8</td>
<td>.001</td>
</tr>
<tr>
<td>School Counselor</td>
<td>3</td>
<td>42.6</td>
<td>.001</td>
</tr>
<tr>
<td>Administrator</td>
<td>3</td>
<td>35.9</td>
<td>.001</td>
</tr>
<tr>
<td>Police</td>
<td>3</td>
<td>22.9</td>
<td>.001</td>
</tr>
<tr>
<td>Adults</td>
<td>3</td>
<td>7.9</td>
<td>.047</td>
</tr>
<tr>
<td>Doctor</td>
<td>3</td>
<td>14.8</td>
<td>.002</td>
</tr>
<tr>
<td>Drug Counselor</td>
<td>3</td>
<td>42.9</td>
<td>.001</td>
</tr>
</tbody>
</table>

Table 11 indicates significant differences exist between the intention to drive a car after having two or more drinks and who students would turn to if they had a problem with drugs. Chi square values are Turning to parents ($X^2=4.6, P<.001$), Turning to a teacher ($X^2=18.8, P<.001$), Turning to a school counselor ($X^2=42.6, P<.001$), Turning to a school administrator ($X^2=35.9, P<.001$), Turning to police ($X^2=22.9, P<.001$), Turning to adults ($X^2=7.9, P<.047$), Turning to a doctor ($X^2=14.8, P<.002$), and Turning to a drug counselor ($X^2=42.9, P<.001$).

The chi square data reflected in summary data in Table 11 show that students in Group 1(N) would, more often than the other three groups, turn for help with an alcohol or other drug problem to parents, police, school counselor, teacher, and school administrator. Both Group 1(N) and Group 2(PN) would less likely turn to a drug counselor or a doctor than would Group 3(PY) and Group 4(DY). The Group 2(PN) was more likely than any of the other groups to turn to an adult.
Interestingly, no significant differences were found among the groups in the extent to which they would turn to a peer or help.

Admitted to Drinking and Driving Grade 10, 11, 12

The following tables provide the analyses for actual drinking and driving behaviors as they relate to the variables identified for study for adolescents in grades 10, 11, and 12. These actual or admitted drinking and driving behaviors examined are those obtained from the self-report survey. Six groups were identified for analysis as indicated in Table 3. The group of students who report drinking once a day, Group 6(D) was too infrequent to include in the analysis. Therefore, the significance of differences was noted for the five groups of Group 1(N) never; Group 2(NY), not within the last year; Group 3(Y) once or twice in the last year; Group 4(M), once or twice in the last month; and Group 5(W) once or twice in the last week.

Table 12

<table>
<thead>
<tr>
<th>Degrees of Freedom, Chi Square and Significance Level of Items for Admitted to Drinking and Driving and Gender, Grade, and Grade Average</th>
<th>Grades 10,11,12</th>
<th>(N=1937)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DF</td>
<td>Chi Square</td>
<td>Sig. Level</td>
</tr>
<tr>
<td>Gender</td>
<td>5</td>
<td>30.6</td>
</tr>
<tr>
<td>Grade</td>
<td>10</td>
<td>148.6</td>
</tr>
<tr>
<td>Grade Average</td>
<td>30</td>
<td>91.3</td>
</tr>
</tbody>
</table>

Table 12 indicates that significant differences exist between students' driving a car after having two or more drinks and gender ($X^2=30.6$, $P<.001$), grade ($X^2=148.6$, $P<.001$), and grade average ($X^2=91.3$, $P<.001$).

With regard to gender differences, it appears that females were significantly more likely to be found in Group 1(N) as males. Grade level differences seem to indicate that as
grade level increases so does the frequency at which students report driving after drinking. There are proportionately more tenth graders in Group 1(N), the never drink and drive group. Grade average differences appear to indicate that as grade point averages decrease, driving a car after drinking increases. The relationship, however, seemed to be more linear across levels than related to placement in any one of the drinking and driving groups.

Table 13

Degrees of Freedom, Chi Square and Significance Levels of Items for Admitted to Drinking and Driving and Attitudes Toward School Grades 10,11,12 (N=1937)

<table>
<thead>
<tr>
<th>Climate</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeling About School</td>
<td>10</td>
<td>51.2</td>
<td>.001</td>
</tr>
<tr>
<td>Feelings About Teachers</td>
<td>10</td>
<td>41.6</td>
<td>.001</td>
</tr>
<tr>
<td>Feelings About Subjects</td>
<td>10</td>
<td>26.1</td>
<td>.004</td>
</tr>
<tr>
<td>Feelings About Classmates</td>
<td>10</td>
<td>3.7</td>
<td>.959</td>
</tr>
</tbody>
</table>

Significant differences exist between driving a car after having two or more drinks and Feelings about school ($X^2=51.2$, $P<.001$), Feelings about teachers ($X^2=41.6$, $P<.001$) and Feelings about subjects ($X^2=26.1$, $P<.004$).

The chi square data reflected in Table 13 show that a larger percentage of students in Group 1(N) were more likely to feel school is a pleasant place to be and that their teachers are helpful than the other groups. Both Group 1(N) and Group 2(NY) have a greater tendency to feel subjects are interesting rather than boring.

No significant differences were found among the groups with regard to their feelings that their peers are friendly.
Table 14

Degrees of Freedom, Chi Square and Significance Level of Items for Admitted to Drinking and Driving and Negative Behaviors Grades 10,11,12 (N=1937)

<table>
<thead>
<tr>
<th>Negative Behaviors</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sent Out Of Class</td>
<td>20</td>
<td>126.5</td>
<td>.001</td>
</tr>
<tr>
<td>Damaged Something</td>
<td>20</td>
<td>113.3</td>
<td>.001</td>
</tr>
<tr>
<td>Taken From Someone</td>
<td>20</td>
<td>66.3</td>
<td>.001</td>
</tr>
<tr>
<td>Taken From Store</td>
<td>20</td>
<td>93.9</td>
<td>.001</td>
</tr>
<tr>
<td>Cheated On Test</td>
<td>20</td>
<td>156.2</td>
<td>.001</td>
</tr>
<tr>
<td>Been High On Drugs</td>
<td>20</td>
<td>440.6</td>
<td>.001</td>
</tr>
<tr>
<td>Been Drunk</td>
<td>20</td>
<td>779.8</td>
<td>.001</td>
</tr>
<tr>
<td>Stayed Out All Night</td>
<td>20</td>
<td>209.1</td>
<td>.001</td>
</tr>
<tr>
<td>Broken School Property</td>
<td>20</td>
<td>123.6</td>
<td>.001</td>
</tr>
</tbody>
</table>

Table 14 shows that significant differences (P<.001) exist between students' driving after having two or more drinks and all negative behaviors identified on the survey. Chi square values for these variables are as follows: Being sent out of class ($X^2=126.5$), Damaging something ($X^2=113.3$), Taking something from someone ($X^2=66.3$), Taking something from a store ($X^2=93.9$), Cheating on a test ($X^2=156.2$), Being high on drugs ($X^2=440.6$), Being drunk ($X^2=779.8$), Staying out all night ($X^2=209.1$) and Breaking school property ($X^2=123.6$).

With respect to negative behaviors, those students in Group 1(N) were significantly more likely to report never having been sent out of class by a teacher, never having damaged something, never taking something from someone, never taking something from a store, never been high on drugs, never stayed out all night without parents permission and never having broken school property.

