DIFFERENCES IN ATTITUDES OF PUBLIC SCHOOL STUDENTS TOWARD SELECTED DRUGS AND THE RELATIONSHIP BETWEEN THESE ATTITUDES AND DRUG KNOWLEDGE

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An investigation of attitudes toward selected drugs, knowledge of drugs, and the relationship between drug attitudes and drug knowledge was conducted among 428 students in grades five through twelve in the Carrollton-Farmers Branch Independent School District near Dallas, Texas.

Attitudes toward cigarettes, alcoholic drinks, marijuana, LSD, heroin, and methedrine were measured by a semantic differential scale. The six drugs were rated in terms of twelve bipolar adjectives separated by a five-point continuum. Positive drug attitudes were defined as those attitudes which are favorable or accepting toward a particular drug. Negative drug attitudes were defined as those attitudes which are not favorable toward a particular drug. Drug knowledge was measured by the "Drug Knowledge Test," a thirty-one-item multiple choice test constructed for this study.

Eight hypotheses were formulated prior to the study to be tested at the .05 level of significance. Following the collection of data, the analysis of variance was used to

determine if differences existed in attitudes or knowledge between students at various educational levels or between students at any one level. When differences in means were indicated, the Scheffe method of comparing all combinations of means was used to identify specific differences. The Pearson Product-Moment Correlation procedure was used to determine the relationship between drug attitudes and drug knowledge.

Upper elementary students expressed a significantly more negative attitude toward cigarettes than junior high school students. Regarding alcohol, marijuana, and LSD, there was no significant difference in attitudes between elementary and junior high students, but junior high students expressed significantly more negative attitudes toward these drugs than senior high school students. There were no significant differences in attitudes between the elementary and junior high groups nor between the junior and senior high groups regarding heroin and methedrine. When compared by grades, there were no significant differences in attitudes between students in any two consecutive grades. Within each educational level, students tended to have more negative attitudes toward LSD, heroin, and methedrine than toward cigarettes, alcohol, and marijuana.

Senior high school students scored significantly higher than junior high students on the "Drug Knowledge Test," and junior high students scored significantly higher than

elementary students. When students were grouped by grades, drug knowledge reached a plateau at the tenth grade. There were no differences in drug knowledge between students in any two consecutive grades.

Among junior and senior high school students, there was a significant negative relationship between accurate drug knowledge and negative drug attitudes. There was not a significant relationship between drug knowledge and drug attitudes among elementary students.

The following recommendations are offered: (1) that the instruments used in the study be administered at a future date to determine changes in attitudes or knowledge; (2) that a study be conducted to determine if drug use, sex, socioeconomic status, extracurricular interests, and academic achievement are related to drug attitudes and drug knowledge; (3) that teachers in drug education programs take student attitudinal distinctions toward drugs into consideration in their approach to teaching about drugs; and (4) that programs which seek to develop negative attitudes toward drugs include more than the presentation of factual information.

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CHAPTER I

INTRODUCTION

The problem of drug abuse among youth is not new. There were reports of teenage drug addiction in the United States as early as 1900, and the number of addicts increased sharply following both world wars. Teenage use of narcotics gradually decreased until 1948, then stabilized, but addiction as well as the habitual use of many new drugs rose again in the period from 1960 to 1970. The upward trend continues today (15, p. 83).

Until recently, many definitions of drugs were restricted to the areas of medicine or narcotic substances. The increase in the variety of drugs and their uses has resulted in definitions more inclusive than the traditional ones. Cohen generalizes the term drug to any mind-altering substance (4, p. 1). Lingeman defines a drug as any synthetic or natural substance with a more or less predictable effect on the human physiology (18, p. viii). Merki defines drugs as substances that cause a change in man's body or way of thinking (19, p. 13). A drug, according to the Lockheed Education Systems Drug Decision Program, is any substance other than food, air, or water, which, when taken into the body or applied to the skin, affects the way the body works (8, p. B-10). The Lockheed definition has been accepted for

this study because it is simple and encompasses those drugs legally used for social reasons, such as tobacco and alcohol, as well as those illicit drugs used for social reasons, such as marijuana, LSD, methedrine, and heroin.

Dangers of Drugs

The fact that all of the drugs previously mentioned are dangerous, either from a health or legal point of view, is well documented. Since the Report of the Advisory Committee to the Surgeon General of the Public Health Service in 1964 pointed out relationships between cigarette smoking and cancer, emphysema, bronchitis, and cardiovascular disease, the case against smoking has continued to build (23, pp. 31, 32). In 1968, the Surgeon General said, "Cigarette smoking is the greatest preventable cause of illness, disability, and premature death in this country" (7, p. 1). The Director of Health of the State of California has said, "Cigarette smoking is one of the greatest threats to well being in modern times" (7, p. 2).

Todd (25) has pointed out the unique risks of teenage alcohol drinking. Adolescents are affected more rapidly and more severely by alcohol than adults. The adolescent age group is more likely to experience psychological intoxication than adults. Teenagers are more likely to become ill from drinking alcohol. Inexperienced drinkers and drivers are a dangerous combination. Finally, calories which come from

alcohol rather than the usual foods may adversely affect health (25, p. 13). Jones states that alcohol has a potential for abuse as great as many illicit drugs (15, p. 89). Einstein calls alcohol "man's oldest drug," and points out that it is addicting, involving both tolerance and withdrawal symptoms (13, p. 31).

A recent report of the National Institute of Mental Health is less conclusive about the ill effects of marijuana, noting that information about the drug is fragmentary and incomplete. The report concluded that the medical consequences of marijuana use can range from no effects to a psychotic experience, and cannot be predicted for any individual (16, p. 6). The legal risks related to marijuana are substantial. The Uniform Narcotic Drug Act prohibits any person from manufacturing, selling, possessing, purchasing, prescribing, administering, or giving away the drug except as authorized by law. In addition to the federal laws, individual states have laws concerning the use and possession of marijuana (19, pp. 43, 45).

The health implications related to the use of LSD are considerably more conclusive than those regarding marijuana. Research is not complete regarding the biological hazards of LSD use (22, p. 14). However, Jones reports cases of chromosomal damage, deformities of children of women who used LSD while pregnant, and other physical damage both to users and their offspring (15, p. 57). The primary immediate

danger, according to Lingeman, lies in illegal, unsupervised use of the drug, which increases the risk of a psychotic break (18, p. 135). Lingeman also warns of the potency of LSD, noting that one ounce will provide enough for 300,000 individual doses on the illicit market (18, p. 129). The immediate effects of LSD are generally more spectacular than the effects of marijuana, and there is the possibility of reoccurring experiences as late as eighteen months after the initial "trip." A user of either LSD or marijuana might consider the legal consequences of taking the drugs a greater deterrent than health considerations.

The legal and health problems created by using methedrine (speed) and heroin are even more serious than problems caused by the drugs previously mentioned. It is not unusual to hear of drug users advising others not to use methedrine. The term "Speed Kills" has become a familiar expression in the United States. Methedrine provides a mind-accelerating experience characterized by activity which may be orderly, chaotic, or repetitive (4, p. 94). Hunger is diminished, leading to malnutrition in regular users. Combining speed with alcohol or barbiturates can cause death or lead to impulsive acts of poor judgment, according to Jones (15, p. 65). Withdrawal from speed is as dangerous as the trip itself, and has resulted in brain damage. A report in the New England Journal of Medicine has identified a disease

affecting the arteries of methamphetamine users which can be fatal (20, p. 2).

The dangers and illegality of heroin use are well known and need not be enumerated here. The drug involves physical and psychological dependence, and heroin addicts seldom function normally in society (13, p. 26). The recidivism rate among heroin addicts has been estimated as high as 90 percent (18, p. 107).

The unpublicized dangers of drug abuse lie not only in the immediate or even long term effects, but also in the personal and social needs of persons who choose to use these potent and sometimes lethal substances in an effort to make life worth living. Recent research indicates that personal and social uses of drugs to meet basic needs are increasing among all age groups. However, the greatest increase in the use of drugs appears to be among public school students (19, p. 13).

Extent of Drug Use Among Students

James Goddard, a former director of the U.S. Food and Drug Administration, said in an interview in 1967 that student use and abuse of drugs is a problem for all schools--college, secondary, and even elementary. Too many students, according to Goddard, begin to use drugs when they are in junior and senior high school (14, p. 121). Sidney Cohen, program director for the National Institute of Mental Health,

says some children between the ages of eight and twelve have already begun experimenting with marijuana and other drugs (16, p. 60).

In October of 1967, a University of Illinois research group reported that 19 percent of ninth-grade students who were surveyed smoked cigarettes; 22 percent of the students in the tenth grade smoked; 26 percent of eleventh-grade students; and 30 percent of the students in the twelfth grade (7, p. 126).

Jesse Steinfield, the United States Surgeon General in 1970, reported that during the 1968-1970 period, while more adults gave up smoking than ever before, the teenage group took up the cigarette smoking habit in alarmingly increasing numbers. The greatest increases were in the thirteen, fourteen, and fifteen year age groups (6, p. 8).

Although the rate of alcohol consumption among students does not seem to be increasing at a rate comparable to other drugs, it is well known that alcohol is used, frequently illegally, by minors. Todd says that almost every adolescent in the United States experiments at least once with alcohol before he graduates from high school. First drinking experiences usually occur at about age thirteen or fourteen. Patterns of drinking are influenced by geographic, cultural, and ethnic factors. These patterns are well established by the time of high school graduation, and have

not changed significantly during the past ten years (25, p. 9).

Reported student use of illicit drugs is reflected in crime statistics and in results of national and local drug surveys. During the period from 1960 to 1968, the number of arrests for drug-related offenses in the United State increased by more than 300 percent. Arrests of juveniles during the same period increased by 1,860 percent (10, p. 38). In 1966, a Dallas, Texas, grand jury handled 6,760 drug abuse cases. In 1970, the number of drug cases was 13,300 (5, p. 26).

A national survey sponsored by the Bureau of Narcotics and Dangerous Drugs revealed the following highest percentages of reported illicit drug use at the high school level: marijuana, 33 percent; LSD, 15 percent; amphetamines, 21 percent; barbiturates, 15 percent; and opiates, 4 percent (1, p. 5). A survey of high school students representing a cross section of ethnic and economic backgrounds in Houston, Texas, reported that one out of every four students has used marijuana. The majority of users came from white, upper-middle-class homes (16, p. 10).

Two other surveys of student drug use are particularly worthy of mention in regard to this study. The Dallas, Texas, Independent School District sponsored a comprehensive study of drug use among students in grades seven through twelve in 1970. Following are some of the results:

48 percent of the junior high school students and 71 percent of the senior high school students said they have used alcohol; 35 percent and 44 percent, respectively, have tried tobacco; 6 percent and 14 percent, respectively, have smoked marijuana at least once; approximately 8 percent of both groups have experimented with amphetamines; and 3 percent of both junior and senior high school students in the study have used heroin (12, pp. 12, 14).

The Carrollton-Farmers Branch Independent School District is located north of Dallas, Texas, and includes approximately 9,000 students. During the fall of 1970, the school district conducted a survey of drug use among its students with the following results: at the junior high school level, 21 percent of the students reported using tobacco; 18 percent, alcohol; 5 percent, marijuana; and lesser percentages reported the use of heroin, methedrine, codeine, and other drugs. Thirty-two percent of the senior high school students surveyed said they use alcohol and tobacco; 18 percent, marijuana; 9 percent, methedrine and LSD; and lesser percentages, morphine, heroin, codeine, and paregoric (11, p. 2).

Elementary, junior high school, and senior high school students are using many drugs which are dangerous because of health and legal reasons. It is reasonable to assume that the more public school teachers and administrators know about student drug use, drug attitudes, and drugs themselves,

the better prepared these teachers and administrators will be to meet the needs of their students.

Statement of the Problem

The problem was to identify the differences in attitudes of public school students at various educational levels toward selected drugs, and to determine the relationship between those attitudes and students' knowledge of drugs.

Purposes of the Study

1. To determine if differences in attitudes exist between upper elementary school students, junior high school students, and senior high school students in the Carrollton-Farmers Branch Independent School District toward cigarettes, alcoholic drinks, marijuana, LSD, heroin, and methamphetamine.

2. To determine if differences in attitudes exist toward cigarettes, alcoholic drinks, marijuana, LSD, heroin, and methamphetamine, respectively, within each of these three groups in the Carrollton-Farmers Branch Independent School District: upper elementary school students, junior high students, and senior high students.

3. To determine if there are differences in drug knowledge among students enrolled in grades five through twelve in the Carrollton-Farmers Branch Independent School District.

4. To determine the relationship between drug knowledge and attitudes toward selected drugs among students enrolled in grades five through twelve in the Carrollton-Farmers Branch Independent School District.

5. To use the findings of this study as a basis for curriculum development in drug education.

Hypotheses

I. There will be no significant difference in the group mean scores on the semantic differential attitude scale between the elementary group and the junior high group in regard to the following drugs: (a) cigarettes, (b) alcoholic drinks, (c) marijuana, (d) LSD, (e) heroin, and (f) methedrine.

II. There will be no significant difference in the group mean scores on the semantic differential attitude scale between the junior high school group and the senior high school group in regard to the following drugs: (a) cigarettes, (b) alcoholic drinks, (c) marijuana, (d) LSD, (e) heroin, and (f) methedrine.

III. There will be no significant differences in attitudes, as measured by mean scores on the semantic differential attitude scale, between students enrolled in any two successive grades in regard to the following drugs: (a) cigarettes, (b) alcoholic drinks, (c) marijuana, (d) LSD, (e) heroin, and (f) methedrine.

IV. There will be no significant differences in attitudes, as measured by group mean scores on the semantic differential attitude scale, between cigarettes, alcoholic drinks, marijuana, LSD, heroin, and methedrine, respectively, within each of these groups: (a) upper elementary school students, (b) junior high school students, (c) senior high school students.

V. Senior high school students will have a significantly higher group mean score on the "Drug Knowledge Test" than junior high school students.

VI. Junior high school students will have a significantly higher group mean score on the "Drug Knowledge Test" than upper elementary school students.

VII. There will be no significant differences in drug knowledge, as measured by mean scores on the "Drug Knowledge Test," between students enrolled in any two successive grades.

VIII. There will be a significant negative relationship between drug knowledge, as measured by scores on the "Drug Knowledge Test," and negative drug attitudes, as measured by the total of scores recorded on the separate semantic differential scales among (a) upper elementary school students, (b) junior high school students, (c) senior high school students.

Background and Significance

The need for additional information about drugs and the people who use them is apparent, according to Blum, because the United States and other countries are experiencing dramatic changes in the social uses of drugs. The information available about drugs and drug users is not only incomplete, but in some cases it is inaccurate (2, p. xii). Blum also points out that the inaccuracy of statistical information about drugs is frequently observed at the junior and senior high school levels. One reason for this inaccuracy is that for a long time school officials responsible for drug education have denied that their schools have a drug problem. When the problem can no longer be denied, the same officials frequently go to the other extreme, claiming that drug abuse among students is out of control (2, p. 332).

Many attempts to gather information about drugs in the public schools have been restricted by other factors. School district administrators, superintendents, and teachers are frequently afraid to study the problems of drug abuse, possibly because of a lack of their own knowledge on the subject. Others simply lack the interest to cooperate in research programs. Students have also complicated the gathering of accurate information about the extent of the drug problem. Drug users are particularly hesitant to answer questions truthfully, because of a fear of getting into trouble with the law, the school, or their families.

There have been reports of users denying drug use, while some nonusers falsely admit to using drugs (2, p. 333).

During the 1970 session, the legislature of the state of Texas passed House Bill 467, which requires that public schools in the state teach drug education each year in grades five through twelve, beginning with the 1971-72 academic year. In compliance with the law, the Carrollton-Farmers Branch Independent School District is developing a drug education program as part of a total community effort in meeting the problem.

Carrollton-Farmers Branch school district officials were contacted in November of 1970 about the possibility of conducting a drug attitude and drug knowledge survey among students in grades five through twelve. The assistant superintendent in charge of instruction indicated the district's willingness to participate in the study. The grades surveyed corresponded to the grades stipulated in the state law. The attitude portion of the survey dealt with six drugs which had been indicated as problem areas by the study on drug use conducted earlier by the school district. The six drugs were cigarettes, alcoholic drinks, marijuana, LSD, heroin, and methedrine. The "Drug Knowledge Test" was developed as an instrument to measure drug knowledge among the students in the eight grades. The semantic differential scale, developed by Osgood (21), was the instrument used to measure attitudes of the students toward drugs.

The nature of the information made available to the Carrollton-Farmers Branch Independent School District will hopefully be of value in the further development of a drug education curriculum. The information generally coincides with the purposes of the study stated previously, and attempted to provide answers to these questions:

1. Do students at the three educational levels--upper elementary, junior high school, and senior high school--differ in their attitudes toward six specific drugs?

2. Do students within any one of the three educational levels form a general attitude toward all drugs, or do they form individual attitudes toward each of the six drugs?

3. Where are the gaps in drug knowledge among the students in grades five through twelve? Is there a particular point at which drug knowledge increases sharply? Is the acquisition of drug knowledge a continuous process, or are there plateaus of knowledge somewhere on the continuum from grade five to twelve?

4. What is the relationship between drug attitudes and drug knowledge? If there is a relationship, at which educational level is it strongest?

In regard to the fourth question, a pilot study was conducted among 121 male freshman and sophomore college students to determine the relationship between attitudes toward drugs and drug knowledge. Attitudes were measured by the semantic differential scale, and knowledge of drugs was

tested by the Drug Knowledge Inventory (9), a 44-item, multiple choice, standardized test developed by McHugh. The Pearson Product-Moment Correlation procedure resulted in a correlation of -.33 between socially acceptable attitudes toward drugs and drug knowledge. This correlation is significant at the .05 level. There was a tendency for students in the pilot study who had socially acceptable drug attitudes to score lower on the Drug Knowledge Inventory than those students who indicated more socially unacceptable attitudes toward drugs.

