The Effect of a Drug Education Program Upon Student Drug Knowledge, Drug Usage, and Psychological States

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PREFACE

In August, 1972, the Law Enforcement Assistance Administration awarded to Mecklenburg County a $287,742 discretionary grant (72-DF-94-0058) to help support the first 18 months of the community's Comprehensive Drug Abuse Prevention Program. This grant was followed up by two State Block grants awarded by the State's Law and Order Division to help support an additional year of the comprehensive program. One grant (amounting to $220,972) was awarded to Mecklenburg County for continuing the prevention activities included in the discretionary grant. The other State Block grant was awarded to the City of Charlotte for continuing the enforcement activities included in the discretionary grant. The Charlotte Drug Education Center, Inc. conducted those activities in the grants that were related to reducing one's propensity to abuse drugs. Estimating the impact of these activities upon the propensity of junior and senior high school students to abuse drugs is the purpose of this paper.

The Charlotte Police Department conducted those activities related to reducing the supply of illicit drugs. Their impact on supply is explored in another paper.

During a research effort that spans two years, the list of people who contribute to the final product becomes too long to recognize adequately everyone who helped. Dr. Jonnie H. McLeod, Director of the Charlotte Drug Education Center, was steadfast in her determination to

have this evaluation completed and opened the doors to the necessary data. Many people helped with the 1972 and 1974 school surveys, which provided the bulk of the data used. Wayne C. Church, Les Bobbit, and George Powell, all with the Charlotte-Mecklenburg Schools, provided background information and cleared the surveys with the school administration. The staff and the volunteers of the Drug Education Center administered the surveys and prepared them for keypunching. Rostyk Lewyckyj, Janet Faltz, and Tom Averette, of the UNC Computation Center, did the computer programming. We would also like to thank the students who shared with us their feelings and experience with drugs so that we might learn from them.

Several grants from the Law Enforcement Assistance Administration supported the data collection and analysis. The 1972 survey costs were paid by discretionary grant NI 71-020. The 1974 survey costs were paid by a State Block grant from the North Carolina Division of Law and Order, 06-131-373-11. Funding for the analysis and report writing came partly from the State Block grant and partly from another LEAA discretionary grant, 73-NI-04-0002.

At the Institute of Government, several people worked with data analysis and report preparation. Mary Jon Lloyd and Lee Viersen spent many days manning the calculators, Ronald A. Boykin worked with the Drug Education Center staff to document the program being evaluated and corrected keypunch and coding errors. Once the report was in draft form, Ted Clark designed the cover and prepared the figures, Carolyn Haith did the typing, Mary Jon Lloyd proofed the paper, Douglas R. Gill critiqued it, and Jack Atwater supervised the printing. Finally, we

would like to thank Douglas R. Gill for the many times that he provided advice during the course of this project and for administering the grants that supported this project.

Introduction

In Charlotte-Mecklenburg, the local program developed to cope with drug abuse has three major components -- reducing the propensity of individuals to become drug abusers, reducing the availability of illicit drugs, and rehabilitating drug abusers. The Charlotte Drug Education Center has assumed primary responsibility for reducing the propensity of individuals to misuse drugs. During the past two years, about 40% of the Drug Education Center's effort has been directed toward the students in junior and senior high schools. Two earlier reports[1] compared behavioral and attitudinal changes in students who participated in several types of rap and Ombudsman groups with students in control groups. This report broadens the focus from students who actively participated in selected rap and Ombudsman groups to all the students enrolled in a school and looks at whether there has been a measurable change in the entire student body of those schools that participated in the Drug Education Center program. The program impacts expected are changes in reported drug usage, drug knowledge, and selected psychological states.

Drug Education Center activities can be divided into five broad categories. Each of these categories is listed below, along with the total portion of Drug Education Center effort estimated to be allocated to it:[2]

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[1]Gloria A. Grizzle, The Effect of Drug Education Groups Upon Attachment to School (Chapel Hill, N.C.: Institute of Government, February 15, 1974) and The Effects of Drug Education Groups: Measuring Changes in Attitudes (Chapel Hill, N.C.: Institute of Government, April 30, 1974).

[2]These estimates were made by Dr. Jonnie H. McLeod, Director of the Charlotte Drug Education Center.

(1).	Better parent-child communication	22%
(2).	Support in the schools	26%
(3).	Opportunities to experience success	32%
(4).	Programs for adults	11%
(5).	Building community resources	9%

Projects included in parent-child communication, adult programs, and building community resources served the entire community. Part of the support in schools and the opportunity to experience success were also made available on a communitywide basis. These projects included the natural high contest, sidewalk education, and workshops for teachers and school principals. But a part of the projects included in these two categories, amounting to some 40% of the total of the Drug Education Center effort (at a cost of about $150,000 for the two-year period), was restricted to thirteen public and one private school. The fourteen schools were designated as experimental schools and had rap and Ombudsman groups, training for volunteer counselors, student-to-student instruction, and opportunities for constructive activities that the twelve schools designated as controls did not have.[3]

This paper looks at how reported drug usage, drug knowledge, and attitudes of students in the experimental schools changed over a two-year period compared with the changes for students in the control schools. A change in the experimental schools relative to that of the control schools makes the assumption that the drug education program caused the change a reasonable one. But the experimental and control schools

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[3]For a description of each of the components of the Drug Education Center program, one should read An Approach to Drug Education (Charlotte, N.C.: Charlotte Drug Education Center, 1973).

were not selected on a random basis and students were not assigned to those schools on a random basis. To say that the drug education program is the cause, we must be able to discount other causes that also seem probable. How the experimental and control schools changed during the two-year period is first summarized below. Why these changes occurred is discussed in subsequent sections.

What Changes Occurred in the Experimental Schools Compared to the Control Schools?

Two questionnaires -- one administered in March of 1972 and the other administered two years later -- provided the data discussed in this section. Each of these questionnaires was administered to all junior and senior high school students in the experimental and control schools who were present the day the questionnaire was scheduled and who were willing to respond to the questionnaire. For the 1972 survey, 88.1% of students enrolled in the experimental schools responded to the questionnaire; and 85.2% of students enrolled in the control schools responded. For the 1974 survey, the percentages of students responding for the experimental and control schools were 78.9% and 83.5%, respectively.

Change in Psychological States

The Drug Education Center's program aimed to reduce drug usage by reducing a student's desire to misuse drugs, not by reducing his opportunity to get drugs. It was assumed that students who were in certain psychological or sociological states had a higher risk of misusing drugs than students who were not in those states.[4] The immediate objective of

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[4]The model hypothesizing the relationship between these high-risk states and drug usage was developed by the Community Drug Action Committee in October, 1971, and is shown in Figure A of the appendix. The Drug Educa ion Center selected from among those predisposing states in Figure A eight states that it believed its program could affect.

the drug education program was to move some of the students in the experimental schools out of eight high-risk states. These states were rebellion, lacking attachment to school, lacking commitment, boredom, having a poor parent-child relationship, having a poor self-image, feeling hopeless and unable to cope, and feeling pressured by their peers. It was assumed that having fewer students in these high-risk states would in turn result in fewer students who misuse drugs.

Both the 1972 and 1974 surveys contained a battery of questions that permitted estimating the number of students who were in each of 15 hypothesized high-risk states.[5] Table 1 shows the average percentage of students who were in each of these states in 1972 and in 1974 for the 14 experimental schools and the 12 control schools. One can see from this table, for example, that there was no change in the percentage of experimental school students who lacked commitment. The percentage of control school students lacking commitment dropped from 6.8% to 6.4%, an improvement of .4%. The control schools did better that the experimental schools in reducing the percentage of students who lack commitment.

Students in the experimental schools showed an improvement relative to the control school in only two of the eight states. They improved by .9% in parent-child relationship and by 1.3% for rebellion. For the other six states that the drug education program sought to affect, the control school students improved over the experimental school students by an amount ranging from .1% to .7%. For the seven states that were measured by not designated as objectives of the drug education program, the experimental schools did better in four instances and the control schools did better in three instances.

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[5]The method of scoring responses to the questions and assigning students to these states is described in Appendix A.

Table 1

CHANGE IN PERCENTAGE OF STUDENTS IN SELECTED PSYCHOLOGICAL/SOCIOLOGICAL STATES, COMPARING EXPERIMENTAL WITH CONTROL SCHOOLS

State	Year	Experimental %	Experimental Change	Control %	Control Change	Change Difference
Lacks commitment [1,2]	1972	6.7	0.0	6.8	0.4	- 0.4[c]
	1974	6.7		6.4		
Lacks school attachment [2]	1972	6.9	1.2	7.3	1.7	- 0.5[c]
	1974	5.7		5.6		
Poor parent relationship [1,2]	1972	57.7	2.0	57.7	1.1	0.9[e]
	1974	55.7		56.6		
Hopelessness [1]	1972	32.3	.8	31.6	1.5	- 0.7[c]
	1974	31.5		30.1		
Boredom [1,2]	1972	18.2	1.6	18.2	2.1	- 0.5[c]
	1974	16.6		16.1		
Rebellion [2]	1972	19.9	1.1	18.7	-0.2	1.3[e]
	1974	18.8		18.9		
Poor self-image [1,2]	1972	23.5	1.9	23.0	2.0	- 0.1[c]
	1974	21.6		21.0		
Peer pressure [1,2]	1972	29.0	1.3	28.8	1.5	- 0.2[c]
	1974	27.7		27.3		
Ghetto milieu	1972	1.4	0.7	1.1	0.5	0.2[e]
	1974	0.7		0.6		

State	Year	Experimental %	Experimental Change	Control %	Control Change	Change Difference
Incohesive family life	1972	29.7	-0.8	24.9	-2.1	1.3[e]
	1974	30.5		27.0		
Parents abuse alcohol	1972	8.8	0.3	8.2	-0.1	0.4[e]
	1974	8.5		8.3		
Illness	1972	5.4	-1.3	5.0	-1.1	- 0.2[c]
	1974	6.7		6.1		
Loneliness	1972	38.9	3.1	38.1	3.5	- 0.4[c]
	1974	35.8		34.6		
Too much pressure	1972	30.4	-0.9	31.1	-0.8	- 0.1[c]
	1974	31.3		31.9		
Physician prescribes pills	1972	9.0	-5.9	8.9	-6.0	0.1[e]
	1974	14.9		14.9		

[1] Designated as an objective of the LEAA discretionary grant running from August, 1972 thru January 31, 1974.

[2] Designated as an objective of the LEAA state block grant running from February 1, 1974 thru January 31, 1975.

[c]Students in control schools did better than students in experimental schools.

[e]Students in experimental schools did better than students in control schools.

Experimental Schools: N= 13,919 in 1972 and 12,284 in 1974.

Control Schools: N= 11,657 in 1972 and 11,940 in 1974.

Change in Drug Knowledge

Increasing students' knowledge about drugs was another program objective. Thirteen questions (numbered 65 through 77 on the 1974 survey instrument) were included in both questionnaires to assess drug knowledge. The average percentage of questions answered correctly by students in experimental schools rose slightly from 38.0% in 1972 to 39.1% in 1974 (see Table 2). For the control schools, the average percentage answered correctly rose from 39.3% to 39.5%. Relative to control school students, experimental school students improved by .9%.