Both Group 1(N) and Group 2(NY) were more likely to report not having been drunk at all or within the last year. The response to having cheated on a test was more
linear in that the less likely the student was to have driven after drinking, the less likely to have cheated on a test. However, no significant differences were clearly noted by groups.

Table 15

Degrees of Freedom, Chi Square and Significance Level of Items for Admitted to Drinking and Driving and Activity Involvement Grades 10,11,12 (N=1937)

<table>
<thead>
<tr>
<th>Activities</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entertainment/Social</td>
<td>20</td>
<td>98.0</td>
<td>.001</td>
</tr>
<tr>
<td>Academic</td>
<td>20</td>
<td>101.3</td>
<td>.001</td>
</tr>
<tr>
<td>Sports</td>
<td>20</td>
<td>22.6</td>
<td>.307</td>
</tr>
<tr>
<td>Religious Activities</td>
<td>20</td>
<td>80.1</td>
<td>.001</td>
</tr>
<tr>
<td>Extracurricular Activities</td>
<td>20</td>
<td>24.0</td>
<td>.238</td>
</tr>
<tr>
<td>Vocational Activities</td>
<td>20</td>
<td>47.9</td>
<td>.001</td>
</tr>
</tbody>
</table>

Table 15 indicates that significant differences exist between students' driving after having two or more drinks and Entertainment/social activity involvement ($X^2=98.0$, $P<.001$), Academic involvement ($X^2=101.3$, $P<.001$), Religious activities ($X^2=80.1$, $P<.001$) and Vocational activities ($X^2=47.9$, $P<.001$).

Students in Group 1(N) were more likely to report engaging in academic activities daily and participating in entertainment or social activities once or twice a month than were the other four groups.

While differences among the drinking and driving groups were significant with regard to religious activities, the relationship appears to be one where less frequent drinking and driving is related to more frequent attendance at religious activities. The differences with regard to vocational behavior seems to indicate that both Group 1(N) and Groups 4(M) and 5(W) the more frequent drinking drivers, were less likely to engage in vocational activities for pay than groups 2(NY) and 3(Y).
There was no significant relationship between the drinking and driving groups and participation in extracurricular activities and sports.

Table 16

Degrees of Freedom, Chi Square and Significance Level of Items for Admitted to Drinking and Driving and Reason Not To Use Drugs Grades 10,11,12 (N=1937)

<table>
<thead>
<tr>
<th>Reasons</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding Effects</td>
<td>15</td>
<td>102.6</td>
<td>.001</td>
</tr>
<tr>
<td>Self-confidence</td>
<td>15</td>
<td>119.2</td>
<td>.001</td>
</tr>
<tr>
<td>Acceptance By Friends</td>
<td>15</td>
<td>30.6</td>
<td>.010</td>
</tr>
<tr>
<td>Ability To Cope</td>
<td>15</td>
<td>44.4</td>
<td>.001</td>
</tr>
<tr>
<td>Fun Things To Do</td>
<td>15</td>
<td>20.6</td>
<td>.148</td>
</tr>
<tr>
<td>Adult Modeling</td>
<td>15</td>
<td>61.4</td>
<td>.001</td>
</tr>
<tr>
<td>School Policy</td>
<td>15</td>
<td>82.8</td>
<td>.001</td>
</tr>
</tbody>
</table>

Significant differences exist between students' driving after drinking two or more drinks and their reason to not use drugs, Table 16. Chi square values for these reasons are Understanding the effects of drugs ($X^2=102.6$, $P<.001$), Self-confidence ($X^2=119.2$, $P<.001$), Acceptance by friends ($X^2=30.6$, $P<.010$), Ability to cope ($X^2=44.4$, $P<.001$), Adult modeling ($X^2=61.4$, $P<.001$) and Having a strict school policy ($X^2=82.8$, $P<.001$).

Significant differences were found between Group 1(N) and the other groups with regard to the reasons for not using drugs. That group more frequently reported very important for knowledge of the effects of drugs, self-confidence, and ability to cope with pressure than did the other four groups.

Both Group 1(N) and Group 2(Y) were similar in rating being accepted by friends as very important more often than the other groups. There is also a pattern indicating those two groups felt that a firm consistent policy and having adult role models were a very important reason to greater extent than the others.
No significant differences were found among the groups with regard to having fun things to do as reason for making a decision about using drugs.

Table 17

Degrees of Freedom, Chi Square and Significance Level of Items for Admitted to Drinking and Driving and Intent To Use Drugs Grades 10,11,12 (N=1937)

<table>
<thead>
<tr>
<th>Intent to Use</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarettes</td>
<td>15</td>
<td>180.1</td>
<td>.001</td>
</tr>
<tr>
<td>Smokeless Tobacco</td>
<td>15</td>
<td>135.2</td>
<td>.001</td>
</tr>
<tr>
<td>Beer</td>
<td>15</td>
<td>230.0</td>
<td>.001</td>
</tr>
<tr>
<td>Wine</td>
<td>15</td>
<td>98.5</td>
<td>.001</td>
</tr>
<tr>
<td>Liquor</td>
<td>15</td>
<td>257.0</td>
<td>.001</td>
</tr>
<tr>
<td>Marijuana</td>
<td>15</td>
<td>289.7</td>
<td>.001</td>
</tr>
<tr>
<td>Inhalants</td>
<td>15</td>
<td>133.2</td>
<td>.001</td>
</tr>
<tr>
<td>Menotropins</td>
<td>15</td>
<td>103.6</td>
<td>.001</td>
</tr>
<tr>
<td>Depressants</td>
<td>15</td>
<td>94.8</td>
<td>.001</td>
</tr>
<tr>
<td>LSD</td>
<td>15</td>
<td>170.4</td>
<td>.001</td>
</tr>
<tr>
<td>Stimulants</td>
<td>15</td>
<td>140.5</td>
<td>.001</td>
</tr>
<tr>
<td>Cocaine</td>
<td>15</td>
<td>109.4</td>
<td>.001</td>
</tr>
</tbody>
</table>

Significant differences (P<.001) exist between students' driving after drinking two or more drinks and students intent to use cigarettes, smokeless tobacco, beer, wine, liquor, marijuana, inhalants, menotropins, depressants, LSD, stimulants and cocaine, Table 17. Chi square values for these intentions are Intention to use cigarettes ($X^2=180.1$), Intention to use smokeless tobacco ($X^2=135.2$), Intent to use Beer ($X^2=230.0$), Intention to use wine ($X^2=98.5$), Intention to use Liquor ($X^2=257.0$), Intention to use Marijuana ($X^2=289.7$), Intent to use Inhalants ($X^2=133.2$), Intention to use Menotropins ($X^2=103.6$), Intention to use depressants ($X^2=94.8$), Intention to use LSD ($X^2=170.4$), Intention to use stimulants and Intention to use Cocaine ($X^2=109.4$).

Those students in Group 1(N) who report never driving after drinking two or more drinks, indicate that they would never or only under a doctors orders intend to use
cigarettes, smokeless tobacco, marijuana, inhalants, LSD, stimulants, cocaine, and the false item menotropins to a significantly greater extent than do the other groups.

Both Group 1(N) and Group 2(NY) were more likely to have never or not within the last year intend to use liquor, beer, and wine than the other three groups.

A less clear pattern emerges for the significant differences with regard to intent to use depressants, although differences appear to be related to likelihood of intent to use.