In addition to providing answers to the questions already mentioned, the study served three other functions. First, it provided base line information regarding attitudes toward the six drugs for continuing evaluation of the program. The study also provided base line information on student drug knowledge prior to the initiation of a drug education program. Finally, this study established the use of drug attitude and drug knowledge instruments which can be used in the future evaluation of the Carrollton-Farmers Branch program.

Definitions of Terms

Drugs: any substances other than food, air, or water, which, when taken into the body or applied to the skin, affect the way the body works (8, p. B-10).

Drug dependence: a state of psychic or physical dependence, or both, arising in a person following administration of a drug on a periodic or continuous basis (4, p. 7).

Drug addiction: a state caused by periodic or chronic intoxication produced by the repeated consumption of a natural or synthetic drug. Its characteristics include a compulsion to continue taking a drug, tolerance, psychic and physical dependence, and detrimental effects on the individual or society (4, p. 8).

Drug habituation: a condition resulting from the repeated consumption of a drug. Its characteristics include a desire, but not a compulsion to continue taking a drug, some degree of psychic dependence, but absence of physical dependence, and detrimental effects primarily on the individual (4, p. 8).

Positive drug attitudes: an attitude may be defined as a predisposition of an individual to evaluate some aspect of his world (23, p. 238). In this study, positive drug attitudes were those predispositions which are favorable or accepting toward a particular drug. A lower score on the semantic differential scale indicated a relatively more positive attitude toward a drug compared to a higher score.

Negative drug attitudes: those predispositions which are not favorable toward a particular drug.

Upper elementary school students: students enrolled in the fifth and sixth grades in the Carrollton-Farmers Branch Independent School District at the time of the study.

Junior high school students: students enrolled in the seventh and eighth grades in the Carrollton-Farmers Branch Independent School District at the time of this study.

Senior high school students: students enrolled in the ninth, tenth, eleventh, and twelfth grades in the Carrollton-Farmers Branch Independent School District at the time of this study.

Semantic differential scale: an attitude measurement instrument consisting of a series of six concepts (the six drugs) rated in terms of several criteria (bipolar adjectives at opposite ends of a five-point scale). The scale is discussed in detail in Chapter III.

Drug Knowledge Test: a thirty-one-item multiple choice instrument designed for this study and discussed in detail in Chapter III.

Limitations of the Study

This study was limited to students enrolled in grades five through twelve in the Carrollton-Farmers Branch Independent School District during the 1970-71 academic year, and to those students attending classes on the days of the survey. The data obtained are intended for the use of that school district, but may be helpful to other school districts.

The study was limited to the six drugs previously mentioned. The drugs are cigarettes, alcoholic drinks, marijuana, LSD, heroin, and methedrine. The information obtained in the study regarding these drugs was dependent on the integrity of student responses.

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CHAPTER II

REVIEW OF THE LITERATURE

As mentioned in Chapter I, relatively little information is available regarding drug knowledge and attitudes of elementary, junior high, and senior high school students toward the illicit drugs. Considerably more information has been gathered about these students and their knowledge about and attitudes toward tobacco and alcoholic beverages. Articles and studies reviewed in this chapter include information related to attitudes toward drugs and knowledge of drugs among the public school age groups, college students, and the general population.

Studies conducted by Blum (7) and the Purdue Opinion Panel (9) are more comprehensive than other studies dealing with drugs and students at the high school level. In this chapter, these two studies are considered in detail as an introduction to general literature related to drugs. The remainder of the literature is divided into the following areas: (1) studies related to cigarette smoking; (2) studies related to alcoholic drinks; (3) studies related to marijuana, LSD, and other drugs; and (4) studies pertaining to relationships between health knowledge, attitudes, and health

behavior. In each of these four divisions, the material is subdivided by age groups and arranged chronologically.

Drugs, General Studies

In 1967, Blum conducted studies in two California high schools regarding incidence of drug use and attitudes toward drugs. School A involved 1,130 middle- and upper-middle-class students, and School B provided 1,382 middle- and lower-middle-class students.

Relatively few students at both schools requested further information about tobacco, apparently viewing the school courses as being adequate. Students from School A expressed the opinion that money spent on tobacco advertising would be better spent on researching other drugs about which little is known. Generally, smokers answered open-ended questions about tobacco that justified their behavior. Non-smokers either did not reply to these questions or gave textbook oriented answers displaying their knowledge about the dangers of smoking. The nonsmokers frequently expressed opinions about smokers, calling them stupid, immature, dependent, and saying that the smokers gave in to group pressure, were trying to be "in," or were not concerned about their health or bad breath (7, p. 334).

Contrary to the results of questions about tobacco, most students in the Blum study wanted more specific information about alcohol. Specifically, the subjects wanted to

know what constitutes alcoholism, and how many drinks it takes to cause physical damage. The replies indicated a need for education on sensible drinking rather than scare lectures which stress physical or psychological damage. Students inquired about help for alcoholic parents, indicating that educators might consider the student as an agent for the prevention and treatment of alcoholism (7, p. 335).

Twenty-two percent of the boys and 21 percent of the girls in School A viewed marijuana as "good." In School B, the corresponding figures were 6 percent for boys and 10 percent for girls. Approximately 13 percent of all students at School A and 5 percent at School B expressed no opinion, or thought that marijuana was neither good nor bad (7, p. 336).

Students at both schools expressed a strong desire for more factual information, minus moralizing, about marijuana, and a need for honest discussions about the pros and cons of all drugs. A significant number of students felt that marijuana should be legalized and that alcohol should be outlawed. A majority of the subjects thought that penalties for marijuana use should be reduced. Angry comments from the students were common regarding the unwillingness of both parents and teachers to engage in dialogues with students about the physiological, psychological, moral, and social aspects of drug use.

Students tended to categorize drug users as either "neat," "groovy," "turned on," and "aware," or as "stupid," "sloppy," and "hippie types." More students at School A than at School B elaborated on their characterization of drug users, while School B students tended to give more non-committal answers, or saw no differences between users and nonusers (7, pp. 336).

LSD was generally seen as less good than marijuana, with approximately 15 percent of both boys and girls at School A saying that LSD was good, compared to 5 percent of both sexes at School B. Less than 5 percent of all students either gave no answer or replied that LSD was neither good nor bad. Misinformation about LSD was common among the students in Blum's study. A majority of students at both schools said they wanted more information about the drug. Typical questions inquired about the addictive qualities of LSD, whether or not LSD helps one to understand himself better, and whether or not the drug leads to insanity (7, p. 337).

Asked about the differences between LSD users and non-users, the nonusers tended not to reply or to characterize users as hippie types, people who cannot cope with life, or lonely persons who are looking for something. Few nonusers felt that LSD had much to offer at the time of the survey, but thought that it might have medicinal value in the future. Users of LSD were enthusiastic about the drug. Relatively

few users reported having had bad experiences, and a majority felt that they had grown by the use of LSD. A few students were apparently interested only in trying LSD for "kicks" (7, p. 339).

Twenty-two percent of all students at both schools in the Blum study felt threatened about the decision to use drugs, the remainder saying that they had resisted or would resist whatever drug was offered. Asked about whom they would consult if in need of help because of a drug problem, more than 50 percent of the students indicated parents first, with school counselors, teachers, doctors, religious leaders, and friends distributed about equally among the remainder of the choices (7, p. 338).

In 1969, the Purdue Opinion Panel administered a 55-item questionnaire to 11,000 high school students in the United States regarding the use, prevalence, availability, and knowledge about drugs, narcotics, alcohol, tobacco, and attitudes toward these substances. From these responses a stratified sample was selected to conform to census data in grades, sex, and area of residence.

A majority of the students in the Purdue study possessed limited accurate information about the effects of drugs. Nineteen percent possessed little or no information; 2 percent had very complete and accurate information; and there were no perfect scores on the fifteen-item drug knowledge portion of the questionnaire. The mean score on the test

was 5.87, the standard deviation, 2.56, and the range, 0-13. Subjects were divided into high, average, and low groups, based on the results of the knowledge test. Thirty-one percent of the students were placed in the high group, 43 percent in the average group, and 26 percent in the low knowledge group.

Knowledge about the effects of drugs was related to the various attitudes held by the students. Students in the low group were not as curious about drugs as those in the other two groups. Those in the low group expected fewer changes in their relationships with known users, and were likely to favor legal prohibition of drugs. Subjects in the low group tended to estimate the number of high school drug users as being less than estimates made by the other groups. The low group also had less information about where to find drugs than the average and high groups (9, p. 7).

Students in the high knowledge group were more likely to disapprove of laws prohibiting the sale of alcoholic drinks, and were more likely to approve the legalization of marijuana. The high group subjects were more curious about drugs than the other two groups, and indicated knowledge about where to find drugs for personal use. These students also predicted fewer changes in relationships if they found their friends to be using drugs (9, p. 8).

There was a strong tendency for students in all three groups to believe that marijuana was being used more

frequently in other schools than in their own. The tendency was evident, but not as strongly, with regard to the use of alcohol, and was not present at all in estimates of tobacco use. Students living in cities demonstrated more permissive attitudes toward all drugs than students living in rural areas (9, p. 18).

Regarding cigarette smoking, 43 percent of all students thought that they would smoke regularly as adults, while 25 percent were skeptical about developing the smoking habit. Sixty-eight percent of all students favored banning cigarette advertising from television. The Purdue researchers concluded that the medical research reports on the harmful effects of cigarette smoking have had a positive impact on student attitudes (9, p. 19).

The high school students in the Purdue survey indicated a relaxation in attitudes toward the use of alcohol. Significant shifts occurred between polls conducted in 1957 and 1969 in attitudes toward use and incidence of alcohol use. The students in the 1969 study perceived parental attitudes as more lenient than in 1957, and students also had more lenient attitudes toward others drinking. Sixty percent in 1957 compared to 25 percent in 1969 disapproved of others who use intoxicants. Girls were more likely to disapprove of others drinking than boys (9, p. 6).

Several authorities in the area of drugs have attempted to explain adolescent attitudes which may lead to drug abuse.

Johnson and Westman (29) summarized these attitudes as follows: (1) pleasure and thrill seeking, (2) desire to gain status, (3) defiance of authority, (4) desire for sensual stimulation, (5) low frustration tolerance, (6) escapism, (7) sense of alienation, (8) desire for a religious experience, (9) desire to enhance aesthetic appreciation or expression, and (10) desire to develop a cult.

Keniston (32) feels that drug attitudes among young people are a reflection of ethics or philosophy, and that the medical issue is relatively unimportant to drug users. Drug users are extremely knowledgeable about the possible bad effects of drugs, and can usually instruct their teachers in this aspect. Keniston also points out that drug users will argue that alcohol and tobacco are in some ways more dangerous than many hallucinogens, and yet, are sanctioned by society.

Blum (7) says that there are dramatic differences in student attitudes toward the use of various drugs. Students not only disagree in their general opinions of drug use, but also have varying opinions about the particular drug in question. These attitudes, according to Blum, vary from campus to campus.

Johnson (28) reported responses of junior high school students made in drug seminars. Most of the students said that they would probably not use drugs, but qualified their answers by saying that they might try marijuana or pills,

but nothing involving needles. Glue was thought to be mentally damaging by most students. While a majority agreed that everybody will use some kind of drug at least once, marijuana was believed to be the least dangerous of drugs. Some students expressed opinions that using marijuana helps one gain and hold friends, makes one a "big shot," and is a status symbol.

Pyle (44) conducted a survey to determine students' attitudes about the effectiveness of a school district policy stating that apprehension anywhere for illegal use of drugs would result in expulsion from school. Questions were also asked about the effectiveness of the school district's drug education program. More than 1,200 high school students were surveyed and divided into three groups: (1) students expelled for drug use; (2) drug users, not expelled; and (3) nonusers. Less than a majority of all respondents rated the policy as being an effective deterrent to drug abuse. Significantly more nonusers than users said the policy was effective as a deterrent. Students strongly supported expulsion for on campus drug violations, while slightly favoring expulsion for off campus offenses. Nonusers supported expulsion for both off and on campus drug use. Users' opinions of the drug education program were very negative. The most frequent suggest for improving the program was for small group discussions to be initiated and directed by well informed people.

De Meritt (10) investigated the differences in self-concepts of sixty drug users, nonusers, and former users between the ages of thirteen and twenty-two. Former users saw themselves as more adequate, more acceptable by their peers, and less threatened than drug users. Users of stimulants saw themselves as more acceptable by their peers than nonusers. Drug users and former users saw themselves as being more religious than nonusers, although not religious in terms of organized western faiths. Parents' attitudes were seen as generally or intensely disapproving of drug use by all groups. DeMeritt concluded that former users seemed to have a better self-concept than nonusers and users as a class. There seemed to be little difference in self-concepts of nonusers and users as a class.

Horman (25) surveyed 112 undergraduates, 26 graduate students, and 17 university staff members about attitudes toward drugs and drug abuse. The three groups shared similar attitudes about both issues. Attitudes concerning the personality of drug abusers were mixed. A majority of subjects indicated that they felt abusers were alienated from society, and that abusers have some emotional problem.

Almost 100 percent of the subjects in the Horman study indicated that college students should be made aware of the dangers of drugs. The subjects responded positively to the suggestion of implementing drug education programs. Most of the respondents felt that the problem of drug abuse should be

handled as a psychological one, rather than a criminal one. A majority of the subjects also felt that the university should not impose extralegal penalties on student drug abusers.

Students, faculty, and administrators were not sure of the effects of the various drugs. A majority did think that pep pills could be used to keep a person awake, and that depressants calm one down. Few subjects believed that marijuana or LSD could help one achieve greater self-understanding.

In 1970, Schaps and Sanders (50) investigated college student attitudes toward drugs. Interviewees consistently categorized drugs according to their immediate and long range effects. Marijuana constituted the mildest class, and was said to produce easily controlled effects and no debilitating effects. The second category included synthetics, such as psilocybin, DMT, and mescaline. These drugs were thought to be stronger than marijuana, easier to control than marijuana, and as having no long term effects. The third group consisted of tranquilizers, amphetamines, and other drugs. These drugs were seen as being used less frequently, were generally viewed as being strongly habit forming, if not addictive, and capable of causing serious physical and mental deterioration in doses large enough to achieve the desired effect. A fourth group, consisting of LSD and STP, was considered potentially injurious to health, both in immediate and long term effects.

In the Schaps and Sanders study, attitudes of the students toward the various classifications of drugs revealed that while student drug users were willing to accept medical conclusions that a particular drug was addictive and physically injurious to health, many users were less willing to accept theories about the psychological dangers of drug use. Most students believed that doctors are generally unqualified to assess the psychological effects of drugs, and saw doctors as victims of "establishment" anti-drug propaganda. Medical warnings about LSD were ignored by many students, but LSD use did decrease when reports of LSD-related chromosome damage were published (50, p. 138).

Smith (54) surveyed 136 college students on drug attitudes, and drew several conclusions. First, students learn from others and from their own use that the assumed effects or benefits of drugs are not meeting pre-use expectations. This concept is generalized by students to all drugs. Secondly, not many students want to experience drugs beyond alcohol and marijuana, and the motivation for using these two drugs stems primarily out of curiosity. Thirdly, although Smith's study showed that drug users know more about drugs than nonusers, the information is not an important motivation for drug use. Finally, Smith concluded that arrest, social disapproval, and fear of overdose or bad effects do not appear to be motivating factors in the discontinuation of drug use.

After gathering information from 2,653 college students in New York, Rand (45) concluded that it is not surprising that students are not overly concerned about illegal drug use, since many of them have been involved in the illegal use of alcohol for a number of years prior to entering college. The Rand study indicated that illegal drug use begins in junior and senior high school, and that attitudes toward illegal drug use are formed prior to the college years. Rand believes that there is relatively little that colleges can do to modify these attitudes.

McHugh (12) developed the Drug Knowledge Inventory, a 44-item drug knowledge test which has been administered to more than 60,000 subjects throughout the United States. The average subject could answer slightly better than half of the questions. Teachers scored highest on the test, with a mean of 24.68, followed by college students and Air Force recruits. High school students ranked lowest on the test, with a mean of 20.15. Among the more difficult items for all groups were questions requiring a knowledge of the difference between addiction and habituation, items requiring identification of tranquilizers and barbiturates, and those concerning the sources of heroin and marijuana.

Cigarette Smoking: Public School Ages

In 1963, Salber (49) investigated smoking behavior and attitudes of more than 6,000 junior and senior high school

students. Far more smokers than nonsmokers thought that smoking has no effect on or decreases nervousness. More heavy smokers than light smokers stated that smoking decreases nervousness, and the heavy smokers tended to hold more definite opinions on the subject of smoking and nervousness.

About 90 percent of the junior high school students in the Salber study had heard that lung cancer is caused by smoking, and more than 95 percent of the senior high school students knew of the relationship. There were no significant differences in this regard between smokers, nonsmokers, and former smokers. Fewer smokers than nonsmokers believed that lung cancer is actually caused by cigarette smoking.

Although a majority of students, including smokers, regarded smoking as a health hazard, differences in opinions between the various smoking categories were significant. Far more nonsmokers regarded smoking as a habit and bad for health, growth, and athletic ability, than did the smokers and former smokers.

Fewer senior high school students than junior high students in the Salber study felt that smoking was related to growth. More junior high school students failed to express opinions on the growth issue than did older students. More senior high school students expressed opinions that smoking is bad for health than did junior high students.

There were no consistent differences in attitudes toward smoking between males and females.

