

A COMPARATIVE STUDY OF DRUG KNOWLEDGE IN AN URBAN  
SCHOOL AND IMPLICATIONS FOR DRUG EDUCATION

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We hereby recommend that the dissertation prepared under  
our supervision by Marian Smith Jones

entitled A COMPARATIVE STUDY OF DRUG KNOWLEDGE IN  
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## CHAPTER I

### I N T R O D U C T I O N

Drug usage has been a controversial issue in many civilizations. Evidence of the use of opium was found in Assyrian Medical Tablets seven centuries before the era of Christianity. There is reason to believe that it was widely used by the Greeks, Romans and early Mohammedans as a medicant. Europeans found a medical panacea in opium and it was used by doctors in the early nineteenth century. In 1803 a pharmacist's assistant in the United States learned how to separate the substance morphine from opium, naming it after Morpheus, the god of dreams. A method of injecting drugs by hyperdermic was developed during the American Civil War and thousands of addicts were created. According to Fort (23) in the 1890's a royal commission of British and Indians empowered to study marijuana (hemp, cannabis) formulated such questions as:

What opportunities have you had of obtaining information regarding the matters connected with hemp drugs in regard to which answers are framed?

What classes and what proportion of the people drink or smoke hemp drugs, and in what localities?

Is the use of these drugs on the increase or on the decrease?

What proportion of the consumers are 1) habitual moderate, 2) habitual excessive, 3) occasional moderate, 4) occasional excessive consumers?

To what extent is the consumption of each of these drugs practiced in solitude or in company?

Is there a tendency for the moderate habit to develop into the excessive?

If not beneficial, do you consider the moderate use to be harmless? Give reasons for your answer.

Does the habitual moderate use produce any noxious effects--physical, mental or moral?

Do you think the cultivation of the plant should be in any way controlled; would this be feasible; if so, indicate the method by which such control could be exercised.

Would it be feasible to prohibit the use of these drugs; would the drug be consumed illicitly; how could the prohibition be enforced; would the prohibition be followed by recourse to alcohol or other drugs?

The Harrison Narcotic Act was passed in 1914 providing regulation and control of narcotics. The United States presently regulates the importation, manufacture, and distribution of opium, coco leaves (cocaine) and their derivatives. Heroin, a derivative of opium, is prohibited from use by anyone in the United States. The Marijuana Tax Act of 1937 places the same restrictions on the use of heroin.

Drug problems and issues of today are a segment of the developmental story of man and his desire to become more aware of himself and his environment. Modern youth is bombarded with the glamour and "cure all" of drugs throughout

the advertising media. Drugs have become commonplace in the daily routine of today's society. The growing use and abuse of drugs among young people is causing concern to parents and educators. Many youth in the United States begin a hazardous involvement with drugs by being curious; some by a desire to be associated with and accepted by the "in group"; others to find an escape from reality. A few young people try drugs to find themselves; to relieve tension and anxiety or to relieve feelings of inadequacy. One main reason young people try drugs is for "kicks", to get high, much as adults use the drug of alcohol.

Merki (45) stated the reasons for drug abuse in other countries besides the ones already mentioned as: drugs are part of religious ceremonies, part of sexual satisfaction, and to cure physical and psychological disorders. In portions of the Asiatic and South American worlds, taking drugs is as commonplace as soda pop and hamburgers.

Chronic users and addicts come from every socio-economic background, broken homes, good homes, black and white families, middle income and low income groups. Many youth attain their initiation by smoking "pot" or marijuana or by taking "pep pills". Either of these drugs is easier for young people to obtain than a package of cigarettes. Teen-agers everywhere are tempted to try drugs while sub-teens pick up the attitudes and vocabulary of the drug culture from their

elders. Many experiment and leave the drug scene, others go on to greater involvement. As one 17 year old boy commented during a recent workshop:

I grooved on drugs for two years and decided it was not my bag. Now my 14 year old brother is taking drugs and I worry that he will not be able to stop before he becomes a drug abuser. He is not able to communicate his feelings as easily as I do.

Fort (23) defined "drug abuse" as the use of a drug, usually chronic excessive use, to an extent that produces definite impairment of social or vocational adjustment or health. The term abuse is appropriate when self-medication or self-administration of a drug, usually in excessive quantities leads to psychological or psychic dependence, and abnormal behavior, either separately or collectively.

#### STATEMENT OF THE PROBLEM

Much of what parents and teen-agers believe about drugs is not true. Scare tactics have been used by parents and educators, and youth ignore these in favor of a "good" feeling that comes with the use of drugs. Much confusion exists concerning the harmful effects of drugs. Authorities continue to disagree especially about the harm marijuana does to the human organism.

The research on marijuana suggests that the drug may be less harmful than alcohol or nicotine in excess. Years

of intensive research will be needed to thoroughly understand how marijuana affects the physical, mental and emotional states of humans. Lehmann (41), director of a rehabilitation foundation, VITAM, Norwalk, Connecticut, is convinced from his observations that any youngster who uses marijuana excessively for six months or longer will be different. Lehmann believes education on a massive scale is important.

The dangers of LSD, methadrine, cocaine, barbiturates, heroin, and amphetamines are far more clear. Basic knowledge about drug use and abuse can be made available to young people and supported with meaningful alternatives. Constructive ways to reassure youngsters must be found to help them cope with the world problems.

#### PURPOSES OF THE STUDY

The overall purpose of the present study was to evaluate the factual knowledge of drugs understood by a group of young people and to compare the understandings with a national group of high school students. The specific purposes of the study were to:

- 1) Determine whether or not teen-agers can distinguish between addictive and habit-forming drugs.
- 2) Determine the extent of knowledge teen-agers have about the physiological and psychological effects of drug use and abuse.

- 3) Compare the results of the study with a national study.
- 4) Determine from the findings if the study indicates a need for further drug education.

The long range purpose of the study was to determine the areas of lack of knowledge among a group of high school students and to determine the need for drug education.

For guiding the development of the study, the following assumptions were made:

- 1) A study of the drug knowledge of teen-agers will determine if there is a need for an educational program in narcotics and related drugs.
- 2) A study of teen-agers responses will indicate that young people are cognitive of the physical and psychological effects of drugs on the human organism.
- 3) The street names of drugs may have more meaning for the teen-ager than the generic names of drugs.
- 4) An objective of public school education should be to include drug education in preparing young people to become healthy, happy and responsible citizens.

## CHAPTER II

### R E V I E W   O F   L I T E R A T U R E

#### D A N G E R O U S   D R U G   I N V O L V E M E N T

The terms "addiction" and "habituation" have been used in past literature to describe drug abuse. The two terms have resulted in the erroneous impression that addiction, with its physical components which are sensationally evident in withdrawal illness, is the most serious manifestation of drug dependence and that habituation is of lesser importance because it functions merely on the psychological level.

According to Kitzinger and Hill (37) dangerous drug is a legal term which applies specifically to barbiturates, amphetamines, and other drugs (except the narcotics) which are officially determined to have a potential for abuse because of their depressant, stimulant, or hallucinogenic effect on man. Federal control of dangerous drugs is under the jurisdiction of the Food and Drug Administration, whereas federal control of narcotics is under the jurisdiction of the Bureau of Narcotic Enforcement of the United States Treasury Department.

## Drug Addiction

The World Health Organization of the United Nations (56) has established the following definition of drug addiction:

Drug addiction is a state of periodic or chronic intoxication detrimental to the individual and to society, produced by the repeated consumption of a drug (natural or synthetic). Its characteristics include:

- 1) an overpowering desire or need (compulsion) to continue taking the drug and to obtain it by any means;
- 2) a tendency to increase the dose;
- 3) a psychic (psychological) and, sometimes, a physical dependence on the effects of the drug.

Under the terms of this definition, Isbell (30) contended that a large number of drugs are addicting. For the purpose of description, they may be divided into two classes: stimulants, drugs which induce sleeplessness or hyperirritability, and depressants, drugs which tend to induce sleep and lessen nervousness. The stimulants regarded as addicting, include cocaine, amphetamine and mescaline. The depressants include morphine and all its derivatives, the synthetic analgesics--methadone and meperidine (Demerol); all the hypnotics and sedatives (chloral, paraldehyde, bromides, barbiturates, marijuana, and alcohol).



### Drug Habituation

An attempt to distinguish between addiction and habituation by The World Health Organization of the United Nations (56) included the following characteristics of drug habituation:

- 1) a desire (but not a compulsion) to continue taking the drug for the sense of improved well-being which it engenders;
- 2) little or no tendency to increase the dose;
- 3) some degree of psychic dependence on the effect of the drug, but absence of physical dependence and hence of an abstinence syndrome;
- 4) detrimental effects, if any, primarily on the individual.

### Drug Dependence

The separation of addiction and habituation has been difficult to obtain objectively. Physical dependence has been characterized by increased tolerance and abstinence syndrome (severe illness or distress when the drug is withdrawn). "Addiction" has been the term used for drugs which can produce physical dependence, mainly, the opiates, barbiturates and alcohol.

Harper and Simmonds (29) stated that drug tolerance may be "in-born" or acquired. Tolerance as acquired, is a cellular adaptation to an alien chemical environment

characterized by diminished biological response. Compounds are "cross-tolerant" when each induces tolerance to the other. Tolerance that appears after one or a few doses of a drug is termed acute tolerance or tachyphylaxis, that appear after many doses is chronic tolerance. The following characteristics of tolerance must be accounted for in any explanation of the mechanism of development:

- 1) Tolerance may develop unaccompanied by physical dependence: it may arise to drugs that do not induce physical dependence.
- 2) Many, but not all drugs, induce tolerance.
- 3) Tolerance may develop to some but not all actions of a drug.
- 4) Tolerance begins to decline on the withdrawal of a drug but the effects may be detectable for periods of one year.
- 5) Tolerance may arise in isolated cells or organs.
- 6) Relatively small doses of a drug may confer tolerance to much larger doses.

Harper and Simmonds further stated that physical dependence is a state of latent hyperexcitability which develops in cells of the central nervous system of higher mammals following frequent and prolonged administration of morphine like analgesics, alcohol, barbiturates and other depressants, and becomes manifest subjectively and objectively as special symptoms and signs. Physical dependence on a drug can only be determined by provoking the abstinence syndrome.

Drug dependence refers to drug involvement in general. Individuals differ in their susceptibility to drug dependence and drugs differ in the capacity to cause dependence. Eddy (21) emphasized that current researchers have accepted the term by The World Health Organization (56) of drug dependence. The term is used as a concept for clarification rather than a definition.

Drug dependence is a state of psychic or physical dependence, or both, on a drug, arising in a person following administration of that drug on a periodic or continuous basis. The characteristics of such a state will vary with the agent involved, and these characteristics must always be made clear by designating the particular type of drug dependence in each particular case: for example, drug dependence of the morphine type, of barbiturate type, of amphetamine type, and the like.

### DRUG DEPENDENCE IN THE UNITED STATES

#### Location of Greatest Addiction

Kaplan (35) reported that there are more arrests for drug violations in the cities than in the suburbs and rural areas combined. Currently, college communities are target areas for drug users and pushers; however, conditions on college campuses are less conducive to detection. In the last few years, among juveniles, arrests for heroin abuse have decreased while increases occur for such drugs as marijuana, amphetamines, and barbiturates.

A study by The California Rehabilitation Center Institution Program (27) found that during 1970, 5,610 male civil narcotic addicts experienced out-patient supervision as part of the addict treatment program. This figure represented an all-time high since inception of the program, and is an increase of over 1,000 men from the previous year.

Cwalina (18) reported that 2,000 juveniles were arrested in Los Angeles in 1966 for drug violations and 4,000 in 1967. Cwalina suggested that the number of unreported drug users and drug dependent persons, particularly among college students and persons in the middle and upper classes, is open to speculation.

The New York State Narcotic Addiction Control Commission (47) described New York's drug scene in early 1970 as critical. The use of heroin had spread among teen-agers and pre-adolescent children. There were less than 500 heroin deaths in the five year period, from 1950 through 1954, in New York City. This figure increased to 611 from 1955 through 1959, to 1,299 from 1960 through 1964, and to 2,935 from 1965 through 1969. Teen-age heroin-related deaths accounted for a disproportionate share of the increase. Fifteen teen-agers died in 1960 from heroin-related causes. The fatalities rose to 38 by 1964, to 79 by 1967, and to 224 by 1969. The study revealed that about 70 per cent of the deaths were caused by heroin overdose.

A recent outbreak of addiction to heroin, Isbell (30) stated, has reached very serious proportions among young people in certain areas of large cities in the Eastern and Middle Western United States. Isbell emphasized the tragic consequences of addiction and stressed the need for dissemination of available information on this subject. A marked increase in the consumption of barbiturates in the United States within the past 10 years was also reported by Isbell. The Bureau of Narcotics (30) estimated, in 1965, there were 60,000 "addicts", primarily dependent upon heroin, in five major cities.

Some writers have expressed misgivings concerning the reliability of statistics on incidence of drug use gathered by questionnaires. A group of students in an eastern college made a variety of responses available for typical questionnaires on drug use. The responses were designed to astonish, reassure or irritate the questioner. In a study of high school and college campuses, Cwalina (18) indicated the findings from several LSD surveys showed that 5.0 per cent of the students polled admitted using the drug. Judging from the decline in the number of admissions to the college health services with reactions to LSD, there may be a decline in the use of LSD nationwide. Cwalina reviewed statistics gathered from a survey in Mamaroneck, New York. The findings showed that 20 per cent of the high school students had tried drugs, 15 per cent casually, but 5.0 per cent on a regular basis.