Table 18

Degrees of Freedom, Chi Square and Significance Level of Items for Admitted to Drinking and Driving and Actual Use Of Drugs Grades 10,11,12 (N=1937)

<table>
<thead>
<tr>
<th>Reported Use</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarette</td>
<td>25</td>
<td>250.1</td>
<td>.001</td>
</tr>
<tr>
<td>Smokeless tobacco</td>
<td>25</td>
<td>180.4</td>
<td>.001</td>
</tr>
<tr>
<td>Beer</td>
<td>25</td>
<td>795.9</td>
<td>.001</td>
</tr>
<tr>
<td>Wine</td>
<td>25</td>
<td>499.2</td>
<td>.001</td>
</tr>
<tr>
<td>Liquor</td>
<td>25</td>
<td>617.9</td>
<td>.001</td>
</tr>
<tr>
<td>Marijuana</td>
<td>25</td>
<td>461.2</td>
<td>.001</td>
</tr>
<tr>
<td>Inhalants</td>
<td>25</td>
<td>141.9</td>
<td>.001</td>
</tr>
<tr>
<td>Menotropins</td>
<td>5</td>
<td>48.2</td>
<td>.001</td>
</tr>
<tr>
<td>Depressant</td>
<td>25</td>
<td>92.5</td>
<td>.001</td>
</tr>
<tr>
<td>LSD</td>
<td>25</td>
<td>389.2</td>
<td>.001</td>
</tr>
<tr>
<td>Stimulant</td>
<td>25</td>
<td>258.3</td>
<td>.001</td>
</tr>
<tr>
<td>Cocaine</td>
<td>25</td>
<td>480.3</td>
<td>.001</td>
</tr>
</tbody>
</table>

Significant differences (P<.001) exist between students' driving after drinking and self-reported use of cigarettes, smokeless tobacco, beer, wine, liquor, marijuana, inhalants, menotropins, depressants, LSD, stimulants and cocaine, Table 18. Chi square values for self-reported use are as follows: cigarettes ($X^2=250.1$), Smokeless tobacco ($X^2=180.4$), Beer ($X^2=795.9$), Wine ($X^2=499.2$), Liquor ($X^2=617.9$), Marijuana ($X^2=461.2$), Inhalants ($X^2=141.9$), Menotropins ($X^2=48.2$), Depressants ($X^2=92.5$), LSD ($X^2=389.2$), Stimulants ($X^2=258.3$) and Cocaine ($X^2=480.3$).
With regard to reported actual use of drugs, those students who report that they have never driven after drinking, Group 1(N) also report more often that they have never used smokeless tobacco, marijuana, inhalants, depressants, LSD, stimulants, cocaine, and the false item drug, menotropins. Groups 1(N) and 2(NY) were also significantly different from the others in the reported use at all of cigarettes.

There is a significant positive relationship between frequency of drinking and driving and frequency of using beer, wine and liquor, although these differences are not significant strictly by membership in one of the drinking and driving groups.

Table 19

<table>
<thead>
<tr>
<th>Turn to for Help</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer</td>
<td>5</td>
<td>6.1</td>
<td>.291</td>
</tr>
<tr>
<td>Parent</td>
<td>5</td>
<td>21.4</td>
<td>.001</td>
</tr>
<tr>
<td>Teacher</td>
<td>5</td>
<td>18.3</td>
<td>.003</td>
</tr>
<tr>
<td>School Counselor</td>
<td>5</td>
<td>32.1</td>
<td>.001</td>
</tr>
<tr>
<td>Administrator</td>
<td>5</td>
<td>24.3</td>
<td>.001</td>
</tr>
<tr>
<td>Police</td>
<td>5</td>
<td>9.6</td>
<td>.085</td>
</tr>
<tr>
<td>Adults</td>
<td>5</td>
<td>1.5</td>
<td>.909</td>
</tr>
<tr>
<td>Doctor</td>
<td>5</td>
<td>16.1</td>
<td>.006</td>
</tr>
<tr>
<td>Drug Counselor</td>
<td>5</td>
<td>25.9</td>
<td>.001</td>
</tr>
</tbody>
</table>

Significant differences exist between students' driving after drinking and who students would turn to if they had a problem with drugs as shown in Table 19. Chi square values are Turning to parents (X²=21.4, P<.001), Turning to a teacher (X²=18.3, P<.003), Turning to a school counselor (X²=32.1, P<.001), Turning to a school administrator (X²=24.3, P<.001), Turning to a doctor (X²=16.1, P<.006) and Turning to a drug counselor (X²=25.9, P<.001).
The data show that students in group 1(N) are more likely to turn for help with a problem with drugs to a parent, doctor, school counselor, drug counselor, school administrator, or police than are the other groups.

No pattern appeared to account for the significance of difference between the groups with regard to turning to teachers. No significant relationship was found among the five groups and turning to adults or to peers for help.

**Intent to Drink and Drive Grades 6, 7, 8, 9**

The following tables include the findings from the survey for grades six, seven, eight, and nine for intent to drink and drive. These are examined for the same variables surveyed for the tenth, eleventh and twelfth grade students.

<table>
<thead>
<tr>
<th>Table 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degrees of Freedom, Chi Square and Significance of Items for Intent to Drink and Drive and Gender, Grades and Grade Average Grades 6,7,8,9</td>
</tr>
<tr>
<td>(N=2740)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>3</td>
<td>26.5</td>
<td>.001</td>
</tr>
<tr>
<td>Grade</td>
<td>9</td>
<td>62.1</td>
<td>.001</td>
</tr>
<tr>
<td>Grade Average</td>
<td>18</td>
<td>146.4</td>
<td>.001</td>
</tr>
</tbody>
</table>

Table 20 indicates that significant differences exist between students intent to drink and drive and Gender ($X^2=26.5$, $P<.001$), Grade ($X^2=62.1$, $P<.001$) and Grade average ($X^2=146.4$, $P<.001$).

With regard to gender differences, it appears that a higher percentage of those in Group 1(N) and Group 2(PN) were more likely to be females than the other two groups. Grade differences seem to indicate that the sixth grade students were more likely to select
items which place them in Group 1(N), never intending to drink and drive than were the other three grades. The relationship between intending to drink and drive and grade point average appears to be a positive one. The higher the reported grade average, the less likely to intend to drink and drive. There was no clear significant difference by groups, however.

Table 21

<table>
<thead>
<tr>
<th>School Climate</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feelings About School</td>
<td>6</td>
<td>109.6</td>
<td>.001</td>
</tr>
<tr>
<td>Feelings About Teachers</td>
<td>6</td>
<td>62.8</td>
<td>.001</td>
</tr>
<tr>
<td>Feelings About Subjects</td>
<td>6</td>
<td>139.2</td>
<td>.001</td>
</tr>
<tr>
<td>Feelings About Classmates</td>
<td>6</td>
<td>23.0</td>
<td>.001</td>
</tr>
</tbody>
</table>

Significant differences (P<.001) exist between students' intent to drink and drive and their attitudes toward school are shown in Table 21. Chi square values for these variables are as follows: Feelings about school ($X^2=109.6$), Feelings about teachers ($X^2=62.8$), Feelings about subjects ($X^2=139.2$) and Feelings about classmates ($X^2=23.0$).