Keeve (31) inquired about the smoking habits and attitudes of 3,057 junior and senior high school students in a study conducted in 1965. Nine percent of the junior high students expressed a desire to stop smoking. Thirty-six percent of the high school students claimed an inability to discontinue smoking. Possession of knowledge or facts about the health hazards of smoking was apparently not a strong motivational factor to discontinue the habit. Sixty-three percent of the senior high school students and 19 percent of the junior high students realized that smoking is a health hazard, but 54 and 36 percent, respectively, identified themselves as smokers. Many of the students who considered themselves as regular smokers were aware of the health dangers involved in smoking, but had no desire to obtain help in discontinuing the habit.

Jensen and Thompson (27) studied the attitudes of 789 senior high school students in Lincoln, Nebraska, in 1965. The group studied had definite opinions concerning the control of cigarette sales. Few students favored outright prohibition of cigarette sales, and felt that prohibition would not work because addicts would turn to illegal sales. The subjects also felt that the sale of cigarettes should be better controlled, and suggested that cigarettes should not

be dispensed by vending machines. Few students thought that tobacco advertising should be controlled.

Schwartz and Dubitsky (51) asked forty-five fourth-grade students their opinions about smoking in a study conducted in 1967. In response to a question asking the students if they wanted to smoke when they became adults, one out of four either expected to smoke or were undecided. Six out of twenty students who had tried cigarettes said they had liked the experience, and one girl who reported having smoked said smoking was relaxing and enjoyable.

Schwartz and Dubitsky (51) also reported on a study of English junior and senior high school students and their attitudes about cigarette smoking. One-fifth of the non-smokers said they had not smoked because they feared possible bad effects on their health. Two-thirds said they did not smoke because it simply did not appeal to them, and more than one-half refrained from smoking because of the expense. Although some of the smokers used filters, relatively few did so because of health reasons. Most of the students who used filters did so because the taste was more enjoyable, milder, or cleaner. One-half of the group said they would not stop smoking even if they could do so easily, and of those who had quit, the most frequent reason given was the cost.

Atha (4) conducted a study of 1,027 ninth-grade students in Arkansas to determine the relationship between smoking cigarettes and tobacco knowledge as measured by the Thompson

Smoking and Tobacco Knowledge Test. Students gave these reasons for continuing smoking: it was an established habit, it soothed the nerves, and smoking was acceptable in social groups to which the students belonged. Atha concluded that students who smoked had significantly less knowledge about tobacco than did nonsmokers. The study also found that smokers tended to come from families in which the parents were smokers.

Streit (56) administered a questionnaire regarding smoking knowledge and attitudes to 8,272 seventh- and eight-grade students in the public and parochial schools of Cincinnati. The survey was conducted in 1969. Ninety-eight percent of all subjects agreed that cigarette smoking contributes to lung cancer and other chronic lung diseases. Fifty-four percent knew that smoking contributes to stomach ulcers and other digestive ailments. Sixty-five percent of the students knew something of the relationship between smoking and heart disease, and 75 percent said that they were influenced not to smoke by this information.

Specific reasons for cigarette smoking were given by the subjects in the Streit study. The reasons included relaxation, being old enough to smoke, making one feel grown up, having nothing better to do, and liking to smoke. Reasons given by students for not smoking were: because it is stupid and expensive, smoking makes one sick, because smoking is bad for health, because parents do not allow

smoking, because smoking degrades a person's image, and because some students "just didn't want to."

Kahn and Edwards (30) investigated smoking attitudes and behavior of approximately 1,300 students in grades seven through twelve in the Boston area in 1970. Ninety-seven percent of the students agreed that smoking is hazardous to health. Students reported various reasons for not smoking, but males most frequently stated health reasons, while females more often indicated taste and the belief that smoking is foolish. Girls also felt that smoking was not in keeping with the feminine image.

Cigarette Smoking: College Students

In 1954, Thompson (59) tested 106 college students on knowledge of tobacco and its effects. Eighty-five percent of the subjects had misinformation regarding the effects of smoking on the heart rate; 73 percent missed questions asking about smoking and basal metabolism rate; 85 percent did not know that the temperature of the skin decreases following the smoking of a cigarette; 86 percent did not know that the pulse rate increases following smoking; and almost 75 percent of the students did not relate smoking cigarettes and lung cancer. Thompson concluded that approximately one student in three had factual information about smoking as measured by the Thompson instrument.

Thompson (60) surveyed directors of college health service programs regarding their attitudes and beliefs toward smoking in a study conducted in 1963. Most of the eighty-eight respondents had permissive attitudes about allowing tobacco advertisements and the sale of cigarettes on campus, and a majority of the directors had done nothing to influence smoking behavior. Some of the directors had endeavored to persuade students to stop smoking when medical examinations indicated that it was advisable, but many did not. At a number of colleges, physicians reported that they smoked in the presence of patients. There was no correlation between smoking habits of the directors and their attitudes about smoking cigarettes.

In 1969, Robbins (47) reported a variety of views on smoking as a result of a study with college students. Both smokers and nonsmokers had similar views on the health dangers of cigarettes, the moral issue, and regulation of the cigarette industry. An attitude representative of smokers was, "I am aware of the dangers, but they are so remote, I put them in the back of my mind." This attitude of remoteness was almost universal among smokers, and was the most difficult justification for nonsmokers to understand. Almost all of the students believed the Surgeon General's report regarding the health hazards of smoking, but few gave it serious consideration in terms of changing smoking behavior. The average college smoker resented having anyone

tell him not to smoke, but was willing to dissuade a potential smoker from starting to smoke. Almost every smoker's attitude was one of not wanting to quit. Most smokers agreed that they would try to prevent a brother or sister from starting to smoke, but most felt that nothing should be done to protect the public from the health dangers of cigarettes.

Haro and Dilley (24) conducted a base line study for the American College Health Association in 1969 regarding attitudes toward cigarettes among college students. Approximately 12 percent of the females and 13 percent of the males were not at all concerned about the harmful effects of cigarette smoking on health. Thirty-eight percent of the females and 40 percent of the males were slightly concerned about the problem. Thirty-four and 33 percent, respectively, showed stronger degrees of concern, and about 15 percent of both groups indicated that they were very concerned about smoking and health problems. An analysis of the results indicated at least 50 percent of all students were seriously concerned about smoking and health. Forty-two percent of the smokers indicated that they would attend meetings held for the purpose of providing discussions and giving out information on cigarettes and health. Haro and Dilley concluded that the concern of college youth regarding the health hazards of smoking is increasing.

Cigarette Smoking: Adults

In a Gallup Poll survey (17) in 1969, people were asked if they thought cigarette smoking is a cause of lung cancer. Seventy percent believed that smoking and cancer are related; 11 percent did not; and 19 percent were undecided. Subjects with a college education were more likely to accept the relationship than were other groups. The smoking and cancer relationship was also accepted more often by persons in the twenty-one to twenty-nine age group than by older persons. Those persons with high incomes accepted the relationship more frequently than lower income subjects. There were no significant differences among persons according to demographic, sex, or religious variables. Sixty percent of those surveyed believed smoking cigarettes to be a cause of heart disease.

Alcohol: Public School Ages

In 1960, two studies were conducted to determine attitudes of high school students toward alcoholic beverages (5). The first study took place in Kansas, and involved more than 2,000 students in urban and rural areas. In urban areas, 56 percent classified themselves as regular drinkers, while 44 percent of those in rural areas placed themselves in the same category. Parental permission to drink beer at home increased in frequency with age, but at all ages the proportion of boys permitted to drink exceeded that of girls.

More than 50 percent of both users and nonusers agreed with statements to the effect that drinking causes arguments and fights, and that drinking makes parties rough or annoying. Nonusers tended to disagree with the statement, "Moderate drinking is fun and harmless," while users generally agreed with the statement.

In the second study (5), 1,000 high school students in Racine, Wisconsin, were asked about their attitudes toward drinking alcohol. Twenty-three percent of the boys and 9 percent of the girls answered that drinking at parties makes people get along better, while 75 percent of all students agreed that drinking causes fights and arguments. Four times as many drinkers at parties as nondrinkers were not regarded as "regular guys and gals." A positive relationship between parental use of alcohol and student use was indicated.

Imre (26) reported attitudes of church-affiliated teenagers toward drinking in a study conducted in 1963. The subjects were fifty white high school students from urban, middle class backgrounds. Use of alcohol was not credited with attracting high esteem or friendship, and nondrinkers were looked upon favorably more often than drinkers both by drinkers and abstainers. Nineteen percent of the students felt that the use of alcohol helps make for a better party. All subjects who reported drinking also reported that their families use alcoholic beverages. Many emotional arguments

were presented against the use of any intoxicants, but a strong minority felt that use of intoxicants should be left up to each person.

Maddox (38) summarized the results of two national surveys on high school students' drinking behavior in 1964. The surveys were the Purdue Opinion Panel Poll Number 49 of 1958, and the Gallup Youth Survey of 1961. The Purdue poll asked students how they personally felt about young people drinking beer and wine. Of the total sample, 27 percent of the boys and 21 percent of the girls indicated approval of drinking these two beverages. In the Gallup survey, 25 percent and 23 percent, respectively, indicated approval of teenage drinking. In both surveys, about the same proportion of students who indicated approval of drinking classified themselves as social drinkers.

Alexander and Campbell (3) conducted a survey similar to the Maddox survey among 1,400 white male seniors in urban and rural high schools in North Carolina. In these regions, the major religious denominations promote total abstinence from drinking. Although more than one-third of the subjects reported use of alcohol, 65 percent, including 40 percent of the drinkers, believed that drinking is wrong as a matter of principle. A majority of the nondrinkers reported experiencing pressure to drink from peers. Alexander and Campbell concluded that pressure to drink is widespread in the adolescent age group, and that the behavior of the adolescents'

friends is a factor in determining whether or not one will decide to begin drinking alcoholic beverages.

A questionnaire concerning the drinking attitudes and knowledge of alcohol of more than 3,000 senior students in nine Utah high schools was administered by Nelson (41) in 1968. A comparison group consisted of 130 delinquent students detained in a correctional institution. Ninety-one percent of the high school students and 66 percent of the delinquent students felt that people do not need alcohol for good relations with other people. Thirty percent of the high school group said that drinking is all right if not excessive, compared to 75 percent in the delinquent group. Insufficient knowledge about alcohol and alcoholism was found at both levels. Forty-one percent of the high school students and 77 percent of the delinquents thought that alcohol is a stimulant, while 11 and 50 percent, respectively, assumed alcoholism to be inherited. As sources of information, the high school students ranked health classes first and family last. The delinquent students reversed the order. Nelson concluded that although students lack adequate information about alcohol, they have a healthy attitude toward drinking, probably because of the influence of the Church of the Latter Day Saints, which prohibits smoking tobacco and drinking alcohol (41, p. 25).

Demone (11) found that among 3,388 boys attending seven high schools in the Boston area, drinking appeared to be an

integral part of the adult role-playing experience for a majority.. Family, peer group, religion, and nationality appeared to influence attitudes toward drinking. Attitudes favoring excessive drinking were more frequent among students from families in which sanctions against drinking were contradictory or ambiguous.

Globetti (20) concluded that cultural attitudes regarding alcohol vary from absolute prohibition to permissiveness toward moderate drinking. In some groups, particularly in southern, midwestern, and western states, the use of intoxicating beverages is viewed as morally indefensible, while in other demographic groups, drinking is acceptable in moderation and is not seen as morally wrong.

In another study, Globetti and Harrison (21) studied the attitudes of 440 high school students about to begin an alcohol education program. The students enrolled in grades seven through twelve participated in the study. Data showed that the students were eager to learn about alcohol and felt that there was a need for formal instruction. About 90 percent felt that they should have an opportunity to learn more about alcohol, and a similar proportion thought that it was the school's responsibility to teach about alcohol. About one-half of the students reported alcohol-related problems in their schools, and felt that an educational program could help solve these problems. Six out of ten students perceived the main problem to be excessive drinking, and 16 percent

felt that even a systematic alcohol education program would fail to help these students. When asked what they wanted to know, 33 percent said they wanted to know about the physical effects of alcohol, and 36 percent wanted objective facts for the purpose of making personal decisions about drinking. More than half of the students complained that their parents would not discuss alcohol objectively with them, but approximately the same percentage of students indicated that they would ask their parents for advice concerning the use of alcohol rather than a school official or minister. A majority of students attributed alcoholism to personal problems and personality disorders. Twenty-nine percent felt that the problem was caused by overindulgence. Forty-one percent of the students felt sympathetic toward alcoholics, while 23 percent indicated disgust or indifference toward the problem. Sixty percent of the subjects felt that the public has a responsibility in establishing treatment centers for alcoholics.

Alcohol: College Students

Gross and Davis (22) tested college freshmen on their knowledge of alcohol in a study conducted in 1959. The subjects were 1,797 male freshmen at Pennsylvania State University. None of the students had completed any instruction on the topic of alcohol in their required college health course. On the twenty-item test, 50 percent of the students missed fourteen or more questions. According to the college grading

standards, 66 percent would have failed the test. Ninety percent of the subjects graduated from Pennsylvania high schools in the upper three-fifths of their graduating classes, indicating that results on the knowledge test were representative of the better academic students. Gross and Davis concluded that more emphasis should be placed on the following aspects of alcohol education: (1) odor of alcohol and its detection on breath, (2) effects of drinking equal amounts of alcohol in a diluted and undiluted state, (3) the relationship of alcohol to ether, chloroform, and other anesthetics, and (4) the effect of varying alcoholic drinks on the condition of the drinker.

Engel and O'Shea (14) found that personal bias based on religious training contributes to attitudes toward drinking. Groups of Catholic, Protestant, and Jewish college students were asked to respond to an article entitled, "Alcohol and Jews." Jewish students interpreted the article as being unfair to Jews. Catholic and Protestant accepted the information in the article as being accurate and fair.

Richardson (46) studied the relationship between attitudes of college students and their parents toward alcohol. Little relationship was found between the attitudes of the students and their parents. High agreement in attitudes toward drinking was indicated between fathers and mothers of college students. Mothers did not accurately predict the attitudes of their children, and fathers were less able to

do so. Parents tended to predict attitudes in their children similar to their own. Although student attitudes ranged from total permissiveness to abstinence from alcohol, their attitudes tended to be more liberal than those of their parents.

Alcohol: Adults

The 1966 Gallup Political Index (19) reported that 21 percent of the population in the United States favored prohibition of alcohol. Seventy-six percent opposed prohibition, and 3 percent had no opinion. More women than men favored the proposal, as did rural residents more than those in urban areas. Other groups which tended to favor prohibition included Protestants more than Catholics, people from upper classes more than those from lower classes, and southerners more than any other geographical group. The same issue of prohibition has been asked of the general population fourteen times since 1933, and five times since 1954. In the last five surveys, the number of people favoring prohibition has dropped each time. In the 1966 survey, 75 percent of those polled favored institutionalization of alcoholics.

Haberman and Sheinberg (23) interviewed 1,412 adults in New York City, asking questions about alcoholism. Sixty-four percent considered alcoholism to be a physical disease. The disease concept was positively related to educational attainment and inversely related to ethnic vulnerability to alcoholism.

Linsky (36) completed 305 interviews in a household survey to examine attitudes toward drinking and alcoholism. Younger persons and those with better educations showed more acceptance of social drinking than others. Approval of treatment for alcoholics was shown more frequently by younger persons, by those with more formal education, and by those with greater exposure to mass media. A biological cause of alcoholism was proposed by 16 percent of the respondents.

Ferneau and Morton (15) administered the Alcoholism Questionnaire to 118 nurses and nursing assistants who had completed the same questionnaire one year earlier. There were no significant differences in responses between the first and second surveys, but those who chose to participate in both surveys were less inclined to generalize in their opinions about alcohol and alcoholism. Specifically, the subjects who participated in both surveys tended to view alcoholism as a disease, and to distinguish between the alcoholic and the heavy drinker.

Marijuana and LSD: Public School Ages

Vincent (61) investigated the attitudes of eighth, tenth, and twelfth-grade students toward smoking marijuana. The study was completed in 1968. A Thurstone scale composed of twenty attitude statements was completed by each group of students. The mean attitude score recorded by the total population was 2.23, and was interpreted by Vincent as an

expression of an unfavorable attitude. Tenth-grade students expressed a more favorable attitude toward marijuana than eighth and twelfth-grade students. The most favorable expression (most unacceptable, by society's standards) was that of tenth-grade boys. The students were more likely to condone personal use of marijuana than when asked about a situation which depicted a person who began using marijuana because of an unhappy home environment. The three groups also had a more favorable attitude toward a person starting to smoke marijuana for social acceptance than it did toward persons starting to smoke because of an unhappy home situation.

Robinson (48) examined the psychological traits, attitudes, and social characteristics of seventeen high school girls between the ages of fifteen and eighteen who smoked marijuana. The study was conducted in 1970. Marijuana smokers were found to be warmhearted, enthusiastic extroverts who were socially dependent on others. The girls communicated with large, colorful vocabularies, and expressed themselves in the jargon of the day. A comparison group of non-marijuana users were like the users in external appearance, but were more reserved, more conscientious, and less colorful in expression. The nonusers were also more introverted and self-reliant. Both groups were found to be neurotic. The girls who smoked marijuana tended to move into peer group relations to find the satisfactions lacking

in family relationships, and to find security as they coped with identity crises. Values of the peer group were demonstrated by such activities as struggle against authority, repudiation of the establishment, and the use of marijuana. Robinson concluded that psychological traits, attitudes, and social characteristics of the group of users were pertinent in the question of motivation for marijuana use.

Shetterly (52) studied the self and social perceptions and the personal characteristics of a group of more than forty socially privileged high school marijuana users. Specifically, the study was designed to identify the subjects' feelings and attitudes toward family, school, religion, peer groups, and social values. In general, the subjects were reared in a permissive atmosphere in which discipline was loose and inconsistent. The students were generally disenchanted with school, but the disenchantment was not manifested in hostile school behavior. Inherent in the life styles of the students was an aversion to games and physical exercise. Although the respondents termed school-sponsored drug education as necessary, they felt that such programs presently lack credibility, both in terms of content and method of presentation. The subjects tended to reject formalized religion. Most of the students felt that marijuana was less harmful than alcohol.