### Youth and Drug Dependence

In a study of five college campuses, Blum and Associates ( 8 ) presented evidence that for all drugs, without exception, the younger undergraduates report less experience than do older students. Male students reported somewhat more use of tobacco, marijuana, hallucinogens and special substances for "kicks" than do females. The sexes are equally experienced with alcohol, amphetamines, and illicit opiates. Females more often than males have had experience with sedatives and tranquilizers. The greatest difference between men and women in drug use occurred with tranquilizers. The tranquilizers were used one or more times by 15 per cent of the men and by 26 per cent of the women. The greatest proportional difference between the sexes occurred with the hallucinogens. Twice as many men as women have employed them. Blum concluded that there were considerable differences within groups of users and non-users of drugs; nevertheless, drug use as such is related to student background, interests, activities, viewpoint and performance.

A similar study in three high schools in California by Blum (8) indicated that the survey was inadequate. Blum stated that there was no provision for reporting the amphetamine trend, and informal conversations with students made it more evident that some of them had lied. The researcher of

the high school surveys emphasized the apparent increase in student use of illicit-exotic drugs, LSD, the amphetamines and especially marijuana.

Drug dependency has been related to personality maladjustment. Kolb (38) enumerated drug abusers as follows:

- 1) Normal--those mentally healthy persons who are accidentally addicted through the use of habit-forming drugs during treatment for an illness.
- 2) Psychoneurotics--hedonistic individuals who seek pleasure, new excitements, and sensations.
- 3) Character disorder--psychoneurotics with mild hysterical symptoms, phobias, compulsions, and other neurotic pathology.
- 4) Personality disorder--habitual criminals, psychopaths with extreme antisocial behavior.
- 5) Inadequate or sociopathic personality--addictive personalities with an ungovernable need for intoxicants.

Nowlis (49) maintained that all college students are at one or another stage in growth from childhood to adulthood. This growth process involves both the unlearning of modes of behavior which were appropriate and rewarded in childhood and the learning of new modes in accordance with society's definition of the adult role. The definition of an adult role within American culture is neither clear nor consistent. Reasons why students use drugs, according to Nowlis, are the same reasons why adults use drugs such as alcohol, aspirin, tranquilizers, amphetamines, barbiturates,

nicotine and caffeine. All of the drugs are widely used by a variety of people for various reasons; change of pace, change of mood, reduce anxiety, a "pick-up," combat fatigue, relieve tensions, relieve boredom, facilitate social interaction, sleep, and just for fun.

Tec (53) studied 1700 high school youths from an affluent suburban community and revealed findings of marijuana use by teen-agers as follows:

- 1) Youths who come from broken homes and/or do not live with both parents are more likely to use marijuana than youths who come from intact families.
- 2) The more rewarding the family is in terms of recognition and respect obtained within it, and the more personally satisfactory the relationships are within it, the lesser the likelihood to smoke marijuana.
- 3) The presence of parental controls and/or indifference increases the use of marijuana when demands made by the family are perceived as unfair and excessive and are not accompanied by warmth.

Reasons cited by youth for taking drugs were mentioned by Merki (45) as motivational factors:

- 1) It is "in"
- 2) "Kicks"
- 3) "To see what it's like," curiosity
- 4) Dare, social pressure
- 5) Peer acceptance



- 6) Escape from reality
- 7) Find themselves
- 8) Relieve inhibitions
- 9) Get away from something
- 10) Something to do
- 11) Relieve tension and anxiety
- 12) Relieve feelings of inadequacy
- 13) Unhappy with society
- 14) Instability of their lives
- 15) Curiosity about their inner thoughts
- 16) Take chances

Blaine (5) supported the premise that young drug takers can be divided into three broad groups: the experience seekers, the oblivion seekers, and the personality-change seekers. Many of the experimenters are rebellious or hostile and wish to break the rules. Oblivion-seekers find the drugged state of mind is pleasant--an escape from worldly stresses. Personality-change seekers are those who most often become drug dependent or permanently incapacitated by drugs. Frustration and disappointment lead to larger doses and use of drugs in combinations. Many are psychologically disturbed--severe neurotics, schizophrenics, manic-depressives and psychopaths.

In a study of 200 noninstitutionalized adults Blum (7) discussed the hypothesis that the sample revealed drug

behavior not radically different from what occurs in the normal adult population. The data suggested the following:

Persons with the greater drug experience will have had more experience with medical care as such. Persons with the greater drug experience will have had more psychological conflicts centered around orality, measured by reported eating problems, both as children and adults. High-drug-use respondents as parents may handle their own children's emotions more negatively. The high drug users more than low express dislike of their fathers and mothers; important in terms of rebellion. The high drug users are more dissatisfied with themselves, with their relation with others, and with their work. High drug users appear to be subject to cravings, unsatisfied desires, extreme likes and dislikes, possible guilt over ingestion habits, evident suspicion of drug contents, and drug-dependency fears.

#### Recent Awareness of Drug Dependence

In 1952, at the request of the United States Public Health Service, Chein (13) investigated juvenile drug use in New York City. Available information was unsystemic or unreliable or both. The data collected by Chein indicated that the neighborhoods where drug use had spread in "epidemic" proportions were located in very high delinquency areas. The percentage of delinquencies was higher in areas of high drug use. This trend was strong in 1951 and 1952, the period when drug use had reached peak levels in these neighborhoods.

Louria (42) reported that the number of narcotic addicts in the United States was greater between 1900 and 1920 than it was in 1968. The Harrison Act in 1914 attempted to control

the supply and to reduce the availability of narcotic drugs. Narcotic addiction in the United States declined to the lowest point during the years of 1940 to 1945. After World War II, heroin flowed more freely to the United States and the number of known addicts rose to approximately 60,000 in 1950.

Marijuana, the most popular drug of young people in the American society, was introduced in 1920. By 1930 marijuana use had increased to the extent that Congress included marijuana in the narcotics statutes. Louria (42) stated that from 1940 to 1950 there was a gradual but persistent increase in the use of marijuana among college students. Marijuana use has increased in the past five years to include young people in the elementary grades.

Blum (7) noted that over the past several years, the public had been concerned about the use of mind-altering drugs among students. That concern had been evoked by reports from individuals, mass media, the police and other government agencies, educators, and social scientists. The report consisted of expansion of student interest in and use of drugs which are illicit or exotic. The exotic drugs were listed as drugs which are so newly developed that the drugs are not covered by existing statutes. Blum continued that in 1963 the students who were primarily interested in psychoactive substances were mostly graduate students. Current

statistics including clinical and journalistic observations have implicated increasingly younger student groups as drug users. Undergraduates first became a focus of concern in drug use, then high school students and grade school pupils were described as using illicit-exotic drugs. In addition the hippie movement began in 1966. The hippie movement, comprised of young people who were not in school, proclaimed a way of life centered on the use of illicit and psychoactive compounds. Young children of drug-using parents have been introduced to drugs.

Bloomquist (6) stated that a decade ago, few people mentioned cannabis. Nobody had any use for marijuana. The marijuana user was described as idle and lacking in initiative, sexually maladjusted, and a person who sought distraction, escape and conviviality by smoking the drug. Marijuana use was confined to a very limited number of citizens. Bloomquist described today's marijuana users as well-educated middle and upper-class young people. The sudden realization of the drug involvement of young people caught society by surprise and created grand confusion. Cannabis is currently the major drug of abuse among American youth.

#### YOUTH AND DRUG USE - ABUSE

Matchett (43) declared that public opinion about adolescent drug use was based upon insufficient data. Matchett

indicated the need for extensive research of youth involvement with marijuana, LSD, methedrine, and amphetamines. In a study of 81 students in a suburban public high school, Matchett observed that there were two very different categories of people who were using drugs. One group was using them more heavily and seemed to fit the stereotype of an individual on the fringe of society. The other group apparently was only experimenting with drugs or using them socially, and were more secure, inquisitive, and active than were their non-using peers.

Thomas and Knotts (54) pointed out that statistics obtained from many sources can be used to illustrate roughly the magnitude of the drug abuse problem. Few authorities studying drug abuse would deny that precise data are difficult to acquire. Thomas and Knotts stated that contemporary drug abuse encompasses both medicinal and non-medicinal agents. Increasing abuse of marijuana, LSD, mescaline and other hallucinogens is of no less concern than is the abuse of sedatives, tranquilizers and other drugs that affect the central nervous system. Scientists have only recently begun to speak freely of a so-called "analgesic receptor" that is alleged to be located within the central nervous system.

### Barbiturates and Tranquilizers

According to de Lone (20), Windsor Mountain School is not new to the business of doing away with "cherished, traditional, and outmoded" educational ideas. In the school catalogue, a statement on drugs follows:

The use of illegal drugs, mainly pot, LSD and hashish, is widespread, spreading out of control. Drugs are available on almost every college campus. It is no longer a matter of temptation or availability, but it has become strictly a matter of choice and decision. Just as it is impossible to stop a girl from sleeping with a boy if she has made up her mind to do so, it is equally impossible to stop an adolescent from finding drugs if he or she has made up his mind to use them. . . . While many of us believe that drug use can and should be attacked and defeated, that will happen only if we are willing to change our whole approach to education, character development, and adult responsibility and do away with many of our most cherished, traditional, and outmoded educational systems and preoccupations.

Windsor Mountain is one of a number of small boarding schools with considerable experience in juggling that slippery, frequently contradictory set of ideas and ideals that John Dewey codified as progressive education a half century ago.

Widespread individual and social anxiety is prevalent regarding drugs. Use of mood-altering drugs frequently results in erratic and inconsistent behavior, both individually and socially. Leake (40) pointed out that in order to have a satisfactory understanding of the use and misuse of drugs in today's society, it is essential that there be a basic

understanding of psychological factors involved in mood and behavior, as well as pharmacological information regarding the action of drugs. The drive for the mood of conditioned satisfaction is a powerful one. If drugs are found, on individual trial, to give this feeling, such drugs will be sought, and used and often misused as a result of ignorance or indifference to the harm such misuse can cause. The mood of dissatisfaction is also powerful and unpleasant. People seek to get away from the mood in many ways, including over-eating, sexual excess and drugs.

Sadusk (52) recognized the difficulty in obtaining an accurate and specific description of non-narcotic addiction. Drugs obtained through illicit traffic cannot be controlled under present law. Complete data are not available for documentation and analysis, neither are adequate reports on this topic available from other countries. Data show that the production and distribution of these drugs in illicit channels is a great problem.

Barbituric acid and its homologues, the hypnotics--of which there are about 42 different preparations in general use--have effects similar to alcohol, and in general opposite to the stimulants: caffeine, amphetamine and cocaine. Laurie (39) pointed out that in the personality continuum from introversion to extroversion, a dose of the hypnotics moves a given personality towards extroversion, a stimulant towards

introversion. A teen-ager who is sleepless and garrulous on a large dose of amphetamines may seem to be extroverted rather than introverted; but in fact the stimulants direct the attention inwards towards the thoughts and feelings of the self, rather than outwards to the environment. Laurie stated that addiction to barbiturates is destructive to personality. The barbiturate addict tends to take the drug until he is completely intoxicated, his object being oblivion.

Cameron (12) made the observation that the misuses of sedatives and stimulants still possible by physicians despite Public Law 89-74 include the following:

- 1) Utilizing these drugs for prolonged, unsupervised periods for symptomatic relief, without adequate diagnosis or knowledge of the patient's experience with and attitudes about these and other dependence inducing drugs.
- 2) Acceding to the patient's demands for increased quantities when there is no real medical indication for such increase.
- 3) Shifting from one sedative or stimulant to another in the mistaken belief that the substituted drug is "safe."
- 4) Writing refillable prescriptions without apparent thought of cumulative effects or the possibility of psychic or physical dependence or both.

Essig (22) cautioned that newer sedative drugs can cause states of intoxication and dependence of barbiturate types. Chemically these drugs are not barbiturates, but the untoward effects of their excessive use are like those of barbiturate



drugs. Excessive use of one or more of these drugs can cause drowsiness, difficulty in thinking, and incoordination of movement. These signs of intoxication are similar to those induced by barbiturates or alcohol and are conducive to injury by falling, interference with occupational skills and violent or aggressive behavior.

According to Fort (23) the number of users of prescribed sedatives, barbiturates and amphetamines is probably between 20 million and 25 million as indicated by production of the pills and the prescribing figures. More than 100 single-dosage pills for every man, woman and child in America could be made from the total quantity of drugs produced each year. Half of the sedative production is said by federal authorities to pass into black-market distribution. The study in the Berkeley schools revealed that 5.0 per cent of the boys and 4.0 per cent of the girls in the seventh grade had tried sleeping pills or tranquilizers without a prescription and without parental approval. In the tenth grade, 13 per cent of both boys and girls had used tranquilizers, and 10 per cent of the boys and 15 per cent of the girls in the twelfth grade had tried the drug.

A considerable amount of the overall use of these drugs can be considered misuse. Fort (23) pointed out that with true tranquilizers, it is particularly difficult to define abuse because the drug may be urged on the patient by the

physician and the individual's disturbed mental state. There is also the complex question of differentiating side effects from abuse. Fort continued that a significant minority of those taking tranquilizing drugs will have physical or mental reactions including skin rash, light sensitivity, rigidity of the muscles, hepatitis, and a kind of robotization or blunting of emotion and activity. The most serious abuse of the sedative drugs, including barbiturates, is accidental death or suicide from an overdose, occurring to more than 10,000 Americans each year.

In a study to determine amphetamine use among college women, Barber and Means (4) found the greatest number of users to be among the sophomores residing in the 22 dormitories for women surveyed. Barber and Means emphasized the possibility that what a person reports and what he actually does may be different. The degree to which the uncontrolled lying factor contaminates such research is unknown.