Students in Group 1(N) were more likely to indicate that they felt their teachers were helpful, their school was pleasant, and their subjects were interesting than were the other three groups. The pattern of feelings about classmates while significantly different among the groups did not seem to be as clearly related to intent to use.
Table 22
Degrees of Freedom, Chi Square and Significance of Items for
Intent to Drink and Drive and Negative Behaviors
Grades 6, 7, 8, 9
N=2740

<table>
<thead>
<tr>
<th>Negative Behaviors</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sent Out Of Class</td>
<td>12</td>
<td>178.8</td>
<td>.001</td>
</tr>
<tr>
<td>Damaged Something</td>
<td>12</td>
<td>274.4</td>
<td>.001</td>
</tr>
<tr>
<td>Taken From Someone</td>
<td>12</td>
<td>228.4</td>
<td>.001</td>
</tr>
<tr>
<td>Taken From Store</td>
<td>12</td>
<td>306.0</td>
<td>.001</td>
</tr>
<tr>
<td>Cheated On Test</td>
<td>12</td>
<td>266.2</td>
<td>.001</td>
</tr>
<tr>
<td>Been High On Drugs</td>
<td>12</td>
<td>678.0</td>
<td>.001</td>
</tr>
<tr>
<td>Been Drunk</td>
<td>12</td>
<td>429.2</td>
<td>.001</td>
</tr>
<tr>
<td>Stayed Out All Night</td>
<td>12</td>
<td>231.4</td>
<td>.001</td>
</tr>
<tr>
<td>Broken School Property</td>
<td>12</td>
<td>253.9</td>
<td>.001</td>
</tr>
</tbody>
</table>

Data from Table 22 indicate that significant differences (P<.001) exist between students' intent to drink and drive and all negative behaviors identifies on the survey instrument. Chi square values for these variables are as follows: Being sent out of class ($X^2=178.8$), Damaging something ($X^2=274.4$), Taking something from someone ($X^2=228.4$), Taking something from a store ($X^2=306.0$), Cheating on a test ($X^2=266.2$), Being high on drugs ($X^2=678.0$), Being drunk ($X^2=429.2$), Staying out all night ($X^2=231.4$) and Breaking school property ($X^2=253.9$).

Students who indicate that they have never intended to drive after drinking two or more drinks, Group 1(N), differed significantly from the other three groups in their reporting that they have never been sent out of the classroom by a teacher, they have never damaged something on purpose, they have never taken something from someone, they have never taken something from a store, they have never cheated on a test, they have never been high on drugs, they have never been drunk, they have never stayed out all night without their parents permission, and they have never broken school property.
Table 23
Degrees of Freedom, Chi Square and Significance of Items for Intent to Drink and Drive and Activity Involvement Grades 6,7,8,9
N=2740

<table>
<thead>
<tr>
<th>Alternative Activities</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entertainment/Social</td>
<td>12</td>
<td>95.8</td>
<td>.001</td>
</tr>
<tr>
<td>Academic</td>
<td>12</td>
<td>102.2</td>
<td>.001</td>
</tr>
<tr>
<td>Sports</td>
<td>12</td>
<td>35.5</td>
<td>.001</td>
</tr>
<tr>
<td>Religious activities</td>
<td>12</td>
<td>73.9</td>
<td>.001</td>
</tr>
<tr>
<td>Extracurricular Activities</td>
<td>12</td>
<td>37.1</td>
<td>.001</td>
</tr>
<tr>
<td>Vocational Activities</td>
<td>12</td>
<td>26.6</td>
<td>.009</td>
</tr>
</tbody>
</table>

Significant differences exist between students' intent to drink and drive and their involvement in activities identified on the survey. Entertainment/social activity involvement ($X^2=95.8$, $P<.001$), Academic involvement ($X^2=102.2$, $P<.001$), Sports involvement ($X^2=35.5$, $P<.001$), Religious activities ($X^2=73.9$, $P<.001$), Extracurricular activities ($X^2=37.1$, $P<.001$) and Vocational activities ($X^2=26.6$, $.009$).

Significant differences in the reasons used for decision making about the use of drugs were found for intent to use groups for all items. Group 1(N) ranked very important the reasons of being accepted by peers and the ability to cope with pressure more often than the other groups. With regard to self-confidence, knowledge of the effects of drugs, and having fun alternatives, no apparent pattern was observed. There appears to be a positive relationship between the intent to drink and drive and the importance of school policy and having adult role models. In each case these reasons were rated more important by a significantly larger percent of those in Groups 1(N) and 2(PN).
Table 24

Degrees of Freedom, Chi Square and Significance of Items for Intent to Drink and Drive and Reasons Not To Use Drugs
Grades 6,7,8,9
N=2740

<table>
<thead>
<tr>
<th>Decision Making</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding Effects</td>
<td>9</td>
<td>295.8</td>
<td>.001</td>
</tr>
<tr>
<td>Self-confidence</td>
<td>9</td>
<td>241.3</td>
<td>.001</td>
</tr>
<tr>
<td>Acceptance By Friends</td>
<td>9</td>
<td>94.5</td>
<td>.001</td>
</tr>
<tr>
<td>Ability To Cope</td>
<td>9</td>
<td>167.4</td>
<td>.001</td>
</tr>
<tr>
<td>Fun Things To Do</td>
<td>9</td>
<td>120.2</td>
<td>.001</td>
</tr>
<tr>
<td>Adult Modeling</td>
<td>9</td>
<td>113.8</td>
<td>.001</td>
</tr>
<tr>
<td>School Policy</td>
<td>9</td>
<td>263.2</td>
<td>.001</td>
</tr>
</tbody>
</table>

Table 24 indicates that significant differences (P<.001) exist between intent to drive after having two or more drinks and students' reported reasons for not using alcohol or other drugs. Chi square values for these reasons are Understanding the effects of drugs ($X^2=295.8$), Self-confidence ($X^2=241.3$), Acceptance by friends ($X^2=94.5$), Ability to cope ($X^2=167.4$), Having fun things to do ($X^2=120.2$), Adult modeling ($X^2=113.8$) and Having a strict school policy ($X^2=263.2$).

The relationship between intent to drink and drive and the participation in activities appears to be a linear one whereby those who intend never to drink and drive engage in fewer entertainment activities, participate in academic activities more often, engage in extracurricular activities more often, and attend religious activities more often. There does not appear to be a pattern of differences by intent to drink and drive and the participation in sports or vocational activities for pay.
Table 25
Degrees of Freedom, Chi Square and Significance of Items for Intent to Drink and Drive and Intent To Use Drugs
Grades 6,7,8,9
N=2740

<table>
<thead>
<tr>
<th>Intent to Use</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intent Cigarettes</td>
<td>9</td>
<td>323.3</td>
<td>.001</td>
</tr>
<tr>
<td>Intent Smokeless tobacco</td>
<td>9</td>
<td>158.2</td>
<td>.001</td>
</tr>
<tr>
<td>Intent Beer</td>
<td>9</td>
<td>474.6</td>
<td>.001</td>
</tr>
<tr>
<td>Intent Wine</td>
<td>9</td>
<td>354.0</td>
<td>.001</td>
</tr>
<tr>
<td>Intent Liquor</td>
<td>9</td>
<td>429.9</td>
<td>.001</td>
</tr>
<tr>
<td>Intent Marijuana</td>
<td>9</td>
<td>366.8</td>
<td>.001</td>
</tr>
<tr>
<td>Intent Inhalants</td>
<td>9</td>
<td>190.4</td>
<td>.001</td>
</tr>
<tr>
<td>Intent Menotropins</td>
<td>9</td>
<td>188.3</td>
<td>.001</td>
</tr>
<tr>
<td>Intent Depressants</td>
<td>9</td>
<td>216.0</td>
<td>.001</td>
</tr>
<tr>
<td>Intent LSD</td>
<td>9</td>
<td>268.9</td>
<td>.001</td>
</tr>
<tr>
<td>Intent Stimulants</td>
<td>9</td>
<td>341.1</td>
<td>.001</td>
</tr>
<tr>
<td>Intent Cocaine</td>
<td>9</td>
<td>260.1</td>
<td>.001</td>
</tr>
</tbody>
</table>