Marijuana and LSD: College Students

Attitudes of college students toward marijuana and LSD appear to become more crystallized than attitudes of younger persons. In 1966, the United States National Student Association, one of the largest groups of organized students in the country, issued a position statement regarding the two drugs (25). The statement accused the Federal Narcotics Bureau of misguiding the American people in the enactment of legislation on marijuana. Laws were considered unfair and harsh. The organization recommended repeal of all state legislation which prohibits the consumption and possession of marijuana for personal use. The group also called for repeal of laws which totally prohibit the sale, possession, and consumption of LSD. Recommendations were made calling for the Food and Drug Administration to sponsor an independent professional organization which would outline criteria for LSD usage, screen subjects, control dosage, and provide supervision.

Eells (13) surveyed a group of California college students on practices and attitudes with respect to marijuana and LSD in 1967. Only among nonusers was there any substantial sentiment for an outright prohibition of the use and possession of marijuana by adults. A substantial number of marijuana users favored legal restrictions for those below some specified age. Casual marijuana users tended to favor controls over the sale and distribution only, while steady

and heavy users favored no legal controls whatever. Attitudes toward the legal control of LSD were significantly more conservative than attitudes toward marijuana. A majority of those students who had used LSD favored outright prohibition for those under a specific age, and a few students indicated that the drug should be prohibited regardless of age. Even among steady users there was comparatively little sentiment for having no legal controls, but some students did express the opinion that controls should affect the sale and distribution of the drug, not possession and use. It appeared that a large group of subjects disagreed with the existing laws regarding marijuana and LSD, and Eells concluded that this disagreement may have been representative of a growing number of college students.

In a study conducted in 1968, Suchman (57) defined the "hang loose ethic" as one in which students whose behavior, attitudes or values, and self-image were indicative of opposition to the traditional, established order. Suchman hypothesized that the student who embraces the "hang loose ethic" will be more likely to use marijuana than others. He also predicted that males would smoke marijuana more frequently and adhere to the ethic more often than females.

In regard to attitudes toward marijuana use, Suchman felt that those students who held to the ethic were more likely to favor use. These attitudes toward marijuana use and the "hang loose ethic" were predicted to be independent

factors, constantly reinforcing each other. All of Suchman's hypotheses were retained as a result of the study.

King (34) selected 775 students at Dartmouth College to be surveyed on attitudinal and behavioral correlates regarding marijuana use. In contrast to nonusers, marijuana smokers tended to be more opposed to external control, and viewed marijuana as a specific agent for inducing tension relief and relaxation. The users also favored legalization of marijuana, and were more permissive in attitudes toward other students using the drug. Users felt that they were better informed on the physical and psychological effects of marijuana than nonusers, and perceived it to be less dangerous than alcohol. More users than nonusers had tried to obtain alcohol illegally while under age.

Less than 50 percent of nonusers in the King study favored legalization of marijuana, but less than a majority opposed it. The nonusers indicated that they would be more approving of others using the drug if it were legalized. Less than one-third of the group conceived of the possibility of trying marijuana before it becomes legalized. The nonusers concluded that laws cannot be construed as a "massive" deterrent to marijuana use. The same group viewed marijuana as being more dangerous psychologically than physically. Neither knowing someone who had used the drug nor actually having had the opportunity to try it influenced all students into using marijuana.

Marijuana: Adults

In 1969, a Gallup opinion poll (18) revealed that 84 adults out of every 100 opposed legislation of marijuana. Sharp differences were found on the basis of age, educational background, and region of the country. One person in four among those in the 21 to 29 age group favored legalization, compared to 12 percent in the 30 to 49 age group, and 6 percent among people over 50 years of age. One-fourth of the adults with some college education also favored legalization of marijuana. The proposed law found more approval in the East and West than in the South and Midwest.

All who were surveyed in the Gallup study were asked if they knew the effects of marijuana. The most common answers suggested that the drug harms the mind and nervous system, and that marijuana leads to the use of stronger drugs. Persons who reported having smoked marijuana were far less inclined to say that the drug leads to the use of stronger substances, and the same group was more inclined to say that marijuana is neither habit forming nor harmful.

Twelve persons out of every 100 in their twenties reported having used marijuana. This figure projects to approximately five million adults in the nation. If all groups are taken into account, an estimated ten million Americans have tried marijuana, according to the Gallup figures. Four percent of all adults said they would try the drug if offered to them, while 10 out of 100 persons in their twenties said they would do so.

Relationship Studies

Statements by experts and research reports indicate differences on the issue of whether or not health knowledge and/or attitudes influence health behavior. Kilander (33) concluded in 1954 that the relationship between accurate health information and desirable health practices is, in general, positive. Taylor (58) found substantial positive relationships between desirable health attitudes and desirable health practices of 109 first-year college students in a study completed in 1957.

Lawton and Goldman (35) asked seventy-two lung cancer scientists and seventy-two psychologists about cigarette smoking habits and attitudes in 1958. While the cancer scientists tended to link smoking and lung cancer, there was no relationship found between the scientists and attitudes that affected current smoking, dissatisfaction with their own habit, or attempts to modify their smoking behavior. Psychologists showed positive relationships between desirable attitudes and smoking behavior patterns.

Maggio (39) studied the relationship between the health information, previous health instruction, and health practices of 200 college freshmen. No significant relationships between health information and health practices were found.

In 1964, a study among 600 eleventh and twelfth-grade boys investigated the effects of a teaching unit on tobacco and attitudes toward smoking (53). Of the 396 boys who had

never smoked, 65 percent indicated that they believed the unit helped prevent them from starting the habit. Of those who had quit or cut down significantly on smoking, 49 percent indicated that the unit had played a part in their decision. Of those who still smoked regularly, 46 percent said they were considering giving up smoking partly because of what they had heard in the smoking unit.

A National Tuberculosis Association publication (55) of 1966 claimed that almost nothing was known about how to get people to change any kind of behavior, including smoking. The report also stated that attitudes toward smoking are not consistent with smoking behavior patterns. The statement concluded that changes in attitudes do not necessarily lead to changes in behavior, and even firm decisions to change behavior do not insure success in change.

Briney (8) designed a study to determine whether or not a relationship exists between knowledge of effects of cigarette smoking and smoking behavior. The subjects were 384 high school seniors in a metropolitan area of California. At the .01 level of significance, the study showed no relationship between knowledge of the effects of smoking and desirable smoking behavior for boys, but a positive relationship for girls. There was no relationship between smoking practices of fathers and either boys or girls. A positive relationship did exist between the smoking practices of girls and their mothers.

Merki (40) found that knowledge of the Surgeon General's report on smoking and health did not appear to be related to the smoking habits of eighth and eleventh-grade students in rural Illinois schools. Neither eighth nor eleventh-grade students indicated that they had been influenced in smoking habits by the knowledge of a friend or relative who had died of lung cancer.

Newsom (42) found positive relationships between accurate health knowledge and desirable health practice among high school students in a study conducted in 1967. Fisher (16) found no such relationships in a similar study completed in 1969. Owen (43) concluded that exposure to health knowledge was successful in immediately modifying general health attitudes, but not successful in changing underlying components of attitudes, such as vulnerability, severity, or benefits. Educational materials, according to Owen, appear to have some delayed, but desirable, effect on health attitudes.

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CHAPTER III

METHODOLOGY

Several factors led to the selection of the Carrollton-Farmers Branch Independent School District as a site for this study. First, the district was about to initiate a drug education program in grades five through twelve, and had expressed an interest in obtaining base line data prior to the start of the program. Other factors included the accessibility of the Carrollton and Farmers Branch communities, and the willingness of the school district to participate in the study.

Two planning meetings were held with the Assistant Superintendent of Instruction. In the first meeting, the basic idea for the study was presented to the school district for consideration. Following the receipt of a letter from the Assistant Superintendent granting permission to conduct the study (Appendix A), a second meeting was held during which time the detailed research proposal was discussed and procedures set for the administration of the instruments. In addition to a discussion of the procedures to be followed, the dates for the collection of data were agreed upon. The collection of data was completed in a two-week period during February of 1971.

Description of the Subjects

The subjects in this study were 428 students enrolled in grades five through twelve in the Carrollton-Farmers Branch Independent School District during the 1970-1971 school year. The subjects were students from the only senior high school in the district, both of the junior high schools, and four of the eight elementary schools. Two of the elementary schools were located in Carrollton, and the other two were in Farmers Branch. The total enrollment of the school district at the time of the study was 9,527 students. Of that total, 6,067 students were enrolled in grades five through twelve. The students who participated in the study represented approximately one-fifteenth (6.7 percent) of the total enrollment in the eight grades surveyed.

In order to insure grouping of students by grades, school district officials selected a representative sample of students enrolled in required courses at each grade level. These students were grouped by grades only, and selected randomly from the classes of cooperating teachers. The students were not told in advance that they would be surveyed on their attitudes toward drugs and their knowledge of drugs. The distribution of subjects, divided according to grades and educational levels, is presented in Table I.

TABLE I

DISTRIBUTION OF SUBJECTS BY GRADES AND EDUCATIONAL LEVELS

Educational Level	Grade	Number	Total
Upper Elementary	5	59	
	6	49	108
Junior High School	7	57	
	8	51	108
Senior High School	9	54	
	10	57	
	11	57	
	12	44	212
Total			428

Instruments

The instrument used to measure attitudes toward the six drugs was the semantic differential scale (Appendix B), developed by Osgood (14). The semantic differential is a rating scale consistong of one concept rated in terms of several criteria. The criteria are pairs of bipolar adjectives at opposite ends of a five, seven, or nine-point scale. The subject is asked to rate a concept somewhere on the scale between the two adjectives at either end. In this study, a five-point scale was used, following the suggestion of Kerlinger (8, p. 571) in regard to the use of the semantic differential among elementary school students.

The concepts used in this study were each of the six drugs (cigarettes, alcoholic drinks, marijuana, LSD, heroin, and methedrine) under consideration. The bipolar adjectives were selected from a list of fifty opposites which Osgood and his associates pretested and found to be representative of the three major dimensions of attitudes, which are evaluation, potency, and activity. To arrive at an attitude score for a particular concept, the five spaces along the scales were numbered from one to five. Five represented the extreme negative end of the scale, and one indicated the positive extreme. According to Osgood (14, p. 119), the researcher's judgment determines the adjectives to be selected, as well as which adjectives are to be considered positive or negative. The order of appearance of the bipolar adjectives was randomly arranged to avoid patterned responses. The subjects were instructed to mark each of the twelve scales in response to a concept. A total of the corresponding values produced the attitude score.

The semantic differential technique is widely recognized as a measurement of attitudes. Sax (16, p. 273) says that the instrument is extremely flexible, simple to construct, administer, and score, and adds that a number of studies have demonstrated the validity of the semantic differential. The technique is subject to all of the limitations present in other rating scales, such as the possibility of faking responses, a tendency to place marks in the middle of the

scale, and having to mark a concept on seemingly unrelated scales (16, p. 273).

Summers (18, p. 251) agrees that the semantic differential is easy to administer and code, and says that the instrument has an unprecedented amount of cross-cultural validation. Neal, Gill, and Tismer (13, p. 233) also support the cross-cultural validation of the semantic differential. Summers concludes that the technique gives an abundance of information about affective responses to a stimulus, that it has been applied frequently as a technique for attitude measurement, and that the semantic differential has been found to correlate highly with measurements on traditional scales.

Smith (17, p. 123) says that the semantic differential has been widely used as an attitude measurement instrument, and that it possesses a significant advantage over other instruments. That advantage is the technique's ability of offering a wide choice in magnitude or completeness of the concept under consideration.

Di Vesta and Dick (3) examined the reliability of the semantic differential under delayed and immediate test-retest conditions. The study was conducted with children in grades two through seven. In general, the semantic differential was found to be an acceptably stable instrument when used with children as young as those in the third grade under immediate retest conditions. Reliability coefficients

ranging from .79 to .89 were found among elementary and junior high school students. Coefficients of .90 and higher have been found on ratings made by college students (3, p. 605).

Brinton (1), Hoover and Schutz (6), Neale and Proschek (12), and Kerrick (9) offer additional evidence that the semantic differential is a valid and reliable instrument in the measurement of attitudes. Brinton (1, p. 288) says that validity of the scale appears to be high, based on scores gathered on the Thurstone, Likert, and Guttman scales. Correlations between the semantic differential and these three scales ranged from .87 to .95. Hoover and Schutz (6, p. 300) describe the differential as a "highly sensitive approach to the measurement of attitudes." Neale and Proschek (12, p. 243) found the semantic differential to yield stable factor scores with children as low as grade two. Kerrick (9, p. 42) reports the semantic differential to be a highly reliable instrument, and adds that the technique has been shown to be a valid measure of attitudes in a number of situations. Specifically, in public health, the semantic differential has been shown to have at least face validity.

The "Drug Knowledge Test" (Appendix B) was constructed as an instrument to measure drug knowledge among the students in grades five through twelve. Thirty-one multiple choice questions were designed to test the students' knowledge

about drugs in general, and specifically, to correspond with information about drugs indicated as problems by the school district's survey of drug use. Questions were consistent with information presented in books written by four experts: Cohen (2), Jones (7), Lingeman (10), and Merki (11). The design of the test questions was consistent with the types of questions asked in the Drug Knowledge Inventory (5) and the Drug Decision Student Manual (4), both standardized drug knowledge tests.

The "Drug Knowledge Test" was administered to separate groups of fourteen and twenty-two fifth and sixth-grade students, respectively, for readability. The students were asked to circle words on the test which they did not understand. Five fifth and sixth-grade teachers were also asked to indicate words on the test which they thought would be inappropriate for students at their respective levels. Following this procedure, the test was rewritten to coincide with changes necessary for insuring understanding at the fifth and sixth-grade levels.

In order to establish the criterion-related validity of the "Drug Knowledge Test," it was administered to a group of twenty-six tenth, eleventh, and twelfth-grade students enrolled in a required health course. The same group of students was given the Drug Knowledge Inventory, a standardized test suited for high school age groups. The scores recorded on the two tests were compared by the Pearson Product-Moment

Correlation procedure, with a resulting correlation coefficient of .80, which is significant at the .01 level of confidence. The same procedure was followed in administering the tests to two groups totaling forty-one students at the freshman level in college. A correlation coefficient of .86 between scores on the two tests resulted.

Reliability of the "Drug Knowledge Test" was established by the Kuder-Richardson Formula Twenty procedure, with a resulting Alpha of .84 with the high school group and .87 with the college group. In view of the fact that the "Drug Knowledge Test" measures more than one dimension of drug knowledge, the Alpha values may be considered underestimates of reliability (15, p. 106).

Procedures for Collecting Data

Testing was conducted on six prearranged dates. Students were allowed to take the tests anonymously in order to improve conditions for honesty of response. The same investigator supervised all testing to insure uniformity of testing conditions.

Test booklets consisting of instruction sheets, the semantic differential attitude scales, the "Drug Knowledge Test," and one IBM answer sheet were distributed to the subjects. Instructions for completing drug knowledge and drug attitude instruments were read to the students, and questions were answered. As the students completed both parts of the

survey, all test materials were collected by the test administrator. No time limit was placed on completing the tests. The maximum time needed to complete the two instruments was fifty minutes, and the minimum time was nineteen minutes.

Procedures for Treatment of Data

When the collection of data was completed, the semantic differential attitude scores were tabulated manually. The data were then punched into cards for automatic processing at the North Texas State University Computer Center.

In Hypotheses I through VII, the simple analysis of variance was used to determine if significant differences in means existed between groups or between attitudes within groups, depending on the hypothesis being tested. When significant differences in means were indicated, the Scheffe procedure for comparing any and all combinations between pairs of means was utilized. Roscoe (15, p. 239) recommends the Scheffe method when the investigator wishes to make all possible comparisons between pairs of means. Because of the possibility of differences in means in two directions, two-tailed tests were chosen. All hypotheses were arbitrarily retained or rejected at the .05 level of significance. Hypotheses were tested, and data were grouped in the following manner:

Hypothesis I. To determine differences in attitudes between groups toward each of the six drugs, data were

grouped by educational levels (for example, all junior high school students).

Hypothesis II. Same as Hypothesis I.

Hypothesis III. To determine differences in attitudes between successive (consecutive) grades, data were grouped by grades.

Hypothesis IV. To determine differences in attitudes within each group toward the respective drugs, data were grouped by educational levels.

Hypothesis V. To determine differences in knowledge between groups, data were grouped by educational levels.

Hypothesis VI. Same as Hypothesis V.

Hypothesis VII. To determine difference in knowledge between successive (consecutive) grades, data were grouped by grades.

In Hypothesis VIII, the Pearson Product-Moment Correlation procedure was used to determine if a significant relationship existed between drug knowledge and drug attitudes. Data were grouped by educational levels.

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CHAPTER IV

RESULTS OF THE STUDY

The purpose of this chapter is to present the findings of the study of drug attitudes, drug knowledge, and the relationship between attitudes and knowledge among students in grades five through twelve in the Carrollton-Farmers Branch Independent School District. These findings are presented in the order in which the eight hypotheses were stated in Chapter I.

In testing Hypotheses I through VII, the simple analysis of variance was used to determine if significant differences in attitudes or knowledge existed. When significant differences were indicated, the Scheffe method of comparing all combinations of means was used to determine if the significant difference existed between the two variables in question. In Hypothesis VIII, the Pearson Product-Moment Correlation procedure was used to determine the relationship between drug attitudes and drug knowledge. All hypotheses were retained or rejected at the .05 level of significance.

As defined in Chapter I, positive drug attitudes are those which are favorable or accepting toward a drug. Negative drug attitudes are those which are not favorable or accepting toward a drug.