Amphetamines are not as safe as has been supposed and dependence occurs frequently. Connell (17) discussed one interesting aspect of the effects of high dosage of amphetamines. The author related that large doses taken either once or over long periods of time might cause brain damage due to the change in brain enzyme levels following methamphetamine administration.

Kalant (34) found that the effects the amphetamine drugs can produce are as follows:

- 1) Acute toxic states characterized by symptoms of overstimulation of the sympathetic and central nervous system.
- 2) Various degrees of dependence ranging from mild habituation to strong compulsion to using drugs chronically.
- 3) The development of marked tolerance leading to the need for increasing doses.
- 4) The development of transitory psychotic reactions clinically indistinguishable from paranoid schizophrenia.
- 5) Damage to society in the form of neglect of family and work, financial irresponsibility, crime, and other antisocial behavior.

#### Hallucinogens, marijuana and LSD

Cohen (14) stated that the hallucinogens are a diverse group of drugs which alter mood, perception, thinking and ego structure. In small doses hallucinogens tend to be euphoric and do not cloud consciousness. In larger amounts hallucinogens cause a spectrum of reactions, ranging from horror to ecstasy, from absence of thought to a manicky flight of ideas, from intensification of color and depth to illusions and hallucinations, and from minor distortions of the body image to complete loss of ego boundaries.

Current researchers enumerate peyote, mescaline, psilocybin, DMT and LSD among the so-called mind-expanding

drugs. Gildersleeve (24) described LSD as one of the most potent drugs known. LSD is thousands of times more potent than marijuana. LSD may be placed on sugar cubes or used as a powder in capsules or vials. Persons taking LSD have hallucinations such as time standing still, music having "scent," and sound having "color." The drug may cause loss of identity and control, anxiety to the point of panic, severe depression with suicidal thoughts, and confusion. LSD can cause psychological dependence rather than physical dependence with withdrawal symptoms. There is often a dramatic change of values, and users lose interest in any form of work or study. They literally "drop out" of life and society.

Current research indicated there are probably several hundred thousand users of LSD, mescaline, STP, DMT and psilocybin and tens of thousands of regular users. Fort (23) summarized that the study at San Mateo found that 10 per cent of their high school students had tried LSD, with no indication as to regularity. The study at Berkeley conducted by Fort in two school districts revealed that 5.0 per cent of seventh grade girls and boys had used LSD-type drugs, and about the same number were currently using them frequently. About 10 per cent of tenth graders had used them with 7.0 per cent using them infrequently. By twelfth grade 40 per cent of the students had an opportunity to use, 13 per cent had used, and 6.0 per cent were continuing to use one or another

of these substances. At all four grade levels only 17 per cent said that there were any facts they would like to know about drugs. The girls of the upper grades indicated the most interest in more factual knowledge.

In the second sample Fort (23) revealed a 4.0 per cent overall use of LSD, with 22 per cent having acquaintances using LSD. Of the twelfth graders, 32 per cent had a chance to try these drugs, 13 per cent did try them and 9.0 per cent continued to use them. About 86 per cent of the youth population stated they would not try any of the drugs even if given the opportunity. From these figures, Fort postulated that estimates of current and past use are probably conservative and the findings indicate that a considerable amount of experimentation and occasional use of LSD and the many other drugs available are occurring despite the criminal laws issued in the United States.

Investigators in Los Angeles found reasons to suspect that a chronic user of large doses of LSD causes brain damage. Cohen and Edwards (15) studied 30 overtly healthy young people who had used LSD over 50 times and compared these individuals to 30 matched non-users. The study indicated that visual spatial orientation was comparatively impaired and the greater the LSD exposure, the lower the general intelligence level of the users. The investigators

also emphasized that only a controlled study comparing functions before and after chronic LSD use could yield definitive answers.

Alsever (2) cautioned that a rather extensive subculture which is centered around marijuana has sprung up recently in high schools, colleges and universities. Marijuana is the commonest of the drugs being abused today and is also the most popular and the most controversial. Parents, teachers, physicians, and students need information concerning misuse of drugs, particularly marijuana. Physical affects noted by Alsever were bloodshot eyes, dilated pupils, cough, dry mouth, excessive thirst, frequency of urination, lowering of blood sugar, increase in pulse rate, and elevation of blood pressure. If a tremendous overdose were taken the mechanism of death would probably be respiratory failure. The significant and sometimes hazardous mental effects are numerous. They include the "up and down" stages of the high or marijuana intoxication with lowering of inhibitions, inability to make realistic decisions and appropriate judgments, the distortion of time and space, feelings of antagonism, depression and anxiety, delusions of grandeur and omnipotence, and the surfacing of previously repressed hostilities. Following the "up phase" of the high, there may ensue a short period known as the "down" which is marked by a moody reverie, introspection, decline of intragroup communications, and withdrawal.

Much controversy centers around easily produced and obtained marijuana. Corinna (1) stated that the assumption that marijuana is harmless has been strongly contradicted. Recent research has indicated that marijuana may have genetic and addictive effects. Corinna continued that the Black Panthers maintained a strict rule while involved in political activities; no drug use during campaigns. According to Johnson and Westman (32), marijuana ordinarily is inhaled in cigarette form, producing a pleasant euphoric dreamlike state in which the senses of time and space are distorted and self-confidence is increased. The effects are felt in a few minutes and persist for as long as 12 hours. The user may feel unusually aware of the function of his limbs and that he can perform feats of great physical agility or grace but that he is too tranquil to do so. Ability to focus attention and to concentrate is diminished. Associations of thought are rapid and disorganized. Increased sensitivity of vision and hearing produce intensified appreciation of music and art and may lead to illusions and hallucinations. The user may also experience impaired judgment, memory, confusion, anxiety, irritability and aggressive outbursts.

Resin of the female hemp plant produces two chemicals apparently responsible for marijuana hallucinogenic action. These two chemicals are delta and delta trans tetrahydrocannabinol, conveniently called THC. Toohey (55) reported a

study in which pure synthetic THC was administered to 40 human subjects producing psycho-physiological effects ranging from mild euphoria to psychosis. The quality of marijuana sold in the United States is very poor. The black-market agent introduces additives to increase profits, and the consumer has been handed a product so low in active ingredients that the intoxication from the marijuana cigarette has to be imagined. Chemical synthesis of THC has proven advantageous to the researcher; it may however become a major problem should individuals untrained in scientific research begin to produce, measure and experiment with the hallucinatory effects of THC.

Brill (10) emphasized that the impression that has been created that virtually nothing is known about marijuana is false. The assumption that no one should oppose its use unless he can provide clear and scientific proof that it is harmful is in direct contradiction to standard pharmacologic practice. Science and the law both agree that the public interest has strict requirements on this point. Hazards of a drug must be fully evaluated and its safety established before released for general use. Generations of experience have shown that there is no such thing as a drug which is both free of risk and still pharmacologically active. In this sense all drugs must be considered guilty until proven innocent. The type and the extent of risk must always be



determined first. Brill concluded that no responsible medical body in the world would support legalization of marijuana.

Researchers in the use of marijuana in the United States estimate the current number of users as between 6 and 12 million. In a study conducted in California, Fort (23) reported that 24 per cent of seventh grade boys and 22 per cent of the girls had opportunities to smoke marijuana, with 18 per cent of the boys and 12 per cent of the girls having tried marijuana. In the eighth grade of this school district, 45 per cent of the boys and 39 per cent of the girls had had the drug available, with 27 per cent and 18 per cent, respectively, using it. In the tenth grade, the data indicated that slightly over 60 per cent of both boys and girls had opportunity to try the drug, and 38 per cent of the boys and 43 per cent of the girls used marijuana. In the twelfth grade, 64 per cent of the boys and 61 per cent of the girls had the chance to use marijuana, and 41 per cent of the boys and 43 per cent of the girls used the drug. Fort further stated that about half of the students saw no difference between those their own age who smoked marijuana and those who did not. The researcher emphasized that one of the difficulties society faces in seeking to reduce drug usage is that only a small minority in each of the grades said there were facts that they would like to learn about marijuana.

As part of the same study in a middle-class community Fort (23) found that an overall 16 per cent of the students

had tried marijuana, and 12 per cent were using the drug regularly. In the twelfth grade 25 per cent of the students had tried marijuana, and 18 per cent were using the drug with some degree of regularity.

### Heroin and Methadone

Heroin, the drug of choice among narcotic addicts, is a white, fluffy powder resembling talc or powdered sugar. A derivative of morphine, heroin has no medical use. The initial effect after injection is euphoria. Addicts continue taking heroin because they suffer intensely from withdrawal illness when they cannot get the drug rather than because heroin makes them feel good. Like other narcotics, heroin is a central nervous system depressant. Chein (13) summarized that most youths in high-drug-use areas had heard of heroin at the time they were 15 years old and some had seen others take the drug. The first try of heroin was a casual, social experience with peers. The readiness to try the drug appears related to age; those who were 16 and 17 were especially susceptible. The study revealed that most of the boys who had a positive reaction to the drug continued to use heroin as an occasional relief and prop. The boys who did not have a positive reaction to the drug did not use heroin again.

Bloomquist (6) observed that each year thousands of teen-agers, good boys and girls, not just those already "in

trouble" with the law, are threatened by innocent association with narcotics users. Fewer than 2.0 per cent of known addicts are under 18; most of the 72 per cent who are under 30 years of age began the drug habit as adolescents. Ninety per cent of teen-age addicts start with marijuana. Fewer than 10 per cent of the teen-agers are introduced directly to heroin. Peddlers usually will not approach a new victim directly, preferring to work through addicts they know who draw others in for the favor of some free narcotics.

Narcotics are used on a short-term basis by millions of Americans each year to relieve pain and treat other medical conditions. A large number of these users become addicted legally in connection with incurable cancer and other protracted conditions. In the Berkeley study Fort (23) noted that 3.0 per cent of both boys and girls in the seventh, eighth and tenth grades had tried but had not become addicted to heroin, while 5.0 per cent of the boys and 8.0 per cent of the girls in the twelfth grade had become addicted. The most serious danger in the abuse of heroin is death due to accidental overdose.

Laurie (39) described the introduction of a shot of heroin as a warmth in the stomach and a tickling in the crotch. Pleasure is often offset by the characteristic vomiting produced by the first shots of heroin or morphine. One ex-addict said that the beginning sensation was that of

golden fire running through the veins. Towards the end of the self-terminated addiction the addict found heroin merely stupefying. Laurie further described a doctor's reaction to heroin as similar to that of a second-rate sleeping pill. An experiment in which two successive doses of morphine were given to 150 healthy young men resulted in only three who would willingly allow the injection to be repeated, and none who would have sought another injection. Laurie concluded that opiates are not inherently attractive, euphoric or stimulating. The danger of addiction to opiates resides in the person and not in the drug.

Methadone hydrochloride is a drug that has been used in clinics for the rehabilitation of drug addicts. Methadone is a narcotic that differs significantly in its action from other narcotics as follows:

- 1) Methadone is a long-acting drug for which only a daily oral dose is necessary, lending itself to strict medical control.
- 2) Methadone reduces or eliminates "drug hunger".
- 3) Methadone blocks the euphoric effect of heroin. The patient loses motivation for the continued illicit use of heroin while on methadone.
- 4) It eliminates the frequent "sick" periods of incipient withdrawal experienced by the heroin addict.
- 5) A steady dose can be maintained indefinitely.
- 6) No long-term ill effects from a controlled methadone administration have yet been identified.

The proposal for a methadone maintenance program in the Los Angeles Public Health Program for Drug Abuse was advocated by Heidbreder (26) to include patients 18 to 40 years of age. The history of the patient must include at least three years of heroin addiction. The addict must be using heroin and no other drug in any significant amount.

The proposal indicated safeguards against side effects of methadone and evaluation of patient progress. Heidbreder (26) emphasized that the data gathered by the study be evaluated critically at the end of the first year. The proposal was designed from a background of statistics in Los Angeles County indicating the spread of experimentation with heroin by youth. Addicts turned up in communities which were previously unconcerned with heroin addiction.

A pilot study conducted by Jaffe (31) indicated that treatment with high doses of methadone hydrochloride, administered orally, facilitates the social rehabilitation of long-term compulsive heroin users. The duration of action of orally administered methadone poses problems. In order to avoid withdrawal symptoms, patients must take methadone at least once every 24 hours. Some patients feel they must take it more frequently. Acetymethadol hydrochloride, a synthetic of methadone can prevent withdrawal for 72 hours. More important was the observation that former heroin users who had made satisfactory social adjustments while receiving

methadone orally continued to do as well while taking acety-methadol only three times each week. This preliminary study suggests that methadols may have practical therapeutic advantages over methadone in the treatment of addicts.

The Methadone Maintenance Program has been in operation in New York City for four years. Brill (11), chairman of the methadone maintenance evaluation committee, made the following conclusions:

The results of this program continue to be most encouraging in this group of heroin addicts who were admitted to the program on the basis of precise criteria. For those patients selected and treated this program can be considered a success. It does appear that those who remain in the program have become productive members of society, in contrast to their previous experience, and have become self-supporting and demonstrate less and less antisocial behavior. It should be emphasized that these are volunteers, who are older than the average street addict and may be more highly motivated. Generalizations of the results of this program in this population to the general addict population probably are not justified.

#### FACTORS IN DRUG EDUCATION

Barber (3) supported the premise that education focused on facts is the solution to drug abuse only to the extent that ignorance is the source of the problem. Most urban teen-agers already know more about drugs than their parents or teachers. The crucial dimension of the drug abuse problem is not the substances but the forces motivating their use.