It should be noted that beliefs about the role that drug knowledge plays in preventing drug abuse changed during the two years that the program was being implemented. When program objectives were first formulated in the spring of 1972, it was widely assumed that providing more information about the pharmacology and physiological effects of drugs (i.e., "teaching drugs") would make students aware of the risks involved and reduce the number of students willing to experiment with drugs. As the literature suggesting that teaching drugs per se might in fact be counterproductive began to mount,[6] the Drug Education Center de-emphasized providing drug information and concentrated more of its energies upon humanistically oriented activities (e.g., the helping relationship and decision-making skills).

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[6]See, for example, National Commission on Marihuana and Drug Abuse, Drug Use in America: Problem in Prespective (Washington, D.C.: U.S. Government Printing Office, March, 1973), pp. 357-8; Jerry M. Lewis, John T. Gossett, and Virginia Austin Phillips, "Evaluation of a Drug Prevention Program," Hospital and Community Psychiatry, 23:4 (April, 1972), pp. 124-6; John D. Swisher and James L. Crawford, Jr., "An Evaluation of a Short-Term Drug Education Program," The School Counselor (March, 1971), pp. 265-72; Sue C. Weaver and Forest S. Tennant, Jr., "Effectiveness of Drug Education Programs for Secondary School Students," American Journal of Psychiatry, 130:7 (July, 1973), pp. 812-14.

Table 2

CHANGE IN AVERAGE DRUG KNOWLEDGE SCORE,
COMPARING EXPERIMENTAL WITH CONTROL SCHOOLS

	Year	Experimental		Control		Change
		%	Change	%	Change	Difference
Score	1972	38.0	-1.1%	39.3	-0.2%	0.9%
	1974	39.1		39.5		

Change in Drug Usage

Although reducing students' desire to use drugs by providing drug information and moving some students out of high-risk states were immediate program objectives, these objectives were not ends in themselves. They were the means through which the program sought to prevent drug abuse. Several dimensions of the change in drug usage are summarized in Tables 3 through 7 -- current frequent usage, current usage, remission, never used, and available but not used.

Opportunity to get drugs is one factor that figures into whether people use drugs. Table 3 focuses upon students who said they could get drugs if they had the money and if they wanted them but had not used drugs within the last year. These students presumably had the opportunity but not the desire to use drugs. In all cases, there was a lower percentage of students who had opportunity but not desire in 1974 than in 1972. The decrease in the percentage was lower for the experimental schools than for the control schools. Relative to the control schools, the experimental schools showed an improvement of 2.8% for marijuana and 2.1% for other drugs.

Another way of looking at the effect of the drug education program is to examine the changes in the percentage of students who report never having used a given drug. Reflected in these figures would be students who had not used a drug in 1972 but who would have by 1974 had there been no drug program. Not captured in these figures are those students who had used a drug but stopped using it because of the program. In every instance but one a lower percentage of students did not use drugs in 1974 than in 1972. The one exception was inhalant usage in the

Table 3

CHANGE IN PERCENTAGE OF STUDENTS REPORTING ACCESS TO DRUGS BUT NOT USING THEM, COMPARING EXPERIMENTAL WITH CONTROL SCHOOLS

Drug	Year	Experimental		Control		Change
		%	Change	%	Change	Difference
Marijuana	1972	35.3	4.0	37.8	6.8	2.8
	1974	31.3		31.0		
Other Drugs	1972	33.5	0.3	36.4	2.4	2.1
	1974	33.2		34.0		

Table 4

CHANGE IN PERCENTAGE OF STUDENTS REPORTING HAVING NEVER USED DRUGS, COMPARING EXPERIMENTAL WITH CONTROL SCHOOLS

Drug	Year	Experimental		Control		Change
		%	Change	%	Change	Difference
Marijuana	1972	74.7	15.1	72.5	15.8	.7
	1974	59.6		56.7		
Alcohol	1972	53.3	2.5	50.2	2.2	- .3
	1974	50.8		48.0		
Hallucinogen	1972	87.8	2.5	85.5	2.7	.2
	1974	85.3		82.8		
Amphetamine	1972	84.4	3.7	83.2	4.7	1.0
	1974	80.7		78.5		
Barbiturate	1972	87.7	5.2	86.0	5.8	.6
	1974	82.5		80.2		
Opiate	1972	91.9	0.1	90.7	0.3	.2
	1974	91.8		90.4		
Inhalant	1972	79.8	- 1.0	79.9	1.3	2.3
	1974	80.8		78.6		

experimental schools, where the percentage of students reporting having never used that drug type actually increased from 79.8% to 80.8%. For six of the seven drug types, experimental school students improved relative to control school students. The size of the improvement ranged from .2% for hallucinogens and opiates to 2.3% for inhalants. For alcohol, the seventh drug type, the change favored the control schools by .3%.

A more direct approach in determining the effect of the drug program upon drug usage is to look at the change in the percentage of students who report that they have used drugs within the last month. In only one instance -- the percentage of control students who reported using hallucinogens during the past month -- did usage actually decline. The control-school change was more favorable than the experimental-school change for hallucinogens by 1.0%. Current alcohol usage increased 2.9% for both experimental and control schools. Changes in current usage of marijuana, amphetamines, barbiturates, opiates, and inhalants favored the experimental schools (Table 5).

Current usage might include students who are experimenting with drugs but who will not continue to use them as a substitute for coping with their problems. Perhaps a more appropriate measure of drug misuse would be drug usage that is both current (occurring within the last month) and frequent. Here again, the control schools showed an absolute decrease in the percentage of students reporting hallucinogen usage and a relative improvement compared with the change reported for the experimental schools. For all other drug types, the experimental schools improved relative to the control schools. The greatest relative improvement, amounting to 1.1%, was for students reporting that they used alcohol daily or at least several times a week. (Table 6)

Table 5

CHANGE IN PERCENTAGE OF STUDENTS REPORTING CURRENT DRUG USAGE, COMPARING EXPERIMENTAL WITH CONTROL SCHOOLS

Drug	Year	Experimental		Control		Change
		%	Change	%	Change	Difference
Marijuana	1972	13.4	-10.6	15.0	-11.0	.4
	1974	24.0		26.0		
Alcohol	1972	44.5	- 2.9	47.6	- 2.9	0.0
	1974	47.4		50.5		
Hallucinogen	1972	4.4	- 0.4	5.7	0.6	-1.0
	1974	4.8		5.1		
Amphetamine	1972	4.6	- 0.9	5.0	- 1.2	.3
	1974	5.5		6.2		
Barbiturate	1972	3.5	- 1.6	3.9	- 2.4	.8
	1974	5.1		6.3		
Opiate	1972	1.8	- 0.1	1.7	- 0.6	.5
	1974	1.9		2.3		
Inhalant	1972	4.0	0.0	3.5	- 0.7	.7
	1974	4.0		4.2		

Table 6

CHANGE IN PERCENTAGE OF STUDENTS REPORTING CURRENT FREQUENT DRUG USAGE, COMPARING EXPERIMENTAL WITH CONTROL SCHOOLS

Drug	Year	Experimental		Control		Change
		%	Change	%	Change	Difference
Marijuana	1972	6.5	- 6.5	8.0	- 6.7	.2
	1974	13.0		14.7		
Alcohol	1972	8.4	- 0.2	8.4	- 1.3	1.1
	1974	8.6		9.7		
Hallucinogen	1972	1.6	0.0	2.1	0.2	- .2
	1974	1.6		1.9		
Amphetamine	1972	1.9	0.0	1.7	- 0.5	.5
	1974	1.9		2.2		
Barbiturate	1972	1.3	- 0.5	1.3	- 1.1	.6
	1974	1.8		2.4		
Opiate	1972	0.7	0.0	0.7	- 0.2	.2
	1974	0.7		0.9		
Inhalant	1972	1.2	0.2	0.9	0.0	.2
	1974	1.0		0.9		

Experimental Schools: N= 13,919 in 1972 and 12,284 in 1974.

Control Schools: N= 11,657 in 1972 and 11,940 in 1974.

One final effect of the program could have been that students already using drugs stopped using them. Table 7 shows the percentage of students who said that they had used a particular drug type in the past but that they had not used that drug within the last year. The findings for this dimension of change in drug usage do not fit the pattern set for the other dimensions. In every category, a higher percentage of students reported having stopped using drugs in 1974 than in 1972. The experimental schools improved relative to the control schools only for marijuana and opiates. The control schools did better for hallucinogens, amphetamines, barbiturates, and inhalants (Table 7).

We might expect that a drug education program would have one or more of these effects upon drug usage: (1) increase the proportion of people who never experiment with drugs, (2) decrease the proportion of people who use drugs frequently, and (3) increase the proportion of drug users who stop using drugs. Several statements about how student drug usage in the experimental schools changed compared with that in the control schools are consistent with the data presented in tables 3 through 7. From 1972 to 1974, the experimental schools retained a higher proportion of their students in the status of nonusers than did the control schools for all drug types except alcohol. Again with one exception (hallucinogens), the experimental schools improved relative to the control schools in both the percentage of students reporting having used drugs in the past month and the percentage reporting frequent usage within the past month. Among the largest differences favoring the experimental schools were the percentages of students who said they knew how to get drugs if they wanted them but had not used them in the past year. But, for four drug types (hallucinogens, amphetamines, barbiturates,

Table 7

CHANGE IN PERCENTAGE OF STUDENTS REPORTING HAVING STOPPED USING DRUGS, COMPARING EXPERIMENTAL WITH CONTROL SCHOOLS

Drug	Year	Experimental		Control		Change
		%	Change	%	Change	Difference
Marijuana	1972	2.9	- 1.5	3.3	-1.3	-.2
	1974	4.4		4.6		
Hallucinogen	1972	1.7	- 1.3	2.1	-1.9	.6
	1974	3.0		4.0		
Amphetamine	1972	2.4	- 1.3	2.9	-1.6	.3
	1974	3.7		4.5		
Barbiturate	1972	1.8	- 1.5	1.9	-1.6	.1
	1974	3.3		3.5		
Opiate	1972	0.9	- 0.9	1.5	-0.8	- .1
	1974	1.8		2.3		
Inhalant	1972	7.6	- 0.5	7.7	-0.7	.2
	1974	8.1		8.4		

and opiates), the change in the percentage of students who stopped using drugs was greater for control schools than experimental schools.

Looking at the several dimensions of drug usage by drug type, one can see that for marijuana the experimental schools improved compared to the control schools in every category -- available but not used, current usage, current frequent usage, remission, and never used. In terms of opiate usage, the experimental schools also improved compared to control schools in all the categories for which usage of that drug was measured. Changes in amphetamines, barbiturates, and inhalants favored the experimental schools for current usage, current frequent usage, and never used but not for remission. Changes in current frequent usage of alcohol favored the experimental schools; current usage changes were the same for both experimental and control schools; and changes in the percentage who had never used alcohol favored the control schools. Finally, changes in hallucinogen usage favored the control schools in three of four categories, the exception being remission.