Data Related to Hypothesis I

Hypothesis I(a) stated that there would be no significant difference in the group mean scores on the semantic differential scale between the upper elementary and junior high groups with regard to cigarettes. As presented in Table II, the elementary group recorded a mean of 48.75 on the cigarette attitude scale, significantly higher than the mean of 44.95 recorded by the junior high group.

TABLE II

NUMBER OF OBSERVATIONS, MEANS, AND STANDARD DEVIATIONS RECORDED BY UPPER ELEMENTARY AND JUNIOR HIGH STUDENTS ON THE CIGARETTE ATTITUDE SCALE

Group	Number	Mean	Standard Deviation
Upper Elementary	106	48.75	8.74
Junior High School	108	44.95*	10.62

*Significantly different from preceding mean at .05 level.

The analysis of variance of means of the elementary, junior high, and senior high groups resulted in an F ratio of 9.80, which is significant at the .001 level (see Table III). The Scheffe method of comparing means of the elementary and junior high groups produced an F value of 3.86, exceeding the table value of 3.00 (1, p. 322), thus indicating a significant difference between the two means. Therefore, Hypothesis I(a) was rejected. Elementary students had a significantly more negative attitude toward cigarettes than junior high students.

TABLE III

SUMMARY OF ANALYSIS OF VARIANCE OF GROUP MEANS ON THE SEMANTIC DIFFERENTIAL ATTITUDE SCALE FOR SIX DRUGS AMONG STUDENTS AT THREE EDUCATIONAL LEVELS

Source	Sum of Squares	df	Variance Estimate	F	p
Cigarettes					
Between	1964.00	2	982.00	9.80	.001
Within	42289.11	422	100.21		
Total	44253.11	424			
Alcoholic Drinks					
Between	4349.96	2	2174.98	22.56	.001
Within	40784.40	423	96.42		
Total	45134.36	425			
Marijuana					
Between	6182.30	2	3091.15	23.53	.001
Within	55693.80	424	131.35		
Total	61876.10	426			
LSD					
Between	717.61	2	358.81	4.33	.01
Within	34875.25	421	82.84		
Total	35592.86	423			
Heroin					
Between	341.89	2	170.95	4.04	.01
Within	17698.86	418	42.34		
Total	18040.75	420			
Methedrine					
Between	325.20	2	162.60	2.19	NS*
Within	30908.23	416	74.30		
Total	31233.43	418			

*Not significant at the .05 level.

Hypothesis I(b) stated that there would be no significant difference in the group mean scores on the semantic differential scale between the upper elementary and junior high groups with regard to alcoholic drinks. The elementary group had a mean of 47.38 on the alcohol attitude scale, which was not significantly different from the mean of 44.14 recorded by the junior high school group (see Table IV).

TABLE IV

NUMBER OF OBSERVATIONS, MEANS, AND STANDARD DEVIATIONS RECORDED BY UPPER ELEMENTARY AND JUNIOR HIGH STUDENTS ON THE ALCOHOL ATTITUDE SCALE

Group	Number	Mean	Standard Deviation
Upper Elementary	106	47.38	8.85
Junior High	108	44.14*	10.67

*Not significantly different from preceding mean.

The analysis of variance of means of the elementary, junior high, and senior high groups produced an F ratio of 22.56, which is significant at the .001 level (see Table III). However, the Scheffe procedure of comparing means of the elementary and junior high groups resulted in an F value of 2.91, which does not exceed the necessary table value (1, p. 322). The results did not indicate a significant difference in the means being compared, and Hypothesis I(b) was retained. Upper elementary students and junior high students demonstrated no significant differences in their attitudes toward alcoholic drinks.

Hypothesis I(c) stated that there would be no significant difference in the group mean scores on the semantic differential attitude scale between the upper elementary and junior high groups with regard to marijuana. As presented in Table V, the elementary group had a mean of 50.28 on the marijuana attitude scale. This mean was not significantly different from the mean of 47.82 recorded by the junior high school group.

TABLE V

NUMBER OF OBSERVATIONS, MEANS, AND STANDARD DEVIATIONS RECORDED BY UPPER ELEMENTARY AND JUNIOR HIGH STUDENTS ON THE MARIJUANA ATTITUDE SCALE

Group	Number	Mean	Standard Deviation
Upper Elementary	108	50.28	7.96
Junior High School	108	47.82*	9.40

*Not significantly different from preceding mean.

The analysis of variance of means recorded by the elementary, junior high, and senior high school groups produced an F ratio of 23.53, which is significant at the .001 level (see Table III). However, the Scheffe procedure of comparing means of the elementary and junior high groups resulted in an F value of 1.25, which does exceed the necessary table value (1, p. 322). The results did not indicate a significant difference in the means being compared, and Hypothesis I(c) was retained. There was not a significant difference

in the attitudes of upper elementary and junior high school students with regard to marijuana.

Hypothesis I(d) stated that there would be no significant difference in the group mean scores on the semantic differential attitude scale between the upper elementary and junior high school groups with regard to LSD. An inspection of Table VI shows that the elementary group recorded a mean of 52.50 on the LSD attitude scale. This mean was not significantly different from the mean of 52.96 recorded by the junior high group.

TABLE VI

NUMBER OF OBSERVATIONS, MEANS, AND STANDARD DEVIATIONS RECORDED BY UPPER ELEMENTARY AND JUNIOR HIGH STUDENTS ON THE LSD ATTITUDE SCALE

Group	Number	Mean	Standard Deviation
Upper Elementary	105	52.50	6.84
Junior High School	108	52.96*	7.06

*Not significantly different from preceding mean.

The analysis of variance of means recorded by the elementary, junior high, and senior high school groups resulted in an F ratio of 4.33, which is significant at the .01 level (see Table III). However, the Scheffe procedure of comparing means of the elementary and junior high groups produced an F value of .07, which does not exceed the table value of 3.00 (1, p. 322). The results did not indicate a significant

difference in the two means being compared, and Hypothesis I(d) was retained. There was not a significant difference in the attitudes of upper elementary and junior high school students toward LSD.

Hypothesis I(e) stated that there would be no significant difference in group mean scores recorded on the semantic differential attitude scale between the upper elementary and junior high school groups with regard to heroin. As presented in Table VII, the elementary group had a mean of 52.01 on the heroin attitude scale, which was not significantly different from the mean of 53.36 recorded by the junior high students.

TABLE VII

NUMBER OF OBSERVATIONS, MEANS, AND STANDARD DEVIATIONS RECORDED BY UPPER ELEMENTARY AND JUNIOR HIGH STUDENTS ON THE HEROIN ATTITUDE SCALE

Group	Number	Mean	Standard Deviation
Upper Elementary	103	52.01	6.84
Junior High School	107	53.36*	6.82

*Not significantly different from preceding mean.

The analysis of variance of means recorded by the elementary, junior high, and senior high groups produced an F ratio of 4.04, which is significant at the .01 level (see Table III). However, the Scheffe procedure of comparing means of the elementary and junior high groups resulted in

an F value of 1.14, which does not exceed the table value of 3.00 (1, p. 322). These results did not indicate a significant difference in the two means being compared, and Hypothesis I(e) was retained. There was not a significant difference in the attitudes of upper elementary and junior high students toward heroin.

Hypothesis I(f) stated that there would be no significant difference in the group mean scores recorded on the semantic differential attitude scale between the upper elementary and junior high school groups with regard to methedrine. As presented in Table VIII, the upper elementary group had a mean of 52.05 on the methedrine attitude scale, compared to a mean of 52.56 recorded by the junior high school group. There was not a significant difference in the means of the two groups.

TABLE VIII

NUMBER OF OBSERVATIONS, MEANS, AND STANDARD DEVIATIONS RECORDED BY UPPER ELEMENTARY AND JUNIOR HIGH STUDENTS ON THE METHEDRINE ATTITUDE SCALE

Group	Number	Mean	Standard Deviation
Upper Elementary	101	52.05	6.61
Junior High School	107	52.56*	7.20

*Not significantly different from preceding mean.

The analysis of variance of means recorded by the elementary, junior high, and senior high school groups resulted in an F ratio of 2.19, which is not significant at the .05

level (see Table III). Because the analysis of variance procedure showed no significant difference in means between any combination of groups, Hypothesis I(f) was retained. There was not a significant difference in the attitudes of upper elementary and junior high school students with regard to methedrine.

Data Related to Hypothesis II

Hypothesis II(a) stated that there would be no significant difference in the group mean scores on the semantic differential attitude scale between junior and senior high school groups of students with regard to cigarettes. As presented in Table IX, the junior high group had a mean of 44.95 on the cigarette attitude scale, a mean not significantly different from that of 43.49 recorded by the senior high school group.

TABLE IX

NUMBER OF OBSERVATIONS, MEANS, AND STANDARD DEVIATIONS RECORDED BY JUNIOR AND SENIOR HIGH STUDENTS ON THE CIGARETTE ATTITUDE SCALE

Group	Number	Mean	Standard Deviation
Junior High School	108	44.95	10.62
Senior High School	211	43.49*	10.28

*Not significantly different from preceding mean.

The analysis of variance of means of the elementary, junior high, and senior high school groups produced an F

ratio of 9.80, which is significant at the .001 level (see Table III). However, the Scheffe procedure of comparing means of the junior and senior high groups resulted in an F value of .77, which does not exceed the table value of 3.00 (1, p. 322). The results did not indicate a significant difference in the two means being compared, and Hypothesis II(a) was retained. There was not a significant difference in the attitudes of junior and senior high school students toward cigarettes.

Hypothesis II(b) stated that there would be no significant difference in the group mean scores on the semantic differential attitude scale between junior and senior high school groups regarding alcoholic drinks. As presented in Table X, the junior high group had a mean of 44.14 on the alcohol attitude scale, significantly higher than the mean of 39.78 recorded by the senior high school group.

TABLE X

NUMBER OF OBSERVATIONS, MEANS, AND STANDARD DEVIATIONS RECORDED BY JUNIOR AND SENIOR HIGH STUDENTS ON THE ALCOHOL ATTITUDE SCALE

Group	Number	Mean	Standard Deviation
Junior High School	108	44.14	10.67
Senior High School	212	39.78*	9.83

*Significantly different from preceding mean at .001 level.

The analysis of variance of means recorded by the elementary, junior high, and senior high groups resulted in an F ratio of 22.56, which is significant at the .001 level (see Table III). The Scheffe treatment of means of the junior and senior high groups produced an F value of 7.06, exceeding the table value of 3.00 (1, p. 322). The results indicated a significant difference in the two means being compared, and Hypothesis II(b) was rejected. Junior high students demonstrated a significantly more negative attitude toward alcoholic drinks than senior high school students.

Hypothesis II(c) stated that there would be no significant difference in the group mean scores on the semantic differential attitude scale between junior and senior high school groups of students with regard to marijuana. As presented in Table XI, the junior high group had a mean of 47.82 on the marijuana attitude scale, significantly higher than the mean of 41.65 recorded by the senior high school group.

TABLE XI

NUMBER OF OBSERVATIONS, MEANS, AND STANDARD DEVIATIONS RECORDED BY JUNIOR AND SENIOR HIGH STUDENTS ON THE MARIJUANA ATTITUDE SCALE

Group	Number	Mean	Standard Deviation
Junior High School	108	47.82	9.40
Senior High School	211	41.65*	13.70

*Significantly different from preceding mean at .001 level.

The analysis of variance of means recorded by the elementary, junior high, and senior high groups produced an F ratio of 23.53, which is significant at the .001 level (see Table III). The Scheffe procedure of comparing means between the junior and senior high school groups resulted in an F value of 10.37, which exceeds the table value of 3.00 (1, p. 322), and indicates a significant difference in the means of the two groups being compared. Therefore, Hypothesis II(c) was rejected. Junior high students demonstrated a significantly more negative attitude toward marijuana than senior high school students.

Hypothesis II(d) stated that there would be no significant difference in the group mean scores on the semantic differential attitude scale between junior and senior high school groups with regard to LSD. An inspection of Table XII shows that the junior high group had a mean of 52.96 on the LSD attitude scale, which is significantly higher than the mean of 50.15 recorded by the senior high school group.

TABLE XII

NUMBER OF OBSERVATIONS, MEANS, AND STANDARD DEVIATIONS RECORDED BY JUNIOR AND SENIOR HIGH STUDENTS ON THE LSD ATTITUDE SCALE

Group	Number	Mean	Standard Deviation
Junior High School	108	52.96	7.06
Senior High School	211	50.15*	10.84

*Significantly different from preceding mean at .05 level.

The analysis of variance of means of the elementary, junior high, and senior high groups produced an F ratio of 4.33, which is significant at the .01 level (see Table III). In comparing means of the junior and senior high groups, the Scheffe method resulted in an F value of 3.41, which exceeds the table value of 3.00 (1, p. 322) and indicates a significant difference between the two means being compared. Therefore, Hypothesis II(d) was rejected. Junior high students demonstrated a significantly more negative attitude toward LSD than students in the senior high school group.

Hypothesis II(e) stated that there would be no significant difference in the group mean scores recorded on the semantic differential attitude scale between junior and senior high school groups with regard to heroin. As presented in Table XIII, the junior high group had a mean of 53.56 on the heroin attitude scale, a mean which was not significantly different from that of 54.23 recorded by the senior high school group.

TABLE XIII

NUMBER OF OBSERVATIONS, MEANS, AND STANDARD DEVIATIONS RECORDED BY JUNIOR AND SENIOR HIGH STUDENTS ON THE HEROIN ATTITUDE SCALE

Group	Number	Mean	Standard Deviation
Junior High School	107	53.36	6.82
Senior High School	211	54.23*	6.17

*Not significantly different from preceding mean.

The analysis of variance of means of the elementary, junior high, and senior high groups produced an F ratio of 4.04, which is significant at the .01 level (see Table III). However, the Scheffe comparison of the means of the junior and senior high groups resulted in an F value of .62, which does not exceed the table value of 3.00 (1, p. 322). The results indicated that there was not a significant difference in the two means being compared, and Hypothesis II(e) was retained. There was not a significant difference in the attitudes of junior and senior high school students toward heroin.

Hypothesis II(f) stated that there would be no significant difference in the group mean scores recorded on the semantic differential attitude scale between junior and senior high school groups of students with regard to methedrine. As presented in Table XIV, the junior high group had a mean of 52.56 on the methedrine attitude scale, which was not significantly different from the mean of 50.59 recorded by the senior high school group of students.

TABLE XIV

NUMBER OF OBSERVATIONS, MEANS, AND STANDARD DEVIATION RECORDED BY JUNIOR AND SENIOR HIGH STUDENTS ON THE METHEDRINE ATTITUDE SCALE

Group	Number	Mean	Standard Deviation
Junior High School	107	52.56	7.20
Senior High School	211	50.59*	10.01

*Not significantly different from preceding mean.

The analysis of variance of means of the elementary, junior high, and senior high school groups produced an F ratio of 2.19, which is not significant at the .05 level (see Table III). The results indicated that no significant difference in means existed between any combination of groups. Therefore, Hypothesis II(f) was retained. There was not a significant difference in the attitudes of junior high and senior high school groups of students toward methedrine.

Data Related to Hypothesis III

Hypothesis III stated that there would be no significant differences in attitudes, as measured by mean scores on the semantic differential scale, between students enrolled in any two successive (consecutive) grades toward (a) cigarettes, (b) alcoholic drinks, (c) marijuana, (d) LSD, (e) heroin, and (f) methedrine. The analysis of variance of means recorded by the students at the eight grade levels indicated that significant differences existed between some combinations of grades. However, as presented in Table XV, the Scheffe method of comparing means between successive grade levels did not indicate significant differences between any two successive grade levels.

Based on the results of the Scheffe comparisons, Hypothesis III, including all six sub-hypotheses, was retained. There were no significant differences in attitudes of students enrolled in any two successive grade levels regarding

TABLE XV

SCHEFFE VALUES RESULTING FROM COMPARISONS OF MEANS ON THE SEMANTIC DIFFERENTIAL ATTITUDE SCALE BY STUDENTS IN SUCCESSIVE GRADES REGARDING SIX DRUGS

	Scheffe Values*					
Grades	Cigarettes	Alcohol	Marijuana	LSD	Heroin	Methedrine
5-6	.39	.86	1.44	.31	1.83	.41
6-7	1.30	.53	.83	.00	.05	.00
7-8	.02	.80	.12	.29	.05	.11
8-9	.14	.11	.25	.09	.01	.26
9-10	.13	.17	.33	1.19	.01	.02
10-11	.18	.12	.02	.43	.13	.13
11-12	.18	.12	.00	.03	.02	.09

*The Scheffe value must exceed 2.01 to indicate a significant difference.

cigarettes, alcoholic drinks, marijuana, LSD, heroin, and methedrine. The means and standard deviations of the attitude scores recorded by the students in the eight grades are presented in Table XXXI (Appendix D).

Data Related to Hypothesis IV

Hypothesis IV(a) stated that there would be no significant differences in attitudes, as measured by group mean scores on the semantic differential attitude scale, between cigarettes, alcoholic drinks, marijuana, LSD, heroin, and methedrine, respectively, among students within the upper elementary group. Table XVI presents the mean attitude scores and standard deviations of this group.

TABLE XVI

MEANS AND STANDARD DEVIATIONS RECORDED BY UPPER ELEMENTARY STUDENTS ON THE SEMANTIC DIFFERENTIAL DRUG ATTITUDE SCALE
N = 100

	Cigarettes	Alcohol	Marijuana	LSD	Heroin	Methedrine
Mean	48.72	47.66	50.46	52.66	52.13	52.06
SD	8.87	8.85	8.02	6.64	6.76	6.64

The analysis of variance of means recorded by the upper elementary group on the six drug attitude scales produced an F ratio of 16.78, which is significant at the .001 level (see Table XVII). The results indicated that students in the elementary group had significant differences in their attitudes toward the six drugs. Therefore, Hypothesis IV(a) was rejected.

