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Signature Christie Rae White

Date December 6, 1974

THE RELATIONSHIP BETWEEN MARIJUANA USAGE
AND ACADEMIC PERFORMANCE

by

CHRISTIE RAE WHITE

A professional paper submitted in partial fulfillment
of the requirements for the degree

of

MASTER OF EDUCATION

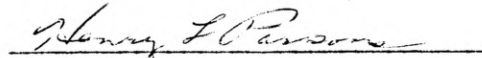
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Approved:


Chairman, Examining Committee


Head, Major Department


Graduate Dean

MONTANA STATE UNIVERSITY
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ABSTRACT

This study was an investigation to discover the relationship between marijuana usage and academic performance. The survey included twenty-four volunteer drug users from the local high school.

The review of literature revealed marijuana may be responsible for physiological changes, psychological changes, and the "antimotivational syndrome." There is substantial research which suggests the possibility of irreversible brain damage.

The method of investigation interviewed twenty-four volunteers by means of an individual oral questionnaire. All data collected was tabulated into percentages and directly reported by tables and descriptive analysis.

The areas surveyed revealed well over half of the students interviewed had used marijuana from two to four years. Approximately half use marijuana at least ten times per week. The grade point average as reported by each student interviewed had dropped 1.2 per cent for the entire group since marijuana usage. Forty per cent of the students who had participated in school related functions prior to marijuana usage are no longer involved. An overall increase in reported close friends of 34 per cent was tabulated. Voluntary absenteeism increased by 392 per cent for the total population after marijuana usage. Fifty per cent of the students had not voluntarily missed one day of school prior to marijuana usage. Sixty-two point five per cent of the students had a career choice in mind.

The conclusions drawn allow for a high probability that marijuana has a detrimental relationship to academic performance.

Recommendations involved more longitudinal studies, cooperation between school systems and researchers allowing for more reliable academic information without disclosing students' identity, and an informative drug education program available to second through fourth grades.

Chapter 1

INTRODUCTION

Drug and drug related topics are as common in the school classroom as they are on a dimly lit street corner. The fact that many students ranging from grade school to college are using illegal drugs has become a concern to parents nationwide. The possibility that drug usage has a detrimental or positive effect on academic performance should be of interest to parents, academicians, and students alike.

Statement of the Problem

The purpose of this study was to determine whether or not prolonged usage of marijuana is related to a student's academic performance.

Purpose of the Study

Studies of marijuana usage as related to academia are crucial to drug education. They are important because a formal education is one of the basic dimensions of personal development. Blum and Associates found a:

. . . consistent negative association between involvement with a number of illegal drugs (among them marijuana) and degree of overall satisfaction with school teachers and course work; overall involvement with school; clarity of occupational goals; extent to which school is perceived as applicable to one's life and career goals.

This research resembles some of the conclusions reached by others (Aushel, 1969; Brotman, et.al., 1969; Carey, 1969; Kenniston, 1968-69), according to which lack of involvement in

the conventional educational pursuits and dissatisfaction with the educational system are both positively related to involvement with illegal drugs (Tec, 1972:3).

It would appear to the researcher that studies verifying or confirming this research would be beneficial to drug education programs. At the present, drug abuse programs are receiving critical evaluation indicating them as "scare tactic agents" or accusing them of pushing even more individuals into drug usage when scare tactics are not used. More extensive studies would be valuable in strengthening the programs validity and trustworthiness. Regardless of whether further research turns up detrimental or beneficial aspects of marijuana, it is necessary to develop the virtual wasteland of knowledge concerning the effects of marijuana.

General Questions To Be
Answered

1. What is the frequency that each student now uses marijuana?
2. What is each student's degree of involvement with school activities?
3. What is each student's overall satisfaction with school?
4. To what extent has the student's grade point average varied after his introduction to marijuana usage?
5. What is each student's occupational goal?

General Procedure

The researcher resolved the problem by interviewing volunteers consisting of high school students drawn from the local high school. Individual interviews were conducted, results tallied, and included in this paper.

Limitations

The fact that the respondents were in a peer-conscious age level could be seen as a limitation, when it was taken into account that many youth are peer-controlled and prone to exaggerate for effect. Truthfulness was the key to this study, thus the reason for establishing individual interviews. Another limitation was the type of student that was willing to admit to and discuss illegal drug use. This could possibly have biased the sample. Students that use drugs congregate in drug subcultures which comprise a total unit; therefore, it was nearly impossible to obtain respondents who were not familiar with the other respondents, regardless of whether or not they were members of their particular group.

Delimitations

The researcher chose to limit interviews to individuals who were enrolled in school at the time of the study and had taken marijuana for over a year at the average frequency of once a week or more.

Definition of Terms

Prolonged marijuana usage. Prolonged marijuana usage shall be herein defined as usage for at least a period of a year and at the frequency of at least once a week. This included respondents who had used marijuana for longer periods of time at a greater frequency rate.

Friend. Friend shall be herein defined as one capable of total trust and discretion.

Summary

The results of this study and further research in regard to this topic were of benefit to drug education programs. Students, academicians, physicians, lawyers support legalization of marijuana before pertinent information on potential dangers are collected. It seemed only fair to produce indepth studies and allow the results to disclose detriments or benefits of marijuana usage. The researcher believed this study was beneficial in discovering more information and in revealing misinformation to the public.

Chapter 2

REVIEW OF LITERATURE

In recent years, there has been an alarming increase of marijuana usage among our nation's youth. Although many studies have been conducted, little empirical evidence has been gathered to indicate safety or danger of continual use. Since many of the users are students, the researcher attempted to determine the relationship between marijuana use and academic performance. The review of literature, and thus proposed study, delved into the following areas: (1) possible personal reasons for marijuana usage; (2) possible effects of marijuana usage; (3) individual satisfaction with education via both interview and research; and (4) estimated usage of high school students.

Personal Motivation

Adolescents generally use two reasons for doing nearly anything; these being (1) it's the thing to do and (2) rebellion against the establishment. However, through systematic analysis of clinical data, Woody (1972:220-4) lists four possibly unconscious reasons for marijuana usage:

1. Need for social identification with peers. This may entail meeting the requirements of either the ideal or actual concept of a teenager and is maintained mainly by individuals with weak self-concepts.

2. Hostility towards parents. Sometimes a negative reaction is the only affective response a child who consciously or unconsciously craves a parent's affection receives, thus serving to reinforce marijuana usage.

3. Frustration over the complexity of existence. The pressures of environmental, psychological, and religious controversies fall into what is referred to by Woody as the "environment press."

4. Vagueness of contemporary guideposts for the development of sexual identity. The unisex concept and the value change within the home has caused confusion in this area.