Generally, a higher proportion of students in both the experimental and control schools reported using drugs in 1974 than in 1972. There are two exceptions to this generalization. Experimental schools bucked the general trend in the case of inhalants. Reported current frequent usage in the experimental schools decreased from 1.2% to 1.0%; current usage remained stable at 4.0%; and the percentage of students reporting never having used inhalants rose from 79.8% to 80.8%. Use of hallucinogens was the exception for the control schools. Current frequent usage declined from 2.1% in 1972 to 1.9% in 1974 and current usage declined from 5.7% to 5.1%.

Summary

These data from surveys taken two years apart suggest that the drug education program was successful in reducing drug usage and increasing drug knowledge. The data also suggest that the program was not successful in moving students out of selected psychological states believed to be associated with drug usage. We must recall, however, that the experimental and control schools were not selected on a random basis and students were not assigned to the schools on a random basis. Pupil assignments were based upon where they lived and which school they needed to go to for the school system to maintain an acceptable racial balance in each school.

Without random assignment, we cannot be assured that the changes reported were caused by the drug education program and not by some other factor. In the next section, we consider several factors that might also have affected the changes that occurred in drug usage, drug knowledge, and psychological states.

Were the Changes Reported Caused by the Drug Education Center's Program?

A number of factors might have affected the prevalence of drug usage in Charlotte-Mecklenburg schools in 1972 and 1973. Among these factors are a change in the penalties for possessing some drugs, school redistricting, a change in the race-grade-sex composition of the student body, the school atmosphere, the existence of another drug education program, and the maturation of the drug usage phenomenon. Other factors might not have affected the real prevalence of drug usage but might have affected the extent to which that usage was reported. These possible influences include a change in the percentage of students who did not respond to the questionnaire, a change in the trust level of students who did respond, and measurement error resulting from invalidity or unreliability of the survey instrument. Each of these possibilities is considered below.

Changes in Drug Laws

Two changes in the North Carolina Controlled Substances Act might have affected one's perception of the risk involved in using illicit drugs and might thereby have affected current drug usage. On April 24, 1972, amphetamines were reclassified as a schedule II drug, changing the possession of amphetamines from a misdemeanor to a felony. On January 1, 1974, the ceiling on the quantity of marijuana that could be possessed and still classified as a misdemeanor was raised from 5 grams to 28 grams (one ounce). Although fewer people might have been willing to use amphetamines and more people might have been willing to use marijuana

as a result of these changes in the law, there is no reason to believe that the impact upon students in the experimental schools would have been different from the impact in the control schools.

This same logic applies to other events external to the school system. Examples of other events affecting drug usage would be the increased effort by the local police to arrest users and sellers, the opium ban in Turkey, and the stepped up enforcement effort at the national level. There is no reason to believe that these events would affect the experimental schools any differently than they would affect the control schools.

School Redistricting

The Charlotte-Mecklenburg schools have been under the gun of court-ordered integration during the entire history of the Drug Education Center program. Continual changes in pupil assignment plans to maintain an acceptable racial balance in each school have caused a feeling of great instability among residents whose children attend the public schools. One change in school redistricting might be reasonably expected to affect the prevalence of drug usage reported in the experimental schools compared to the control schools. By the 1973-74 academic year, one of the experimental schools, under the pupil assignment plan that existed for the 1972-73 academic year, would have become more than 50% black. After several months of controversy, the decision was made to increase the size of the student body by busing in white students. The method devised for selecting the students to be bused was to draw by lot a number of quarter grids from a predominantly white section of the city and to bus all children in the affected grades who lived on the quarter grids drawn.

It might be assumed that the anxiety evidenced by the parents affected by the redistricting would be carried into the school by the students. Further, the students' attitudes about themselves and their school might change, leading to a change in drug usage reported in the questionnaire. Two methods were used to determine whether school redistricting had affected questionnaire results.

First, we broke the total number of students who filled in the questionnaire into 236 units. Each unit consisted of all the respondents who were in a particular grade and of a particular race and sex at each school. For example, one unit might have included all black, male, ninth graders who attended school X. For each unit, the change between 1972 and 1974 in the percentage of students who reported drug usage was tabulated. Using multiple regression, we estimated what the change was expected to be, based upon the sort of drug education program it had received, its age-race-sex composition, and two characteristics of the schools. We compared the expected change to the actual change for each unit and isolated the extreme units. A unit was considered extreme if its expected percentage was much higher or lower than its actual percentage.

The only pattern of extreme differences that we could detect for this experimental school was for black males in one grade who had not attended that school the previous year (N=18). Drug usage for this unit was higher than expected for 8 out of the 29 drug usage categories. We found similar patterns in other schools not affected by school redistricting.

Next we took the percentages for the experimental school as a whole and compared them with the average percentage for all the experimental schools. There were a total of 45 categories, including 15 psychological

states, 1 drug score, and 29 types of drug usage. The change for the experimental school was better than average for 24 categories, the same for 1 category, and worse than average for 20 categories. Eighty-four percent of the deviations were within three percentage points of the average for all the experimental schools. A disproportionate number of the better-than-average deviations occurred in the psychological states and the remission categories. A disproportionate number of the worse-than-average deviations occurred in the drug usage categories. School districting probably had no substantial effect upon the change in drug usage reported for all experimental schools compared to control schools. But if there was any effect, the distribution of these deviations suggests that that effect would have been to make the change in experimental school usage look worse that it actually was. It seems unlikely that school redistricting biased the survey results in favor of the experimental schools.

Race-Grade-Sex Composition

Not surprisingly, reported drug usage varies by grade, by race, and by sex. Older students use drugs more than younger students. Whites use some drugs more than blacks, and blacks use other drugs more than whites. A higher percentage of males than females typically report using drugs. More unexpected findings were that the change in drug usage between 1972 and 1974 also varied by grade, race, and sex. Upper grades increased their drug usage during the two-year period more than the lower grades did. The change in usage between the sexes was present but too small to matter. For some drug categories, blacks increased usage at a faster rate, while whites increased usage at a faster rate for other drug categories.

What these differential change rates mean is that a shift in the proportion of students between 1972 and 1974 who are in the lower grades or who are black could result in a change in the total drug usage reported for either the experimental or the control schools. If, for example, a higher proportion of control students were in the upper grades in 1974 than in 1972, the control drug usage rate might show a greater increase than it would have had the proportions remained the same for both years. Table 8 shows that the proportion of experimental students who were eighth and ninth graders decreased by 1.0% and the upper grades increased by that amount. The proportion of control students who were tenth graders decreased by 2.7%, with the increase shifting to both the junior high school grades and the eleventh and twelfth grades. These shifts in distribution of students by grade would favor the control schools rather than the experimental schools.

The more favorable change in drug usage reported for the experimental schools was not caused by a change in the distribution of students across grades and between sexes. The effect as a result of a change in the racial breakdown is a more complicated one. In control schools, the proportion of respondents who were black increased by 1.5%, compared with a .7% increase for the experimental schools. Relative to the experimental schools, the proportion of control school responses by blacks was .8% (1.5% - .7%) greater in 1974 than in 1972. For those drug usage categories in which blacks increased their reported drug usage faster than did whites, this shift would favor the experimental schools.

Table 9 shows that blacks increased their reported usage faster than whites in 9 of 29 drug usage categories. The experimental schools

Table 8

CHANGE IN AGE, RACE, SEX DISTRIBUTIONS 1972 to 1974

Characteristic	Experimental Schools			Control Schools		
	1972%	1974%	Increase (Decrease)	1972%	1974%	Increase (Decrease)
Race						
Black	28.2%	28.9%	.7%	25.4%	26.9%	1.5%
White	71.8	71.1	(.7)	74.6	73.1	(1.5)
Sex						
Male	48.5	48.7	.2	49.0	49.1	(.1)
Female	51.5	51.3	(.2)	51.0	50.9	.1
Grade						
7th	20.0	20.0	.0	17.6	18.9	1.3
8th & 9th	37.3	36.3	(1.0)	34.4	35.0	.6
10th	16.1	16.3	.2	19.0	16.3	(2.7)
11th & 12th	26.5	27.4	.9	29.0	29.8	.8

Table 9

RELATIVE INCREASE IN DRUG USAGE BY RACE

	USAGE				
Drug	Current Frequent	Current Remission		Never Used	Available but not used
Marijuana	W * e	B e	W e	B * e	W * e
Alcohol	W * e	W *		W *	w * e
Hallucinogen	B	B	B *	W * e	
Amphetamine	W * e	W * e	B	W * e	
Barbiturate	W e	W * e	B *	W * e	
Opiate	W e	W e	B * e	W * e	
Inhalant	B e	W e	W	W e	

B means that blacks increased usage faster (or reduced usage slower) than whites between 1972 and 1974.

W means that whites increased usage faster (or reduced usage slower) than blacks between 1972 and 1974.

* means that the coefficient for the race variable for a drug usage category was large enough to be statistically significant at the .05 level.

did better than the control schools in 21 of the 29 categories. In only 4 of these 21 categories did the shift in racial composition favor the experimental schools. In 2 of these 4 categories the effects of race upon change in drug usage rate were not large enough to be statistically significant.[7] For 2 other categories the effect of race was statistically significant: (1) the change in the percentage of students who had stopped using opiates and (2) the change in the percentage of students who had never used marijuana.

How much of the difference between the reduction in the percentage of students reporting never having used marijuana in the experimental schools and in the control schools could the shift in racial composition account for? For black students, the percentage reporting never having used marijuana dropped 19.2%. For white students, the percentage dropped only 14.4%, 4.8% less than for blacks. Multiplying the shift in racial composition (0.8%) by the difference in the percentage changes (4.8%), amounts to .04%. Of the 0.7% improvement in this category for experimental schools compared to control schools, the shift in racial composition can account for only .04%. For the opiate category, the amount is even smaller. Only .006% of the .1% improvement in this category can be explained in terms of a shift in the racial composition of the control group.

The relative improvement in drug usage rates reported for experimental schools compared with control schools was not caused by a shift in the age-race-sex composition of the student bodies. The proportion

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[7]These findings come from the same multiple regression equations used in exploring the effect of school redistricting. Race was used as an independent variable to explain the change in drug usage for each of the 29 categories. The size of the coefficient for the race variable and its standard error is used to determine whether a coefficient is statistically significant.

of the change in percentage of drug users that the grade and race shifts account for is very small. In most instances, the shifts that do exist favor the control schools instead of the experimental schools.

School Atmosphere

In looking at the effect of drug education upon student behavior, one might ask whether there are other factors in a student's life that are a much more powerful influence upon drug-taking behavior. Did the experimental schools do better because there was something about those schools that made them less conducive to drug-taking than was the case for the control schools? We tried to get at two school characteristics that seemed important. One characteristic is the effect that the school principal has upon teacher willingness to try new methods of communicating with students. The principal's attitude toward innovative teaching methods can set the tone for the entire school. A principal unwilling to accept the risk of trying out new approaches, we assumed, could stultify a drug education program that is based upon the humanistic approach to interpersonal relations.