TABLE XVII

SUMMARY OF ANALYSIS OF VARIANCE OF UPPER ELEMENTARY GROUP MEANS ON THE SEPARATE DRUG ATTITUDE SCALES

Source	Sum of Squares	df	Variance Estimate	F	p
Between	22884.90	99	418.25	16.78	.001
Within	14363.17	500	24.79		
Total	37248.07	599			

The Scheffe procedure of comparing all combinations of means was used to identify specific attitude differences. These differences are presented in Table XVIII.

TABLE XVIII

SCHEFFE VALUES RESULTING FROM COMPARISONS OF UPPER ELEMENTARY GROUP MEANS ON THE SEPARATE DRUG ATTITUDE SCALES*

	Alcohol	Marijuana	LSD	Heroin	Methedrine
Cigarettes	.45	1.22	6.26**	4.69**	4.50**
Alcohol		3.16**	10.08**	8.06**	7.81**
Marijuana			1.95	1.12	1.03
LSD				.11	.15
Heroin					.00

*Scheffe values must exceed 2.21 to indicate a significant difference.

**Indicates a significant difference in attitude from the corresponding drug in the left column.

Hypothesis IV(b) stated that there would be no significant differences in attitudes, as measured by the group mean scores on the semantic differential attitude scale, between cigarettes, alcoholic drinks, marijuana, LSD, heroin, and methedrine, respectively, among students within the junior high group. Table XIX presents the attitude means and standard deviations of this group.

TABLE XIX

MEANS AND STANDARD DEVIATIONS RECORDED BY JUNIOR HIGH STUDENTS ON THE SEMANTIC DIFFERENTIAL DRUG ATTITUDE SCALE (N = 107)

	Cigarettes	Alcohol	Marijuana	LSD	Heroin	Methedrine
Mean	44.99	44.12	47.80	53.07	53.36	52.56
SD	10.67	10.72	9.44	7.01	6.82	7.20

The analysis of variance of means recorded by the junior high group on the six drug attitude scales produced an F ratio of 44.51, which is significant at the .001 level (see Table XX). The results indicated that the junior high students also had significant differences in their attitudes toward the six drugs. Therefore, Hypothesis IV(b) was rejected.

TABLE XX

SUMMARY OF ANALYSIS OF VARIANCE OF JUNIOR HIGH GROUP MEANS ON THE SEPARATE DRUG ATTITUDE SCALES

Source	Sum of Squares	df	Variance Estimate	F	p
Between	26643.18	106	1903.64	44.51	.001
Within	32188.00	535	42.77		
Total	58831.18	641			

The specific differences in attitudes were identified by the Scheffe method of comparing all combinations of means. These differences are presented in Table XXI.

Hypothesis IV(c) stated that there would be no significant differences in attitudes, as measured by the group means on the semantic differential attitude scale, between cigarettes, alcoholic drinks, marijuana, LSD, heroin, and methedrine, respectively, among students in the senior high

TABLE XXI

SCHEFFE VALUES RESULTING FROM COMPARISONS OF JUNIOR HIGH GROUP MEANS ON THE SEPARATE DRUG ATTITUDE SCALES*

	Alcohol	Marijuana	LSD	Heroin	Methedrine
Cigarettes	.19	1.98	16.31**	17.54**	14.34**
Alcohol		3.39**	20.01**	21.37**	17.82**
Marijuana			6.93**	7.74**	5.66**
LSD				.02	.06
Heroin					.16

*Scheffe values must exceed 2.21 to indicate a significant difference.

**Indicates a significant difference in attitude from the corresponding drug in the left column.

school group. Table XXII presents the means and standard deviations of this group.

TABLE XXII

MEANS AND STANDARD DEVIATIONS RECORDED BY SENIOR HIGH STUDENTS ON THE SEMANTIC DIFFERENTIAL DRUG ATTITUDE SCALE (N = 211)

	Cigarettes	Alcohol	Marijuana	LSD	Heroin	Methedrine
Mean	43.49	39.72	41.65	50.15	54.23	50.56
SD	10.28	9.81	13.70	10.84	6.17	10.01

The analysis of variance of means recorded by the senior high school group on the six drug attitude scales produced an F ratio of 105.05, which is significant at the .001 level (see Table XXIII). The results indicated that the senior high school students had significant differences in their

attitudes toward the six drugs. Therefore, Hypothesis IV(c) was rejected.

TABLE XXIII

SUMMARY OF ANALYSIS OF VARIANCE OF SENIOR HIGH GROUP MEANS ON THE SEPARATE DRUG ATTITUDE SCALES

Source	Sum of Squares	df	Variance Estimate	F	p
Between	64600.19	210	7101.16	105.05	.001
Within	106480.67	1055	67.60		
Total	171080.86	1265			

The Scheffe procedure of comparing all combinations of means was used to identify specific attitude differences. These differences are presented in Table XXIV.

TABLE XXIV

SCHEFFE VALUES RESULTING FROM COMPARISONS OF SENIOR HIGH GROUP MEANS ON THE SEPARATE DRUG ATTITUDE SCALES*

	Alcohol	Marijuana	LSD	Heroin	Methedrine
Cigarettes	4.44**	1.06	13.86**	36.00**	15.73**
Alcohol		1.17	34.00**	65.74**	36.90**
Marijuana			22.57**	49.39**	24.94**
LSD				5.18**	.06
Heroin					4.14**

*Scheffe values must exceed 2.21 to indicate a significant difference.

**Indicates a significant difference in attitude from the corresponding drug in the left column.

Data Related to Hypothesis V

Hypothesis V stated that senior high school students would have a significantly higher mean on the "Drug Knowledge Test" than junior high school students. The senior high group had a mean of 17.25 on the test, significantly higher than the mean of 13.51 recorded by the junior high group (see Table XXV).

TABLE XXV

NUMBER OF OBSERVATIONS, MEANS, AND STANDARD DEVIATIONS RECORDED BY JUNIOR AND SENIOR HIGH STUDENTS ON THE DRUG KNOWLEDGE TEST

Group	Number	Mean	Standard Deviation
Junior High School	108	13.51	4.70
Senior High School	212	17.25*	5.00

*Significantly different from preceding mean at .001 level.

The analysis of variance of means of the senior high, junior high, and elementary groups produced an F ratio of 63.98, which is significant at the .001 level. These findings are presented in Table XXVI.

The Scheffe method of comparing means of the junior and senior high groups produced an F value of 22.33, which exceeds the table value of 3.00 (1, p. 322). The results indicated a significant difference between means of the two groups being compared; therefore, Hypothesis V was retained. Senior

TABLE XXVI

SUMMARY OF ANALYSIS OF VARIANCE OF GROUP MEANS ON THE DRUG KNOWLEDGE TEST RECORDED BY ELEMENTARY, JUNIOR HIGH, AND SENIOR HIGH STUDENTS

Source	Sum of Squares	df	Variance Estimate	F	p
Between	2875.57	2	1437.79	63.98	.001
Within	9550.89	425	22.47		
Total	12426.46	427			

high school students had a significantly higher mean on the "Drug Knowledge Test" than the junior high school students.

Data Related to Hypothesis VI

Hypothesis VI stated that junior high school students would have a significantly higher mean on the "Drug Knowledge Test" than upper elementary students. The junior high group had a mean of 13.51, significantly higher than the mean of 11.18 recorded by the elementary group. The means and standard deviations of these two groups are presented in Table XXVII.

TABLE XXVII

NUMBER OF OBSERVATIONS, MEANS, AND STANDARD DEVIATIONS RECORDED BY JUNIOR HIGH AND UPPER ELEMENTARY STUDENTS ON THE DRUG KNOWLEDGE TEST

Group	Number	Mean	Standard Deviation
Junior High School	108	13.51	4.22
Upper Elementary	108	11.18*	4.70

*Significantly different from preceding mean at .001 level.

The analysis of variance of means of the senior high, junior high, and upper elementary groups resulted in an F ratio of 63.98, which is significant at the .001 level (see Table XXVI). The Scheffe procedure of comparing means between the junior high school and elementary groups produced an F value of 58.82, which exceeds the table value of 3.00 (1, p. 322). The results indicated that a significant difference in means did exist between the junior high school and elementary groups. Therefore, Hypothesis VI was retained. Junior high school students had a significantly higher mean on the "Drug Knowledge Test" than upper elementary students.

Data Related to Hypothesis VII

Hypothesis VII stated that there would be no significant differences in mean scores on the "Drug Knowledge Test" between students enrolled in any two successive grades. Although the analysis of variance indicated that significant differences did exist between some combinations of means, the Scheffe method of comparing means did not indicate significant differences between any two successive grade levels. The Scheffe values must have exceeded 2.01 to indicate a significant difference. Hypothesis VII was retained. The Scheffe comparisons of means between grades are presented in Table XXVIII.

The "Drug Knowledge Test" consisted of thirty-one multiple choice items. The means and standard deviations

TABLE XXVIII

SCHEFFE VALUES RESULTING FROM COMPARISONS OF MEANS RECORDED ON THE DRUG KNOWLEDGE TEST BY STUDENTS IN GRADES FIVE THROUGH TWELVE

Grade	5	6	7	8	9	10	11	12
5	. .	.03	.17	2.18*	4.19*	8.03*	6.47*	6.82*
6	. .	. .	.31	2.47*	4.48*	8.21*	6.71*	7.06*
7	. .	. .	. .	1.45	2.66*	5.78*	4.49*	4.90*
8	. .	. .	. .	. . .	.28	1.60	.98	1.34
9	. .	. .	. .	. . .	. . .	.55	.21	.44
10	. .	. .	. .	. . .	. . .	. . .	.08	.00
11	. .	. .	. .	. . .	. . .	. . .	. . .	.06
12	. .	. .	. .	. . .	. . .	. . .	. . .	. . .

*Indicates significant difference between corresponding grades.

Note: Scheffe values must exceed 2.01 to indicate significant differences between grades.

recorded by the students in grades five through twelve on the test are presented in Table XXIX.

TABLE XXIX

NUMBER OF OBSERVATIONS, MEANS, AND STANDARD DEVIATIONS RECORDED BY STUDENTS IN GRADES FIVE THROUGH TWELVE ON THE DRUG KNOWLEDGE TEST

Grade	Number	Mean	Standard Deviation
5	59	11.36	3.85
6	49	10.96	4.65
7	57	12.30	4.88
8	51	14.86	4.14
9	54	16.14	4.95
10	57	17.89	5.08
11	47	17.23	4.72
12	44	17.82	5.25

Data Related to Hypothesis VIII

Hypothesis VIII(a) stated that there would be a significant negative relationship between drug knowledge, as measured by scores on the "Drug Knowledge Test," and negative drug attitudes, as measured by the total of scores recorded on the separate semantic differential scales, among upper elementary school students. The elementary students scored a mean of 11.36 on the "Drug Knowledge Test," and a mean of 303.58 on the combined drug attitude scales (see Table XXX). When the scores were correlated by the Pearson Product-Moment Correlation procedure, the resulting r value was .11. This correlation was positive and was not significant at the .05 level, therefore, Hypothesis VIII(a) was rejected. There was not a significant correlation between drug knowledge and negative drug attitudes among upper elementary students at the .05 level.

Hypothesis VIII(b) stated that there would be a significant negative relationship between drug knowledge and negative drug attitudes among junior high school students. These students scored a mean of 13.57 on the "Drug Knowledge Test" and a mean of 296.00 on the combined drug attitude scales. The resulting correlation coefficient was -.22, which is significant at the .05 level (see Table XXX). On the basis of these results, Hypothesis VIII(b) was retained. There was a significant negative relationship between drug knowledge and negative drug attitudes among junior high

TABLE XXX

MEANS, STANDARD DEVIATIONS, COEFFICIENT OF CORRELATION, AND LEVEL OF SIGNIFICANCE BETWEEN DRUG KNOWLEDGE AND DRUG ATTITUDES AMONG THREE EDUCATIONAL GROUPS

Drug Knowledge		Drug Attitudes		Value of r	p
Mean	SD	Mean	SD		
Upper Elementary N = 100					
11.36	4.15	303.58	37.33	.11	NS*
Junior High N = 107					
13.57	4.68	296.00	38.90	-.22	.05
Senior High N = 211					
17.27	5.01	279.31	44.48	-.41	.01

*Not significant at the .05 level.

school students. In this case, there was a tendency for students who scored relatively high on the drug knowledge test to indicate relatively favorable or accepting attitudes toward drugs.

Hypothesis VIII(c) stated that there would be a significant negative relationship between drug knowledge and negative drug attitudes among senior high school students. As presented in Table XXX, these students had a mean of 17.27 on the "Drug Knowledge Test" and a mean of 279.31 on the drug attitude scales. The resulting correlation coefficient was -.41, which is significant at the .01 level. Therefore,

Hypothesis VIII(c) was also retained. There was a significant negative relationship between drug knowledge and negative drug attitudes among senior high school students. Again, there was a tendency for students who scored relatively high on the drug knowledge test to indicate relatively favorable or accepting attitudes toward drugs.

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CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This study was an investigation of attitudes toward selected drugs, knowledge of drugs, and the relationship of drug attitudes to drug knowledge among students enrolled in grades five through twelve in the Carrollton-Farmers Branch Independent School District. The specific purposes of the study were (1) to determine if differences exist between upper elementary, junior high, and senior high school groups of students in attitudes toward cigarettes, alcoholic drinks, marijuana, LSD, heroin, and methedrine; (2) to determine if differences exist in attitudes toward the six respective drugs among students in each of the three groups; (3) to determine if there are differences in drug knowledge among the students in the eight grades and three groups; (4) to determine the relationship between drug attitudes and drug knowledge among students in the three groups; and (5) to make the findings of the study available to serve as a basis for curriculum development in the drug education program of the Carrollton-Farmers Branch Independent School District.

The Carrollton-Farmers Branch school district was chosen for this study for three reasons. First, the district was

about to initiate a drug education program and had expressed an interest in obtaining base line information regarding drug attitudes and drug knowledge among its students. Second, the district was willing to participate in the study. Finally, the district was convenient to work with. At the time of the study, the Carrollton-Farmers Branch district served approximately 9,500 students. Of this total, 6,067 were enrolled in grades five through twelve. Four hundred twenty-eight students enrolled in the eight grades participated in the study. These students were grouped by grades only, and each group was randomly chosen. The maximum number of students surveyed at any grade level was 59 in the fifth grade, and the minimum number was 44 in the twelfth grade. The survey was completed prior to the initiation of the district's drug education program in order that the data obtained might be used as part of a pre-post evaluation of the effect of the program.

The students were asked to complete a semantic differential attitude scale in order to arrive at attitude scores for the six drugs previously mentioned. The students were also administered the "Drug Knowledge Test," a thirty-one item multiple choice test constructed to cover a wide range of drug-related information. The students were given oral and written instructions regarding the tests prior to the beginning of the testing period (see Appendix B).

The following hypotheses were formulated at the beginning of the study:

I. There will be no significant difference in the group mean scores on the semantic differential attitude scale between the upper elementary group and the junior high group in regard to the following drugs: (a) cigarettes, (b) alcoholic drinks, (c) marijuana, (d) LSD, (e) heroin, and (f) methedrine.

II. There will be no significant difference in the group mean scores on the semantic differential attitude scale between the junior high and senior high school groups in regard to the following drugs: (a) cigarettes, (b) alcoholic drinks, (c) marijuana, (d) LSD, (e) heroin, and (f) methedrine.

III. There will be no significant differences in attitudes between students enrolled in any two successive grades, as measured by mean scores on the semantic differential attitude scale, in regard to the following drugs: (a) cigarettes, (b) alcoholic drinks, (c) marijuana, (d) LSD, (e) heroin, and (f) methedrine.

IV. There will be no significant differences in attitudes, as measured by group mean scores on the semantic differential attitude scale, between cigarettes, alcoholic drinks, marijuana, LSD, heroin, and methedrine, respectively, within each of these groups: (a) upper elementary school students, (b) junior high school students, (c) senior high school students.

V. Senior high school students will have a significantly higher group mean score on the "Drug Knowledge Test" than junior high school students.

VI. Junior high school students will have a significantly higher group mean score on the "Drug Knowledge Test" than upper elementary school students.

VII. There will be no significant differences in drug knowledge, as measured by mean scores on the "Drug Knowledge Test," between students enrolled in any two successive grades.

VIII. There will be a significant negative relationship between drug knowledge, as measured by scores on the "Drug Knowledge Test," and negative drug attitudes, as measured by the total of scores recorded on the separate semantic differential scales among: (a) upper elementary school students, (b) junior high school students, (c) senior high school students.

In order to test the hypotheses, three statistical procedures were used. In Hypotheses I through VII, the simple analysis of variance was employed to test for significant differences in mean scores. When the analysis of variance indicated that significant differences in means did exist, the Scheffe procedure for comparing all combinations of means was used to identify specific differences. In Hypothesis VIII, the Pearson Product-Moment Correlation procedure was used to determine the relationship between drug attitudes

and drug knowledge. All hypotheses were arbitrarily tested at the .05 level of significance.

Summary of the Findings

The upper elementary group of students indicated a significantly more negative attitude toward cigarettes than junior high school students. In light of the evidence that smoking cigarettes may be hazardous to one's health, the elementary group expressed a collective attitude that tended to recognize the health hazards of smoking more than the junior high school group. There was no significant difference in the way junior and senior high school groups viewed cigarettes. The standard deviations of the three groups indicated that a wider range of opinions existed toward cigarettes among the junior and senior high school groups than among students in the upper elementary group.

Regarding alcohol, the upper elementary group again expressed the most negative attitude of the three groups in terms of mean scores. While there was not a significant difference in the mean attitude scores of the upper elementary and junior high school groups, the senior high school group had a significantly more positive attitude than the other two groups. The collective attitude expressed by the senior high school group toward alcoholic drinks was not as consistent with the health and legal arguments against alcohol as that of the other groups. The mean of 39.78

recorded on the alcohol attitude scale by the senior high group was the lowest (most positive) recorded by any group on any of the six drug attitude scales.