Significant differences (P<.001) exist between the intention to drive after having two or more drinks and students reported intent to use cigarettes, smokeless tobacco, beer, wine, liquor, marijuana, inhalants, menotropins, depressants, LSD, stimulants and cocaine. Chi square values for these intentions are Intention to use cigarettes ($X^2=323.3$), Intention to use smokeless tobacco ($X^2=158.2$), Intention to use beer ($X^2=474.6$), Intention to use wine ($X^2=354.0$), Intention to use liquor ($X^2=429.9$), Intention to use marijuana ($X^2=366.8$), Intention to use inhalants ($X^2=190.4$), Intention to use menotropins ($X^2=188.3$), Intention to use depressants ($X^2=216.0$), Intention to use LSD ($X^2=268.9$), Intention to use stimulants ($X^2=341.1$) and Intention to use cocaine ($X^2=260.1$).

Those students who never intend to drive after drinking two or more drinks, Group 1(N), report to a significantly greater extent than the other groups that they would never use cigarettes, smokeless tobacco, beer, wine, liquor, marijuana, inhalants,
depressants, LSD, and stimulants. Groups 1(N) and 2(PN) would be comparatively less likely to use cocaine or report intending to use the false drug menotropins as the others.

Table 26
Degrees of Freedom, Chi Square and Significance of Items for Intent to Drink and Drive and Actual Use Of Drugs Grades 6,7,8,9
N=2740

<table>
<thead>
<tr>
<th>Actual Use</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cigarette Use</td>
<td>15</td>
<td>332.9</td>
<td>.001</td>
</tr>
<tr>
<td>Smokeless tobacco Use</td>
<td>15</td>
<td>213.8</td>
<td>.001</td>
</tr>
<tr>
<td>Beer Use</td>
<td>15</td>
<td>567.3</td>
<td>.001</td>
</tr>
<tr>
<td>Wine Use</td>
<td>15</td>
<td>443.8</td>
<td>.001</td>
</tr>
<tr>
<td>Liquor Use</td>
<td>15</td>
<td>454.0</td>
<td>.001</td>
</tr>
<tr>
<td>Marijuana Use</td>
<td>15</td>
<td>513.0</td>
<td>.001</td>
</tr>
<tr>
<td>Inhalants Use</td>
<td>15</td>
<td>185.0</td>
<td>.001</td>
</tr>
<tr>
<td>Menotropins</td>
<td>3</td>
<td>44.3</td>
<td>.001</td>
</tr>
<tr>
<td>Depressant Use</td>
<td>15</td>
<td>89.2</td>
<td>.001</td>
</tr>
<tr>
<td>LSD Use</td>
<td>15</td>
<td>359.1</td>
<td>.001</td>
</tr>
<tr>
<td>Stimulant Use</td>
<td>15</td>
<td>269.5</td>
<td>.001</td>
</tr>
<tr>
<td>Cocaine Use</td>
<td>15</td>
<td>345.2</td>
<td>.001</td>
</tr>
</tbody>
</table>

Table 26 shows the significant differences (P<.001) exist between the intention to drive after having two or more drinks and students' self-reported use of cigarettes, smokeless tobacco, beer, wine, liquor, marijuana, inhalants, menotropins, depressants, LSD, stimulants and cocaine, Table 26. Chi square values for self-reported use are as follows: Cigarettes ($X^2=332.9$), Smokeless tobacco ($X^2=213.8$), Beer ($X^2=567.3$), Wine ($X^2=443.8$), Liquor ($454.0$), Marijuana ($X^2=513.0$), Inhalants ($X^2=185.0$), Menotropins ($X^2=44.3$), Depressants ($X^2=89.2$), LSD ($X^2=359.1$), Stimulants ($X^2=269.5$) and Cocaine ($X^2=345.2$).

With regard to actual use of drugs, in each case Group 1(N) were comparatively more likely to report never having used any of the drugs listed: cigarettes, smokeless tobacco, beer, wine, liquor, marijuana, inhalants, stimulants, depressants, LSD, cocaine and the false item drug, menotropins.
Table 27
Degrees of Freedom, Chi Square and Significance of Items for Intent to Drink and Drive and Who To Turn To Grades 6,7,8,9
N=2740

<table>
<thead>
<tr>
<th>Turn to for Help</th>
<th>DF</th>
<th>Chi Square</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer</td>
<td>3</td>
<td>17.8</td>
<td>.001</td>
</tr>
<tr>
<td>Parent</td>
<td>3</td>
<td>121.4</td>
<td>.001</td>
</tr>
<tr>
<td>Teacher</td>
<td>3</td>
<td>102.0</td>
<td>.001</td>
</tr>
<tr>
<td>School Counselor</td>
<td>3</td>
<td>76.7</td>
<td>.001</td>
</tr>
<tr>
<td>Administrator</td>
<td>3</td>
<td>108.2</td>
<td>.001</td>
</tr>
<tr>
<td>Police</td>
<td>3</td>
<td>85.7</td>
<td>.001</td>
</tr>
<tr>
<td>Adults</td>
<td>3</td>
<td>6.3</td>
<td>.096</td>
</tr>
<tr>
<td>Doctor</td>
<td>3</td>
<td>78.1</td>
<td>.001</td>
</tr>
<tr>
<td>Drug Counselor</td>
<td>3</td>
<td>54.7</td>
<td>.001</td>
</tr>
</tbody>
</table>

Table 27 indicates that significant differences exist between the intention to drive a car after having two or more drinks and who students would turn to if they had a problem with drugs. Chi square values are Turning to a peer ($X^2=17.8$, $P<.001$), Turning to a parent ($X^2=121.4$, $P<.001$), Turning to a teacher ($X^2=102.0$, $P<.001$), Turning to a school counselor ($X^2=76.7$, $P<.001$), Turning to a school administrator ($X^2=108.2$, $P<.001$), Turning to the police ($X^2=85.7$, $P<.001$), Turning to adults ($X^2=6.3$, $P<.096$), Turning to a doctor ($X^2=78.1$, $P<.001$) and Turning to a drug counselor ($X^2=54.7$, $P<.001$).

The data show that students in Group 1(N) to a greater degree than the others turn for help with a drug problem to a parent, teacher, school counselor, school administrator, police, adult, doctor, and drug counselor. Interestingly, both Group 1(N) and Group 4(DY) were alike in that the report to a greater extent that the other two groups they would not turn to a peer.
Summary

This chapter has presented the findings of the study. Chapter V provides a summary of the study including the major findings, conclusions reached from the findings, implications for comprehensive education and prevention program development in schools and communities, and recommendations for further research.
CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

It was the purpose of this study to investigate the relationship among various demographic, attitudinal and behavioral variables and the behavioral intention and self reported drinking and driving behaviors of Ohio adolescents enrolled in schools participating in a Drug-Free Schools Consortium and determine from these data effective education and prevention program activities for addressing their substance use issues.