To determine whether the principal's willingness to innovate had affected the change in reported drug usage at their schools, we asked a member of the school administration who knew all the principals to classify each one as being either innovative, inflexible, or neutral. We then entered these ratings as variables in the multiple regression equations formulated to account for the change in drug usage for the 236 age-grade-sex units (These units are explained in the section on school redistricting). One equation was specified to explain changes in each of the 15 psychological states, the 1 drug knowledge score, and the 29 drug usage categories. We tested the innovation and inflexibility

variables to determine whether their effect was significantly different from zero. The innovation variable was statistically significant at the .95 confidence level in only 3 of the 45 equations, and the inflexibility variable was statistically significant in only 1 of the 45 equations. We do not believe that statistical significance means that innovation or inflexibility really had an effect in these 4 instances. At the .95 confidence level, we would expect to conclude that there was statistical significance when in fact no effect existed in about 4 out of 80 cases. It is possible however, that a principal's innovativeness and inflexibility does affect the change in drug usage in a school and that our rating procedure was too crude a method to capture the essence of "innovation" and "inflexibility."

A second characteristic that seemed important was the size of the school. Much has been written about the effect that large organizations have upon an individual's feeling of belongingness. The larger the organization, the more likely a person is to feel that he is being treated merely as a number in a sea of other numbers. We hypothesized that, the larger the school, the more likely would a student feel alienated from the school and the more likely would he turn to drugs. Here again, we found the school-size variable to be statistically significant in accounting for change in drug usage and psychological states in only 4 out of 45 instances -- not often enough to support our hypothesis. This measure was probably not put to a good test. The size of public junior and senior high schools does not vary over a wide range in Charlotte-Mecklenburg. Had there been greater variability in school size, the statistical technique used might have revealed some effect of size upon change in drug usage.

We are unable to show that either the principal's attitude toward innovation and or school size had any effect upon the improvement in drug usage reported. Because of problems in measuring these two factors, we cannot absolutely rule them out as having some effect upon drug usage. We do, however, have no reason to expect that these factors would have affected the experimental schools differently from the control schools. Both the control and experimental schools are in the same size range. The median[8] size for the experimental schools is 1117; the median for the control schools is 1126. The distribution of innovative and inflexible principals favors the control schools slightly. Some 29% of experimental school principles were designated "innovative," compared to 33% for control schools. Forty-three percent of experimental school principals were designated "inflexible," compared to 33% for control schools.

Another Drug Program

During the time that the Drug Education Center program took place, a drug curriculum was also used in all the junior and senior high schools in the Charlotte-Mecklenburg school system. In the senior high schools, the drug curriculum was a part of tenth grade orientation classes. In the junior high schools, the curriculum was a part of the semester-long health class required for all seventh, eighth, and ninth graders. Although the drug curriculum was used at all the public schools in both the experimental and control groups, there was some variation in the strength of the curriculum. The primary determinant of strength was the

[8]The median is found by arraying the school enrollments from high to low and picking the enrollment figure that falls at the mid point of the array. When there is an even number of figures, the median is the average of the two middle figures.

capability of the teachers who used the curriculum. The programs designated (by school administrators) as strong appear to be evenly distributed between the experimental and control schools. It is unlikely that the drug curriculum could account for the relative improvement reported for the experimental schools.

Maturing Out of Drug Usage

When using drug usage rates at two points in time to assess the effect of a drug education program, one has difficulty in determining what the drug usage rate would have been at the second point in time had there been no drug program. We assume that the drug usage phenomenon can be represented by a curve that shows the growth and decline of drug usage over time. If the first point at which the prevalence of drug usage was measured happened to be at the peak of the growth curve, then a lower prevalence rate measured after implementing the drug program might represent a decline in drug usage that would have happened without the program. In Charlotte-Mecklenburg, the opposite change was found. The prevalence of drug usage was generally greater in 1974 (the second point in time measured) than in 1972 (the first point measured).

How do we know whether the drug program caused the increase in prevalence or whether drug usage in Charlotte-Mecklenburg is still in the growth phase of the curve and increased in spite of the drug education program? This question can be answered by comparing the change in prevalence reported by the experimental schools with those of the control schools. Tables 5 and 6 show that (hallucinogens and inhalants excepted), while the prevalence increased in both types of schools, the increase was greater in the control schools. We conclude from these data that

(1) drug usage in Charlotte-Mecklenburg was still in the growth phase between 1972 and 1974 and (2) the drug education program succeeded in reducing the rate of the increase in prevalence but not in reversing the direction of change.

We have explored several plausible reasons -- in addition to the impact of the drug education program -- that might have caused drug usage in those schools designated as experimental to change in a more favorable way than those schools designated as controls. These reasons include (1) external events affecting drug usage (such as a change in the penalty structure for possessing illicit drugs and an accelerated law enforcement effort), (2) a change in pupil assignments to schools, (3) a change in the race-grade-sex composition of the students in the experimental schools compared to the control schools, (4) the school atmosphere, (5) the existence of another drug education program operating in the same school system, and (6) the point at which Charlotte-Mecklenburg was located in 1972 on the time curve showing the growth and decline of drug usage. It is unlikely that any of these factors accounts for the improvement in drug usage prevalence in the experimental schools compared to the control schools. We turn now to a second set of factors -- those that may have affected the reported prevalence of drug usage instead of the real prevalence.

Refusals and Absentees

All the students enrolled in the junior and senior high schools did not respond to the survey. Students who were absent from class the day the survey was administered and students who chose not to fill in the questionnaire were omitted. Some of these omitted students (those who

are normally present but were absent the day of the survey) are probably, in terms of drug usage, like those students who did answer the questionnaire. Chronic absentees and students who refused to fill in the questionnaire may not be like the students who responded. If they are different, we would expect their drug usage rate to be higher than that of those who responded rather than lower.

As shown in Table 10, the chronic absenteeism and refusal rates were higher in 1974 than in 1972. Further, the increase in these rates was greater for the experimental schools than for the control schools. Chronic absenteeism and refusal rates increased from 5.4% to 12.2% of total student enrollment for the experimental schools and from 3.7% to 7.7% for the control schools. The net decrease in responses caused by a change in the chronic absentee and refusal rate was 6.8% for the experimental schools and 4.0% for the control schools, a difference of 2.8%. Did this 2.8% of the student body have a drug usage rate higher than the rate reported by the students in the experimental schools who responded to the survey in 1974? If they did, then at least some of the relative improvement in drug usage that the experimental schools showed could have resulted from omitting a greater proportion of the drug users in the experimental schools than in the control schools from the second survey. The relative change in reported usage, if such were the case, would not equal the relative change in real drug usage.

To examine this possibility, we divided the experimental schools into two categories. Schools having high increases in refusal and chronic absentee rates (the median increase was 6.7%) were compared with schools having low increases in refusal and chronic absentee rates (The

Table 10

RESPONSES AND NON-RESPONSES TO SCHOOL SURVEYS
FOR EXPERIMENTAL AND CONTROL SCHOOLS

Charlotte-Mecklenburg Junior and Senior High Schools

	1972 Survey		1974 Survey		%
	Number	% of Total	Number	% of Total	Change
EXPERIMENTAL SCHOOLS	(N=14)				
Responses	13,919	88.1%	12,284	78.9%	-9.2%
Absentees	1,493	9.5%	1,859	11.9%	+2.4%
chronic absentees	(537)	(3.4%)	(706*)	(4.5%)	(+1.1%)
normally present	(956)	(6.1%)	(1,153)	(7.4%)	(+1.3%)
Refusals	317	2.0%	1,204	7.7%	+5.7%
Not Asked to Respond	62	.4%	223	1.4%	1.0%
Total Enrollment	15,791	100%	15,570	100%	-----
CONTROL SCHOOLS	(N=12)				
Responses	11,657	85.2%	11,940	83.5%	-1.7%
Absentees	861	6.3%	1,754	12.3%	+6.0%
chronic absentees	(310)	(2.3%)	502	(3.5%)	(+1.2%)
normally present	(551)	(4.0%)	1,252	(8.8%)	(+4.8%)
Refusals	192	1.4%	603	4.2%	+2.8%
Not Asked To Respond	966	7.1%	0	0%	-7.1%
Total Enrollment	13,676	100%	14,297	100%	------

* figure based on an inferred chronic absentee rate of 38%.

median increase was 2.0%, lower than the average for the control schools). We compared the high-increase and low-increase categories in terms of the change reported for amphetamine, hallucinogen, opiate, and alcohol usage. If the 2.8% who were omitted had a higher drug usage rate than those who reported, we would expect the high-increase schools to show a more favorable change than the low-increase schools. Table 11 shows in which drug usage categories the high-increase schools did better. The high-increase category did consistently better in only one category of usage - those who reported using amphetamines, hallucinogens, and opiates over a month ago but less than a year ago. The high-increase category did not do consistently better across all usage categories for any of the four drug types. Overall, the high-increase schools did better in about half the drug usage categories, an occurrence that we would expect if the 2.8% had no higher drug usage rate than that reported by the respondents. We conclude that the shift in refusal and chronic absentee rates between 1972 and 1974 does not account for the improvement in drug usage reported for experimental compared to control schools.

Trust and Honest Answers

Another question raised in assessing the validity of drug usage that students report in questionnaires is whether students tell the truth about their drug usage. In using questionnaires administered at two points in time to estimate the impact of a drug education program, knowing the proportion of students who tell the truth is less important than knowing whether that proportion has changed between the two surveys. One might argue that in the first survey some students are afraid of getting into trouble and report that they have never used drugs when in

Table 11

CHANGES IN REPORTED DRUG USAGE IN EXPERIMENTAL SCHOOLS HAVING A HIGH INCREASE IN REFUSAL AND CHRONIC ABSENTEE RATE COMPARED WITH CHANGES IN EXPERIMENTAL SCHOOLS HAVING A LOW INCREASE IN REFUSAL AND CHRONIC ABSENTEE RATE

Change in Percentage of Usage by Increase in Refusal and Chronic Absentee Rate

	Amphetamine		Hallucinogen		Opiate		Alcohol	
Category of Usage	High Increase	Low Increase	High Increase	Low Increase	High Increase	Low Increase	High Increase	Low Increase
No Response		X		X		X		X
Never used	X		X			X	X	
Last time used								
Over a year ago		X		X		X		
Over a month ago	X		X		X			
Over a week ago	X		X			X		
Within last week				X				
Frequency of usage								
Monthly or less							X	
Weekly or several times a month							X	
Several times a week								X
Daily							T	T

An "X" recorded in a column means that the schools requested by that column experienced the more favorable change. A "T" represents a tie.

fact they have. By the time the second survey is made, these students know that nothing bad happened to the students who did report using drugs and therefore told the truth on the second survey.

This argument would be a legitimate concern if there were no control group. Since students in the control schools were administered the same questionnaire on the same dates, there is no reason to suspect that administering the first questionnaire affected student honesty in the experimental schools in any different way than it did in the control schools.

A second argument is harder to discount. That argument is that one of the effects of the humanistic approach used in the drug education program is to raise the level of trust among the student body. We did not attempt to measure trust in the survey and do not know whether such a result in fact occurred in the experimental schools. But if it did, its effect would probably be to increase the reported drug usage rate in the experimental schools, not in the control schools.