The presence of more negative attitudes among elementary students than among the two older groups was also evident on the marijuana attitude scale. The elementary group had a higher mean (indicating a more negative attitude) than the junior high group, but the difference was not statistically significant. The senior high school group had the lowest mean attitude score (41.65) of the three groups, and the difference in means was significantly more positive than the other groups.

Although the mean differences of the three groups were not as widely dispersed on the LSD attitude scale as on previously mentioned scales, the senior high school group again had a significantly more positive attitude toward the drug than did the junior high group. There was not a significant difference between the junior high and upper elementary groups.

Significant differences in attitudes toward heroin and methedrine did not exist between the elementary and junior high groups, nor between the junior and senior high groups. Standard deviations recorded by the three groups indicated little differences in the range of attitudes among the groups.

As stated in Hypothesis III, there were no significant differences in attitudes toward any of the six drugs between students enrolled in any two successive grades. Although exceptions existed, attitudinal differences generally appeared over a two-grade span, if at all.

Students at all three educational levels made significant distinctions in their attitudes toward the six drugs. A review of Tables XVIII, XXI, and XXIV shows the various attitudinal differences, but these findings seem to be particularly relevant:

1. At none of the three levels did the students view marijuana significantly different from cigarettes.

2. Based on mean scores, all three groups expressed a more negative attitude toward LSD, heroin, and methedrine than toward marijuana.

3. Compared to attitudes expressed by upper elementary and junior high school students, the senior high school group expressed relatively positive attitudes toward both alcoholic drinks and marijuana, but viewed alcoholic drinks significantly more positively than marijuana.

4. The senior high school group demonstrated the widest range of attitudes of the three groups toward the six drugs, recording a low mean of 39.73 on the alcohol attitude scale, and a high mean of 54.23 on the heroin scale.

5. Neither the junior high nor the upper elementary group expressed significantly different attitudes between alcoholic drinks and marijuana.

6. In terms of means and standard deviations, the three groups tended to place cigarettes, alcoholic drinks, and marijuana in one group, and LSD, heroin, and methedrine in another group. The mean scores on the drugs in the first group tended to be lower, indicating a more positive group attitude. The standard deviations on the drugs in the first group tended to be larger, indicating a wider dispersion of attitudes than on drugs in the second group.

There was a definite upward progression of drug knowledge, as measured by the "Drug Knowledge Test," beginning with the upper elementary group and continuing through the senior high group. The senior high group (grades nine through twelve) scored significantly higher on the test than the junior high group (grades seven and eight), and the junior high group scored significantly higher than the elementary group (grades five and six). However, the data in Table XIX show that mean scores on the knowledge test reached a plateau at the tenth-grade level. Table XVIII presents data showing that no significant differences in drug knowledge existed among students beyond the eighth-grade level.

Significant negative relationships between negative drug attitudes and drug knowledge existed among students in the junior and senior high school groups. In both groups,

there was a tendency for students who registered relatively negative attitude scores to score higher on the knowledge test than other students. Among students in the upper elementary group, there was a positive, but not statistically significant, relationship between negative drug attitudes and drug knowledge. In this case, the lack of a significant relationship may be viewed as important as any positive relationship which might have resulted.

Conclusions

Based on the results of this study, the following conclusions regarding the students of the Carrollton-Farmers Branch Independent School District are offered:

1. Students at the senior high school level have a significantly more positive attitude toward alcoholic drinks, marijuana, and LSD than do students at the junior high school level. The collective attitude expressed by the senior high school group toward these three drugs is not as consistent with the health and legal arguments against these drugs as the attitude of the junior high group.

2. There are no significant differences in the collective attitudes of junior and senior high school groups of students toward cigarettes, heroin, and methedrine.

3. Students at the junior high school level have a significantly more positive attitude toward cigarettes than do students at the upper elementary level. The collective

attitude expressed by the junior high school group toward cigarettes is not as consistent with the health arguments against cigarettes as the attitude of the elementary group.

4. There are no significant differences in the collective attitudes of junior high school students and upper elementary students toward alcoholic drinks, marijuana, LSD, heroin, and methedrine.

5. Significant differences in attitudes toward drugs do not appear between students enrolled in any two consecutive grade levels. The process of attitudinal change in regard to some drugs appears to be gradual.

6. Students at the upper elementary, junior high school, and senior high school levels make significant distinctions in their attitudes toward the six drugs. Cigarettes, alcoholic drinks, and marijuana tend to be viewed with a more positive attitude than do LSD, heroin, and methedrine. The collective attitudes of the three groups toward cigarettes, alcoholic drinks, and marijuana are not as consistent with the health and legal arguments against those drugs as are the attitudes toward LSD, heroin, and methedrine.

7. When students are grouped according to educational levels, drug knowledge appears to increase as the students progress from the upper elementary through the senior high school level. However, when students are grouped by individual grade levels, drug knowledge does not increase

significantly beyond the eighth grade. An inspection of means on a drug knowledge test prior to the analysis of variance treatment indicates no increase in drug knowledge beyond the tenth grade.

8. Possession of factual information about drugs does not insure negative attitudes toward drugs.

Recommendations

One of the objectives of this study was to provide base line information regarding drug attitudes and drug knowledge among the students prior to the initiation of the Carrollton-Farmers Branch community drug education program. It is recommended that students in grades five through twelve in that school district be administered the drug attitude and drug knowledge instruments used in this study at a future date to determine if changes will have occurred in attitudes or knowledge as a result of the community's program.

No attempt was made in this study to relate any factors other than grade and educational level to drug attitudes or drug knowledge. It is recommended that a study be conducted to determine if factors such as the use of drugs, sex, socioeconomic status, extracurricular interests, and academic achievement are related to drug attitudes and drug knowledge.

It was concluded that students at the three educational levels make significant distinctions in their attitudes toward the six drugs under consideration in this study.

Therefore, it is recommended that teachers involved in drug education programs take these attitudinal distinctions into consideration in their approach to teaching about drugs.

It was also concluded that possession of facts about drugs does not insure negative attitudes toward drugs. Therefore, in drug education programs which have as an objective the development of negative attitudes toward drugs, it is recommended that these programs include more than the presentation of factual information. Discussions of mental health, motivation for drug use, and alternatives to drug use might be included in such programs.

APPENDIX A

ARROLLTON-FARMERS BRANCH
INDEPENDENT SCHOOL DISTRICT
1711½ WALNUT • CARROLLTON, TEXAS 75006

Office of Assistant Superintendent Curriculum

November 24, 1970

Mr. Jim Brown
1607 West Oak Street
Apt. 108
Denton, Texas

Dear Jim

This morning I discussed your proposal with the Superintendent of Schools and we both feel like we are interested in your conducting the research program which would coincide with our drug education program.

Let's get together soon and work out the details as best we can so that I can talk with some of our principals and teachers about their participation in this research program.

I look forward to working with you and know that I will gain much from your experience and knowledge.

Hope you and your family have a nice Thanksgiving.

Respectfully

Kenneth N Bush

Kenneth N. Bush
Assistant Superintendent of Instruction

KNB/llb

APPENDIX B

DRUG SCALE

The purpose of this part of the study is to find out how you feel or what you think about certain drugs. On the following pages you will find the names of some drugs at the top, and below these names of drugs are twelve pairs of words that are exactly opposite in meaning. The opposites are separated by five spaces.

For example, at the top of one page is the word "Marijuana." Below the word "Marijuana" are the first two opposites: "good" and "bad." If you think "Marijuana" is very closely related to the word "good," make a mark like this:

good:__X__:_____:_____:_____:_____:bad

If you think "Marijuana" is only slightly related to the word "good," make a mark like this:

good:_____:__X__:_____:_____:_____:bad

If you think "Marijuana" is very closely related to the word "bad," make a mark like this:

good:_____:_____:_____:_____:__X__:bad

If you think "Marijuana" is only slightly related to the word "bad," make a mark like this:

good:_____:_____:_____:__X__:_____:bad

If you think "Marijuana" is not at all related or is equally related to the words "good" and "bad," make a mark like this:

good:_____:_____:__X__:_____:_____:bad

PLEASE FOLLOW THESE ADDITIONAL DIRECTIONS:

1. If you have never heard of the word at the top of the page, leave that page blank and go on to the next page.
2. If you have heard of the word at the top of the page, put only one mark on one of the five spaces separating each set of opposite words.
3. Do not go back and change the marks once you have made a choice.
4. Place your "X" in the middle of the spaces. (Like this: __X__:)

Alcoholic Drinks

safe:_____:_____:_____:_____:_____:dangerous

good:_____:_____:_____:_____:_____:bad

ugly:_____:_____:_____:_____:_____:beautiful

kind:_____:_____:_____:_____:_____:mean

nice:_____:_____:_____:_____:_____:awful

hazy:_____:_____:_____:_____:_____:clear

dull:_____:_____:_____:_____:_____:sharp

wonderful:_____:_____:_____:_____:_____:terrible

honest:_____:_____:_____:_____:_____:dishonest

rough:_____:_____:_____:_____:_____:smooth

clean:_____:_____:_____:_____:_____:dirty

happy:_____:_____:_____:_____:_____:sad

Heroin

honest:_____:_____:_____:_____:_____:dishonest

safe:_____:_____:_____:_____:_____:dangerous

rough:_____:_____:_____:_____:_____:smooth

dull:_____:_____:_____:_____:_____:sharp

dirty:_____:_____:_____:_____:_____:clean

good:_____:_____:_____:_____:_____:bad

clear:_____:_____:_____:_____:_____:hazy

terrible:_____:_____:_____:_____:_____:wonderful

nice:_____:_____:_____:_____:_____:awful

kind:_____:_____:_____:_____:_____:mean

happy:_____:_____:_____:_____:_____:sad

ugly:_____:_____:_____:_____:_____:beautiful

Cigarettes

safe:_____:_____:_____:_____:_____:dangerous

bad:_____:_____:_____:_____:_____:good

clear:_____:_____:_____:_____:_____:hazy

ugly:_____:_____:_____:_____:_____:beautiful

honest:_____:_____:_____:_____:_____:dishonest

dirty:_____:_____:_____:_____:_____:clean

terrible:_____:_____:_____:_____:_____:wonderful

nice:_____:_____:_____:_____:_____:awful

smooth:_____:_____:_____:_____:_____:rough

mean:_____:_____:_____:_____:_____:kind

happy:_____:_____:_____:_____:_____:sad

sharp:_____:_____:_____:_____:_____:dull

Speed

terrible:_____:_____:_____:_____:_____:wonderful

honest:_____:_____:_____:_____:_____:dishonest

ugly:_____:_____:_____:_____:_____:beautiful

happy:_____:_____:_____:_____:_____:sad

kind:_____:_____:_____:_____:_____:mean

nice:_____:_____:_____:_____:_____:awful

dangerous:_____:_____:_____:_____:_____:safe

smooth:_____:_____:_____:_____:_____:rough

dull:_____:_____:_____:_____:_____:sharp

hazy:_____:_____:_____:_____:_____:clear

good:_____:_____:_____:_____:_____:bad

dirty:_____:_____:_____:_____:_____:clean

LSD

ugly:_____:_____:_____:_____:_____:beautiful

happy:_____:_____:_____:_____:_____:sad

kind:_____:_____:_____:_____:_____:mean

nice:_____:_____:_____:_____:_____:awful

terrible:_____:_____:_____:_____:_____:wonderful

clear:_____:_____:_____:_____:_____:hazy

good:_____:_____:_____:_____:_____:bad

dirty:_____:_____:_____:_____:_____:clean

dull:_____:_____:_____:_____:_____:sharp

rough:_____:_____:_____:_____:_____:smooth

safe:_____:_____:_____:_____:_____:dangerous

honest:_____:_____:_____:_____:_____:dishonest

Marijuana

good:_____:_____:_____:_____:_____:bad

ugly:_____:_____:_____:_____:_____:beautiful

dirty:_____:_____:_____:_____:_____:clean

happy:_____:_____:_____:_____:_____:sad

dull:_____:_____:_____:_____:_____:sharp

kind:_____:_____:_____:_____:_____:mean

rough:_____:_____:_____:_____:_____:smooth

nice:_____:_____:_____:_____:_____:awful

safe:_____:_____:_____:_____:_____:dangerous

terrible:_____:_____:_____:_____:_____:wonderful

honest:_____:_____:_____:_____:_____:dishonest

clear:_____:_____:_____:_____:_____:hazy

1. Which kind of person is most likely to become a drug addict?
   1. one who does not do well in school
   2. no one kind of person
   3. one who does not get along well with others
   4. Undecided
   5. I don't know.

2. Which substances are drugs?
   1. Marijuana and heroin
   2. Aspirin and coffee
   3. Both 1 and 2 are correct.
   4. Undecided
   5. I don't know.

3. Which word refers (is connected) to marijuana?
   1. Smack
   2. STP
   3. Lid
   4. Undecided
   5. I don't know.

4. Which of the following is a barbiturate?
   1. Seconal
   2. Benzedrine
   3. Hashish
   4. Undecided
   5. I don't know.

5. Which statement is true?
   1. Smoking cigarettes is harmless.
   2. Cigarettes are not drugs.
   3. Smoking cigarettes may cause cancer and other diseases.
   4. Undecided
   5. I don't know.

6. Which drug does the most harm in the United States?
   1. Alcoholic drinks
   2. LSD
   3. Marijuana
   4. Undecided
   5. I don't know.

7. LSD is:
   1. physically habit forming.
   2. a drug that peps people up.
   3. a drug that can cause people to see and hear things differently.
   4. Undecided
   5. I don't know.

8. Marijuana:
   1. can be physically habit forming.
   2. is not physically habit forming.
   3. makes people more alert.
   4. Undecided
   5. I don't know.

9. Alcoholic drinks:
   1. can be physically habit forming.
   2. cannot be physically habit forming.
   3. make people more alert.
   4. Undecided
   5. I don't know.

10. Which drug causes more people to become drug addicts?
   1. Marijuana
   2. Speed
   3. Heroin
   4. Undecided
   5. I don't know.

11. Which disease may be directly caused by smoking cigarettes?
   1. Arthritis
   2. Emphysema
   3. Diabetes
   4. Undecided
   5. I don't know.

12. Some cough medicines may be dangerous if they contain:
   1. morphine
   2. dexedrine
   3. codeine
   4. Undecided
   5. I don't know.

13. A person who uses drugs like marijuana and LSD usually comes:
   1. from the lower class of people.
   2. from the middle class of people.
   3. from any class of people.
   4. Undecided
   5. I don't know.

14. People who use LSD regularly:
   1. can take the same amount every time and get the same results.
   2. have to take more and more to get the same results.
   3. frequently become insane.
   4. Undecided
   5. I don't know.

15. Which drug is a stimulant (speeds things up)?
   1. Alcoholic drinks
   2. Marijuana
   3. Cocaine
   4. Undecided
   5. I don't know

16. Which drug is a depressant (slows things down)?
    1. Heroin
    2. Speed
    3. LSD
    4. Undecided
    5. I don't know.

17. Sleeping pills:
    1. cannot become physically habit forming.
    2. are safe for everyone to use without a doctor's advice.
    3. can become physically habit forming.
    4. Undecided
    5. I don't know.

18. Which drugs are in the same family?
    1. Alcohol and tobacco
    2. Heroin and morphine
    3. Sleeping pills and pep pills
    4. Undecided
    5. I don't know.

19. Which statement is true?
    1. Using marijuana is a felony.
    2. Using marijuana is a misdemeanor.
    3. People over 21 can use marijuana without breaking a law.
    4. Undecided
    5. I don't know.

20. Which statement is true?
    1. Cigarettes with filters are safe to smoke.
    2. Cigarettes with filters may be dangerous to a person's health.
    3. Filters do not affect the way tobacco tastes.
    4. Undecided
    5. I don't know.

21. Which part of the body is affected first by sleeping pills?
    1. the brain
    2. the muscles
    3. the stomach
    4. Undecided
    5. I don't know.

22. Much of the marijuana smoked in this country comes from:
    1. Canada
    2. England
    3. Mexico
    4. Undecided
    5. I don't know.

23. Which drug can cause damage to the liver?
    1. Psilocybin
    2. Sleeping pills
    3. Glue
    4. Undecided
    5. I don't know.

24. Opium comes from:
    1. a mushroom
    2. a cactus
    3. a flower
    4. Undecided
    5. I don't know.

25. A person who has just taken heroin will probably act in which way?
    1. He will be nervous.
    2. He will be quiet.
    3. He will be alert.
    4. Undecided
    5. I don't know.

26. Tranquilizers are used to:
    1. make people less nervous or tense.
    2. make people sleepy.
    3. relieve pain.
    4. Undecided
    5. I don't know.

27. A person who takes an amphetamine (pep pill):
    1. does better on tests.
    2. stays calm in all situations.
    3. stays awake.
    4. Undecided
    5. I don't know.

28. Another word for speed is:
    1. goofball
    2. joint
    3. meth
    4. Undecided
    5. I don't know.

29. Which drug is not physically habit forming?
    1. Morphine
    2. LSD
    3. Heroin
    4. Undecided
    5. I don't know.

30. Which drug can be used to help people who are addicted to heroin?
    1. Methamphetamine
    2. Morphine
    3. Methadone
    4. Undecided
    5. I don't know.

31. Which two drugs are in the same family?
    1. LSD and mescaline
    2. Alcohol and cocaine
    3. Speed and marijuana
    4. Undecided
    5. I don't know.

APPENDIX C

#1. Which kind of person is most likely to become a drug addict?

1. one who does not do well in school
*2. no one kind of person
3. one who does not get along well with others
4. Undecided
5. I don't know.