This chapter has been divided into four sections: 1) a summary of procedures, 2) conclusions, 3) discussion and implications, and 4) recommendations for further study.

Summary

The instrument used to collect the self-reported data was the Primary Prevention Awareness, Attitude, and Usage Scales, Form 8R (PPAAUS) (Swisher,1983) provided in Appendix A. Special care was taken in the selection of the instrument to ensure satisfactory reported validity and reliability. The instrument requires approximately 30-35 minutes for completion. The instrument consisted of 13 subscales:

1. Factors Influencing Substance Use (demographic, school climate, negative behaviors, alternative activities, and decision-making factors).

2. School Climate Items (feelings about school, feelings about teachers, feelings about subjects, and feelings about classmates).

3. Alternative Activities (entertainment and social, academic, sports, religious, extracurricular, and vocational).

4. Factors Influencing Decision-Making (understanding effects of substances, self-confidence, having friends, being able to cope, being involved in alternative activities, adult role models, and consistent school policy).
5. Resource Persons to Turn to (peer, teacher, parents, school administrator, school counselor, adult, doctor, police, drug counselor)

6. Primary Location Of Use

7. Primary Sources For Substances

8. Intent To Use And Self-Reported Use Of Substances (cigarettes, smokeless tobacco, beer, wine, liquor, marijuana, menotropins, inhalants, hallucinogens, depressants, stimulants, and cocaine).

9. Trends In Drug Use Among High School Seniors

10. Monthly-Or-More Use Of Substances

11. Driving/Passenger Intent And Behaviors (drive while/after drinking, drive while/after smoking marijuana, passenger of drinking drive, passenger of driver smoking marijuana, and intent to stop impaired driver).

12. Negative/Disruptive Behaviors (sent out of class, damaged something, took something from someone, took something from a store, cheated on a test, was high on drugs, been drunk, stayed out all night without permission, and broke school property).

13. Student's Perception Of Presence Of Substance Use Problem In The District

The present study explored (1) sixth through twelfth grade students' intent to drive after drinking and tenth through twelfth grade students' self-reported driving after drinking practices, and (2) the variables of grade, gender, grade average, attitudes toward school, negative behaviors, intent to use drugs, self-reported use of drugs, activity involvement, reasons not to use drugs, and whom to turn to if a drug problem exists. The participants were students in 18 schools that are member schools of the Franklin County Drug-Free Schools Consortium. Participating schools had contracted with an independent agency, Data Base, to conduct a survey to determine the nature and extent of drug use and related behaviors within the student population of the school system. Data Base is a consulting firm whose primary emphasis is survey research and evaluation in the area of drug and alcohol abuse prevention. Each school surveyed received an extensive illustrated final report, as well as technical assistance from a Data Base representative concerning the
survey results. The sample was large (N= 61,257), and included 6th through 12th grade students who attended school districts comprised of various socio-demographic characteristics. The research sample for the two groups were n = 1937 for grades 10, 11, and 12; and n = 2740 for grades 6, 7, 8, and 9.

For this study, 61,257 students completed the questionnaire: 7970 sixth graders, 9029 seventh graders, 9050 eighth graders, 8831 ninth graders, 8753 tenth graders, 8347 11th graders and 7978 twelfth graders. Another 1109 students did not fill in their grade. Of the sample, 48.5 percent were males, and 51.4 were females. Statistical analyses were conducted on a stratified random sample of approximately eight-percent of participants, yielding a sample population of 4938 students.

For this study the sample population used was 4809 students. The composition of the sample was 619 sixth graders, 666 seventh graders, 781 eighth graders, 731 ninth graders, 677 tenth graders, 688 eleventh graders and 630 twelfth graders. From that number, two research groups of students were formed. One represented students in grades six through nine and the other students in grades ten through twelve. Students in the former group were presumed to be too young to drive, therefore only the intention to drive after drinking question was used for this group. Questions pertaining to the intention to drive after drinking and self-reported drinking and driving practices were reserved for the latter group.

For intention to drive after having two or more drinks, four groups were identified based on their responses to that question. These were Group 1(N), never; Group 2(PN), probably not; Group 3(PY), probably yes; and Group 4(DY), definitely yes. For reported actual drinking and driving six groups were formed. These were Group 1(N), never; Group 2(NY), not within the last year; Group 3(Y), within the last year; Group 4(M), within the last month; Group 5(W), within the last week and Group 6(D), daily. The latter group was eliminated from the analysis and the other five were examined for the same
dependent variables. A chi square analysis was performed by these groups and the variables identified in the statement of the problem. The findings from the analysis of data indicated the following.

**Direction of Relationships**—First, all the relationships which were found to be significant between (a) drinking and driving or intent to drink and drive and (b) the other variables examined were found to be consistently related to whether or not a student reported level of intent or actual to drinking and driving. The directions were the same in almost all responses, that is, with few exceptions the frequency distribution for the PPAAUS items was related to the level of both intent or actual driving behaviors of students.

Within that general linear trend, where there were significant differences between the groups, three patterns were found. Pattern one indicated that Group 1(N), students who never intend to or actually drink and drive, were significantly different from the other three intent groups or four actual driving groups. Pattern 2 indicated a linear trend from most likely to intend to or actually drive to least likely, with no single group or groups clearly different from the others. Pattern three indicated a scattered set of differences among the cells with no discernable pattern.

Secondly, differences which occurred in these patterns were consistent across all grade levels from grades six through twelve. While the younger students were not able to drive legally, their intent to drink and drive was correlated in the same direction as those older students who were of legal age to drive in nearly all of the variables examined.

A third general finding was that of the 183 items examined, only eleven showed no difference among the groups with regard to drinking and driving or intent to drive. These focused on the seven areas of (1) feelings about classmates; (2) turning to peers for help; (3) turning to adults for help; (4) engaging in sports, (5) extracurricular activities and (6) fun things to do; and (7) turning to police for help. There is an obvious blurring of the
distinction between the students who never use and the levels of students who do use drugs in the areas of peers, sports and extracurricular activity participation, and relationships with adults, and with police.

Intent to Drink and Drive, Grades 10, 11, 12—Intent to drink and drive rates were positively correlated with being male; being in a higher grade level; getting lower grades; and feeling less positive about school, teachers and subjects. Those who reported intending to not drink and drive indicated these relationships to a significantly less extent. The single difference between the intent to drink and drive and the other variables was that no difference existed with regard to feelings about classmates.

With regard to negative behaviors, in all cases those who did not intend to drink and drive were less likely to engage in any of the listed behaviors on the survey than those who did intend to.

A stronger relationship exists between those who intend to drink and drive to any degree than those who do not (a) for all activities in which students become involved; (b) for all reasons to not use; (c) for intent to use all drugs; and (d) for actual use of drugs.

The single difference between intent to drink and drive and to whom the student would turn to for help was with turning to peers where there is no difference between those who intend to drink and drive and those who do not. For all others, those who do not intend to drink and drive would be more likely to turn to parents, teachers, school counselors, administrators, police, adults and less likely to turn to doctor, and drug counselor, than those who do intend to.