Measurement Error

In interpreting survey results, one must usually be concerned with two types of error. The first type is sampling error. Sampling error can occur whenever the results of a sample are generalized to the total population from which that sample was drawn. There are statistical methods for determining the likely size of this error, given a desired level of confidence in the results. We did not draw a sample from the student body. We gave a questionnaire to every junior and senior high school student in class on the day of the survey. In discussing findings for the population that responded, there is no sampling error because we did not draw a sample. In attempting to generalize these findings to

students who did not respond, methods used to estimate sampling error are inappropriate. So, we can forget about sampling error.

Measurement error is the second type; we can't forget about this one. Measurement error results from lack of correspondence between the concepts that we intended to measure and what we actually measured Obviously, measurement error will be more of a problem in estimating change in psychological states than in drug usage. Devising questions to measure drug usage are fairly straightforward. If you want to know whether a student has used marijuana within the last year, you can ask him, "When was the last time you used marijuana?" But if you want to know if a student feels attached to his school, one is less sure of accurately measuring this concept by asking, "Are you attached to your school?"

Even the straightforward measures of drug usage contain some error. We know that some students misread the questions and thereby give incorrect responses. And we suspect that some students deliberately misstate the extent to which they have used drugs. Is the error resulting from these sources so great that we cannot have confidence in the survey data summarizing drug usage? To get some idea of the size of measurement error from these two sources, we looked at inconsistent responses for a series of pairs of drug usage questions. We asked two questions about each of several drug types: (1) How often have you used drug X? (2) When was the last time you used drug X? Answers are inconsistent if a student says either (1) that he has never used drug X but gives some response other than never for the last time he used it or (2) that he has used drug X once or twice, occasionally, or frequently and then says that the last time he used it was never. Table 12 compares the size of these logically inconsistent responses for the two surveys.

Table 12

PERCENTAGE OF STUDENTS WHO GAVE LOGICALLY INCONSISTENT RESPONSES TO DRUG USAGE QUESTIONS, 1972 and 1974 SURVEYS

Drug Type	Have Used: Yes/ Last Time: Never		Have Used: No/ Last Time: Not Never	
	1972	1974	1972	1974
Marijuana	1.0%	1.1%	.5%	.7%
Hallucinogens	.6	.5	.4	.7
Amphetamines	1.3	1.5	.9	1.0
Barbiturates	.8	1.1	.9	1.1
Opiates	.6	.7	.4	.7
Inhalants	.7	.8	1.0	1.0

The percentage of responses that were logically inconsistent hovers around 1% for both years. The percentage averages slightly higher in 1974 (.15%) than in 1972. How much of the relative improvement in drug usage reported for the experimental schools could this shift in measurement error account for? Focusing upon the current drug usage category, one can see from Table 13 that the percentage of students stating on one hand that they have used a drug within the past month and on the other that they have never used that drug ranges from .1% to .2%. The shift from 1972 to 1974 amounts to from .0% to .1%.

Several observations about these logically inconsistent responses are appropriate in interpreting the effect that the shift in the size of inconsistent responses would have upon the size of the relative improvement shown for the experimental schools. First, the logically inconsistent responses do not reflect the total error. Students who consistently lied about their drug usage would not be included in the percentages listed in Table 12. We would expect some to consistently overstate their usage and others to consistently understate their usage, but we cannot estimate to what extent the overstaters offset the understaters. We know of no reason to believe, however, that the proportion of overstaters to understaters in the control schools compared with the experimental schools would be any different in 1974 than in 1972. (The one possible exception is a change in the trust level in the experimental schools discussed earlier. If such a change did occur, it would favor the control schools).

Second, we would expect that logically inconsistent responses would be distributed evenly over the experimental and control schools. Further, we would expect the changes in the percentage of inconsistent

Table 13

SIZE OF RELATIVE IMPROVEMENT IN REPORTED CURRENT DRUG USAGE COMPARED WITH SIZE OF SHIFT IN LOGICALLY INCONSISTENT RESPONSES

Drug Type	Logically Inconsistent Responses [Current Usage/Never] 1972	1974	shift	Relative Improvement of Experimental Group Compared to Control Group [Current Usage]
Marijuana	.2%	.2%	.0%	.4%
Hallucinogen	.1	.2	+.1	(1.0)
Amphetamines	.2	.2	.0	.3
Barbiturates	.2	.2	.0	.8
Opiates	.1	.2	+.1	.5
Inhalants	.2	.1	-.1	.7

responses to apply to both experimental and control schools as well. We do not, however, have the statistics either to confirm or disprove these expectations.

Finally, even if our expectation that the shift in the percentage of inconsistent responses was wrong and the total shift worked to the advantage of the experimental schools, this measurement error would not be large enough to make much of an impact upon the relative change in experimental compared to control school usage rates. For inhalants, the largest possible impact of the shift would be to reduce the relative improvement from .7% to .5%. For hallucinogens, the largest possible impact would be to increase the relative deterioration from 1.0% to 1.2%. For opiates, the largest possible impact would be to reduce the relative improvement from .5% to .3%.

Conclusion

Reported drug usage was generally higher in 1974 than in 1972 for both the schools that got the drug education program (experimental schools) and the schools that did not (control schools). In most drug usage categories, however, the increase in drug usage was at a lower rate for the schools that got the program. Except for hallucinogens, students in the experimental schools reported an improvement relative to students in the control schools in terms of current drug usage. Since the schools that got the drug education program were not selected randomly, we must consider the possibility that something other than the drug education program could have caused the relative improvement. We have explored a number of alternative explanations for this relative improvement and concluded that it is unlikely that they were the cause.

Having done so, we can be more confident that it was the drug education program that caused the relative improvement in drug usage reported for students in the experimental schools.

Were the Assumptions upon Which the Program Was Based Correct?

Let us now accept as valid the finding that the drug education program did result in improvement in most drug usage categories but not in the psychological states assumed to lead to drug usage. It is as important to know why a program had an impact as it is to know what the impact was. If we do not know why, we cannot have much assurance that the same program would work somewhere else, or even in the same community, under a different set of circumstances. The most critical assumptions affecting the program's logic are (1) that there are some high-risk states that increase the likelihood that a person will use drugs and (2) that a program that reduces the number of people in the states will also reduce the drug usage rate. We now question the validity of these assumptions.

The Association between Psychological States and Drug Usage

Are the psychological/sociological states believed to lead to drug usage in fact associated with drug usage? Tables 14 and 15 indicate that most of them are. If the way these states were measured is valid, we can say that in most instances students who are in one of these states are more likely to use drugs than students who are not.

Table 14

PERCENTAGE OF STUDENTS IN HIGH-RISK STATES WHO HAVE USED DRUGS COMPARED WITH PERCENTAGE NOT IN THOSE STATES WHO HAVE DONE SO

1972 SURVEY

States DEC Projects Are Most Likely to Affect	DRUG TYPE													
	Alcohol		Amphetamine		Barbiturate		Hallucinogen		Inhalant		Marijuana		Opiate	
	Not In	In	Not In	In	Not In	In	Not In	In	Not In	In	Not In	In	Not In	In
Rebellion	42.2%	60.9%	10.7%	27.7%	7.7%	21.8%	8.4%	22.6%	13.9%	32.2%	20.8%	39.5%	3.9%	14.9%
Lacks attachment to school	44.4	64.9	12.9	28.7	9.5	23.1	10.2	24.1	16.5	30.4	23.1	42.6	5.3	15.2
Lacks commitment	45.0	57.8	13.0	28.7	9.6	22.4	10.4	22.7	16.7	28.8	23.4	40.1	5.4	15.3
Boredom	43.6	56.0	11.7	24.8	8.6	19.0	9.4	19.3	15.4	27.2	21.9	36.2	4.7	12.0
Too much pressure	41.5	55.8	10.6	21.9	7.9	16.3	8.6	17.4	14.7	23.8	20.6	33.4	4.4	9.8
Poor parent-child relationship	36.0	53.2	7.5	18.9	5.6	14.1	6.1	15.0	10.8	22.5	15.8	30.9	3.0	8.2
Peer pressure	44.7	48.8	13.4	15.6	10.0	11.7	11.0	11.9	15.6	22.2	24.0	25.6	5.7	7.0
Hopelessness and inability to cope	44.8	48.0	12.7	16.9	9.2	13.2	10.2	13.3	15.0	22.8	23.5	26.6	5.0	8.4
Incohesive family life	44.0	50.8	12.9	17.2	9.3	13.5	10.2	14.1	16.3	20.7	22.5	29.8	5.0	8.8
Lonely	46.1	45.5	14.0	14.2	10.2	10.8	11.2	11.2	15.4	20.8	25.1	23.5	5.6	6.8
Poor self-image	46.4	44.3	14.4	13.0	10.7	9.7	11.6	9.8	16.3	21.5	25.4	21.6	6.0	6.2
States DEC Projects Are Least Likely to Affect														
Lives in ghetto milieu	45.9	41.0	14.1	10.1	10.5	8.8	11.3	8.6	17.6	12.3	24.5	22.6	6.0	6.6
Parents abuse alcohol	44.5	60.1	13.1	24.4	9.7	18.8	10.3	20.8	16.5	28.1	23.2	37.8	5.4	13.4
Illness	45.4	54.0	13.5	24.6	9.9	20.3	10.7	20.7	17.1	24.8	23.8	36.7	5.5	15.4
Physician prescribes diet or sleeping pills	44.6	58.1	13.0	25.2	9.7	18.5	10.3	20.2	16.4	28.0	23.3	35.9	5.2	14.9

Table 15

PERCENTAGE OF STUDENTS IN HIGH-RISK STATES WHO USE DRUGS FREQUENTLY COMPARED WITH PERCENTAGE NOT IN THOSE STATES WHO DO SO

1972 SURVEY

States DEC Projects Are Most Likely to Affect	DRUG TYPE													
	Alcohol		Amphetamine		Barbiturate		Hallucinogen		Inhalant		Marijuana		Opiate	
	Not In	In	Not In	In	Not In	In	Not In	In	Not In	In	Not In	In	Not In	In
Rebellion	6.1%	17.5%	1.7%	7.3%	1.1%	5.1%	1.7%	6.5%	1.1%	5.0%	6.1%	14.8%	1.0%	3.7%
Lacks attachment to school	7.4	20.3	2.4	7.4	1.6	4.7	2.3	7.4	1.6	5.2	7.0	17.3	1.0	3.3
Lacks commitment	7.8	16.0	2.4	7.6	1.6	5.9	2.3	7.4	1.7	4.9	7.2	16.0	1.0	3.9
Boredom	7.3	13.1	2.1	5.7	1.4	4.1	2.1	5.1	1.4	4.2	6.6	13.1	.9	2.7
Too Much Pressure	7.1	11.1	1.8	5.0	1.3	3.2	1.9	4.3	1.3	3.2	5.9	12.2	.8	2.0
Poor parent-child relationship	5.6	10.3	1.4	3.8	.9	2.6	1.4	3.5	.8	2.7	4.5	10.2	.5	1.7
Peer pressure	7.7	9.8	2.6	3.4	1.6	2.4	2.6	2.7	1.5	2.8	7.9	7.6	1.0	1.7
Hopelessness and Inability to cope	7.1	10.9	2.3	3.8	1.4	2.8	2.3	3.4	1.2	3.3	7.6	8.2	.8	2.0
Incohesive family life	7.0	12.0	2.4	4.0	1.4	3.0	2.1	4.2	1.5	2.9	6.9	10.1	.8	2.2
Lonely	8.0	8.9	2.6	3.0	1.6	2.2	2.5	2.8	1.4	2.6	8.3	6.9	1.0	1.6
Poor self-image	8.1	9.3	2.8	2.9	1.8	2.0	2.7	2.3	1.7	2.6	8.4	5.7	1.1	1.5
States DEC Projects Are Least Likely to Affect														
Lives in ghetto milieu	8.3	12.5	2.8	2.2	1.9	2.0	2.6	2.2	1.9	2.2	7.8	6.4	1.2	2.0
Parents abuse alcohol	7.7	15.4	2.4	6.6	1.6	4.9	2.3	6.5	1.6	4.9	7.2	14.6	1.0	3.8
Illness	7.9	16.0	2.5	7.8	1.6	6.2	2.4	6.5	1.7	5.1	7.4	14.2	1.0	4.5
Physician prescribes diet or sleeping pills	7.8	14.0	2.4	6.5	1.5	5.0	2.3	5.7	1.6	4.7	7.4	11.8	1.0	3.4

Further, these states show a higher association with the categories of frequent drug usage than with the categories that include anyone reporting having ever tried a drug. Tables 16 and 17 express this information in terms of relative risk.[9] The greatest association is between the state of rebellion and opiate usage. A student classified as rebellious is 4.3 times as likely to report having tried opiates and 6.5 times as likely to report having used opiates frequently.