Krug (1974:445) stated:

The most probably interpretation of the Motivation Analysis Test superego conflict pattern is that the user wants to "do right" but doesn't know what is right. This psychological portrait of the user is far different than common stereotypes of the user as actively antisocial and disdainful of established standards of conduct.

And, yet, it seems paradoxical when Krug further states:

The pattern of personality and motivation differences between adolescent drug users and nonusers . . . revolves about a central core of low inhibition. This is evident in the findings of higher dominance [radicalism, self-indulgence, and aggression], combined with lower social inhibition and conscience development.

Martino (1973:126) finds it "difficult to support that hypothesis that most of the frequent users of marijuana do so because of personal problems" based on the fact that over half of his sample population smoked monthly or more often.

Even Shibuya (1974:444) was less persecuting "in terms of 'personality traits,' the drug abuser may be characterized as expedient, insecure, imaginative, idealistic, and experimenting."

Weitman (1974:420) agrees, stating "experimentation is the single most important motive contributing to the use of drugs by high school youth."

Farnsworth (1973:153-158) disagrees, stating the cause for increased marijuana usage to be the "hang loose" ethic.

Among young people, rejection of the inconsistencies in legal-social efforts to control marijuana smoking has become a symbol of their much deeper rejections of personal response to a world they do not like. Indeed marijuana smoking has in itself become a symbol of rejection of things as they are (Yolles, 1971:14-15).

Price (1974:822) charged:

Other arguments frequently made are that marijuana causes alienation, introspective thinking, resentment of authority, and disdain of the future. That these latter are indications of a changing value system and not symptoms of marijuana use seems to have escaped many Americans."

Taintor (1974:29) also defines the causes of drug abuse as a "declining consensus about values in our society, the generation gap and changes in the family." He finds the peer group to have more influence on individual behavior than the family structure.

Richards (1973:34-35) confirms Taintor's beliefs:

Adolescent use of marijuana is related not only to the best friend's use, but also to the frequency with which the friend has used marijuana. Drug use is also directly related to the frequency of mere contact with peers and to being peer-oriented

rather than parent-oriented. Marijuana users are more likely to be found among students who visit with their friends on a daily basis, among those who would continue to see their friends over their parents' objections, or among those who respect their friends' opinion over their parents' when confronted with a problem. Similarly, these users are found to rely on peers and contemporaries as sources of information about drugs, while nonusers are reported to have learned (or obtained most of their knowledge) from their parents, mass media, or the school.

Shibuya (1974:444) agreed, stating, "The extent to which an individual agreed or disagreed with his or her parents was a reliable and consistent discriminator between the drug-abusing group and the non-user group."

Krug (1974:440) found "child-rearing practices involving the neglect of discipline and absence of training in societal or ethical standards are suggested as significant in adolescent drug abuse."

Richards (1974:35) supports Krug according to results from a study of family factors which:

. . . indicate that drug use is part of a constellation of beliefs and practices related to the child-rearing goals and personal beliefs of the parents. A study of white, black, and Mexican-American families indicates there are certain factors that increase the probability of drug use in children. These characteristics include: lack of cohesion in the family, use of alcohol and medications by parents, and less emphasis on self-control. Families which tend not to encourage drug use are characterized as cohesive, support authority in the home, and are generally more content.

Possible Effects of Marijuana Usage

Spratto (1972:213) stated:

Although complete scientific studies are lacking, instances are known in which marijuana has produced profound psychological and physiological responses in the user The marijuana user . . . may experience loss of motivation, impaired learning ability, and impaired performance of motor skills.

Additional research by Thomas, Smith, and Knotts (1972:383) verifies this. They found experienced smokers to exhibit a slight decrease in intellectual efficiency.

Fulton (1973:61) attacked the Thomas, et. al. (1972:384) statement of "some reports indicate the prolonged use of marijuana may lead to a loss of desire to work, reduction in motivation, and a loss of intellectual functions" by citing that an ever increasing number of bright young people who use marijuana and are involved in honors programs, medical colleges, and law schools invalidate the statement.

Another dissenting opinion was voiced by MacDonald, Walls, and LeBlanc (1973:189) in referring to a study done by Hogan, who found users attaining slightly better grades than non-users.

Farnsworth (1973:157) tells of a young friend who had submitted a class paper on a new intellectual scheme he had developed after a marijuana experience. The result was indistinguishable from the sort of world-view often produced by persons suffering from schizophrenia. Farnsworth also referred to evidence that work which involves both creativity and organization is likely to be adversely affected.

An article, New Report on Marijuana Use and It's Hazards (1974:

6) stated:

Researchers have found that the more complex the task, the more it is affected by the drug. In the case of driving, the report warns that even social doses of marijuana can impair performance through momentary lapses of attention, delays in reaction time, and increased number of inaccurate responses.

Ramsey (1973:137) agrees, stating, "Evidence is accumulating more clearly indicating that more complex tasks may be detrimentally affected by marijuana."

Roth, et. al. (1973:264) found marijuana to produce a deficit in tracking performance, confirming the studies of Manno and Kiplinger. Rafaelson, et. al. (1973) warns against driving while intoxicated with marijuana, reporting an increase of braking time and an indication of steering impairment with small (12 mg.) to moderate doses. Roth, et. al. (1973:259) exclaims, "Marijuana effects on tracking are becoming especially relevant now, since there is evidence that people sometimes drive when intoxicated with marijuana."

Szara (1973:137) reports reaction time is more frequently reported to be affected by marijuana than not to be affected.

Bech, et. al. (1973:373) stated:

Cannabis showed a much stronger effect than alcohol on estimation of time and distance, and it was more marked on the subjective than on the objective estimation. A dose-response type of effect was seen with cannabis.

Bech (1973:380) continued, "Cannabis exerts, according to Tart (1970), just as characteristic an effect on experience of distance as on time."

Also of interest is DeLong's (1973:908) findings, "The acute cognitive effects of marijuana can be seen as decrements in resisting distraction and in voluntarily shifting the focus of one's attention."

Short-term memory appears to be the target of marijuana according to Szara (1973:137), "A deficit in short-term memory has again been clearly demonstrated in all of the studies which included an appropriate test of this function in their assignment battery." Pearl's, et. al. (1973:20) findings agree:

One of the most commonly reported effects of marijuana intoxication is impairment of short-term memory. Marijuana clearly had a detrimental- dose-related effect on the number of words recalled in the conceptual clustering memory test.