Youngsters do not need to know the chemical composition of the drug they are tempted to try as much as they need to know what leads people to take that first "bennie" or that first "reefer." The critical time for an educational approach to the dynamics of drug abuse is not after drug use has begun, or when value systems are as structured as they begin to be in secondary school. Rather drug education needs to be an ongoing process starting as early as kindergarten.

According to Mikeal (46) drug education is inexorably linked to health education. Drug education is that part of health education which involves the interaction of drugs with an individual's physical, mental and emotional health. The definition is neither new nor original. The deplorable situation is the ignorance in defining the term "drug" and the use of drugs in the social complex in which man exists.

Boe (9) observed that drug abuse has been likened both to a public health epidemic and to a fire raging across the land. Boe indicated that in some way educators should be able to instill in children deeply ingrained attitudes toward the use of medicines, drugs, alcohol, cigarettes and other items in the environment that would deter any influences for the use of these agents. The influence toward harmful usage would then be contrary to what has become the normal way of thinking, and the school's educational efforts would reinforce existing attitudes rather than merely try to combat other influences.

Harnett (28) contended that if any single purpose for drug education exists, the purpose is to offer the best possible educational experiences, providing the student with a basis for deciding what drugs he will use and why he will use them. In a review of a planned drug education program, Harnett pointed out that lack of understanding concerning drugs and drug use makes it imperative that the predominant use of valuable in-class time be directed toward achieving attitudinal objectives.

The data for a pilot program in a public high school was gathered through the student body by Dearden (19). One question was especially useful for planning a drug education program. The students were asked what kind of drug education program they would prefer. Only two-thirds of 1.0 per cent of the students said they would prefer parental guidance over other methods of drug education. Approximately 80 per cent of the students suggested that movies and discussions with drug users and other young people would be more desirable. Other responses from the survey as suggestions for a drug education program were lectures, readings and "no program."



## CHAPTER III

### P R O C E D U R E

The purposes and procedures of the present study were mainly concerned with the determination of the extent of the knowledge of drugs among teen-agers in an urban high school in New York State and with the implications for an educational drug program. All areas of drug knowledge must be considered, habit-forming--amphetamines, hallucinogens, marijuana--and all addictive drugs--barbiturates, opiates and tranquilizers. Psychologists Kesten (36) and Houston (36) stated that the drug culture is here and parents should send letters to federal and state legislatures demanding funds for drug research and drug programs in every school grade. These researchers believe that a child deeply involved in drugs has his very life at stake.

The main purposes of the present study were 1) to explore recent research on narcotics and related drugs used by young people; 2) to find the extent of knowledge of drugs understood by high school students in an urban community; and 3) to assess the implication for a drug education program to meet the needs of children 13 through 19 years of age. A

high school in a suburban community in the New York City area was used as the basis of the study.

The specific purposes developed to guide the present study were to:

- 1) Determine whether or not teen-agers can distinguish between addictive and habit forming drugs.
- 2) Determine the extent of knowledge teen-agers have about the physiological and psychological effects of drug use and abuse.
- 3) Compare the results of the study with a national study of knowledge of drugs among teen-agers.
- 4) Determine from the findings if the study indicates a need for further drug education.

The long range purpose of the study was to determine the areas of inadequate knowledge of high school students about drugs in order to determine the areas needing education in drugs in the high school curriculum.

#### THE SAMPLE

The sample for the present study consisted of 741 high school boys and girls grades 9 through 12. The group of young people represented a cross section of the suburban high school at Mamaroneck, New York, with a total enrollment of approximately 2100 students. The random sample was taken from the physical education classes, heterogeniously grouped,

as suggested by the Superintendent of Schools in charge of curriculum development. The sample was comprised of 314 girls and 427 boys, aged 13 through 19 years. The number of boys and girls in each grade level are shown below:

<u>Grade Level</u>	<u>Boys</u>	<u>Girls</u>	<u>Total</u>
9	176	96	272
10	105	76	181
11	79	70	149
12	67	72	139

Each student volunteered to participate in the program.

Mamaroneck High School services three communities; the Village of Mamaroneck, the town of Mamaroneck and the Village of Larchmont. The high school students enroll from four public elementary schools in the Mamaroneck school system and three local parochial schools. The economic backgrounds of the students vary from family incomes of below \$4000 to a high of \$100,000 and over. Very few of the children from the highest income families attend the public high school. Parents prefer private schools outside of the communities to the public high school. The population of the three communities is close to 40,000 inhabitants. Ethnically the high school serves a small percentage of black and Puerto Rican families. The student body is comprised of children from Anglo Saxon, Catholic and Jewish families.

Mamaroneck High School is a fully accredited school that was recently evaluated by the Middle States Evaluation Committee with an excellent rating. Approximately 80 per cent of the students are enrolled in college preparatory programs. The curriculum emphasizes course work for the college bound student. Academic classes are grouped according to achievement testing levels. Physical education classes and special interest classes are grouped heterogeniously.

The requirements for high school graduation are for the student to complete 16 credits approved by the New York State Department of Education. The high school curriculum includes units of drug study in physical education, the sciences and the humanities. Every student must be enrolled and complete physical education requirements for four years to receive a high school diploma. The superintendent and the investigator agreed that the sample from the physical education classes would be most representative of the total student body. The sample size was determined on November 18, 1970 in each of the classes by the teacher in charge of each individual section, according to the number of students present. No attempt was made to include those students who were absent on the day the instrument was administered.

### THE INSTRUMENT

A standardized instrument consisting of five parts was used to collect information considered necessary to achieve the purposes of the study. The instrument used was A Drug Knowledge Inventory, developed by McHugh and Williams (44). The questionnaire was designed to furnish an estimate of knowledge of drugs in specific areas. The five parts of the instrument were categorized to include questions of knowledge in the following:

- I Habit-forming and addictive drugs
- II Knowledge about drug addition in the United States
- III Specific questions concerning: Addictive Drugs
  - A Barbiturates
  - B Opiates
  - C Tranquilizers
- IV Specific questions concerning: Habit-forming Drugs
  - A Amphetamines
  - B Hallucinogens
  - C Marijuana
- V Questions related to both habit forming and addictive drugs

The standardized instrument is composed of 44 questions. The investigator formulated and added five questions relating to drug names by slang rather than generic terminology. Young people are familiar with drugs in language other than

scientific terms. The five questions added using a choice of answers in slang were:

Which term refers to barbiturates?

Which of the following refers to amphetamines?

Which term refers to hallucinogens?

Which of the following refers to marijuana?

Which term refers to heroin?

Each of the five questions were added to the standardized instrument with a choice of answers using "street" names.

Permission to undertake the drug study at Mamaroneck High School was granted by the Superintendent of Schools, in charge of curriculum services. The superintendent studied the inventory and encouraged the study with the stipulation that he would be consulted at the time the inventory was to be administered. The superintendent was interested in the comparison of the Mamaroneck study with the national study results obtained by McHugh (44). The chairman of the physical education department was later authorized to supervise the administration of A Drug Knowledge Inventory (44).

Prior to the administration of the inventory in the physical education classes, the author met with the chairman and members of the department to discuss the instruction sheet to be used by each teacher before the student answered the questionnaire. A Drug Knowledge Inventory (44) was

administered on November 18, 1970 in the physical education classes to 741 boys and girls, grades 9 through 12 at Mamaroneck High School by the teacher of the section in the gymnasium.

The questionnaires were scored to find the number of correct answers for males and females at each grade level in each division of questions. The answers for Part I indicated whether or not the student understood the difference between habit-forming and addictive drugs. Scores in Part II indicated what the students knew about drug addiction in the United States today. Responses to questions in Part III and Part IV indicated the area of greatest knowledge in the two classifications of drugs. Part V summarizes broad drug questions and related information. The last group of questions determined the extent of terminology, slang versus generic.

The overall scores of the instruments are indicative of the level of greatest knowledge by sex and grade level and by the same assessment the level of the least knowledge. Scores of each numbered section of the instrument emphasize areas of special knowledge.

A comparison of the Mamaroneck scores with the scores of the national study illustrates the level of knowledge of Mamaroneck High School students as compared with students

in other parts of the country. The comparison of each question contrasted the knowledgeable level of the high school students with students of similar academic achievement. A copy of A Drug Knowledge Inventory (44) may be found in the Appendix.

#### TECHNIQUES OF DATA ANALYSIS

Data pertinent to the study were analyzed by using the standard deviation in order to compare the study with a national study. The scores were compared between each grade level and between boys and girls. The standard deviation was calculated for each group of questions, for each sex and for each grade level. The t-test was used to compare boys with girls, grade 9 with grades 10, 11 and 12. Grade 10 was compared with grades 11 and 12, and grade 11 was compared with grade 12.



## CHAPTER IV

### P R E S E N T A T I O N   O F   D A T A   W I T H A N A L Y S I S   A N D   D I S C U S S I O N O F   F I N D I N G S

The study was designed to compare the knowledge of drugs among high school students at Mamaroneck, New York, with data obtained from a study that had been completed elsewhere in the nation. A standardized questionnaire was administered to a random sample of students enrolled in grades 9 through 12.

The standardized instrument was divided into five parts: Part I, The difference between addictive and habit-forming drugs; Part II, The current status of drug addiction in the United States; Part III, Specific questions about addictive drugs; Part IV, Specific questions about habit-forming drugs; and Part V, General questions related to the use of drugs. Part VI, Questions concerning drug terminology using "street" names rather than the generic names of drugs, was designed by the author.

Information needed for the study of high school students at Mamaroneck was collected through the administration of the standardized instrument, with the added questions, to 741

boys and girls. The questionnaire was completed by 314 girls and 427 boys enrolled in physical education classes. Students cooperating by grade level included:

<u>Grade</u>	<u>Boys</u>	<u>Girls</u>
9	176	96
10	105	76
11	79	70
12	67	72

The age of the students at Mamaroneck ranged from 13 to 19 years. The mean age of both boys and girls enrolled in grade 9 was 14.5 years. In grade 10, the mean age for girls was 15.0 years and for boys, 15.5 years. The majority of the students enrolled in grade 11 were 16 years of age. One boy and one girl from grade 12 were 19 years of age as contrasted to 11 girls and seven boys who were only 16 years of age. The mean age of the students in all grades at Mamaroneck was 15.24 years while the national study recorded a mean age of 17.37. A distribution of the mean ages of the Mamaroneck students is seen in Table I.

#### COMPARISON OF THE OVERALL SCORES FOR TWO STUDY GROUPS

The t-test was used to statistically compare the scores of the two groups. There was a significant difference between the Mamaroneck students and the students in the national study.

TABLE I  
DISTRIBUTION OF STUDENTS PARTICIPATING IN  
MAMARONECK STUDY ACCORDING TO AGE

Grade Level	Age	Participants			
		Girls	Boys	Mean Age in Years	
		Number	Number	Girls	Boys
Grade 9	13	8	17	14.5	14.5
	14	77	143		
	15	9	14		
	16	2	2		
Grade 10	14	4	8	15.0	15.5
	15	68	81		
	16	4	14		
	17	0	2		
Grade 11	15	6	7	16.0	16.5
	16	62	60		
	17	2	11		
	18	0	1		
Grade 12	16	11	7	17.3	17.3
	17	53	50		
	18	7	9		
	19	1	1		

The mean scores for the Mamaroneck boys and girls were significantly higher than the mean scores for boys and girls participating in the national study. The mean for the boys in the Mamaroneck study was significantly higher than the mean for the boys in the national study. The same was true for the girls in the Mamaroneck study. Moreover, the girls participating in the present study had a higher mean than the boys (Table II).

The scores of the boys and girls in the Mamaroneck study were statistically compared by sex and grade level using the t-test. There was no significant difference in drug knowledge between boys and girls within the grade levels investigated. The results shown in Table III indicate that the girls were as cognizant as the boys in drug knowledge at each grade level.

#### COMPARISON OF TYPES OF DRUG KNOWLEDGE

Each of the six parts of the questionnaire was analyzed to determine the significance of differences in specific drug knowledge of boys and girls enrolled in grades 9 through 12. The questions on the questionnaire were designed to indicate cognizance of drug definitions, drug terminology, effects on the human organism, and general factual knowledge about drugs. Fort (23) stated that drugs have been classified in terms of: the system or portion of the human body acted upon

TABLE II  
ANALYSIS OF MEAN DIFFERENCES IN QUESTIONNAIRE  
SCORES BETWEEN TWO GROUPS OF  
HIGH SCHOOL STUDENTS

Study Group	Test Scores			
	Mean	Standard Deviation	t-value	Level of Significance
Boys				
National Study (N=228)	20.16	5.30	10.964	P<.05
Mamaroneck Study (N=427)	25.96	7.38		
Girls				
National Study (N=104)	20.13	4.86	11.001	P<.05
Mamaroneck Study (N=314)	26.63	7.14		
Total Group				
National Study (N=332)	17.37	2.23	15.891	P<.05
Mamaroneck Study (N=741)	26.25	7.34		

TABLE III  
ANALYSIS OF SEX DIFFERENCES IN DRUG KNOWLEDGE  
OF HIGH SCHOOL BOYS AND GIRLS ENROLLED  
IN GRADES 9 THROUGH 12

Group	Mean	Standard Deviation	t- Value	Level of Significance
Grade 9				
Boys (N=176)	23.33	6.78	0.455	n.s.
Girls (N=96)	22.95	6.26		
Grade 10				
Boys (N=105)	27.37	7.68	0.221	n.s.
Girls (N=76)	27.13	6.52		
Grade 11				
Boys (N=79)	27.33	6.98	0.384	n.s.
Girls (N=70)	27.77	7.04		
Grade 12				
Boys (N=67)	29.07	7.43	0.691	n.s.
Girls (N=72)	29.92	6.95		

by the drug, physical properties or chemical structure of the drug, the ultimate effects of the drug, and the drug action against particular diseases. Drugs have been further classified in terms of legal definitions and in terms of psychological or perceptual experiences. The drugs included in the questionnaire have been listed in pharmacological texts as drugs acting on the central nervous system.