The logic upon which this drug education program is based is that, using rebellion and opiates as an example, the drug program could move a student out of the state of rebellion and moving a student out of the state of rebellion would lower the likelihood that he would try opiates from 14.9% to 3.9% (Table 14). A good test of these assumptions would be to take a group of students who are in high-risk states and randomly assign them to two groups. One group would get the drug education program and the other would not. Pre- and posttests would be given to determine whether fewer students who moved out of the high-risk states used drugs than those who remained in high-risk states. These tests could also compare the proportion in the drug education group who moved out with the proportion in the control group who did so.

Unfortunately, our guarantee to the students that they would in no way be identified made it impossible to link an individual's 1972 responses to his 1974 responses. We had to fall back to a cruder method of linking (a) the drug education program to a reduction in the percentage of students in high-risk states and (b) the reduction in the percentage

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[9]Relative risk is calculated by multiplying the number of students in a high-risk state who use a drug (a) times the number not in a high-risk state who do not use a drug (d) and dividing this product by the number in a high risk state who do not use a drug (b) times the number not in a high-risk state who do use a drug (c). The equation is, r=ad/bc.

of students in high-risk states to a reduction in the drug usage rate.

The method used to link the drug education program to movement out of the high-risk states was to compare the average change of the percentage of students in those states in experimental schools with the change in control schools. As previously noted (Table 1), the experimental schools improved relative to the control schools in only two of the eight states for which improvement was expected.

In an attempt to relate a change in the percentage of students in high-risk states to a change in drug usage rates, we broke the total number of control and experimental students down into 236 units. For each race-sex-grade category, we matched 1974 survey results with 1972 survey results. We then substracted 1974 percentages for each unit from 1972 percentages and linked changes in psychological state percentages to drug usage percentages for each unit. To find out whether changes in drug usage followed changes in psychological states, we set up 29 equations that would use changes in the 15 psychological states to account for changes in drug usage.

For 21 of the 29 drug usage categories, the amount of change that the psychological states accounted for is significantly (at the .95 confidence level) greater than zero. This finding of itself would not be unusual even if there were in fact no relationship at all between changes in psychological states and changes in drug usage. With 15 independent variables, we might expect an equation to fit the data enough to be statistically significant no matter what the variables were, even if the variables used had no possible relationship to drug usage. Two observations lead us to conclude that the statistical fit of the data to the equation is not simply an artifact

Table 16

RISK THAT PERSONS IN HIGH-RISK STATES HAVE USED DRUGS RELATIVE TO RISK THAT PERSONS NOT IN THOSE STATES HAVE DONE SO

1972 SURVEY

States DEC Projects Are Most Likely to Affect	Relative Risk By Drug Type						
	Alcohol	Amphetamine	Barbiturate	Hallucinogen	Inhalant	Marijuana	Opiate
Rebellion	2.1	3.2	3.3	3.2	2.9	2.5	4.3
Lacks attachment to school	2.3	2.7	2.9	2.8	2.2	2.5	3.2
Lacks commitment	1.7	2.7	2.7	2.5	2.0	2.2	3.2
Boredom	1.6	2.5	2.5	2.3	2.1	2.0	2.8
Too much pressure	1.8	2.4	2.3	2.2	1.8	1.9	2.3
Poor parent-child relationship	2.0	2.9	2.8	2.7	2.4	2.4	2.9
Peer pressure	1.2	1.2	1.2	1.1	1.5	1.1	1.2
Hopelessness and inability to cope	1.1	1.4	1.5	1.3	1.7	1.2	1.8
Incohesive family life	1.3	1.4	1.5	1.5	1.3	1.5	1.8
Lonely	1.0	1.0	1.1	1.0	1.4	.9	1.2
Poor self-image	.9	.9	.9	.8	1.4	.8	1.0

States DEC Projects Are Least Likely to Affect	Alcohol	Amphetamine	Barbiturate	Hallucinogen	Inhalant	Marijuana	Opiate
Lives in ghetto milieu	.8	.7	.8	.7	.7	.9	1.1
Parents abuse alcohol	1.9	2.1	2.2	2.3	2.0	2.0	2.7
Illness	1.4	2.1	2.3	2.2	1.6	1.8	3.1
Physician prescribes diet or sleeping pills	1.7	2.3	2.1	2.2	2.0	1.8	3.2

Table 17

RISK THAT PERSONS IN HIGH-RISK STATES HAVE USED DRUGS FREQUENTLY
RELATIVE TO RISK THAT PERSONS NOT IN THOSE STATES HAVE DONE SO

1972 SURVEY

States DEC Projects Are Most Likely to Affect	Relative Risk By Drug Type						
	Alcohol	Amphetamine	Barbiturate	Hallucinogen	Inhalant	Marijuana	Opiate
Rebellion	3.3	4.6	5.1	4.0	4.6	2.7	6.5
Lacks attachment to school	3.2	3.2	3.0	3.4	3.3	2.8	3.3
Lacks commitment	2.3	3.3	3.9	3.4	3.1	2.5	4.0
Boredom	1.9	2.8	3.1	2.5	3.1	2.1	3.2
Too much pressure	1.6	2.9	2.6	2.3	2.5	2.2	2.4
Poor parent-child relationship	1.9	2.9	2.9	2.5	3.2	2.4	3.1
Peer pressure	1.3	1.3	1.4	1.0	1.9	1.0	1.7
Hopelessness and inability to cope	1.6	1.7	2.1	1.5	2.8	1.1	2.3
Incohesive family life	1.8	1.7	2.2	2.1	1.9	1.5	2.7
Lonely	1.1	1.1	1.4	1.1	1.8	.8	1.7
Poor self-image	1.2	1.0	1.1	.8	1.6	.7	1.4

States DEC Projects Are Least Likely to Affect	Alcohol	Amphetamine	Barbiturate	Hallucinogen	Inhalant	Marijuana	Opiate
Lives in ghetto milieu	1.6	.8	1.1	.8	1.2	.8	1.7
Parents abuse alcohol	2.2	2.8	3.2	3.0	3.2	2.2	4.1
Illness	2.2	3.3	4.0	2.8	3.1	2.1	4.6
Physician prescribes diet or sleeping pills	1.9	2.8	3.4	2.6	3.0	1.7	3.6

of the statistical method used. When the 29 drug categories are looked at in terms of drug type and level of usage, a pattern is apparent. For both current usage and current frequent usage, equations for the same three drug types did not account for enough change in drug usage to be statistically significant. These drugs were hallucinogens, amphetamines, and barbiturates. The changes in the 15 psychological states accounted for only from 6% to 10%[10] of the total variation among the 236 units in the changes in hallucinogen, amphetamine, and barbiturate usage. For remissions, the pattern is reversed. Hallucinogens, amphetamines, and barbiturates (and also inhalants) were the drugs for which a change in the psychological states accounted for enough variation among the 236 units to be statistically significant. For the drug usage categories containing students who reported having never used a drug and being able to get drugs but not having used them during the past year, all equations were statistically significant at the .95 confidence level.

Another observation concerns the significance of changes in individual psychological states, as opposed to the significance of changes in all 15 psychological states combined. The effects of these states are greater than zero (at the .95 confidence level) too often -- 63 out of 435 instances -- to have occurred by chance alone.

While there is reason to believe that the changes in the 15 psychological states do account for some of the variation among the 236 units in changes in drug usage, the percentage of total variation accounted for is small. The amount of variation that the change in psychological states "explains" for the 21 drug categories having statistically significant equations ranges from 13% up to 20%. Why

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[10]These percentages are R^2, the coefficient of multiple determination, multiplied by 100.

do the changes in the psychological states explain so little of the changes in drug usage? We know that there is an association between reported drug usage and these psychological states (as measured using the 1972 and 1974 questionnaires). We also know that this relationship is fairly stable over the two-year period. Not only is a person in one high-risk state more likely to use drugs than one who is not, but a person in several high-risk states is more likely to use drugs than a person in only one such state. Table 18 demonstrates this increased probability for various combinations of four of the high-risk states -- lacks commitment, lacks attachment to schools, is rebellious, and is bored. The likelihood, based on the 1972 survey, that a student has ever used opiates climbs from 3% if he is in none of the four high-risk states to 36% if he is in all four.

Given the stable association between high-risk states and drug usage, there are several possible reasons for the changes in the psychological states explaining so little of the changes in drug usage. For at least some of the psychological states, the direction of causation might be the reverse of the direction we assumed. Perhaps a poor parent-child relationship, or rebellion, or boredom, and so forth, are caused by using drugs instead of causing drug usage. Another possible reason is that there is some factor (or factors) not yet articulated that affects both the high-risk states and drug usage and that neither being in the high-risk states causes one to use drugs nor using drugs causes one to be in the high-risk states. A third possible reason is that measurement error was so great in the data used to test the logic upon which the program was based that the causal relationship was washed out.