Darley, et. al. (1974:148) concluded with the above:

The purpose of the present study was to examine the effect of marijuana upon memory storage and retrieval. With regard to storage processes, the important finding is that even when required to use a rigid, automatic approach to list-learning (such as the fixed rehearsal scheme) subjects do better in the no-drug than in the drug condition. In other words, even though overt rehearsal processes were equated in the no-drug and drug states, the marijuana-induced storage deficit did not disappear. However, we consider the idea that material learned in the drug state is most accessible in the same state to be a parsimonious and intuitively reasonable explanation of our delayed-recall data, particularly since drug users commonly report that events experienced while intoxicated are not remembered until the drug is ingested at a later time.

Maugh II (1974:776) stated:

Hollister finds that cannabis, like alcohol and some other drugs, seems to disrupt the transfer of information in the brain from short-term to long-term memory. Information acquired while under the influence of cannabis would thus be forgotten more easily than if it were acquired while sober; subject would also have trouble completing their thoughts during conversations.

Ramsey (1973:137) informs that:

Some of the discrepancies in the reported effects of this drug on psychomotor performances may be related to the findings that occasional and frequent users perform differently under the influence of the drug, with the frequent users showing better performance and a clearer dose response curve than occasional users.

Cohen (1974:323) adds:

Perusal among the various studies suggests that, in general, the effects on marijuana are mild and most consistently seen with naive and light usage. People with a history of heavy or chronic usage appear in some manner to have compensated for the detrimental effects of the drug on several performance variables.

Cohen suggests (1974:327):

Perhaps some type of tolerance develops to the drug with repeated extended usage. Another possibility is that chronic marijuana usage leads to the development of behavior (cognitive?) tolerance to the drug. Users of marijuana have reported that as usage increases individuals become more acutely aware of the marijuana 'high'.

Cappell (1973:429) presents a possible explanation, "Although compensation was task specific, the results demonstrate that in principle the ability to come down exists." Carder (1973:73) agrees, stating studies "indicated that the development of behavior tolerance to marijuana involves a learning process."

In a study done by Klechner in 1968, results showed "users were significantly more aloof, anxious, paranoid, and had less strength and super ego." It "also termed them brighter and more dominant interpersonally. The users were more creative, less leader-like, more isolated and more accident prone (Toohey, 1971:467)." Yolles (1971:16) adds,

stating marijuana has the capacity to alter mood, judgment, and functional ability.

Maugh II (1974:775-776) introduces a concept known as the "antimotivational syndrome." He states:

The effects of this persistence are a subject of debate but many scientists argue that the continued presence of tetrahydrocannabinol (the principal psychoactive constituent of cannabis) in the brain induces a set of mental characteristics termed the "antimotivational syndrome."

According to a study by Kolansky and Moore

Thirteen individuals between the ages of 20 and 41 years who had smoked cannabis three to ten times a week for at least 16 months, all showed the same set of symptoms: The patients were characteristically apathetic and sluggish in mental and physical responses. There was usually a goallessness and a loss of appearance. Considerable flattening of affect gave a false impression of calm and well-being; this was usually accompanied by the patient's conviction that they had recently developed emotional maturity and insight aided by cannabis. This pseudo-equanimity was easily disrupted if the patients were questioned about their personality change, new philosophy, and drug consumption, or if their supplies of cannabis were threatened. The individuals were physically thin, often appeared tired and exhibited slowed physical movements. They also showed symptoms of mental confusion, a slowed time sense, difficulty with recent memory, and an incapability of completing thoughts during verbal communication.

According to Ramsey (1973:144);

Kolansky and Moore (1972) describe a common core of symptomatology which they feel characterizes this syndrome and which includes such things as apathy, mental sluggishness, loss of interest in personal appearances, flattening of affect, sense of well-being, mental confusion, slowed time sense, difficulty with recent memory, and an incapability of completing thoughts during verbal communication. They report that the intensity of symptoms seemed to be related to the level of cannabis use and that in most cases there was either total or partial remission

of symptoms after the patient stopped using cannabis. The authors strongly feel that the psychological phenomena they observed are causally related to a toxic effect of cannabis on the brain.

Cohen (1974:327) comments on motivation concerning his study, "As evaluated by their participation in these studies, chronic usage appeared to be less motivated and less dependable than our light usage."

Maugh II (1974:775) stated:

In those patients who had used cannabis most heavily and then stopped, however, the symptoms persisted intermittently for as long as 24 months, and the investigators suggest that these individuals may have suffered irreversible brain damage.

New Report on Marijuana Use and Its Hazards (1974:6) stated:

Whether or not marijuana brings about the "antimotivational syndrome" is still open to debate. Users, it has been observed, place less emphasis on competitive career achievement. It is not clear, however, if this behavior reflects their underlying values or is induced by the drug.

Price (1974:822) admitted, "Advocates of marijuana law reform do not maintain that the drug is harmless. Chronic use does have serious results such as acute bronchitis and temporary psychosis."

Maugh II (1974:683) has more to say:

The notion that marijuana is harmless has enjoyed a high degree of acceptability with only a minimum of scientific support. Since 1969, when the federal government began making marijuana of controlled quantity available to research scientists, evidence suggesting potential hazards has accumulated at a rapid pace. What the evidence does suggest is that the effects of marijuana are cumulative and dose-related, and that prolonged heavy use of marijuana, or less frequent use of the more potent hashish, is associated with at least six different types of potential hazards. The research indicates that cannabis (the generic term

for both hashish and marijuana): (1) may cause chromosome damage that could affect the health of the user; (2) may cause disruption of cellular metabolism, including synthesis of DNA; (3) may interfere with the functioning of the immune system; (4) may mimic hormones or act on hormonal regulators to produce a variety of effects ranging from impotence and temporary sterility to the development of female-like breasts in men; (5) is, with heavy use, severely debilitating to the bronchial tract and lungs; and (6) causes sharp personality changes that lead to a marked deterioration in what is normally considered good mental health. And, most important, may cause potentially irreversible brain damage.

Ramsey (1973:142) confirms the hormonal change:

Recently a new report in this country has described the occurrence of gynecomastia (breast enlargement) in chronic marijuana users. The authors speculate that the chemical similarity between delta-9-tetrahydrocannabinol and the feminizing hormone, estradiol, may have played some role in this phenomena.

Student's Satisfaction with Education

Farnsworth (1973:155) termed drug usage as being related to one's dissatisfaction with one's education and with the social structure--vaguely identified as the "system." Tec (1972:3) agrees:

More recent and extensive research shows a consistent negative association between involvement with a number of illegal drugs (among them marijuana) and degree of overall satisfaction with school, teachers, and coursework; overall involvement with school; clarity of occupational goals; extent to which school is perceived as applicable to one's life and career goals.