In grade 9 the means for the girls were significantly higher than the means for the boys in two parts, Part III and Part V ( $P < .05$ ). The means for Part III and Part V are shown below:

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<u>Part</u>	<u>Sex</u>	<u>Mean</u>	<u>Standard Deviation</u>
III Addictive drugs	Boys (N=176)	4.27	1.70
	Girls (N=96)	4.80	2.10
V General facts	Boys (N=176)	4.12	1.64
	Girls (N=96)	3.68	1.80

---

Non-significant differences between sexes at the ninth grade level were found for all other group comparisons (Table IV). The results from the analysis of scores for grade 10 revealed no significant sex differences between the means of the scores for Part I, Difference between addictive and habit-forming drugs; Part II, Addiction in the United States today;

TABLE IV  
ANALYSIS OF SEX DIFFERENCES IN DRUG KNOWLEDGE  
ON PARTS I THROUGH VI OF HIGH SCHOOL BOYS  
AND GIRLS ENROLLED IN GRADE 9

Section of the Test	Sex	Mean	t-value	Level of Significance
Part I Difference between addictive and habit- forming drugs	Boys (N=176) Girls (N=96)	3.56 3.65	0.472	n.s.
Part II Addiction in the United States	Boys (N=176) Girls (N=96)	1.48 1.67	1.930	n.s.
Part III Addictive drugs	Boys (N=176) Girls (N=96)	4.27 4.80	2.095	P<.05
Part IV Habit-forming drugs	Boys (N=176) Girls (N=96)	7.00 6.96	0.104	n.s.
Part V General information	Boys (N=176) Girls (N=96)	4.13 3.69	1.976	P<.05
Part VI "Street" terminology	Boys (N=176) Girls (N=96)	2.51 2.57	0.355	n.s.



Part IV, Habit-forming drugs, Part V, General facts and Part VI, "Street" names of drugs. However, in Part III, Addictive drugs, the mean for the girls was significantly higher ( $P < .05$ ) than the mean for the boys (Table V). Both ninth and tenth grade girls were more knowledgeable than boys about addictive drugs.

The data (Table VI) revealed that there was no significant sex differences in the mean scores on any part of the questionnaire for boys and girls enrolled in grade 11. The data analysis for grade 12 (Table VII) showed no real differences between the mean scores for boys and girls of any of the six parts of the questionnaire.

According to Pretzel (51), much of the frustration of parents, counselors, and teachers over inability to communicate with young people is due to the false assumption that a basic sense of values exists between the two groups. A difference in values exists in that the drug culture is mystical, placing high value on feelings and existential experiences. The straight culture wants to intellectualize, and values the ability to think and behave rationally. Pretzel further stated that educators must avoid over-reaction, but failure to respond to realistically dangerous situations in the name of open-mindedness or tolerance is destructive permissiveness.

TABLE V  
ANALYSIS OF SEX DIFFERENCES IN DRUG KNOWLEDGE  
ON PARTS I THROUGH VI OF HIGH SCHOOL BOYS  
AND GIRLS ENROLLED IN GRADE 10

Section of the Test	Sex	Mean	t-value	Level of Significance
Part I Difference between addictive and habit- forming drugs	Boys (N=105) Girls (N=76)	4.17 3.99	0.834	n.s.
Part II Addiction in the United States	Boys (N=105) Girls (N=76)	1.66 1.87	1.671	n.s.
Part III Addictive drugs	Boys (N=105) Girls (N=76)	4.80 5.68	2.535	$P < .05$
Part IV Habit-forming drugs	Boys (N=105) Girls (N=76)	8.81 8.70	0.247	n.s.
Part V General information	Boys (N=105) Girls (N=76)	4.65 4.27	1.510	n.s.
Part VI "Street" terminology	Boys (N=105) Girls (N=76)	3.04 2.91	0.723	n.s.

TABLE VI  
ANALYSIS OF SEX DIFFERENCES IN DRUG KNOWLEDGE  
ON PARTS I THROUGH VI OF HIGH SCHOOL BOYS  
AND GIRLS ENROLLED IN GRADE II

Section of the Test	Sex	Mean	t-value	Level of Significance
Part I Difference between addictive and habit- forming drugs	Boys (N=79) Girls (N=70)	4.09 4.04	0.200	n.s.
Part II Addiction in the United States	Boys (N=79) Girls (N=70)	1.61 1.76	1.100	n.s.
Part III Addictive drugs	Boys (N=79) Girls (N=70)	5.59 5.67	0.227	n.s.
Part IV Habit-forming drugs	Boys (N=79) Girls (N=70)	8.79 8.80	0.022	n.s.
Part V General information	Boys (N=79) Girls (N=70)	4.66 4.19	1.713	n.s.
Part VI "Street" terminology	Boys (N=79) Girls (N=70)	3.04 2.87	0.799	n.s.

TABLE VII  
ANALYSIS OF SEX DIFFERENCES IN DRUG KNOWLEDGE  
ON PARTS I THROUGH VI OF HIGH SCHOOL BOYS  
AND GIRLS ENROLLED IN GRADE 12

Section of the Test	Sex	Mean	t-value	Level of Significance
Part I Difference between addictive and habit- forming drugs	Boys (N=67) Girls (N=72)	4.58 4.28	1.279	n.s.
Part II Addiction in the United States	Boys (N=67) Girls (N=72)	1.74 1.84	0.804	n.s.
Part III Addictive drugs	Boys (N=67) Girls (N=72)	5.71 5.93	0.577	n.s.
Part IV Habit-forming drugs	Boys (N=67) Girls (N=72)	9.83 9.60	0.408	n.s.
Part V General information	Boys (N=67) Girls (N=72)	4.67 4.43	0.824	n.s.
Part VI "Street" terminology	Boys (N=67) Girls (N=72)	2.51 2.57	1.971	n.s.

COMPARISON OF KNOWLEDGE OF TWO STUDY  
GROUPS BY ITEM ANALYSIS

Data were collected in Mamaroneck through the interest of educators in determining the extent of drug knowledge of boys and girls grades 9 through 12. Correct responses for each question were calculated by percentages for the total group of boys and girls. Comparisons were made with the results obtained from the national study using the same instrument with high school students. The mean years of education for the students in the national study was 11.7 years. In the Mamaroneck study the mean years of education was 10.1 years. The differences in the means may be due to the method of testing as grade level was not indicated for the national study.

Part I of the Drug Knowledge Inventory was designed to determine knowledge of the difference between addictive and habit-forming drugs. The Mamaroneck students had a higher percentage of correct responses than the students in the national study. Mamaroneck girls had the greatest number of correct responses to the identification of an addictive drug. A total of 84.1 per cent of the girls answered the question correctly. Both boys and girls of Mamaroneck responded with a higher percentage of correct answers to the identification of a habit-forming drug. Boys in Mamaroneck were more knowledgeable about habit-forming drugs with 36.2 per cent of the

responses being true. The percentages of correct responses concerning habit-forming drugs were considerably lower than the percentage of correct responses for addictive drugs for students participating in both studies (Table VIII).

A comparison of the percentage of correct responses to drug addiction in the United States today showed that the Mamaroneck boys and girls were more aware of the most common drug of addiction, the least frequent cause of addiction, and the area in which drug addiction is most often found than were the national group of students. In contrast to the national study group, with 71 per cent of the boys knowing the most common drug of addiction, 85.2 per cent of the Mamaroneck boys knew that heroin is the most common addictive drug. More than half of the students participating in both studies were not informed on the least frequent cause of drug addiction among teen-agers (Table IX).

The questions in Part III were directed to knowledge about addictive drugs. Inquiries about barbiturates, opiates, and tranquilizers were included. Ramer (16) emphasized that barbiturates are hypnotic drugs that have been the most abused drugs on the market. Barbiturates act quickly in setting up a disposition to addiction as opposed to the lesser possibility of addiction in slower acting drugs. Heavy users of barbiturates become hyper-alert and hyper-awake. Abuse of barbiturates can cause the cortex to fire

TABLE VIII  
COMPARISON OF CORRECT RESPONSES TO THE DIFFERENCES BETWEEN THE  
ADDICTIVE AND HABIT-FORMING DRUGS OF TWO STUDY GROUPS

Study Group	Years of Education  Mean	Type of Drugs			
		Addictive		Habit-forming	
		Boys	Girls	Boys	Girls
		Per cent	Per cent	Per cent	Per cent
National study	11.7	75.0	80.0	25.0	20.0
Mamaroneck study	10.1	78.0	84.0	36.2	27.2

TABLE IX  
COMPARISON OF CORRECT RESPONSES AS TO KNOWLEDGE OF TWO STUDY GROUPS  
TO DRUG ADDICTION IN THE UNITED STATES TODAY

Drug Addiction in the United States Today	Study Groups			
	National Study		Mamaroneck Study	
	Boys	Girls	Boys	Girls
	Per cent	Per cent	Per cent	Per cent
City slum - Area of concentration of addiction	44.0	49.0	66.0	53.2
Heroin - Most common addictive drug	71.0	74.0	85.2	84.4
Pushers - Least frequent cause of addiction	34.0	19.0	26.8	29.8



abnormally which causes grand mal seizures. Ramer cautioned that barbiturate addiction should be treated in a hospital. Ramer named the medical profession as the number one cause of drug abuse because of the random writing of prescriptions.

The percentage of students having knowledge of the name of barbiturates was small for both study groups. Approximately 20 per cent of the students at Mamaroneck knew the generic names of barbiturates as compared to approximately 10 per cent of the students in the national study. The greatest difference in the percentage distribution for medical use of barbiturates was between the boys in the two studies. Of the boys in the national study, only 20.0 per cent knew the medical use of barbiturates, while 30.2 per cent of the Mamaroneck boys were familiar with the medical use of the drug. The students in both studies were knowledgeable as to the description of a person who had taken more than a prescribed amount of barbiturates. Over 60 per cent of all the students recognized the correct description of a barbiturate user.

Inquiries about the opiates included: the derivation of opium, the drug made from opium, medical use of opiates, description of a user, reactions to withdrawal, effects on pregnancy, and an explanation of the relationship between opiate use and crime. The greatest number of correct

responses by students in both studies was to the relationship of opiate use and crime. The Mamaroneck students had a smaller percentage of correct responses than the national group to questions on opiate derivation and the drug made from opium. The percentages indicating knowledge about medical use of opiates and the description of a user were similar in both groups of boys. The Mamaroneck girls (44.3 per cent) were more aware of the medical use of opiates as compared with the national group of girls (46.0 per cent). About 40 per cent of the Mamaroneck girls recognized the description of an opiate user as compared to 45 per cent of the national group. The lowest percentage of knowledge about opiates for both groups was in the effect of opiates on pregnancy.

Students in both studies were better informed in the medical use of tranquilizers than in the medical use of opiates and barbiturates. The girls in the national study were the most knowledgeable as to the medical use of tranquilizers with 72 per cent of the responses being correct. The national study group was not as well informed concerning the generic names of tranquilizers or the physically harmful effects from misuse of the drug as were the Mamaroneck students. The percentages of correct responses to the physically harmful effects from misuse of tranquilizers were extremely low for both study groups (Table X).

TABLE X  
COMPARISON OF CORRECT RESPONSES OF TWO STUDY GROUPS  
AS TO KNOWLEDGE ABOUT ADDICTIVE DRUGS

Addictive Drugs	Study Group			
	National Study		Mamaroneck Study	
	Boys	Girls	Boys	Girls
	Per cent	Per cent	Per cent	Per cent
<u>Barbiturates</u>				
Terms	9.0	10.0	19.6	20.9
Medical use	20.0	36.0	30.2	36.4
Description of user	62.0	72.0	65.3	66.0
<u>Opiates</u>				
Derivation	55.0	47.0	48.0	44.7
Terms	55.0	56.0	32.5	26.0
Medical use	48.0	46.0	48.8	44.3
Description of user	44.0	45.0	44.9	40.6
Reaction to withdrawal of drug	21.0	14.0	24.7	25.8
Effect on pregnancy	25.0	20.0	35.7	34.2
Relationship of use and crime	68.0	72.0	62.1	55.9
<u>Tranquilizers</u>				
Terms	18.0	17.0	26.3	28.0
Medical use	66.0	72.0	51.7	62.3
Physically harmful effects from misuse	11.0	6.0	12.9	14.2

Questions concerning habit-forming drugs including amphetamines, hallucinogens, and marijuana were included in Part IV. The percentage of correct responses was calculated for the generic name of amphetamines, medical use, reaction to the drug, description of an amphetamine user, and the greatest danger from over-use of amphetamines. The girls in the Mamaroneck study were the most knowledgeable of the two groups, with over 40 per cent of responses to questions about amphetamines being correct. The boys in both study groups had the smallest percentage of correct answers to the generic names of the drug. Of the questions about amphetamines, over 60 per cent of the Mamaroneck girls knew the reaction to amphetamine use.