Alternative	1		2*		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	7	6.5	39	36.2	29	26.9	18	16.7	15	13.9
Junior High	4	3.8	56	51.9	19	17.6	18	16.7	11	10.2
Senior High	10	4.8	145	68.4	20	9.5	22	10.4	15	7.1
Total	21		240		68		58		41	

* Correct answer

#2. Which substances are drugs?

1. Marijuana and heroin
2. Aspirin and coffee
*3. Both 1 and 2 are correct.
4. Undecided
5. I don't know.

Alternative	1		2		3*		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	53	49.1	2	1.9	49	45.4	0	0.0	4	3.8
Junior High	63	58.4	1	1.0	37	34.3	5	4.7	2	1.9
Senior High	83	39.2	9	4.3	111	52.4	9	4.3	0	0.0
Total	199		12		197		14		6	

* Correct answer

#3. Which word might be used when talking about marijuana?

*1. Lid
2. Smack
3. STP
4. Undecided
5. I don't know

Alternative	1*		2		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	13	12.1	14	13.0	11	10.2	16	14.9	54	50.0
Junior High	27	25.0	8	7.5	7	6.5	16	14.9	50	46.3
Senior High	104	49.1	28	13.3	6	2.9	16	7.6	58	27.4
Total	144		50		24		48		162	

* Correct Answer

#4. Which drug is a barbiturate?

1. Benzedrine
*2. Seconal
3. Hashish
4. Undecided
5. I don't know.

Alternative	1		*2		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	18	16.7	6	5.6	21	19.5	9	8.4	54	50.0
Junior High	41	38.0	4	3.8	10	9.3	5	4.7	48	44.5
Senior High	112	52.9	24	11.4	1	0.5	8	3.8	67	31.7
Total	171		34		32		22		169	

* Correct answer

#5. Which statement is true?

1. Smoking cigarettes is harmless.
2. Cigarettes are not drugs.
*3. Smoking cigarettes may cause lung cancer.
4. Undecided
5. I don't know.

Alternative	1		2		3*		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	2	1.9	2	1.9	101	93.6	0	0.0	3	2.8
Junior High	3	2.8	9	8.4	90	83.4	4	3.8	2	2.0
Senior High	3	1.5	13	6.2	190	89.7	4	1.9	2	1.0
Total	8		24		381		8		7	

* Correct answer

#6. Which drug does the most overall harm in the United States?

*1. Alcoholic drinks
2. Marijuana
3. LSD
4. Undecided
5. I don't know.

Alternative	1*		2		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	21	19.5	21	19.5	47	43.6	9	8.4	10	9.3
Junior High	42	38.9	9	8.4	36	33.4	7	6.5	14	13.1
Senior High	133	62.8	3	1.5	46	21.7	18	8.5	12	5.7
Total	196		33		129		34		36	

* Correct answer

#7. LSD:

1. is a physically habit forming drug.
*2. can be taken in liquid form.
3. is a drug that peps people up.
4. Undecided
5. I don't know.

Alternative	1		2*		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	36	33.4	22	20.4	23	21.3	7	6.5	20	18.6
Junior High	55	51.0	12	11.2	6	5.6	12	11.2	23	21.4
Senior High	67	31.7	73	34.5	10	4.8	26	12.3	36	17.0
Total	158		107		39		45		79	

* Correct answer

#8. Marijuana:

1. is physically habit forming.
*2. is not physically habit forming.
3. makes people more alert.
4. Undecided
5. I don't know.

Alternative	1		2*		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	41	38.0	15	13.9	14	13.0	16	14.9	22	20.4
Junior High	29	26.9	41	38.0	5	4.7	11	10.2	22	20.4
Senior High	28	13.3	139	65.6	1	0.5	22	10.4	22	10.4
Total	98		195		20		49		66	

* Correct answer

#9. Alcoholic drinks:

*1. can be physically habit forming.

2. cannot be physically habit forming.

3. make people more alert.

4. Undecided

5. I don't know.

Alternative	*1		2		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	67	62.1	16	14.9	5	4.7	9	8.4	11	10.2
Junior High	85	78.8	10	9.3	1	1.0	5	4.7	7	6.5
Senior High	172	81.2	20	9.5	2	1.0	9	4.3	9	4.3
Total	324		46		8		23		27	

* Correct answer

#10. Which drug directly causes more people to become drug addicts?

1. Marijuana
2. Speed
*3. Heroin
4. Undecided
5. I don't know.

Alternative	1		2		3*		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	27	25.0	24	22.3	35	32.5	4	3.8	18	16.7
Junior High	41	38.0	13	12.1	34	31.5	7	6.5	13	12.1
Senior High	71	33.5	18	8.5	98	46.3	10	4.8	15	7.1
Total	139		55		167		21		46	

* Correct answer

#11. Which disease may be directly caused by smoking cigarettes?

1. Arthritis
2. Diabetes
*3. Emphysema
4. Undecided
5. I don't know.

Alternative	1		2		3*		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	5	4.7	7	6.5	72	66.7	6	5.6	18	16.7
Junior High	3	2.8	0	0.0	71	65.8	6	5.6	28	26.0
Senior High	2	1.0	1	0.5	191	90.1	6	2.9	12	5.7
Total	10		8		334		18		58	

* Correct answer

#12. Which drug is a commonly found substance in cough medicines?

1. Librium
*2. Codeine
3. Benzedrine
4. Undecided
5. I don't know.

Alternative	1		2*		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	4	3.8	50	46.3	9	8.4	5	4.7	40	37.1
Junior High	0	0.0	77	71.3	3	2.8	2	1.9	26	24.2
Senior High	1	0.5	188	88.7	8	3.8	4	1.9	11	5.2
Total	5		315		20		11		77	

* Correct answer

#13. A person who uses drugs like marijuana and LSD usually comes from:

1. the lower class of people
2. the middle class of people
*3. any class of people
4. Undecided
5. I don't know.

Alternative	1		2		3*		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	22	20.4	7	6.5	61	56.5	8	7.5	10	9.3
Junior High	12	11.2	2	1.9	80	74.1	8	7.5	6	5.6
Senior High	5	2.4	18	8.5	172	81.2	10	4.8	7	3.4
Total	39		27		313		26		23	

* Correct answer

#14. People who use LSD regularly:

1. can take the same amount every time and get the same results.
*2. have to take more and more or stronger amounts to get the same results.
3. frequently become insane.
4. Undecided
5. I don't know.

Alternative	1		2*		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	5	4.7	50	46.3	35	32.5	8	7.5	10	9.3
Junior High	3	2.8	55	51.0	21	19.5	9	8.4	20	18.6
Senior High	8	3.8	124	58.5	40	18.9	18	8.5	22	10.4
Total	16		229		96		35		52	

* Correct answer

#15. Which drug is a stimulant (speeds things up)?

1. Alcoholic drinks
2. Marijuana
*3. Cocaine
4. Undecided
5. I don't know.

Alternative	1		2		3*		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	14	13.0	33	30.6	25	23.2	9	8.4	27	25.0
Junior High	2	1.9	10	9.3	49	45.4	8	7.5	39	36.2
Senior High	17	8.1	19	9.0	110	51.9	24	11.4	42	19.9
Total	33		62		184		41		108	

* Correct answer

#16. Which drug is a depressant (slows things down)?

*1. Heroin

2. Speed

3. LSD

4. Undecided

5. I don't know.

Alternative	1*		2		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	37	34.3	10	9.3	15	13.9	14	13.0	32	29.7
Junior High	25	23.2	5	4.7	20	18.6	11	10.2	47	43.6
Senior High	65	30.7	7	3.4	45	21.3	32	15.1	63	29.8
Total	127		22		80		57		142	

* Correct answer

#17. Sleeping pills:

1. cannot become physically habit forming.
2. are safe for everyone to use without a doctor's advice.
*3. can become physically habit forming.
4. Undecided
5. I don't know.

Alternative	1		2		3*		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	17	15.8	8	7.5	54	50.0	13	12.1	16	14.9
Junior High	10	9.3	6	5.6	69	63.9	9	8.4	14	13.0
Senior High	15	7.1	2	1.0	160	75.5	12	5.7	23	10.9
Total	42		16		283		34		53	

* Correct answer

#18. Which drugs are in the same family?

1. Alcohol and speed
* 2. Heroin and morphine
3. Sleeping pills and pep pills
4. Undecided
5. I don't know.

Alternative	1		2*		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	7	6.5	24	22.3	44	40.8	14	13.0	19	17.6
Junior High	2	1.9	43	39.9	32	29.7	3	2.8	28	26.0
Senior High	6	2.9	142	67.0	32	15.1	14	6.7	18	8.5
Total	15		209		108		31		65	

* Correct answer

#19. Which statement is true?

*1. Selling marijuana is a felony.

2. Selling marijuana is a misdemeanor.

3. People over 21 can use marijuana without breaking a law.

4. Undecided

5. I don't know.

Alternative	1*		2		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	43	39.9	15	13.9	5	4.7	12	11.2	33	30.7
Junior High	65	60.2	13	12.1	2	1.9	7	6.5	21	19.5
Senior High	158	74.6	28	13.3	0	0.0	5	2.4	21	10.0
Total	266		56		7		24		75	

* Correct answer

#20. Which statement is true?

1. Cigarettes with filters are safe to smoke.
*2. Cigarettes with filters may be dangerous to a person's health.
3. Filters have nothing to do with the way tobacco tastes.
4. Undecided
5. I don't know.

Alternative	1		2*		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	8	7.5	38	35.2	32	29.7	16	14.9	14	13.1
Junior High	2	1.9	57	52.8	22	20.4	11	10.2	16	14.9
Senior High	7	3.4	120	56.7	29	13.7	20	9.5	36	17.0
Total	17		215		83		47		66	

* Correct answer

#21. Which part of the body is affected first by sleeping pills?

*1. the brain
2. the muscles
3. the stomach
4. Undecided
5. I don't know.

Alternative	1*		2		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	40	37.1	27	25.0	14	13.0	11	10.2	16	14.9
Junior High	46	42.6	20	18.6	5	4.7	6	5.6	31	28.8
Senior High	105	49.6	46	21.7	8	3.8	7	3.4	46	21.7
Total	191		93		27		24		93	

* Correct answer

#22. Much of the marijuana smoked in this country comes from:

1. Canada
2. England
*3. Mexico
4. Undecided
5. I don't know.

Alternative	1		2		3*		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	6	5.6	9	8.4	70	64.9	9	8.4	14	13.0
Junior High	2	1.9	1	1.0	96	88.9	1	1.0	8	7.5
Senior High	3	1.5	1	0.5	194	91.6	2	1.0	12	5.7
Total	11		11		360		12		34	

* Correct answer

#23. Which drug is most likely to cause damage to the liver?

1. Psilocybin
2. Marijuana
*3. Airplane glue
4. Undecided
5. I don't know.

Alternative	1		2		3*		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	11	10.2	8	7.5	61	56.5	8	7.5	20	18.6
Junior High	8	7.5	8	7.5	42	38.9	7	6.5	43	39.9
Senior High	40	18.9	2	1.0	69	32.6	15	7.1	86	40.6
Total	59		18		172		30		149	

* Correct answer

#24. Opium comes from:

1. a mushroom
2. a cactus
*3. a flower
4. Undecided
5. I don't know.

Alternative	1		2		3*		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	16	14.9	11	10.2	31	28.8	9	8.4	41	38.0
Junior High	6	5.6	4	3.8	51	47.3	7	6.5	40	37.1
Senior High	14	6.7	9	4.3	134	63.3	10	4.8	45	21.3
Total	36		24		216		26		126	

* Correct answer

#25. A person who has just taken heroin will probably act in which way?

1. He will be nervous.
*2. He will be quiet.
3. He will be alert.
4. Undecided
5. I don't know.

Alternative	1		2*		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	36	33.4	23	21.3	19	17.6	15	13.9	15	13.9
Junior High	37	34.3	19	17.6	6	5.6	5	4.7	41	38.0
Senior High	51	24.1	59	27.9	5	2.4	16	7.6	81	38.3
Total	124		111		30		36		137	

* Correct answer

#26. Tranquilizers are usually used to:

*1. make people less nervous or tense.

2. make people go to sleep.

3. relieve pain.

4. Undecided

5. I don't know.

Alternative	1*		2		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	46	42.6	15	13.9	27	25.0	6	5.6	14	13.0
Junior High	73	67.6	15	13.9	11	10.2	1	1.0	8	7.5
Senior High	182	85.9	18	8.5	8	3.8	1	0.5	3	1.5
Total	301		48		46		8		25	

* Correct answer

#27. A person who takes dexedrine:

1. does better on tests.
2. stays calm in all situations.
*3. stays awake.
4. Undecided
5. I don't know.

Alternative	1		2		3*		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	4	3.8	8	7.5	24	22.3	14	13.0	58	53.8
Junior High	1	1.0	6	5.6	29	26.9	4	3.8	68	63.0
Senior High	3	1.5	13	6.2	84	39.7	14	6.7	98	46.3
Total	8		27		137		32		224	

* Correct answer

#28. Another word for speed is:

1. goofball
*2. meth
3. joint
4. Undecided
5. I don't know.

Alternative	1		2*		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	18	16.7	25	23.2	12	11.2	15	13.9	38	35.2
Junior High	24	22.3	18	16.7	15	13.9	9	8.4	42	39.0
Senior High	63	29.8	58	27.4	14	6.7	10	4.8	67	31.7
Total	105		101		41		34		147	

* Correct answer

#29. Which drug is not physically habit forming?

*1. DMT

2. Morphine

3. Demerol

4. Undecided

5. I don't know.

Alternative	1*		2		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	15	13.9	15	13.9	8	7.5	18	16.7	52	48.2
Junior High	6	5.6	6	5.6	5	4.7	15	13.9	76	70.4
Senior High	21	10.0	4	1.9	22	10.4	22	10.4	140	67.6
Total	42		25		35		55		268	

* Correct answer

#30. Which drug is used in some states to help people quit taking heroin?

1. Methedrine
*2. Methadone
3. Equanil
4. Undecided
5. I don't know.

Alternative	1		2*		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	14	13.0	34	31.5	10	9.3	10	9.3	40	37.1
Junior High	15	13.9	38	35.2	5	4.7	7	6.5	43	39.9
Senior High	27	12.8	64	30.2	8	3.8	16	7.6	97	45.8
Total	56		136		23		33		180	

* Correct answer

#31. Which drugs are in the same family?

*1. Mescaline and LSD

2. Alcohol and cocaine

3. Diet pills and sleeping

4. Undecided

5. I don't know.

Alternative	1*		2		3		4		5	
	Tallies	%	Tallies	%	Tallies	%	Tallies	%	Tallies	%
Upper Elementary	16	14.9	16	14.9	37	34.3	11	10.2	28	26.0
Junior High	26	19.5	6	5.6	34	31.5	7	6.5	40	37.2
Senior High	71	33.5	18	8.5	42	19.9	18	8.5	59	29.8
Total	113		40		113		36		127	

* Correct answer

APPENDIX D

TABLE XXXI

NUMBER OF OBSERVATIONS, MEANS, AND STANDARD DEVIATIONS RECORDED BY STUDENTS IN GRADES FIVE THROUGH TWELVE ON SIX DRUG ATTITUDE SCALES

Grade	Number	Mean	Standard Deviation
	Cigarettes		
5	57	47.26	8.80
6	49	50.49	8.83
7	57	44.63	10.54
8	51	45.31	10.80
9	54	43.35	11.57
10	57	41.54	11.19
11	56	43.66	8.30
12	44	45.95	9.42
	Alcohol		
5	57	45.23	9.26
6	49	49.88	7.70
7	57	46.23	10.50
8	51	41.80	10.47
9	54	40.13	10.63
10	57	38.11	8.52
11	57	39.75	10.02
12	44	41.55	10.12
	Marijuana		
5	59	47.12	7.62
6	49	54.10	6.67
7	57	48.79	9.06
8	51	46.75	9.74
9	54	43.80	13.85
10	57	40.54	13.85
11	56	41.29	13.61
12	44	40.91	13.63

TABLE XXXI -- Continued

Grade	Number	Mean	Standard Deviation
	LSD		
5	56	51.29	6.54
6	49	53.88	6.98
7	57	54.14	6.48
8	51	51.65	7.50
9	54	52.26	9.98
10	57	47.32	11.83
11	56	50.27	10.31
12	44	51.09	10.76
	Heroin		
5	55	49.89	6.54
6	48	54.44	6.40
7	57	53.70	6.96
8	50	52.98	6.70
9	54	53.98	6.67
10	57	53.70	6.05
11	56	54.86	5.71
12	44	54.41	6.40
	Methedrine		
5	53	50.66	6.06
6	48	53.58	6.90
7	57	53.25	7.26
8	50	51.78	7.13
9	54	51.22	10.98
10	57	49.00	10.38
11	56	50.55	8.89
12	44	51.91	9.67

APPENDIX E

TABLE XXXII

MEANS, STANDARD DEVIATIONS, COEFFICIENT OF CORRELATION, AND LEVEL OF SIGNIFICANCE BETWEEN DRUG KNOWLEDGE AND DRUG ATTITUDES AMONG STUDENTS IN EIGHT GRADES

Drug Knowledge		Drug Attitudes		Value of	
Mean	SD	Mean	SD	r	p
Fifth Grade N=53					
11.57	3.68	292.45	34.35	-.09	NS**
Sixth Grade N=47					
11.13	4.65	316.13	36.90	.32	.05
Seventh Grade N=57					
12.30	4.88	300.74	38.85	-.02	NS**
Eighth Grade N=50					
15.02	4.03	290.60	38.63	-.45	.01
Ninth Grade N=54					
16.15	4.95	284.20	50.13	-.49	.01
Tenth Grade N=57					
17.89	5.08	269.47	44.29	-.14	NS**
Eleventh Grade N=56					
17.26	4.75	279.68	36.61	-.54	.01
Twelfth Grade N=44					
17.82	5.25	285.57	45.77	-.53	.01

** Not significant at .05 level

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