He refers to studies done by Ausbel (1969), Brotman, et. al. (1969), Carey (1969), and Kenniston (1968-69) to verify his findings that a lack of involvement and dissatisfaction with the educational system are positively related to involvement with illegal drugs. Interestingly enough, Tec feels his findings show the degree of school satisfaction

has more impact on marijuana use rather than the other way around.

Marijuana and Health (1973:-2-25) stated:

According to McGlothlin, who in mid-1972 estimated total nationwide use for persons 11 years and older using all available survey data, 38% of all high school students have used marijuana. This was also broken down according to sex, with 32% male use and 25% female use.

Table 1

Frequency of Marijuana Use in San Mateo Schools

Grade	Any Use In Past Year	Ten Times or More	Fifty Times or More
10th	50.6%	34.5%	22.3%
11th	55.2%	38.4%	24.45%
12th	56.9%	40.25%	26.05%

Table 2

San Mateo County, California Schools, Grades 10-12,^a Per
Cent Reporting Marijuana Use in the Past Year

Marijuana Use	1968	1969	1970	1971	1972
Any use during past year	31.9%	39.5%	42.0%	49.7%	51.0%
Ten+ times during past year	17.5%	24.4%	26.3%	32.9%	34.5%
Fifty+ times during past year	b	b	15.9%	21.2%	21.8%

a. Blackford, 1972

b. Unreported data

Summary

Marijuana in relation to academic achievement is a controversial subject. Even though a great deal of research has been done in this field, many more studies of long duration must be conducted to produce more accurate and reliable evidence. Legalization of marijuana is also in dispute. It is a difficult question to determine without more complete and verifiable information available to the public. Spratto (1972:213) defined the problem clearly and accurately when he stated "complete scientific studies are lacking."

Studies show a relation between academic performance and marijuana use and yet reports to the contrary appear to refute their claims. The researcher believed it would be interesting to interview students on their personal beliefs, which have been presented later in this paper.

Chapter 3

PROCEDURES

The problem was to determine the relationship, if any, between prolonged usage of marijuana and academic performance on the senior high school level. In this chapter, the researcher describes the population researched and the procedure used. Categories of participants and interview procedure has been defined and controls of variables explained. The instrument for the collection of data has been discussed, and the method of organizing data after it is received for analysis explained. Questions to be answered have been presented, along with the method of analyzing the data received. An explanation of precautions which were taken to insure accuracy of data analysis have been submitted, and a summary of the chapter follows.

Population Description and Sampling Procedure

The population was derived from the local school system. It consisted of one community comprised of twenty-four high school students. Ideally, the community would be composed of half males and half females; however, as the interviews were conducted on a volunteer basis, this representation might be difficult to maintain.

Each participant was given an appointment for an individual interview during which time he completed an oral questionnaire.

CATEGORIES OF INVESTIGATION

Participants

The participants were students from the local school system, the Bozeman Senior High School. The respondents' ages were in accordance with their age group, i.e., high school respondents' ages vary between fifteen and eighteen. The purpose of this was to control variables of students who have flunked courses, dropped out and returned, advanced grades, worked, or performed military duty before continuing their education. Each respondent had to have used drugs for at least one year at the rate of at least once a week in order to be eligible for an interview. Each respondent was enrolled as a full-time student.

Interviews

The interviews were on an individual basis in an attempt to control prevarication and inhibiting factors. An oral interview collecting data on each respondents' personal marijuana experience and evaluating a student's attitude towards school was conducted. Each respondent's cumulative grade point average, both before his first marijuana experience and the most current available, was collected through the most accurate means accessible.

Method of Collecting Data

Each respondent, selected on a volunteer basis, was granted an appointment during which time he completed an oral questionnaire

discussing his personal experience with marijuana and his attitudes toward school. Whatever means necessary and accessible were utilized in order to obtain accurate cumulative grade point averages for each respondent.

Method of Organizing Data

All data gathered from the oral interview was compiled in a table in accordance with areas questioned. The results of each area were tabulated in percentiles. Data was also presented in the form of case studies in which the respondents' anonymity was kept confidential.

Questions To Be Answered

1. When did the student begin using marijuana?
2. How often does the student presently use marijuana?
3. What difference was reported between pre-drug grade point average and post-drug grade point average?
4. How many and what activities was and is the student participating in?
5. How many friends does the student claim to have?
6. What is the rate of absenteeism?
7. Does the student have any post-high school plans?

Analysis of Data

The analysis of data has been descriptive in the form of percentages. The percentages were compiled on each separate area.

These results were comparative within each age group.

Precautions Taken for
Accuracy

All data has been analyzed by a computer. All data compiled on the tables by means of hand calculations were rechecked, as well as the calculations made by the computer. All interview data was compiled manually into tables used for significance testing. Hand calculations were checked in their entirety to insure accuracy of compilation, at which time results were calculated by a computer.

Summary

The problem was to determine the relationship, if any, between prolonged marijuana usage and academic performance. The respondents, composed of twenty-four high school students, completed an oral questionnaire during individual interviews. The respondents' identity has been kept confidential. The results were transferred from interview questionnaires to a table in the form of percentages. Descriptive analysis and comparison within and between the group was used to determine whether there was a relationship between marijuana and academic performance. All percentages were calculated by the computer to insure accuracy in results.

Chapter 4

ANALYSIS OF DATA

Due to the fact that marijuana is an illegal drug with fairly severe penalties, the students were wary of contact with an "unknown." Through a mutual friend, the researcher was introduced and accepted by a number of student drug users. In order to obtain information, the researcher spent two noon-hours and approximately half an hour after school on two consecutive days interviewing volunteer high school drug users. The intimate interview surroundings was a pickup cab. Each student was granted an individual and uninterrupted interview in order to control prevarication and discomfort. The researcher feels a good rapport and mutual honesty was established with each individual and that the data acquired is valid.

Results tabulated on the following tables are responses to the questionnaire (see Appendix, page 49), orally answered by each individual. The tables are presented according to each question asked.

The students consisted of thirteen sophomores, six juniors, and five seniors, divided into sixteen males and eight females. It would have been more desirable for an equal number in each class and more equally divided among males and females, but when one is working with volunteers these are difficult factors to control.

Two female students interviewed were disqualified. One had not met the limitation of length of marijuana use and the other had not met

the limitation of continuous high school attendance.

The average age of the sophomores was fifteen, the average age of the juniors was sixteen, and the average age of the seniors was seventeen.

Table 3

Year First Began Using Marijuana

Per Cent	Year Began	Number of Years of Use	Number of Scphomores	Number of Juniors	Number of Seniors
8.3	1968	6	1	0	1
12.5	1969	5	1	0	2
29.2	1970	4	4	2	1
16.6	1971	3	3	1	0
25.0	1972	2	4	2	0
8.3	1973	1	0	1	1

This table indicates well over half, 70.8 per cent, of the students interviewed have used marijuana from two to four years. It is interesting that 20 per cent have used the drug at least five or six years.