Actual Drinking and Driving, Grades 10, 11, 12—Never actually drinking and driving is related more strongly to being in the upper grades and getting lower grades in subjects.

With regard to drinking and driving and feelings about school those who would never drive after two drinks or would probably not, were more positive about school and
teachers subjects. Those who do to any degree drink and drive are more likely to indicate peers as being friendly.

Students who never drink and drive or do so less than once a year are less likely to engage in negative behaviors.

Students who report never drinking and driving are either never involved in or at most indicate they participate in entertainment or social activities one or two times a month whereas students who participate more often in those activities drive more often after two or more drinks. Never drinking and driving is more closely related to engaging in academic activities and religious activities and not engaging in work for pay.

No differences were found with regard to extracurricular activities and sports between those who drink and drive and those who do not.

All reasons for not using alcohol or other drugs were related to reported drinking and driving except having fun things to do. This includes understanding effects, self-confidence, acceptance by friends, ability to cope, adult modeling, and having a school policy. When having fun things to do is a reason for not drinking and driving, no differences exist between the drinkers and drivers and the nondrinkers and drivers.

Those students who drink and drive were more likely to intend to use and actually use drugs to a greater extent than those who do not.

With regard to actual drinking and driving, those who never do so or drink less would more likely turn to parents, teachers, school counselors, school administrators, doctor or drug counselor. No difference was found with regard to turning to peers being those who drink and drive and those who not.

Intent to drink and drive, grades 6, 7, 8, and 9--In the lower grades not intending to drink and drive is more closely associated with being female, being in higher grades and having higher grades in subjects.
All feelings about school, teachers, subjects and classmates are more closely related to not intending to drink and drive at all. This differed from the upper grades where there was no differences in the feelings about classmates among all students.

Not being involved in all negative behaviors examined in this survey are more closely associated with never intended to drink and drive.

With regard to activities involvement, students who report more involvement in entertainment and social activities and work for pay have a higher willingness to drink. Students who are less involved in academics, and religious activities and extracurricular activities and sports are more likely to intend to drink and drive.

Conclusions

A number of conclusions can be drawn from the findings. First, from the findings that indicate that as the intention to drive after drinking as well as actual driving after drinking increased, so did the intention to become involved in drug use increased for all drug categories listed in the instrument, it is possible to conclude that this sample is similar to other adolescent groups in this regard. The findings are parallel with the literature as it pertains to the self-reported drug use and the intention to use drugs with individual variables. The behavioral intention to use drugs was consistently related to intention to drive after drinking and also the self-reported driving after drinking behaviors of adolescents. Behavioral intention as an important variable to consider in regards to adolescent drug use, is reinforced by Ajzen and Fishbein (1973) who believed that behavioral intention is the immediate antecedent of behavior. Downey and O'Rourke (1976), Huba, Wingard, and Bentler (1981), Schlegal, Crawford, and Sanborn (1977), and Swisher and Hu (1983) also discovered statistically significant relationships between a variety of drug use behaviors and the stated intention to engage in such behavioral patterns.
Second, one of the findings of the study indicated that of the 183 items which were examined for significance of differences between students who exhibit different drinking and driving or intent or behavior, only eleven showed no difference between the groups. It can be concluded therefore, that the pattern of dependent variables examined is highly related to the independent variables of drinking and driving behavior. Six of these eleven items were on relationship to peers, and engaging in sports, extra curricular activities and fun activities.

Third, from the finding that when adolescents are asked to differentiate among their peers for almost any issue, it appears that differences which exist between all groups disappear. That is, it is possible to conclude that there seems to be a adolescent culture attitude on certain issues that crosses other distinctions that relate to drugs. This apparent cultural norm also extends to issues regarding participation in sports, extracurricular activities, and having fun things to do. This norm seems to have a mixing influence on the peer group. The other four areas where no differences appear were with regard to turning to adults or police for help where all adolescents appear to think alike regardless of drinking and driving intent or behavior is concerned.

Fourth, from the findings that indicate that students who report never intending or never reporting drinking and driving are significantly different from the other groups, it is possible to conclude that the primary differences between student groups is between those who never use and those who use in any degree. It appears that if a student is intending to engage in these behaviors at all, there is no significant difference between the extent or degree of intention or actual behaviors manifested. It would appear that a primary goal of prevention programs would be to focus on the initial decision regarding drinking and driving behaviors.

Fifth, from the findings that intentional behaviors closely parallel the actual behaviors, it is possible to conclude that what students intend to do regarding behaviors in
the use of drugs, will come to pass. Again this is consistent with the literature in the field. The earlier prevention programs which address the intentions in early grade will probably have an effect in delaying a wide range of drug use behaviors. On the other hand, the data also indicate that this intent to never start is essential, since the patterns of students who use in any degree differ significantly from those who never do.

Sixth, from the findings that indicate that drinking and driving intent or actual is related to potentially damaging behaviors among adolescents, it is possible to conclude that these behaviors should be considered among those which identify students-at-risk. It is likely that students with these drinking and driving attitudes and behaviors, would also be likely to manifest other characteristics which would place them in jeopardy as well. This should be one of the characteristics routinely included in a list to identify when screening for students-at-risk.

Recommendations for Program Development

From these findings it is important for educators and program planners to focus on the prime determinants of behavior such as intention to use drugs or become involved in certain behaviors. Huba, Wingard, & Bentler (1981) support this in their belief that an examination of the cognitive plans to engage in drug use behaviors could facilitate the identification of high-risk individuals, as well as the design of prevention and intervention strategies. Since assessment and programming strategies for at-risk students are being promoted throughout the schools today, it would be advisable to involve an assessment of a students willingness to be involved in behaviors such as those listed in this study so as to plan programming reflective of the findings. Swisher (1988) supports this and found that the intention (willingness) to use beer forms earlier than seventh grade and that prevention programs should consider these developmental phenomena in their planning. Swisher (1976) suggested that programs addressing education and prevention should include all
activities which are planned to enrich the personal development of the student, including personal or moral education, career education and developmental guidance. From the findings of this study a number of general and specific recommendations can be made for program planning and development.

1. Program Planning and Development--First, several recommendations focus on the three program management areas of policy and procedures, organization and administration, and staff development.

Policy and Procedures--Each school district should review its policy and procedures to insure that there is a requirement for explicitly stated education and prevention guidelines in the policy and procedures to inform adolescents of the issues involved in drinking and driving. There should be specific drinking and driving education provided through health classes and/or driver education. Where the driver education is offered outside the school, there should be a guideline for evaluating the extent to which these topics are being covered by that program and a follow-up education in the school regarding this information. Regular student outcome evaluation should be conducted on all aspects of the education and prevention program and a report made back to the board of education on the results of the activities called for in the policy and procedures. These evaluations should include assessment of knowledge, attitudes and behaviors regarding drinking and driving or riding with a drinker.