All data used to test the relationships hypothesized between psychological and sociological factors like those used in this report

Table 18

LIKELIHOOD THAT A STUDENT IN DIFFERENT COMBINATIONS OF FOUR HIGH-RISK STATES HAS EVER USED OPIATES

LIKELIHOOD BASED ON 1972 SURVEY

High-Risk States	Lacks Commitment and is Bored	Lacks Commitment	Is Bored	None
Rebellious and Lacks Attachment to School	36%	36%	24%	23%
Rebellious	24%	32%	15%	12%
Lacks Attachment to School	16%	19%	11%	9%
None	7%	11%	7%	3%

LIKELIHOOD BASED ON 1974 SURVEY

High-Risk States	Lacks Commitment and is Bored	Lacks Commitment	Is Bored	None
Rebellious and Lacks Attachment to School	37%	43%	28%	26%
Rebellious	21%	21%	17%	15%
Lacks Attachment to School	23%	16%	11%	11%
None	10%	10%	8%	4%

contain some measurement error. Whether this error can substantially distort the findings depends upon the size of the error compared to the size of the factor being measured. There was little change from 1972 to 1974 in the percentage of students classified as being in the high-risk states. Table 19 compares the percentages for the two years. In attempting to account for the change in drug usage in terms of the difference between the 1972 and 1974 percentages, we are dealing with factors having a very small magnitude. For the entire student body, only two of the 15 states changed by more than 2%. The state showing the largest change, physician prescribes drugs, was statistically significant in 12 of the 29 equations explaining a change in drug usage in terms of a change in psychological/sociological states. The average for all the psychological/sociological states is only 3 equations. Thus if the change in percentages had been larger, the equations might have accounted for substantially more of the changes in drug usage. Measurement error that might be tolerable in establishing an association between a psychological state (where the percentages range up to 57%) and drug usage might not be tolerable in establishing an association between the change in a psychological state (where most percentages are less than 2%) and a change in drug usage.

There are two sources of measurement error that are important in this case. One is the difficulty already mentioned of adequately measuring the concepts themselves. How do we know, for example, that the questions we used to measure poor parent-child relationship really measure that concept? The other source of error stems from the way the change figures for each of the units was derived. A given unit -- say, white female eleventh graders at a certain school -- is not composed

Table 19

PERCENTAGE OF STUDENTS IN EACH PSYCHOLOGICAL/
SOCIOLOGICAL STATE

1972 and 1974 SURVEYS

High-Risk States	% of Students in States - All Schools		
	1972	1974	Change
	(N-32,995)	(N=30,501)	
Rebellion	19.7%	19.0%	- .7%
Lacks attachment to school	7.2	5.6	- 1.6
Lacks commitment	6.7	6.6	- .1
Boredom	18.0	16.2	- 1.8
Too much pressure	30.5	31.2	+ .7
Poor parent-child relationship	57.5	56.2	- 1.3
Peer Pressure	28.8	27.4	- 1.4
Hopelessness and inability to cope	32.0	30.7	- 1.3
Incohesive family life	27.2	29.0	+ 1.8
Lonely	38.2	35.2	- 3.0
Poor self-image	23.1	21.3	- 1.8
Lives in ghetto milieu	1.2	0.6	- .6
Parents abuse alcohol	8.5	8.3	- .2
Illness	5.2	6.4	+ 1.2
Physician prescribes diet or sleeping pills	9.1	14.8	+ 5.7*

*This state is the only one for which the wording on a question measuring a state was changed from 1972 to 1974. In 1972 the question read, "Has a doctor ever prescribed diet or sleeping pills for you?" In 1974 the question was changed to, "Has a doctor ever prescribed diet pills, sleeping pills, or tranquilizers for you?" The increase shown could be the result of adding "tranquilizer" to the question.

of the same individuals in 1974 as in 1972. Most of the students in this unit in 1974 were ninth graders in 1972 at a different school. This measure is not nearly as good as one that links questionnaire responses made by the same individual two years apart.

Were valid measures used for the psychological/sociological states? The average number of questions used to determine whether a student was in each of the 15 psychological/sociological states was 2.6. Psychological inventories typically use many more questions to measure each concept. As one check on the validity of these measures, we expanded the 1974 questionnaire to include questions from the McLeod High-Risk Inventory[11] for two of the concepts -- boredom and lacks attachment to school. Instead of the one question used to measure boredom in the 1972 school survey, three others were used in the McLeod inventory. Of the total student respondents, 1.2% indicated boredom on the school survey question but did not indicate boredom on any one of the three McLeod inventory questions. Some 6.2% of the students indicated boredom on all three of the McLeod inventory questions but not on the school survey question. A total of 7.4% of the students gave responses on one set of measures that was incompatible with their responses on the other set. Instead of the two questions used to measure lacks attachment to school in the 1972 school survey, four others were used to measure that concept in the McLeod inventory. The responses deemed incompatible for this concept was 5.3%.

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[11]This instrument is described in Gloria A. Grizzle, The Effects of Drug Education Groups: Measuring Changes in Attitudes (Chapel Hill, N.C.: Institute of Government, April 30, 1974).

The low percentages of incompatible responses for these two concepts lend some support to the validity of the measures used in the 1972 and 1974 surveys. While incompatible responses of this magnitude are not serious in establishing the association between being in one of these psychological states and using drugs, they might be more serious in linking a change in the percentage of students bored or lacking attachment to school to a change in drug usage.

Conclusion

Given the size of the measurement error in the data used, we should not be surprised to find that the change in psychological states accounts for from only 6% to 20% of the change in the 29 drug usage categories. It is likely that measurement error is large enough to have seriously distorted the change data used for the psychological states. If this be the case, then a strong test of the two assumptions underpinning the drug education program must be based upon a data collection effort that permits linking an individual's pretest to his posttest. Such a method, also using random assignment to experimental and control groups, was followed when the McLeod Inventory was used. (The McLeod Inventory, however, does not ask about one's drug usage.) It may also be necessary to increase the number of questions used to measure most of the psychological concepts. The additional testing and revision contemplated for the McLeod Inventory seems to be a good way of pursuing this task.

Findings of Especial Use in Future Program Development

Some information gleaned from the two school surveys may be of particular interest in developing future drug education programs. It may be helpful to address these questions:

1. What characteristics do students most likely to use drugs have?
2. Did the drug education program benefit students with some characteristics more than others?
3. Is the timing of program intervention important, and do program effects continue after the program ends?
4. Does the length of an individual student's exposure to the program have an effect beyond the effect attributable to the overall school effect?

Each of these questions is explored below.

Students Most Likely to Use Drugs

Three characteristics of students had strong associations with reported drug usage. These characteristics are race, school grade, and being in high-risk psychological states. In most of the drug usage categories a larger percentage of whites than blacks reported using drugs and this gap widened between 1972 and 1974.

The pattern by grade is similar across most drug categories. As one would expect from having looked at the prevalence reported in the 1972 survey, usage increases from the seventh grade to the eleventh and typically shows a slight decrease or a leveling off by grade twelve. Following the assumption that drug usage diffuses from older to younger students, we would expect the largest increases in drug usage from 1972 to 1974 to have occurred at the lower grade levels. Instead, the greatest

increase occurred in the same grades that showed the largest usage in the 1972 survey. Frequent usage of marijuana, shown below, typifies the pattern:

Reported Frequent Usage of Marijuana

Grade	1972 Survey	1974 Survey	Increase
7	1.8%	3.8%	2.0%
8	4.5	8.9	4.4
9	7.6	15.9	8.3
10	10.4	20.9	10.5
11	12.1	23.8	11.7
12	14.5	23.8	9.3

One can only speculate about the reason for lower increases in the junior high schools. Senior high school students may simply have more money to spend on drugs. But whatever the cause, the greatest growth in drug usage during the past two years has been reported by white senior high school students.

Tables 14 through 17, alluded to already, showed that a student in one of the high-risk psychological/sociological states is more likely to use drugs than a student not in the state. In order to understand why some students use drugs and others do not, it would be helpful to know the relationship of these predisposing states to each other. The average student found to be in one state typically is in more than one. If these states do lead to drug abuse, then the likelihood of drug usage may vary, depending upon the combination of predisposing states a person is in. Knowing the effect of a high-risk state in the presence of other states

may help determine which high-risk states should be given the most attention in developing future drug abuse prevention programs.

To explore the effects of being in multiple high-risk states, four states were selected that the Drug Education Center projects are likely to affect -- lacks commitment, lacks attachment to school, is bored, and is rebellious. Table 20 shows how much more likely a person in all four of these states is to have ever used each of seven drug types than is a person in none of these four states.[12] As drug usage becomes more common, we would expect the gap between the likelihoods for the two groups to narrow. For example, in 1972, 24% of the students reported having used marijuana. For that year the likelihood for the high-risk group was 64%, some 3.4 times that for those students in none of the four states. By 1974, reported marijuana usage had risen to 40% and the likelihood for students in all four high-risk states was only 2.3 times that for those in none of these states. The more widespread drug usage becomes, the less useful the high-risk states will be as predictors of who will use drugs.

The combined effect of the four states upon usage of seven drug types falls into two patterns. Pattern A (Table 21) fits what might be loosely termed the "downers" -- alcohol, barbiturates, opiates, and inhalants. Individually, three of the four states significantly increase the likelihood that a student uses drugs.[13] The exception is boredom, which by itself is not an important factor but which does serve to decrease the likelihood

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[12]Tables 1 through 7 in Appendix B give the likelihood for each of the 16 possible state combinations for each of the 7 drug types.

[13]Categorized data analysis was used to fit a model relating the four selected states to having ever used each drug type for seventh through twelfth graders, based upon responses to the 1972 survey. The computer program used was LINCAT, developed in the Biostatistics Department at UNC-CH by James E. Grizzle, C.F. Starmer, and Gary G. Koch. Tables 21 and 22 give the factors included in the fitted models, along with their coefficients and chi-squares.

Table 20

COMPARISON OF LIKELIHOOD THAT A STUDENT IN FOUR HIGH-RISK PSYCHOLOGICAL STATES* HAS EVER USED DRUGS WITH LIKELIHOOD THAT A STUDENT NOT IN THOSE STATES HAS DONE SO

Drug Type	% of Students Reporting Ever Using Drugs			
	1972 Survey		1974 Survey	
	In all 4 States	In None	In all 4 States	In None
Alcohol	82%	41%	82%	44%
Marijuana	64	19	78	34
Inhalants	56	12	57	14
Amphetamines	54	9	60	13
Barbiturates	44	6	57	12
Hallucinogens	47	7	53	10
Opiates	36	3	37	4

*These states are lacks commitment, lacks attachment to school, is bored, and is rebellious.

Table 21

HIGH-RISK STATE EFFECTS UPON LIKELIHOOD OF HAVING EVER USED DRUGS - PATTERN A

High-Risk States	Alcohol		Barbiturates		Opiates		Inhalants	
	b	X^2	b	X^2	b	X^2	b	X^2
Lacks commitment	.03	19.9	.05	109.0	.04	94.8	.05	40.1
Lacks attachment to school	.08	195.6	.05	134.4	.04	84.5	.07	71.1
Rebellion	.06	117.5	.07	189.3	.08	187.5	.08	116.4
Lacks commitment with lacks attachment							.02	6.0
Lacks commitment with boredom	-.02	12.0	-.03	95.4	-.02	56.8	-.04	53.3
Lacks commitment with rebellion			.01	3.1	.02	26.1	.02	13.2
Lacks attachment with boredom	-.01	5.5					-.03	38.8
Lacks attachment with rebellion					.01	6.6	.03	24.0
Lacks commitment with lacks attachment and rebellion	.02	17.0						
Lacks commitment with boredom and rebellion	.02	24.1					.01	11.0
X^2 due to error		2.4		6.3		2.8		5.8

of drug usage when it occurs with rebellion, lacks commitment or lacks attachment to school. Pattern B (Table 22) fits the uppers. Here, all four states are individually important in increasing the likelihood that a student uses drugs. There is a further increase in likelihood when the states occur in conjunction with one another.