Table 4

Frequency Per Week

Frequency	Overall	Sophomores	Juniors	Seniors
5X or less	45.8%	38.0%	66.6%	40.0%
10X or less	4.1%	7.6%	0.0%	0.0%
15X or less	16.6%	15.3%	16.6%	20.0%
20X or less	12.5%	12.0%	7.6%	20.0%
25X or less	8.3%	7.6%	16.6%	0.0%
30X or less	4.1%	7.6%	0.0%	0.0%
35X or less	4.1%	7.6%	0.0%	0.0%
40X or less	4.1%	0.0%	0.0%	20.0%

About half, 49.9 per cent, used marijuana at least ten times a week and approximately 20 per cent used marijuana twenty-five or more times a week.

Table 5

Estimated Grade Point Average Before Marijuana Usage

Grade	Overall	Sophomores	Juniors	Seniors
A	12.5%	0.0%	16.6%	20.0%
B	37.5%	38.0%	33.3%	40.0%
C	41.6%	46.0%	33.3%	40.0%
D	12.5%	15.3%	16.6%	0.0%
F	0.0%	0.0%	0.0%	0.0%

Table 6

Estimated Grade Point Average After Marijuana Usage

Grade	Overall	Sophomores	Juniors	Seniors
A	0.0%	0.0%	0.0%	0.0%
B	33.3%	30.7%	33.3%	20.0%
C	54.1%	53.8%	33.3%	80.0%
D	12.5%	7.6%	33.3%	0.0%
F	4.1%	7.6%	0.0%	0.0%

Table 7

Reported Grade Point Average

	Sophomores	Juniors	Seniors
Before	2.2	2.5	3.0
After	2.0	2.0	2.3
Difference	-1.1%	-1.25%	-1.3%

According to Table 7, the overall difference for all three grades was a drop of 1.2 per cent. Although 12.5 per cent "A" grade point averages were reported before marijuana use, no "A" averages were reported after marijuana use. The reported "B" grade point average also dropped by 4.2 per cent. The "C" grade point average increased by 12.5 per cent. The reported "D" grade point average remained the same, and the reported "F" grade point average increased by 4.1 per cent, not having been reported before marijuana use. The seniors' grades dropped

the most, whereas 60 per cent were getting B's or better, only 20 per cent are getting B's after marijuana usage. Half of the students reported the negative grade point (i.e., C- rather than C or C+) before and after marijuana usage. Since the students' identities would have to have been revealed in order to achieve exact school records, the individually reported grade point average was the most accurate means accessible.

Table 8

Activities and Honors Before Marijuana Usage

	Sophomores		Juniors		Seniors	
	Activities	Honors	Activities	Honors	Activities	Honors
Male	38.0%	0.0%	16.6%	0.0%	20.0%	20.0%
Female	15.0%	0.0%	33.3%	0.0%	--	--
Total	53.0%	0.0%	49.9%	0.0%	20.0%	20.0%

Over half of the sophomores and half of the juniors participated in activities or sports before marijuana usage. The seniors were the only ones to have received honors.

Table 9

Activities and Honors After Marijuana Usage

	Sophomores		Juniors		Seniors	
	Activities	Honors	Activities	Honors	Activities	Honors
Male	23.0%	0.0%	16.6%	0.0%	40.0%	40.0%
Female	23.0%	0.0%	0.0%	0.0%	--	--
Total	46.0%	0.0%	16.6%	0.0%	40.0%	40.0%

Both the sophomores and juniors took a drop in their participation in activities or sports, 7 per cent and 33.3 per cent respectively. However, the seniors doubled both their activities and honors, one male receiving a National Merit Commendation, although he reported a total grade point drop since marijuana usage.

Table 10

Number of Close Friends Reported Before
Marijuana Usage by Class

	Sophomores	Juniors	Seniors
Male	50	14	15
Female	13	2	--
Total	63	16	15

Table 11

Number of Close Friends Reported Before
Marijuana Usage by Sex

	Sophomores		Juniors		Seniors	
	Male	Female	Male	Female	Male	Female
0 - 2	1	3	2	2	1	--
3 - 5	3	3	1	0	4	--
6 - 10	2	0	1	0	0	--
10+	1	0	0	0	0	--

Three of the students reported having no close friends, 84 per cent reported having five or less, and 4 per cent reported having more than eleven.

Table 12

Number of Close Friends Reported After
Marijuana Usage by Class

	Sophomores	Juniors	Seniors
Male	233	28	47
Female	43	5	--
Total	276	33	47

Table 13

Number of Close Friends Reported After
Marijuana Usage by Sex

	Sophomores		Juniors		Seniors	
	Male	Female	Male	Female	Male	Female
0 - 2	1	0	1	1	0	--
3 - 5	2	3	1	1	1	--
6 - 10	1	2	2	0	2	--
11 - 15	1	1	0	0	2	--
16 - 20	0	0	0	0	0	--
21 - 30	0	0	0	0	0	--
31+	2	0	0	0	0	--

Everyone listed having at least one close friend. After marijuana usage, approximately 55 per cent had over five friends. Twenty-five per cent reported having more than eleven close friends. Sophomores reported an increase of 44 per cent since using marijuana, juniors reported a 24 per cent increase, and seniors a 33 per cent increase.

Table 14

Voluntary Absenteeism Before and After Marijuana Usage
by Class (Average Number Days Per Year)

	Sophomores	Juniors	Seniors	Total
Before	104	41	2	147
After	334	115	127	576
Per cent of increase	320	280	6350	392

Table 15

Voluntary Absenteeism Before and After Marijuana Usage
by Sex (Average Number Days Per Year)

	Sophomores		Juniors		Seniors	
	Male	Female	Male	Female	Male	Female
Before	69	35	41	0	2	--
After	175	159	95	20	127	--
Per cent of increase	255	454	231	2000	6350	--

Fifty per cent of the students had not missed one day of school from voluntary absenteeism before using marijuana. Voluntary absenteeism, known as ditching to the students, increased by as much as an incredible 6350 per cent after marijuana usage. The increase was not confined to any one group. Some students admitted to not going to one full day of school all year. Many are absent from study periods every day.

Table 16

Absenteeism Due to Illness Before and After Marijuana
Usage (Average Number Days Per Year)

	Sophomores	Juniors	Seniors	Overall
Before	100	38	33	171
After	123	24	19	166
Per cent of increase/decrease	+123	-63	-57	-97

Illness is reported to have dropped since use of marijuana. This is difficult to measure since those who had feigned illness before using marijuana are now just "ditching" classes. As one male senior put it, "Now I don't know when I'm sick; I can't feel it."