A statement requiring a parent education emphasis should be included in the policy and procedures for students in grades 6, 7, 8, and 9 for intent to drink and drive. In the upper grades there should be an emphasis on activities for parental education on intervention into drinking and driving by their own children. The school policy and procedures should also establish a clear no-use message for youth and should include provision for collaboration with the community law enforcement agencies on plans to prevent and intervene on these behaviors where school activities are involved.
Program Planning, Organization and Administration--School personnel should collaborate with parents and community law enforcement to establish a single integrated program which focuses on the education, prevention, intervention and treatment of adolescent drinking and driving. This includes integrating parental home expectations, school regulations, and community ordinances within the same set of guidelines. This would also include establishing clear responsibilities for specifically identified individuals within the school program to initiate, implement, and evaluate the school program regarding drinking and driving. For the elementary and middle school this would include the planning and implementation of programs for refusal skills accompanied by follow-up evaluation on their effectiveness in terms of student behavioral outcomes. For the high school it would include an integration of the earlier prevention activities into a drinking and driving behavior intervention approach.

A major focus of the program planning is evaluation. Evaluation should consist of both process evaluation to insure that the program activities are being carried out as planned, and outcome evaluation to measure changes in student behaviors should. Effectiveness evaluation can be conducted to determine the long range value of the drinking and driving prevention programs.

Staff Development--All staff should receive an intensive education program which includes a focus on their own attitudes and behaviors regarding drinking and driving or riding with a drinker. This education should include skills for monitoring one's own behaviors and those with whom they interact where drinking and driving may occur. A special consideration should be given to teacher inservice education about drinking and driving to and from formal or informal school events. A special module should be developed and implemented on this topic. Selected teachers should become skilled in the delivery of this module to their colleagues. A training of trainers program should be
implemented to provide skilled staff for inservice activities from within the school district/s.

The school personnel should become familiar with the local ordinances regarding drinking and driving and the alternative education programs for persons arrested for driving while intoxicated. Where possible selected school staff should participate in these programs as educators, counselors or assessors where appropriate.

A parent education module should be included in the staff development skills training. Teachers should become knowledgeable about how, when appropriate, to deal with parents on parents' own drinking and driving behaviors, that of their children, on their friends' and relatives' drinking and driving, and on their own party guidelines when entertaining. These parent education programs can be delivered through the primary avenues of the Parent Involvement Component.

2. Program Emphases—Second, the seven emphases of a comprehensive program design should serve as a guide for the inclusion of program activities which address knowledge, attitudes and values, and skills regarding the prevention of drinking and driving and riding with a drinker.

Education—Include instruction on drinking and driving information in all classes and all subjects. Address content specific information regarding this issue in these classes. Provide inservice education for all staff appropriate to their content area. Activities should focus on the attitudes and values which are influential in the predriving intentionality.

Prevention—Provide specific refusal skills education. Use peer leadership programs with students who do not drink and drive nor do not intend to to work with younger students. Provide efforts that establish a norm for not drinking and driving among the student peer group. Provide reinforcement for alternative ways of transportation. Where SADD is used, examine carefully the programs careful to determine that there is a clear no use message. Use cross grade programs. Reinforce the athletic and
cocrural activities within the broader prevention program. Bring in law enforcement representatives into schools in positive ways such as the law enforcement based Drug Abuse Resistance Education Program, D. A. R. E. Cooperate with Safe Homes programs and Tough-Buy programs where legal drugs are prohibited from sale to minors through influence on the stores.

Identification—Identify high risk behaviors using the data of this study. Several key characteristics have been listed which could be used to identify students at high risk for drinking and driving. Survey students for additional information on the dynamics of drinking and driving. Identify the locations of frequent use and the means for getting to and from them by students. Develop alternative plans for monitoring these locations and accessing them safely. Inform parents about the risk factors. Identify the significantly core drinker and driver and the adolescent who used poor judgement on drinking and driving.

Intervention—Intervene on locations of use where drinking and driving takes place. This would include athletic contests and other school events, house parties, and hotel and motel parties on weekends and during school social functions. Collaborate with law enforcement in intervention. Provide parent education on means to intervene. Use local traffic safety data to identify times, places for intervention. Be prepared to assist with more formal, structured interventions when appropriate.

Referral—Identify and provide resources for referral of adolescents at all stages from developing the intent to actual drinking and driving. Establish effective lines of communication with law enforcement and the courts. Assist law enforcement, probation officers, and court officials with their own lines of communication which are necessary to collaborate with the school. Update referral procedures between the school and agencies.

Treatment—Collaborate with community programs for drinking and driving education. Include mandatory drinking and driving education in all treatment programs,
inpatient and outpatient. Follow the changes made in the local, state and national laws that address adolescent drinking and driving. Identify a continuum of treatment modalities from education through inpatient treatment and halfway houses. Include both out-of-school and appropriate in-school treatment modalities.

**Follow-up**—Follow-up all incidents of actual or reported use of drinking and driving or riding with a driver who has been drinking with action. Develop plans for getting more data regarding the potential for drinking and driving. Act on all reports. Get commitments from offenders to follow-up treatment. Provide school support for these activities. All activities that are a part of program components should include attention to the drinking and driving patterns of all students. This includes activities which focus on both the actual drinking and driving, the intent to drink and drive, riding with a drinker, and driving when there was no intention to do so.

3. **Program Components**—Third, each of the ten program components should be planned and implemented to include specific concrete activities which focus on student intent to drink and drive or actual drinking and driving behavior. This would include examining each of the ten components for their primary responsibility to deal with one or more of the seven emphases. While all components address all seven program emphases, a primary responsibility should rest within one planned component.

Those components which should focus on the education and prevention emphases regarding drinking and driving include, the K-12 Curriculum Infusion Component, the K-12 Prevention Component, K-12 Written Guidance Program Component, and the Peer Leadership Component. Those components that should assume primary responsibility for the emphases on identification and intervention into specific drinking and driving behaviors include the Student Assistance Program Component, and the Student Athletic/Cocurricular Program Component. Those components that should focus on the intervention, referral, and treatment emphases include the Parent Involvement Component,
and the Community Involvement Component. The follow-up emphasis should be the primary focus of the Student Support Group Component. All emphases which include a focus on the behaviors of all school staff should be the focus of the Employee Assistance Program Component.

**Recommendations for Further Study**

The following recommendations for further study are suggested.

1. There is considerable evidence that significant changes occur in adolescents across their years in middle school and high school. Therefore, it is recommended that there should be an effort to conduct a longitudinal analysis of participants to evaluate over time the stability of the variable of behavioral-intention to drive after drinking over time.

2. Often adolescent behaviors model those behaviors of adults. Therefore it is recommended that there be an effort to replicate this study among adult groups adapting the subscale items appropriate for adult use. The results of these analyses could be used to draw inferences between adult and adolescent behaviors within a given population.

3. In all cases with student needs assessment data it is recommended that there be efforts to conduct experimental research projects to assess the impact of peer-based education on knowledge and attitudes, on all drug-related behaviors of adolescents.

4. There is wide range of activities currently underway in education and prevention programs, it is recommended that there be an effort to conduct a meta-analysis of existing programs that provide prevention or intervention services regarding drinking and driving in order to evaluate the rationale on which these programs were developed, and their respective outcomes.

5. Regional differences among adolescents with regard to knowledge, attitudes and usage behaviors have been found, therefore, it is recommended that there should be
efforts to replicate this study in other states to assess the relationship between the identified variables with regard to other geographic samples.

6. Finally it is recommended that an effort be made to replicate this study, incorporating variables not included in this instrument such as parent drug use patterns, educators' communication style in regard to the use of drugs, along with coaches/co-curricular advisers communication style in regards to the use of drugs.
APPENDIX

Primary Prevention Awareness, Attitude and Usage Scales
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These consist of pages:

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