Ramer (16) indicated that most stimulants are habituating. The most abused stimulant is methadrine, commonly referred to as speed. Heavy users experience paranoid reactions and should be considered dangerous until the drug reaction is under control. The best treatment is to talk the individual "down" in a controlled setting. Ramer further stated that there is very little medical use for amphetamines. The drugs had been used to treat narcolepsy, a rare disease that the typical doctor never encounters. Amphetamines have also been used to treat weight reduction. Eating less food is just as effective as any amphetamine.

Questions asked under hallucinogens were: generic names of the drug, medical use, affect of LSD on vision and hearing, intensification of mental action, and the physical side effects most likely to accompany LSD use. Harmon (25) pointed out that in teaching about hallucinogens, knowledge of what is not known about the drugs is most important. The frequency of the incidence of bad trips is unknown. However, the fact that a bad trip may occur even to the most experienced and knowledgeable user of LSD has been established. Other factors that are not definitely known include the following: whether LSD can cause irreversible brain damage; whether LSD can cause permanent psychosis in a previously emotionally stable individual; the specific action of LSD in the brain; and the long range effects of psychological dependence on the user and on society. Further, the reason hallucinations occur months after taking a single dose is not known; nor is the effect of LSD on the unborn children of a woman who had used the drug during pregnancy known.

About 60 per cent of the students in Mamaroneck knew the generic names of hallucinogens from among the choices listed as compared to approximately 47 to 48 per cent of the students in the national study. Boys and girls in both studies were not well informed about the medical use of hallucinogens. Approximately 36 per cent of all the boys and 39 per cent of the girls in the national study were

cognizant of the physical side effects of LSD while 46 per cent of the girls in Mamaroneck disclosed an understanding of the side effects of LSD. Results indicated that the largest number of students knew that imagination is intensified by taking hallucinogens. The percentage of correct responses in all groups was more than 75 per cent. About three-fourths of the students in both studies responded accurately to the effect of LSD on vision and hearing. Table XI shows the distribution of the responses.

Jones (33) stated that LSD had been used on an experimental basis in the treatment of alcoholics. Studies have shown no difference between LSD use and the traditional treatment in alcoholics. Flashbacks or spontaneous recurrences of bad trips occurred more commonly in regular users under periods of stress. The use of LSD in the laboratory has become less frequent as new methods and drugs have been researched.

In 1970 a specific research study, through a grant from the National Institute of Mental Health, was conducted by Jones on the effects of the use of marijuana. Jones (33) found that marijuana grown in the United States was too weak to use in the experiments. Mexican grown marijuana was used in the study. The best single measure of an individual

TABLE XI  
COMPARISON OF CORRECT RESPONSES OF TWO STUDY GROUPS  
AS TO KNOWLEDGE ABOUT HABIT-FORMING DRUGS

Habit-forming Drugs	Study Group			
	National Study		Mamaroneck Study	
	Boys	Girls	Boys	Girls
	Per cent	Per cent	Per cent	Per cent
<u>Amphetamines</u>				
Terms	27.0	27.0	36.4	42.7
Medical use	51.0	52.0	50.5	56.9
Reaction to drug	40.0	45.0	58.6	61.0
Description of abuse of drug	47.0	37.0	45.5	46.3
Effect from over use	44.0	42.0	51.8	56.2
<u>Hallucinogens</u>				
Terms	48.0	47.0	62.1	64.5
Medical use	32.0	17.0	38.5	33.0
Intensification of action	75.0	82.0	75.7	82.0
Effect on vision and hearing	80.0	82.0	74.7	79.8
Physical side effects	36.0	39.0	36.9	46.5

"high" on marijuana is an increase of approximately 20 per cent in the pulse rate. Changes can be observed in three to 10 minutes after the individual started smoking, and reached a peak in about 30 minutes. The peak may last as long as three hours. Jones also found that the experienced smoker can control the "high" no matter how strong or weak the content of the substance being smoked. In subjects smoking alone, Jones observed very little elation, but a mild feeling of euphoria. Jones stated that when marijuana was smoked in a group, the drug would produce non-verbal communication, and hallucinations. As a result of the study, Jones classified marijuana with the dangerous drugs currently on market. The conclusions of the study follow:

- 1) There is both tolerance and psychological dependence in marijuana use, but not addiction as normally defined.
- 2) Marijuana does not lead to heroin use, but the typical user does experiment with other drugs.
- 3) There is no correlation between marijuana use and increased sexual activity.
- 4) There is no evidence that marijuana increases creativity.
- 5) There is no evidence in the United States of marijuana psychosis, but this is probably due to the weak quality of the substance available in the United States.

The questions on marijuana included: possible physical damage from the use of marijuana, description of the



habitual marijuana user, the immediate effects of marijuana use, a description of a frequent user of the drug, the relationship of use of marijuana to mental illness, indications of use of marijuana leading to use of more dangerous drugs, and the identification of an individual who had been smoking marijuana. Over 40 per cent of the students in Mamaroneck made correct responses to five of the seven questions. Approximately 80 per cent of the Mamaroneck students did not know the relationship of marijuana use to mental illness. Approximately 56 per cent of the boys in the Mamaroneck study knew the correct responses to the immediate effects of marijuana use as compared to 60 per cent of the boys in the national study. The girls in the Mamaroneck study knew more about the immediate effects of marijuana use than either group of boys, with a total of over 65 per cent correct responses. The distribution of the percentages of correct responses is seen in Table XII.

Part V of the questionnaire contained questions related to general knowledge about drugs. The Mamaroneck students gave about 42 per cent correct responses as compared to about 36 per cent correct responses by the national study group to the question of the individual who occasionally uses more than the prescribed amount of the addictive drugs. The two groups were similar in the knowledge of the description of

TABLE XII  
COMPARISON OF CORRECT RESPONSES OF TWO STUDY GROUPS  
AS TO KNOWLEDGE ABOUT MARIJUANA

Habit-forming Drugs	Study Group			
	National Study		Mamaroneck Group	
	Boys	Girls	Boys	Girls
	Per cent	Per cent	Per cent	Per cent
<u>Marijuana</u>				
Possible physical damage	40.0	38.0	50.2	57.1
Description of habitual user	52.0	19.0	54.2	65.8
Immediate effects of use	60.0	63.0	55.5	65.1
Description of frequent user	37.0	23.0	54.6	42.3
Relationship of use to mental illness	25.0	26.0	20.4	20.9
Indication of use leading to more dangerous drugs	42.0	29.0	44.0	49.7
Identification of a smoker	14.0	9.0	29.7	22.5

an addictive personality. By comparison, all the boys had less knowledge as to the description of an addictive personality. Over 70 per cent of all the students knew why black market drugs are unsafe. Students were not well informed on the drugs which most often cause death. Only 33 per cent of the boys knew that death is often caused by misuse of barbiturates. The students participating in both studies were poorly informed about the danger of death from discontinued use of phenobarbital. The percentages of correct responses ranged from 9.0 to 13.0 per cent in response to death from withdrawal of phenobarbital.

The highest percentage of students knew that some cough medicines may cause addiction because they contain codeine. The percentages of correct responses were well above 75 per cent for both groups. However, the effects of cocaine were not understood. The girls in both studies knew more about cocaine than the boys, but only 31 per cent of the responses for the girls were correct. The harmful effects of sniffing substances such as glue, cleaning fluids, and gasoline were understood by over 60 per cent of the boys and girls in both studies. Approximately 57 per cent of the boys and 71 per cent of the girls in the Mamaroneck study would seek professional help in overcoming a drug habit or drug addiction. The results of the national study indicated that 78 per cent

of the boys and 91 per cent of the girls would seek professional help with a drug problem (Table XIII).

The five questions that were added to the questionnaire were designed to determine whether the Mamaroneck students had better recognition of drugs by the "street" name than by the generic name. The format of the questions corresponded to the format of the standardized questionnaire. Questions were duplicated from the questionnaire with the four possible choices being in "street" terminology.

Eighty boys or 68 per cent of the boys selected the slang name for barbiturates while only about 20 per cent of the boys gave the correct response to the generic name. Of the girls, 70 per cent checked the slang name for barbiturates and approximately 20 per cent selected the correct generic name.

The difference in percentages checking the "street" name of amphetamines was not as marked. The slang name for amphetamines was known by 59 per cent of both boys and girls as compared to the standardized instrument, with 36 per cent of the boys and 42 per cent of the girls having the correct responses for amphetamines.

There was very little difference in knowledge of terminology for the hallucinogens. Both boys and girls recognized

TABLE XIII  
COMPARISON OF CORRECT RESPONSES OF TWO STUDY GROUPS  
AS TO KNOWLEDGE ABOUT GENERAL FACTS

General Information	Study Group			
	National Study		Mamaroneck Study	
	Boys	Girls	Boys	Girls
	Per cent	Per cent	Per cent	Per cent
Effects of occasional use	36.0	37.0	42.8	42.9
Description of addictive personality	43.0	61.0	43.2	56.3
Safety of black market drugs	82.0	79.0	70.2	70.7
Drugs causing most deaths	33.0	43.0	32.1	38.7
Death from withdrawal of drugs	11.0	13.0	13.3	9.9
Cough medicine that may cause addiction	87.0	89.0	75.2	82.6
Effects of cocaine	28.0	31.0	24.2	34.8
Harmful effects of sniffing substances	68.0	62.0	61.7	64.3
Willingness to seek help for drug problems	78.0	91.0	57.4	71.0

the slang name for hallucinogens with a total of 62 per cent correct responses. Over 64 per cent of the girls had made the correct selection on the standardized instrument.

The slang names were used with marijuana to investigate the knowledge of the use of "street" names among the students. Over 86 per cent of the boys knew the slang names of marijuana while about 93 per cent of the girls selected the slang names for marijuana.

"Street" names for heroin were listed as: boy, horse, and Harry. Of the boys, 56 per cent identified heroin from the slang terms; while 62 per cent of the girls knew the street names of heroin. On the standardized instrument, about 85 per cent of both boys and girls had correctly identified heroin from a selected list of generic drug names (Table XIV).

Data analysis of the comparison of the Mamaroneck study of high school students with a national study of high school students revealed two significant factors: although the mean age of the Mamaroneck students was younger than the mean age of the students in the national group, both the boys and girls of Mamaroneck were more knowledgeable than the students in the national study ( $P < .05$ ). Data analysis of the comparison of the knowledge of the boys and girls within the

TABLE XIV  
COMPARISON OF THE KNOWLEDGE OF MAMARONECK BOYS AND  
GIRLS IN THE "STREET" NAMES OF DRUGS

"Street" Names	Mamaroneck Study			
	Boys		Girls	
	Number	Per cent	Number	Per cent
Barbiturates	280	68.3	210	70.0
Amphetamines	240	59.1	177	58.8
Hallucinogens	253	62.0	190	62.9
Marijuana	354	86.8	285	92.8
Heroin	231	56.5	190	62.7

Mamaroneck group of students indicated very little sex differences. The girls were more knowledgeable than the boys in drug terminology.



## CHAPTER V

### S U M M A R Y , C O N C L U S I O N S , A N D R E C O M M E N D A T I O N S

The present study was undertaken to determine the extent of the knowledge of drugs understood by high school students in an urban community and to assess from the study the implications for a drug education program to meet the needs of children aged 13 through 19 years. The specific purposes developed to guide the present study were as follows:

- 1) Determine whether or not teen-agers can distinguish between addictive and habit-forming drugs;
- 2) Determine the extent of knowledge teen-agers have about the physiological and psychological effects of drug use and abuse;
- 3) Compare the results of the study with a national study of knowledge of drugs among teen-agers;
- 4) Determine from the findings if the study indicates a need for further drug education.

The long range purpose of the study was to determine the areas of inadequate knowledge about drugs of high school students in order to determine the areas needing emphasis in an educational program planned for the high school curriculum.

A standardized instrument consisting of five parts was used to collect information considered necessary to achieve the purposes of the study. The instrument used was A Drug Knowledge Inventory, developed by McHugh and Williams (44). An additional set of questions concerning drug terminology in "street" language was designed by the author and added to the inventory. The instrument was administered to a heterogeneous group of students enrolled in grades 9 through 12 during the physical education classes.

#### SUMMARY

The sample consisted of 741 high school boys and girls enrolled in grades 9 through 12 at Mamaroneck, New York. The group of young people represented a cross section of the suburban high school, with a total enrollment of approximately 2100 students. The group of participating students was divided between 427 boys and 314 girls. The largest single group of students consisted of 176 ninth grade boys.

The ages of the participants ranged from 13 to 19 years. The mean age for the Mamaroneck students was younger than the average age of the group of students in the national study. More students enrolled in grades 9 and 10 participated in the study than did the students enrolled in the upper grades at Mamaroneck.

There was a considerable difference in the knowledge of drugs among the two groups of students compared. Both boys and girls in the urban community were more knowledgeable than the students participating in the national study. The Mamaroneck girls knew more about drugs than the boys in either study. Boys and girls in the national study were equally knowledgeable about drugs.

The overall scores of the Mamaroneck boys were compared with the scores of the girls to determine whether the boys were more knowledgeable than the girls at any grade level. The results of the comparison indicated that there was no difference in overall knowledge of drugs between boys and girls at Mamaroneck when analyzed by grade level.

The scores of the boys on each part of the test were compared by grade level with the scores of the girls. In grade 9 the girls were more cognizant about addictive drugs and general information about drugs than the boys. The girls in grade 10 were more knowledgeable about addictive drugs than the boys. Analysis of the scores indicated an equal level of cognizance among the boys and girls in the eleventh and twelfth grades.

The percentage of correct responses to each question was computed for all the boys and all the girls participating in the Mamaroneck study. The percentages were compared with

the percentage of correct responses for the boys and girls in the national study. There were differences between the two groups on a number of questions.