Parentally Excused Absences

Many students reported no loss of time due to hunting or parents' vacations. Fifty-eight per cent had never been absent for any other reason than illness or voluntary absence. The average number of days per year due to "other" absences is five, both before and after marijuana usage.

Table 17

Post High School Plans

	Sophomores		Juniors		Seniors		Total
	Male	Female	Male	Female	Male	Female	
Undecided	28.5%	50.0%	25.0%	0.0%	20.0%	--	29.0%
Additional schooling	42.8%	50.0%	50.0%	50.0%	80.0%	--	50.0%
Travel	28.5%	33.3%	0.0%	50.0%	0.0%	--	21.0%
Career Choice In Mind	71.4%	50.0%	75.0%	50.0%	60.0%	--	62.5%

Half of the students interviewed plan to continue with additional schooling; approximately 20 per cent want to travel when they get out of school. Although nearly 30 per cent are undecided about post high school plans, 62.5 per cent have a career choice in mind.

Summary

According to the results of this limited study, it is apparent to the researcher that prolonged frequent use of marijuana may be responsible for:

1. A detrimental effect on academic performance. Approximately 62.5 per cent reported a drop within a range, as from a C+ to a C- or a total grade point or more. A drop of a full grade point or more was indicated by 41.6 per cent.

2. Less participation in school activities. Fifty four point five per cent of those who had previously been active in school related functions are no longer active since marijuana usage.

3. An increase in the reported number of friends. Before marijuana use, only 16 per cent reported more than five friends they could trust completely. After marijuana usage, 55 per cent reported more than five friends. One male reported beginning marijuana to make friends. Many others indicated that the nature of the bonding force of marijuana (i.e., it's illegality and penalty for use) was responsible for the trust with so many. One sophomore male reporting an increase of ninety friends stated that one has to trust the people he smokes with.

4. An astronomical increase in the number of days of voluntary absenteeism. Fifty per cent of the students in this study had never voluntarily been absent until after marijuana use. Only one person since has not missed school voluntarily. Voluntary absenteeism has increased from 280 per cent to 6350 per cent, or an average for all three grades of 392 per cent.

Table 18

Complete Results of Questionnaire* (Before Marijuana Usage)

Respondent	Sex	Grade	Age	Year began using	# of Years of Use	Grade First Began	Frequency per Week	Grade Before Use	Activities partici- pation before or honors received	# close friends before use	Avg. # days ditched before use	Avg. # days absent ill before use	Avg. # days absent w/parental excuse
1	M	10th	15	71	3	7th	20	C	Football, wrestling, moto cross racing	10	9	6	0
2	M	10th	15	70	4	6th	3	B-	Basketball, football, track, wrestling	20	2	5	10
3	M	10th	15	72	2	8th	4	C+	Football, basketball, wrestling	8	4	8	0
4	M	10th	16	71	3	7th	25	C+	Football	3	5	15	0
5	M	10th	15	69	5	5th	30	C-	None	3	45	13	0
6	M	10th	15	72	2	8th	10	C-	Band, football	2	4	1	0
7	M	10th	16	68	6	4th	20	D	None	4	0	2	0
8	F	10th	16	71	3	7th	1	B-	None	1	0	10	0
9	F	10th	15	72	2	8th	15	B+	Cheerleader	1	20	10	0
10	F	10th	15	70	4	6th	35	B	None	3	5	10	0
11	F	10th	16	72	2	8th	1	B-	Gymnastics	5	10	10	5
12	F	10th	15	70	4	6th	15	C	None	3	0	5	0
13	F	10th	16	70	4	6th	2	D	None	0	0	5	0

Table 18 (Continued)

Respondent	Sex	Grade	Age	Year Began Using	# of Years of Use	Grade First Began	Frequency per Week	Grade Before Use	Activities participated in before or honors received	# close friends before use	Avg. # days ditched before use	Avg. # days absent ill before use	Avg. # days absent w/parental excuse
14	M	11th	16	70	4	7th	2	B	None	0	1	0	2
15	M	11th	16	72	2	9th	1	B-	Basketball, track	7	40	5	10
16	M	11th	17	73	1	10th	1	D	None	1	0	6	0
17	M	11th	17	70	4	7th	21	C-	None	4	0	10	2
18	F	11th	16	71	3	8th	15	A-	Chorus, drama	2	0	5	0
19	F	11th	16	72	2	9th	3	C	Band	0	0	12	5
20	M	12th	17	68	6	6th	2	B-	None	3	0	3	4
21	M	12th	17	69	5	7th	1	C-	None	3	0	15	0
22	M	12th	17	70	4	8th	18	C+	Football	3	2	5	0
23	M	12th	18	73	1	11th	15	B-	Honor roll/Jr. High	5	0	0	5
24	M	12th	17	69	5	7th	40	A-	None	1	0	10	0

* (See Appendix, page 49, for complete list of questions.)

Table 19

Complete Results of Questionnaire* (After Marijuana Usage)

Respondent	Sex	Grade	Age	Year Began Using	# Years of Use	Grade First Began	Frequency Per Week	Grade After Use	Activities participated in or honors received	# close friends after use	Avg. # days ditched after use	Avg. # days 111 after use	Avg. # days absent--other	Plans
1	M	10th	15	71	3	7th	20	C	Weight lifting	100	10	5	0	College--electronics
2	M	10th	15	70	4	6th	3	B-	Football, basketball, wrestling, AAU	100	15	10	10	Undecided--travel
3	M	10th	15	72	2	8th	4	B-	Football, basketball, wrestling	8	5	4	0	College--agriculture
4	M	10th	16	71	3	7th	25	C-	None	5	35	15	0	Undecided
5	M	10th	15	69	5	5th	30	F	None	1	60	0	0	Votech(speed shop) Adv. auto mech.
6	M	10th	15	72	2	8th	10	C-	None	5	20	2	0	Votech--TV-radio electronics
7	M	10th	16	68	6	4th	20	D-	Maybe wrestling this spring, NONE	14	30	0	0	Travel--college veterinarian
8	F	10th	16	71	3	7th	1	B-	None	4	6	13	4	College--interior design
9	F	10th	15	72	2	8th	15	B	Bowling	15	80	10	0	Travel--college

Table 19 (Continued)

Respondent	Sex	Grade	Age	Year Began Using	# Years of Use	Grade First Began	Frequency Per Week	Grade After Use	Activities partici- pation after use or honors received	# Close Friends After Use	Avg. # days ditched after use	Avg. # days ill after use	Avg. # days absent- other	Post High School Plans
10	F	10th	15	70	4	6th	35	C+	None	5	20	25	0	Undecided
11	F	10th	16	72	2	8th	1	C+	Gymnastics	7	30	14	5	Undecided
12	F	10th	15	70	4	6th	15	C-	None	3	15	5	0	Travel--stewardess
13	F	10th	16	70	4	6th	2	C	German Club	9	8	20	0	College--film & production movies
14	M	11th	16	70	4	7th	2	B	None	6	30	0	5	Undecided--maybe college
15	M	11th	16	72	2	9th	1	C	None	6	52	7	4	Trade school mechanics
16	M	11th	17	73	1	10th	1	D+	None	1	5	0	0	College -- DJ
17	M	11th	17	70	4	7th	21	C-	Gymnastics	15	8	8	0	Undecided--carpentry
18	F	11th	16	71	3	8th	15	B-	None	1	10	5	0	College--literature
19	F	11th	16	72	2	9th	3	D	None	4	10	4	0	Travel
20	M	12th	17	68	6	6th	2	C	Bowling--Hawk bowl award	6	4	4	4	Trade school-- electrician
21	M	12th	17	69	5	7th	1	C-	None	12	90	5	5	Undecided
22	M	12th	17	70	4	8th	18	C	Bowling	10	3	5	0	College/trade sch.

Table 19 (Continued)

Respondent	Sex	Grade	Age	Year Began Using	# Years of Use	Grade First Began	Frequency Per Week	Grade After Use	Activities partici- pated in after use	or honors received	# close friends after use	Avg. # days ditched after use	Avg. # days ill after use	Avg. # days absent-- other	Post High School Plans
23	M	12th	18	73	1	11th	15	C+	None		15	0	0	5	College--small business(ski shop)
24	M	12th	17	69	5	7th	40	B-	National Merit Com- mendation		4	30	5	0	College--college biology teacher

* (See Appendix, page 49, for complete list of questions.)

Chapter 5

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

SUMMARY

Related Readings

Previous studies have revealed marijuana to potentially cause irreversible brain damage; possible sexual alterations; impaired performance due to memory and attention lapses and delay in reaction time; and an "antimotivational syndrome."

Possible reasons for marijuana usage include experimentation, need for social identification with peers, hostility toward parents and poor child rearing practices (i.e., neglect of discipline and absence of training in societal or ethical standards), frustration over the complexity of existence and vagueness of contemporary guideposts for the development of sexual identity. Other research provided the possibility of drug usage as being related to dissatisfaction with school.

Procedures

Twenty-four volunteer local high school drug users were individually interviewed with an oral questionnaire. The students' ages were in accordance with their age group, were currently enrolled as full-time students, have used drugs for at least a year at least once a week.

The interview was designed to collect data on each student's personal experience with marijuana, attitudes toward school, and the most reliable grade point average information accessible. The data was presented in tables, percentages, and descriptive form. All data was tabulated by use of a calculator to insure accuracy.

Analysis of Data

The researcher believes the results of this limited study show prolonged marijuana usage may be responsible for:

1. A detrimental effect on academic performance. Approximately 62.5 per cent of the students reported a drop in grade point average up to a full grade point.
2. Less participation in school activities. Reports show a 54.5 per cent drop in activity from those who had been previously active.
3. An increase in the number of reported friends.
4. An astronomical increase in the number of days per year of voluntary absenteeism. An overall average of all three grades showed an increase of 392 per cent.

CONCLUSIONS AND IMPLICATIONS

Although the researcher feels the acquired data is reliable, it is difficult to determine whether marijuana is responsible for the "antimotivational syndrome," and the decrease in grades or whether the

psychology of the future user is responsible for marijuana use. It is difficult to prove without reservation that marijuana is responsible for the drop in grades, even though grades dropped after marijuana use. It seems peculiar that a percentage so high (62.5 per cent) would be attributable to another cause. However, just the possibility that marijuana is responsible for hindering academic success and motivation is a powerful enough reason to suggest further study and more careful use.

RECOMMENDATIONS

It is imperative, if one puts any credence at all in Blackford's tables, that more indepth studies and more longitudinal surveys be completed in this virtually unknown area of drug use. Even if there is the remotest possibility that marijuana usage could cause irreversible brain damage is cause for alarm and more dedicated research. Unfortunately, the approximation of 28 per cent of all high school students using drugs may be low when one considers Blackford's figures of an increase of nearly 20 per cent of light marijuana use in five years.

It is recommended that longitudinal studies of this nature (i.e., testing academic performance, psychological, and physiological variations) be conducted with depth and purpose. It would be beneficial for schools to cooperate with researchers so identity will not be

disclosed, yet more reliable and accurate data could be gathered.

Drug education classes should be conclusive of all the latest research and should be offered as soon as second through fourth grades. All available information should be presented to the students so a rational decision could be made.

BIBLIOGRAPHY

BIBLIOGRAPHY

- Bech, Per, Lise Rafaelson, Ole J. Rafaelson. 1973. "Cannabis and Alcohol: Effects on Estimation of Time and Distance," Psychopharmacologia, Vol. 32, Fasc. 4, pp. 373-381.
- Camp, William L. September, 1973. "We Are Told That Marijuana is Harmless, Except . . .," Personnel and Guidance Journal, pp. 9-15.
- Cappell, Howard D., Patricia L. Pliner. December, 1973. "Volitional Control of Marijuana Intoxication: A Study of the Ability to 'Come Down'," Journal of Abnormal Psychology, pp. 428-434.
- Carder, Brooks, James Olson. January, 1973. "Learned Behavior Tolerance to Marijuana in Rats," Pharmacology, Biochemistry and Behavior, pp. 73-76.
- Cohen, Michael J., and William H. Rickles, Jr. 1974. "Performance on a Verbal Learning Task by Subjects of Heavy Past Marijuana Usage," Psychopharmacologia, Vol. 37, Fasc. 4, pp. 323-330.
- Darley, C. F., J. R. Tinklenberg, W. T. Roth, and R. C. Atkinson. 1974. "The Nature of Storage Deficits and State Dependent Retrieval Under Marijuana," Psychopharmacologia, Vol. 37, pp. 139-149.
- DeLong, Tonya L., and Bernard I. Levy. December, 1973. "Cognitive Effects of Marijuana, Described in Terms of a Model of Attention," Psychological Reports, pp. 907-916.
- Farnsworth, Dana L., M.D. March, 1973. "Drug Use for Pleasure: A Complex Social Problem," Journal of School Health, pp. 153-158a.
- Fulton, Gere B., Ph.D. June, 1973. "Current Assessment of Marijuana: A Rebuttal," Journal of School Health, pp. 60-62.
- Krug, Samuel E., and Thomas J. Henry. September, 1974. "Personality, Motivation, and Adolescent Drug Use Patterns," Counseling Psychology, pp. 440-445.
- MacDonald, A. P. Jr., Ph.D., Richard T. Walls, and Rita LeBlanc. Summer, 1973. "College Female Drug Users," Adolescence, pp. 89-96.