The majority of the Mamaroneck girls could identify the definition of an addictive drug. More than three-fourths of the boys were more aware of addictive drugs than of habit-forming drugs. Neither group of students was well informed about habit-forming drugs. The percentage of correct responses to the question about habit-forming drugs was very small in both studies.

More than half of the Mamaroneck students knew that the concentrated areas of drug addiction were in city slum areas. More boys and girls in the Mamaroneck study than students in the national study knew that heroin is the most common drug of addiction. The students in both studies were poorly informed on the fact that pushers are the least frequent cause of drug addiction among teen-agers.

The students in both studies were not well informed as to the generic names of barbiturates and the medical use of barbiturates. All students were knowledgeable in the description of a person who had taken more than a prescribed amount of barbiturates. Over 60 per cent of all students responded to the correct description of a barbiturate user.

Mamaroneck boys and girls had less knowledge of the derivation of opium than the students in the national study. Over 50 per cent of the national study group knew that morphine was made from opium, while only a small percentage of the urban community students could identify morphine as a drug derived from opium. Approximately the same number of students in each study could accurately describe an opium user. All the students were inadequate in understanding the reaction to withdrawal from opium and had little understanding of the effect of opium use during pregnancy. A high percentage of both groups of students knew the relationship between opiate use and crime.

Students in both studies were better informed in the medical use of tranquilizers than in the medical use of opiates and barbiturates. The girls in the national study were the most knowledgeable concerning the medical use of tranquilizers. The national study group was not as well informed as the Mamaroneck students as to the generic names for tranquilizers or the physically harmful effects from misuse of the drug.

The Mamaroneck girls were the most knowledgeable of the two groups about questions pertaining to amphetamines. Approximately three-fourths of the national group did not know the generic names for amphetamines. Almost half of the Mamaroneck students had some knowledge about amphetamines.

Students in Mamaroneck had a better understanding of the generic names of hallucinogens than the national group. Boys and girls in both studies were not well informed about the medical use of hallucinogens. Results indicated that the majority of the students knew that imagination is intensified by taking hallucinogens. Three-fourths of the students in both studies responded accurately to the item concerning the effect of LSD on vision and hearing.

More than 40 per cent of the students in Mamaroneck chose the correct responses to five of the seven questions about marijuana. The majority of the Mamaroneck students did not know the relationship of marijuana use to mental illness. More boys in the national study than boys in the urban community study knew the immediate effects of marijuana use. The Mamaroneck girls knew more about the immediate effects of marijuana use than either group of boys.

There were many differences between the two groups on the general information section of the questionnaire. More of the Mamaroneck students gave correct responses to the question concerning the individual who occasionally uses more than the prescribed amount of drugs. More of the girls in the national study recognized the description of an addictive personality. A large percentage of all students lacked knowledge of the drugs which most often cause death. The

students in both studies were poorly informed about the danger of death from discontinued use of phenobarbital. The majority of students knew that some cough medicines may cause addiction because of the codeine content. However, the effects of cocaine were not as well understood. The harmful effects of sniffing glue were understood by a large number of boys and girls of both study groups. A majority of all the students indicated they would seek professional help with a drug problem.

The questions that were added to the standardized instrument were designed to investigate whether the Mamaroneck students knew drugs by "street" names rather than by the generic names. An interesting finding was that a large percentage of both boys and girls knew the slang name of barbiturates and only a small number of students knew the generic name.

Although the difference in selection of the name of amphetamines was not as great as the difference with barbiturate names, a larger percentage of both boys and girls knew the correct slang name than knew the generic name of amphetamines. There was little difference in the selection of correct responses to the names of hallucinogens. The percentage of correct responses to the generic name of hallucinogens by girls was greater for the standardized instrument than for the questionnaire which included "street" name drug knowledge.

A majority of the students knew the "street" name for marijuana; more girls than boys knew the slang names for the drug. A smaller percentage of both boys and girls identified the slang name for heroin as compared with the responses to the generic name on the standardized instrument.

### CONCLUSIONS

A significant conclusion drawn from the study concerned the level of drug knowledge and understanding of students at Mamaroneck. All the students at Mamaroneck were better informed about drugs than the students participating in the national study ( $P < .05$ ). The Mamaroneck girls were more knowledgeable than the boys in either study. The findings tended to indicate specific areas of cognizance by the girls and areas where more information was needed for both boys and girls.

Although the Mamaroneck students were younger than the students in the national study, the results indicated the Mamaroneck boys and girls were more knowledgeable of drugs and drug usage. The difference may be due to the method of testing which was not disclosed on the national study. More time may have been allowed for the testing of the urban students.

A study was made of differences in knowledge between boys and girls at Mamaroneck by grade level. The results



indicated that there was no significant difference between the responses of students by grade level when the data were analyzed.

When the scores of the boys were compared to the scores of the girls on each part of the test, the girls enrolled in grades 9 and 10 were significantly more knowledgeable about addictive drugs. The ninth grade girls were also more knowledgeable than the ninth grade boys in general information about drugs. The boys were better informed about habit-forming drugs than they were about addictive drugs. Teen-agers participating in both studies need information to clarify the difference between the addictive and the habit-forming drugs.

The study showed that the students were not knowledgeable about the physiological and psychological effects of drug use and abuse. Data analysis revealed the smallest percentage of correct responses to questions relating to physical and psychological effects of drug use. Students in the national study also made inadequate responses to the physiological and psychological effects of drugs. All the students were lacking in an understanding of the reaction to withdrawal from opium. A small minority of all of the students were cognizant of the effect of opium use on pregnancy.

The national study group was not as well informed as the Mamaroneck students concerning the generic names of the

tranquilizers. The students in both studies were not knowledgeable about the generic names of barbiturates and the medical use of the drug. Students in Mamaroneck had a better understanding of the generic names of the hallucinogens than the national group of students.

The students in Mamaroneck knew more about marijuana than any of the other drugs. More than half of the students could recognize the description of the habitual user and knew the immediate effects of the use of the drug. The majority of the students did not know the relationship of marijuana to mental illness. Only a small percentage of both boys and girls could identify the description of an individual who had been smoking marijuana.

Mamaroneck students knew the "street" names of drugs as well or better than the generic names. More students could identify barbiturates by slang names than by the generic name. The same was true for amphetamines. Students knew hallucinogens equally well by slang or generic name. "Street" names of heroin were not recognized as well as "street" names of marijuana.

Although the students at Mamaroneck were better informed than the group of students tested in a national survey, there were questions on the instrument with very low

percentages of adequate responses. The implications from the study indicated a need for drug education.

### RECOMMENDATIONS

Further study should be undertaken on the extent of the knowledge and comprehension of drug use and abuse among young people in selected high schools that are located in both urban and rural communities throughout the United States.

Research is needed for further development of instruments to survey drug cognizance of young people. The instrument used in the present study was found to be somewhat limited for the desired investigation.

Educational programs to meet the needs of high school students should be established. Such programs should provide opportunities for students to participate in planning the curriculum. Drug education should provide the students with knowledge as the basis for deciding what drugs to use and the reasons for using them.

## L I T E R A T U R E   C I T E D

1. Adams, Corinna. "Talk About Pot." New Statesman, Vol. 80 (January, 1971).
2. Alsever, William D. "An Evaluation of Marihuana for School Physicians, Nurses and Educators." The Journal of School Health, Vol. 38 (December, 1968).
3. Barber, Barbara. Drugs and Society. New York: Russell Sage Foundation, 1967.
4. Barber, Josephine M. and Richard K. Means. "Amphetamine Use Among College Women." The Journal of School Health, Vol. 51 (April, 1971).
5. Blaine, Graham B. "Why Intelligent Young People Take Drugs." Journal of Iowa State Medical Society, Vol. 59 (January, 1969).
6. Bloomquist, Edward R. "What Makes Teens Try Dope." In Narcotics and Hallucinogens, edited by John B. Williams. Beverly Hills, California: Glencoe Press, 1967.
7. Blum, Richard H. and Associates. Society and Drugs. San Francisco: Jossey-Bass, Inc., Publishers, 1970.
8. Blum, Richard H. and Associates. Students and Drugs. San Francisco: Jossey-Bass, Inc., Publishers, 1970.
9. Boe, Sue. "Philosophy and Objectives for a Drug Education Program." The Journal of School Health, Vol. 51 (January, 1971).
10. Brill, Henry. "The Case Against Marihuana." The Journal of School Health, Vol. 38 (October, 1968).
11. Brill, Henry. "Progress Report of Evaluation of Methadone Maintenance Treatment Program as of March 31, 1968." Journal of American Medical Association, Vol. 206 (December, 1968).

12. Cameron, Dale C. "Sedatives and Stimulants: Use and Misuse." Journal of American Medical Association, Vol. 196 (May, 1966).
13. Chein, Isidor, Donald L. Gerard, Robert S. Lee, and Eva Rosenfield. The Road to H. New York: Basic Books, Inc., Publishers, 1964.
14. Cohen, Sidney. The Drug Dilemma. New York: McGraw-Hill Book Company, 1969.
15. Cohen, Sidney and Allan E. Edwards. "Does Chronic LSD User Risk Brain Damage." Journal of American Medical Association, Vol. 204 (June, 1968).
16. Conference on Drug Abuse. Santa Rosa, California: Department of Health, 1970.
17. Connell, Philip H. "Clinical Manifestations and Treatment of Amphetamine Type of Dependence." Journal of American Medical Association, Vol. 196 (May, 1966).
18. Cwalina, Gustav E. "Drug Use on High School and College Campuses." The Journal of School Health, Vol. 38 (December, 1968).
19. Dearden, Marlin H. and James F. Jekel. "A Pilot Program in High School Drug Education Utilizing Non-Directive Techniques and Sensitivity Training." The Journal of School Health, Vol. 51 (March, 1971).
20. de Lone, Richard H. and Susan T. de Lone. "John Dewey is Alive and Well in New England." Science Review, Vol. 53 (November, 1970).
21. Eddy, Nathan B., H. Halbach, Harris Isbell, and Maurice H. Seevers. "Drug Dependence: Its Significance and Characteristics." Bulletin of the World Health Organization, Vol. 32 (1965).
22. Essig, Carl F. "Newer Sedative Drugs That Can Cause States of Intoxication and Dependence of Barbiturate Type." Journal of American Medical Association, Vol. 196 (May, 1966).
23. Fort, Joel. The Pleasure Seekers: The Drug Crises, Youth and Society. Indianapolis: The Bobbs-Merrill Company, 1969.

24. Gildersleeve, Dorothy. Darkness on Your Doorstep. San Fernando Valley: Valleywide Narcotics Committee, 1969.
25. Harmon, Shirley. "LSD: A Meaningful Approach to Drug Education." The Journal of School Health, Vol. 38 (June, 1968).
26. Heidbreder, G. A. "Proposal for the Inclusion of Methadone Maintenance in a Public Health Program for Drug Abuse." A paper prepared for the Los Angeles County Health Department (April, 1970).
27. Human Relations Agency, California Department of Corrections. "Characteristics of Civil Narcotic Addicts in California Rehabilitation Center Institution Program," (March, 1971).
28. Harnett, Arthur L. "How We Do It." The Journal of School Health, Vol. 51 (June, 1971).
29. Harper, N. J. and Alma B. Simmonds. Advances in Drug Research. London: Academic Press, Vol. 3, 1966.
30. Isbell, Harris. "The Merck Report." In Narcotics and Hallucinogens, edited by John B. Williams. Beverly Hills, California: Glencoe Press, 1967.
31. Jaffe, Jerome H., Charles R. Schuster, Beth B. Smith, and Paul H. Blachley. "Comparison of Acetyl-methadol and Methadone in the Treatment of Long-Term Heroin Users." Journal of American Medical Association, Vol. 211 (March, 1970).
32. Johnson, Frank K. and Jack C. Westman. "The Teenager and Drug Abuse." The Journal of School Health, Vol. 38 (December, 1968).
33. Jones, Kenneth L., Louis W. Shainberg and Curtis O. Byer. Drugs and Alcohol. New York: Harper and Row Publishers, 1969.
34. Kalant, Oriana J. The Amphetamines. Toronto: University of Toronto Press, 1966.
35. Kaplan, Robert. Drug Abuse: Perspectives on Drugs. Dubuque, Iowa: Wm. C. Brown Company, Publishers, 1970.

36. Kesten, Sue and Jean Houston. "Facing a Drug Problem in Your Family." New York, Business Week (November, 1970).
37. Kitzinger, Angela and Patricia J. Hill. Drug Abuse: A Source Book and Guide for Teachers. Sacramento, California: California State Department of Education, 1967.
38. Kolb, Lawrence. Drug Addiction. Springfield, Illinois: Charles C. Thomas, Publisher, 1962.
39. Laurie, Peter. Drugs Medical, Psychological and Social Facts. Middlesex, England: Penguin Books, Ltd. 1970.
40. Leake, Chauncey D. "Mood, Behavior and Drugs." A paper read at the symposium of the annual AAAS meeting in Chicago, December, 1970.
41. Lehmann, Walter X. "Doctor, What About Marijuana?" Paper read at the Rehabilitation Foundation, Norwalk, Connecticut, February, 1970.
42. Louria, Donald B. The Drug Scene. New York: McGraw-Hill Book Company, 1968.
43. Matchett, William Foster. "Who Uses Drugs?" The Journal of School Health, Vol. 51 (February, 1971).
44. McHugh, Gelolo and Jay C. Williams. "A Drug Knowledge Inventory." Durham, North Carolina: Family Life Publications, Inc., 1969.
45. Merki, Donald J. Drug Abuse: Teenage Hangup. Dallas, Texas: Texas Alcohol Narcotics Education, Inc. 1970.
46. Mikeal, Robert L. "A Positive Approach to Drug Education." The Journal of School Health, Vol. 44 (October, 1970).
47. Narcotic Addiction Control Commission. The Attack. Albany, New York: The New York State Narcotic Control Commission, Vol. 4 (Winter, 1970).
48. National Institute of Mental Health. Facts About Narcotic Drug Addiction. Public Health Services Publication No. 1322. Washington, D. C.: United States Government Printing Office, 1965.