- Marijuana and Health, A Report to Congress from the Secretary, United States Department of Health, Education, and Welfare. Subcommittee on Alcoholism and Narcotics of the Committee on Labor and Public Welfare, United States Senate, Washington, D.C., United States Government Printing Office, 1971.
- Marijuana and Health, Second Annual Report to Congress from the Secretary U. S. Department of Health, Education, and Welfare. Subcommittee on Alcoholism and Narcotics of the Committee on Labor and Public Welfare, United States Senate, Washington, D.C., United States Government Printing Office, May 1972.
- Marijuana and Health, Third Annual Report to Congress from the Secretary U. S. Department of Health, Education, and Welfare. Subcommittee on Labor and Public Welfare, United States Senate, Washington, D.C., United States Government Printing Office, 1973.
- Martino, Edward R., R. Carroll, and V. Truss. March, 1973. "Drug Use and Attitudes Toward Social and Legal Aspects of Marijuana in a Large Metropolitan University," Counseling Psychology, pp. 120-126.
- Maugh II, Thomas H. August 23, 1974. "Marijuana: The Grass May No Longer Be Greener," Science, pp. 683-685.
- Maugh II, Thomas H. August 30, 1974. "Marijuana(II): Does It Damage the Brain?" Science, pp. 775-776.
- New Report on Marijuana Use and Its Hazards," (January, 1974), Society.
- Orcutt, James D. January, 1972. "Toward A Sociological Theory of Drug Effects: A Comparison of Marijuana and Alcohol," Sociology and Social Research, An International Journal, pp. 242-253.
- Price, Thomas E., and Ruth Hargraves. September 4, 1974. "Decriminalization of Marijuana: Dealing With the Reality, Not the Symbol," The Christian Century, pp. 822-823.
- Pearl, Joseph H., Edward F. Domino, and Phillip Rennick. 1973. "Short-term Effects of Marijuana Smoking on Cognitive Behavior in Experienced Male Users," Psychopharmacologia, Vol. 31, Fasc. 1, pp. 13-24.

- Ramsey, Alan, Ph.D. 1973. "Effects in Man," Marijuana and Health. Third Annual Report to Congress from the Secretary U. S. Department of Health, Education, and Welfare. Subcommittee on Alcoholism and Narcotics of the Committee on Labor and Public Welfare, United States Senate, Washington, D.C., United States Government Printing Office, pp. 141-160.
- Richards, Louise, Ph.D. 1973. "Extent, Patterns and Social Context of Use in the United States," Marijuana and Health. Third Annual Report to Congress from the Secretary U. S. Department of Health, Education, and Welfare. Subcommittee on Alcoholism and Narcotics of the Committee on Labor and Public Welfare, United States Senate, Washington, D.C., United States Government Printing Office, pp. 21-41.
- Roth, Walton T., Jared R. Tinklenberg, Charlotte A. Whitaker, Charles F. Darley, Bert S. Koppell, and Leo E. Hollister. 1973. "The Effect of Marijuana on Tracking Task Performance," Psychopharmacologia, Vol. 33, Fasc. 3, pp. 259-264.
- Shibuya, Ruth R., Ph.D. October, 1974. "Categorizing Drug Users and Nonusers on Selected Social and Personality Variables," The Journal of School Health, pp. 442-444.
- Spratto, George R., Ph.D. April, 1972. "A Statement Concerning the Use of Marijuana," Journal of School Health, p. 213.
- Szara, Stephen, Ph.D. 1973. "Effects in Man," Marijuana and Health. Third Annual Report to Congress from the Secretary U. S. Department of Health, Education, and Welfare. Subcommittee on Alcoholism and Narcotics of the Committee on Labor and Public Welfare, United States Senate, Washington, D.C., United States Government Printing Office, pp. 129-141.
- Taintor, Zebulon. January, 1974. "The 'Why' of Youthful Drug Abuse," Journal of School Health, pp. 26-29.
- Tec, Nechama, Ph.D. Spring, 1972. "Some Aspects of High School Status and Differential Involvement with Marijuana: A Study of Suburban Teenagers," Adolescence, pp. 1-28.
- Thomas, John A., Ph.D., Michael T. Smith, M.D., and Glenn F. Knotts, Ph.D. September, 1972. "Current Assessment of Marijuana," Journal of School Health, pp. 382-384.

- Toohy, Jack V., Ed.D. November, 1971. "An Analysis of Drug Use Behavior at 5 American Universities," Journal of School Health, pp. 464-468.
- Weitman, Morris, Ph.D., Robert O. Scheble, B.S., and Kit G. Johnson, M.D., M.P.H. May, 1974. "Survey of Adolescent Drug Use and Patterns of Drug Use," American Journal of Public Health, pp. 417-421.
- Woody, Robert H., Ph.D. April, 1972. "Therapeutic Techniques for the Marijuana User," Journal of School Health, pp. 220-224.
- Yolles, Stanley F. November, 1971. "Student Use of Drugs: Facts and Fables," The Education Digest, pp. 13-16.

APPENDIX

QUESTIONNAIRE

I. Use of Marijuana

- A. When did you first begin using marijuana?
- B. How many times per week do you now use marijuana?

II. School Activities Before Marijuana Usage

- A. What was your overall estimated grade point average before you started using marijuana?
- B. What school activities, sports, organizations, or honors did you participate in or receive prior to marijuana usage?
- C. How many close friends, someone you could confide in and trust completely, do you feel you had before you began using marijuana?
- D. How many times do you estimate you were absent per year from school before you began using marijuana due to:
 - 1. voluntary absenteeism?
 - 2. illness?
 - 3. other (i.e., parentally excused absence such as hunting vacation, etc.)?

III. School Activities After Marijuana Usage

- A. What is your overall estimated grade point average now that you have been using marijuana?
- B. What school activities, sports, organizations, or honors are you currently participating in and or have received since you have been using marijuana?
- C. How many close friends, someone you can confide in and trust completely, do you feel you have now since you have been using marijuana?
- D. How many times do you estimate you have been absent per year from school since you have been using marijuana due to:
 - 1. voluntary absenteeism?
 - 2. illness?
 - 3. other (i.e., parentally excused absence such as hunting, vacation, etc.)?

IV. Post-high School Plans

What, if any, are your post-high school plans?