49. Nowlis, Helen H. Drugs on the College Campus. New York: Doubleday and Company, Inc., 1969.
50. O'Donnell, John A. and John C. Ball. Narcotic Addiction. New York: Harper and Row Publishers, 1966.
51. Pretzel, Paul W. "Young Drug Users and the Value Gap." Los Angeles Times, March, 1970.
52. Sadusk, Joseph F. "Size and Extent of the Problem." Journal of American Medical Association, Vol. 196 (May, 1966).
53. Tec, Nechama. "Family Differential Involvement with Marihuana: A Study of Suburban Teenagers." Journal of Marriage and the Family, Vol. 32 (November, 1970).
54. Thomas, John A. and Glenn R. Knotts. "The Abuse of Medicinal Products." The Journal of School Health, Vol. 51 (May, 1971).
55. Toohey, J. V. "Marihuana--The Evidence Begins to Grow." The Journal of School Health, Vol. 38 (May, 1968).
56. World Health Organization Expert Committee on Addiction-Producing Drugs. World Health Organization Technical Report Series, No. 273. Geneva: World Health Organization, United Nations, 1964.



A P P E N D I X

A D R U G   K N O W L E D G E   I N V E N T O R Y

DIRECTIONS FOR ADMINISTERING A DRUG

KNOWLEDGE INVENTORY

Pen or pencil may be used. This is not a Test. It is a questionnaire to find out what you as students know about drugs.

Each questionnaire is numbered so that no one will know the answers you circled.

Please fill in the blank spaces at the top of the first sheet indicating your sex and grade level.

Answer every question by circling the number which you think is the best answer out of the four possibilities. If you don't know, GUESS. There should be a circled number for each question.

Thank you for your cooperation.

EXPERIMENTAL EDITION

FILE NO. \_\_\_\_\_

# A Drug Knowledge Inventory

Developed by

Gelolo McHugh and Jay C. Williams

This is a *teaching test* to help you learn facts about drugs and discover your drug education needs.

Your teacher or discussion leader will not be concerned with your score on this test for the purpose of giving you a grade. His or her interest will be in helping you learn important facts about drugs so you will be able to make constructive behavior choices about their use.

Please supply the following: Your age.....years; Sex.....male.....  
or.....female; Your education.....year or grade in school.

Directions: This is a multiple choice test. Draw a circle around the number printed to the left of the answer you consider to be the *best* answer to each question. Choose a *best* answer to *each* question. If you do not know, guess. Be sure to answer *every* question.

## I. Do you know the difference between addictive and habit-forming drugs?

1. An *addictive* drug is one which causes:

1. emotional and physical craving and a need to increase dosage.
2. emotional and physical craving, but no need to increase dosage.
3. emotional craving, but no physical craving or need to increase dosage.
4. regular use, but no craving or need to increase dosage.

2. A *habit-forming* drug is one which causes:

1. emotional and physical craving and a need to increase dosage.
2. emotional and physical craving, but no need to increase dosage.
3. emotional craving, but no physical craving or need to increase dosage.
4. regular use, but no craving or need to increase dosage.

## II. What do you know about drug addiction in the United States today?

3. Where in the United States is drug addiction most often found?

1. College campus
2. Middle-class suburb
3. Rural area
4. City slum area

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4. In the United States today, the most common drug addiction is to:
  1. cocaine
  2. heroin
  3. morphine
  4. phenobarbital
5. Of those listed below which is the *least frequent* cause of drug addiction among teenagers?
  1. Curiosity
  2. Peddlers or "pushers"
  3. Pressure from peers
  4. Thrill-seeking

### **III. What do you know about addictive drugs?**

#### **A. What do you know about barbiturates?**

6. Which terms refer to barbiturates?
  1. Amytal, Nembutal, Seconal
  2. Benzedrine, Dexedrine, Methedrine
  3. Librium, Miltown, Thorazine
  4. Codeine, Heroin, Morphine
7. The most important medical use of barbiturates is:
  1. to bring about sleep.
  2. to reduce tension.
  3. to relieve pain.
  4. in research.
8. Which one is the most likely description of a person who has taken more than a prescribed amount of a barbiturate?
  1. Giggling, daydreaming
  2. Even-tempered, withdrawn
  3. Drowsy, slurred speech
  4. Restless, perspiring

#### **B. What do you know about opiates?**

9. Opium is derived from:
  1. a cactus.
  2. a hemp plant.
  3. a mushroom.
  4. a flower.
10. Which of the following terms refers to a drug made from opium?
  1. Cocaine
  2. Methedrine
  3. Morphine
  4. Hashish

11. The most important medical use of opiates is:
1. as an anaesthetic.
  2. to relieve pain.
  3. to reduce tension.
  4. in research.
12. Which one is the most likely description of a person who has taken more than a prescribed amount of an opiate?
1. Excited and hyperactive
  2. Hostile and aggressive
  3. Nervous and fearful
  4. Quiet and inactive
13. What happens when an opiate addict discontinues the use of opiates?
1. Withdrawal causes no more physical distress than discontinuing use of tobacco.
  2. Withdrawal causes much physical distress but little danger of death.
  3. Withdrawal causes much physical distress and considerable danger of death.
  4. Withdrawal causes much emotional distress but little physical distress.
14. What happens when an unborn baby's mother is an opiate addict?
1. The baby is an opiate addict at birth.
  2. The baby is likely to be physically deformed.
  3. The baby is likely to be mentally retarded.
  4. The baby will be unaffected.
15. Which is the best explanation for the close relationship between opiate use and crime?
1. An addiction to opiates is very expensive.
  2. Opiates inspire criminal acts.
  3. An opiate user is not fully aware of what he is doing.
  4. Opiates decrease fears and inhibitions.

### C. What do you know about tranquilizers?

16. Which terms refer to tranquilizers?
1. Amytal, Nembutal, Seconal
  2. Benzedrine, Dexadrine, Methedrine
  3. Codeine, Heroin, Morphine
  4. Librium, Miltown, Thorazine
17. The most important medical use of tranquilizers is:
1. to bring about sleep.
  2. to reduce tension.
  3. to relieve pain.
  4. to increase alertness.

18. Which are the physically harmful effects most likely to result from misuse of tranquilizers?

1. Damage to brain, kidneys, and liver
2. Reduced sex drive and damage to reproductive capacity
3. Irregular heartbeat and high blood pressure
4. Weight gain and blood cell damage

#### **IV. What do you know about habit-forming drugs?**

##### **A. What do you know about amphetamines?**

19. Which of the following terms refer to amphetamines?

1. Amytal, Nembutal, Seconal
2. Benzedrine, Dexedrine, Methedrine
3. Librium, Miltown, Thorazine
4. Codeine, Heroin, Morphine

20. The normal medical use of amphetamines is in:

1. relief from drowsiness and depression.
2. relief from fear and anxiety.
3. relief from restlessness and excitability.
4. research on human behavior.

21. By taking an amphetamine one may be able to:

1. think more clearly.
2. do better on tests.
3. stay awake.
4. remain calm under pressure.

22. Which is the most likely description of a person who has taken more than a prescribed dose of an amphetamine?

1. Giggling, daydreaming, enlarged pupils
2. Inactive, quiet, small pupils
3. Poor balance, slurred speech, short temper
4. Restless, perspiring, enlarged pupils

23. The greatest danger from over use of an amphetamine is in its effect on:

1. body temperature.
2. breathing rate.
3. heartbeat.
4. oxygen in the blood.

##### **B. What do you know about hallucinogens?**

(Hallucinogens also are known as psychedelic, mind-expanding or mind-altering drugs)

24. Which terms refer to hallucinogens?

1. Cocaine, novocaine
2. Dilaudid, paregoric
3. Luminal, Tuinal
4. Mescaline, psilocybin

25. The most important medical use of hallucinogens is in:

1. overcoming depression.
2. treatment of mental and emotional problems.
3. controlling fear and anxiety.
4. research on human behavior.

26. Which of the following is intensified by taking hallucinogens?

1. Concentration
2. Imagination
3. Judgment
4. Motivation

27. How does LSD affect vision and hearing?

1. It has no effect on vision or on hearing.
2. It affects the ways sights and sound are experienced.
3. It makes vision and hearing less sensitive.
4. It makes ears and eyes hear and see better.

28. Which are the physical side effects most likely to accompany LSD use?

1. Vomiting, stomach cramps
2. Headache, fever, sweating
3. Increased blood pressure and pulse rate
4. Nausea, chills, enlarged pupils

### **C. What do you know about marihuana?**

29. Authoritative literature about the possibility of physical damage from marihuana indicates that:

1. its use does damage to nerves and lungs.
2. its use does no physical damage.
3. it has not been proved to be physically harmful.
4. it is physically harmful only if often used.

30. What kind of person is likely to become an habitual user of marihuana?

1. One who has little self-control
2. Those who are easily influenced by others
3. People who are unhappy because of conditions in their lives
4. No one kind of person

31. Which are the most probable immediate effects of marihuana use?
1. Daydreaming, altered sense of time
  2. Restlessness, quick temper
  3. Inactivity, small pupils
  4. Slurred speech, poor balance
32. The frequent user of marihuana is likely to be:
1. calm and alert.
  2. depressed and fearful.
  3. excitable and irritable.
  4. tired and indifferent.
33. Which statement best describes the relationship of marihuana use to mental illness?
1. Its use can cause mental illness.
  2. Its use is not related to mental illness.
  3. Its use may increase one's chances of becoming mentally ill.
  4. Its use may disclose or aggravate mental illness.
34. Which of the following best accounts for the belief that use of marihuana causes use of more dangerous drugs?
1. Frequent use of marihuana causes a need for addictive drugs.
  2. A marihuana user is likely to contact and be influenced by users of other drugs.
  3. Frequent use of marihuana causes a craving for other "mind-altering" drugs.
  4. Marihuana use weakens personality and causes willingness to use stronger drugs.
35. How can one know that a person has been smoking marihuana?
1. Blood test
  2. Dilated pupils
  3. Odor on breath
  4. Urinalysis

**V. Do you know the best answer to each of the following questions?**

36. The person who occasionally uses more than the prescribed amount of addictive drugs:
1. will not become addicted.
  2. may become addicted.
  3. will become addicted in time.
  4. may already be moderately addicted.



37. Which one of the following is the best description of the kind of person who is likely to become a drug addict?
1. No one kind of person
  2. A person who is unable to achieve a satisfactory social adjustment
  3. A person who is unable to foresee the end results of his behavior
  4. A person of weak character and of little self-control
38. Black market drugs are unsafe because:
1. they often are of unknown strength and of questionable purity.
  2. they usually are stronger than prescribed drugs.
  3. they are more likely to cause addiction than prescribed drugs.
  4. they often are spoiled drugs that have been discarded.
39. Misuse of which one of the following kinds of drugs most often causes death?
1. Amphetamines
  2. Barbiturates
  3. Hallucinogens
  4. Opiates
40. An addicted person is in the greatest danger of dying when he *discontinues use* of which one of the following:
1. Alcohol
  2. Heroin
  3. Phenobarbital
  4. Morphine
41. When taken more often than prescribed or in larger doses than directed, some cough medicines may cause addiction because they contain:
1. heroin.
  2. codeine.
  3. morphine.
  4. phenobarbital.
42. Which of the following are the most probable effects of cocaine?
1. Daydreaming, enlarged pupils, habit-formation
  2. Inactivity, small pupils, addiction
  3. Slurred speech, poor balance, addiction
  4. Excessive talking, excitement, habit-formation
43. Which of the following are probable harmful effects of sniffing substances such as glue, cleaning fluids, gasoline, etc.?
1. Damage to brain, kidneys, and liver
  2. Damage to chromosomes and nervous system
  3. Irregular heartbeat and high blood pressure
  4. Weight gain and blood cell damage
44. Which is likely to be the most productive first step in overcoming a drug addiction or a drug habit?
1. Stop all use at once
  2. Begin gradual withdrawal
  3. Seek professional help
  4. Ask friends and family to help

45. Which terms refer to barbiturates ?
1. Sugar, Acid, Bummer
  2. Candy, Barbs, Goofballs
  3. Co-pilots, Drivers, Eye-openers
  4. Weed, Manicure, Grass
46. Which of the following refer to amphetamines ?
1. Sugar, Acid, Bummer
  2. Candy, Barbs, Goofballs
  3. Co-pilots, Drivers, Eye-openers
  4. Weed, Manicure, Grass
47. Which terms refer to hallucinogens ?
1. Sugar, Acid, Bummer
  2. Candy, Barbs, Goofballs
  3. Co-pilots, Drivers, Eye-openers
  4. Weed, Manicure, Grass
48. Which of the following refer to marijuana ?
1. Sugar, Acid, Bummer
  2. Candy, Barbs, Goofballs
  3. Co-pilots, Drivers, Eye-openers
  4. Weed, Manicure, Grass
49. Which terms refer to heroin ?
1. Golddust, Flake, Happy Dust
  2. Beans, Bennies, Cartwheels
  3. Charge, Grass, Hay
  4. Boy, Horse, Harry