Students Most Likely to Benefit from the Drug Education Program

Did the drug education program affect attitudes and usage in some grade-race-sex groupings more than others? To answer this question, we broke the experimental and control school changes down for 3 psychological states and 5 drug usage categories. Table 23 indicates each instance in which a grade-race-sex category in the experimental schools did better than that same category in the control schools. For example, reading across the first line, we see that black male seventh graders in the experimental schools improved relative to black male seventh graders in the control schools in 6 of the 8 categories. They did worse in 2 categories -- change in percentage of students who reported (a) having stopped using hallucinogens and (b) having never used amphetamines.

No grade-sex-race combination of experimental students did either better or worse than their control school counterparts across all 8 psychological and drug usage categories. We see no pattern in Table 23 that suggests that some grade-sex-race categories benefitted from the drug education program more than others.

A Stitch in Time Saves Nine

One question that we hoped to answer was, "Does a reduction in drug usage continue after the drug education program ends?" To answer this question, we compared changes in drug usage rates for three groups of

Table 22

HIGH-RISK STATE EFFECTS UPON LIKELIHOOD OF HAVING EVER USED DRUGS - PATTERN B

High-Risk State	Marijuana		Hallucinogens		Amphetamines	
	b	X^2	b	X^2	b	X^2
Lacks commitment	.05	31.3	.04	35.6	.04	42.7
Lacks attachment to school	.07	164.1	.05	68.3	.05	81.4
Boredom	.05	111.8	.02	11.3	.02	18.0
Rebellion	.07	375.2	.07	168.1	.07	294.8
Boredom within lacks commitment	.04	5.6				
Boredom within lacks attachment	.02	1.6				
Boredom within rebellion	.03	12.4				
Lacks attachment and boredom			.01	3.7		
Lacks attachment and rebellion			.01	1.6		
Lacks commitment and boredom and rebellion					.02	7.9
Lacks commitment and lacks attachment and boredom			.02	13.0	.02	7.2
Lacks commitment and lacks attachment and boredom and rebellion					.01	3.2
X^2 due to error		3.8		8.7		

Table 23

CATEGORIES IN WHICH EXPERIMENTAL STUDENTS DID BETTER THAN CONTROL STUDENTS

	CATEGORY								
	Psychological			Current Frequent Usage		Stopped Using	Current Usage	Never Used	
Student Characteristic	Lacks Attachment	Poor Parent-Child Relationship	Rebellion	Alcohol	Opiate	Hallucinogen	Marijuana	Amphetamine	
Black male 7th grade	X	X	X	X	X		X		
Black male 8th & 9th grade		X	X	X	X		X		
Black male 10th grade		X			X	X	X		
Black male 11th & 12th grade		X	X		X	X			
Black female 7th grade		X		X		X	X		
Black female 8th & 9th	X	X	X	X		X	X		
Black female 10th		X	X	X			X	X	
Black female 11th & 12th				X	X	X	X	X	
White male 7th grade	X			X		X			
White male 8th & 9th	X	X	X				X	X	
White male 10th		X	X	X	X	X			
White male 11th & 12th		X	X	X	X			X	
White female 7th grade	X	X	X				X	X	
White female 8th & 9th	X		X						
White female 10th				X	X		X	X	
White female 11th & 12th		X	X		X				

Student Characteristic	Lacks Attachment	Poor Parent-Child Relationship	Rebellion	Alcohol	Opiate	Hallucinogen	Marijuana	Amphetamine
Race								
Black		X	X	X	X	X	X	X
White	X	X	X	X	X			X
Sex								
Male	X	X	X	X	X			X
Female		X	X				X	X
Grade								
7th	X	X	X	X		X		X
8th & 9th	X	X	X	X			X	X
10th		X	X	X	X			X
11th & 12th		X	X	X	X			X

schools. The early program group consisted of those experimental schools that participated in the drug education program in the spring semester of 1972 but not in the 1972-73 and 1973-74 academic years. Note that the second survey was given almost two years after the drug education program ended in those schools. The recent program group included the schools that were in the program during the 1972-73 and 1973-74 academic years. Control schools made up the third group.

Since we needed to look at drug usage at three points in time, we focused upon marijuana, the only drug covered individually in the survey that the Mecklenburg County Medical Society conducted in November, 1969. Table 24 shows the percentages of students reporting having ever used marijuana, taken from the three surveys. We would expect the early program schools to improve relative to the recent program and control schools between 1969 and 1972 and the recent program schools to improve relative to the other two groups between 1972 and 1974. Senior high schools show the expected relative improvements. From 1969 to 1972, the percentage increase in students reporting having ever used marijuana was lowest for the early program (19.7% compared to 23.9% and 24.6% for the other groups). From 1972 to 1974, the percentage increase was lowest for the recent program.

Such is not the case for the junior high schools. From 1969 to 1972, the changes fit our expectations, with the early program schools having the lowest increase. But the recent program schools show the highest increase instead of the lowest increase between 1972 and 1974. In searching for an explanation for this last finding, we divided all the junior high schools into two groups, one group having a low prevalence of reported marijuana usage in 1969 and the other having a high prevalence. All the early program

Table 24

CHANGE IN REPORTED MARIJUANA USAGE BY TYPE OF DRUG EDUCATION PROGRAM

Type of Drug Education Program Received	Percentage of Students Who Have Ever Used Marijuana				
	1969 Survey	1972 Survey	1974 Survey	Change 1969 to 1972	Change 1972 to 1974
Junior High School					
Early	4.5%	12.9%	23.0%	8.4%	10.1%
Recent	7.4	18.1	32.2	10.7	14.1
None	5.8	16.1	28.9	10.3	12.8
Senior High School					
Early	8.7	28.4	47.4	19.7	19.0
Recent	15.9	39.8	58.3	23.9	18.5
None	10.5	35.1	55.5	24.6	20.4

schools fell into the low prevalence group and all the recent program schools fell into the high prevalence group.

What caused the low prevalence experimental (early program) schools to increase drug usage at a lower rate between 1972 and 1974 than the high prevalence experimental (recent program) schools? Would the rate of increase for the low prevalence experimental schools have been lower without the program simply because drug usage rises slowest in schools with the lowest prevalence? We then compared the low prevalence experimental schools with the low prevalence nonexperimental schools. These usage rates are compared below:

Percentage of Students Who Have Ever Used Marijuana in Low Prevalence Junior High Schools

	Experimental	Nonexperimental
1969 Survey	4.5%	4.8%
1972 Survey	12.9%	17.6%
1974 Survey	23.0%	28.1%
Change from 1969 to 1972	8.4%	12.8%
Change from 1972 to 1974	10.1%	10.5%

The low prevalence nonexperimental schools had a much higher rate of increase between 1969 and 1972 than did the low prevalence schools who got the drug education program in the spring of 1972. One might conclude from these data that the recent program did indeed reduce the rate of marijuana usage (Figure 1).

Following a similar procedure to compare high prevalence experimental (recent program) schools with high prevalence nonexperimental schools does not result in a similar conclusion.

FIGURE 1

Change In Percentage Of Junior High School Students Reporting Having Ever Used Marijuana, Low Prevalence Schools

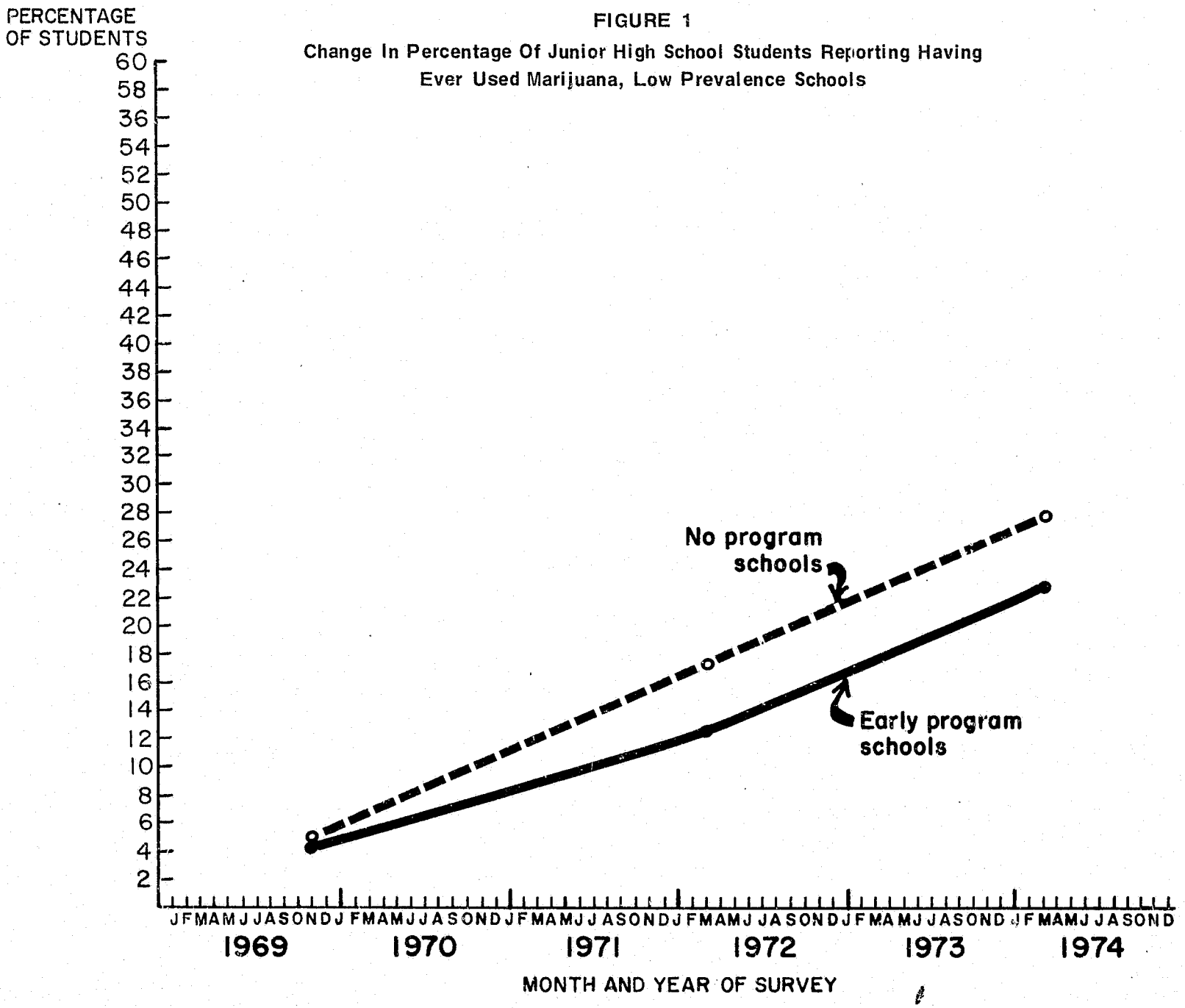
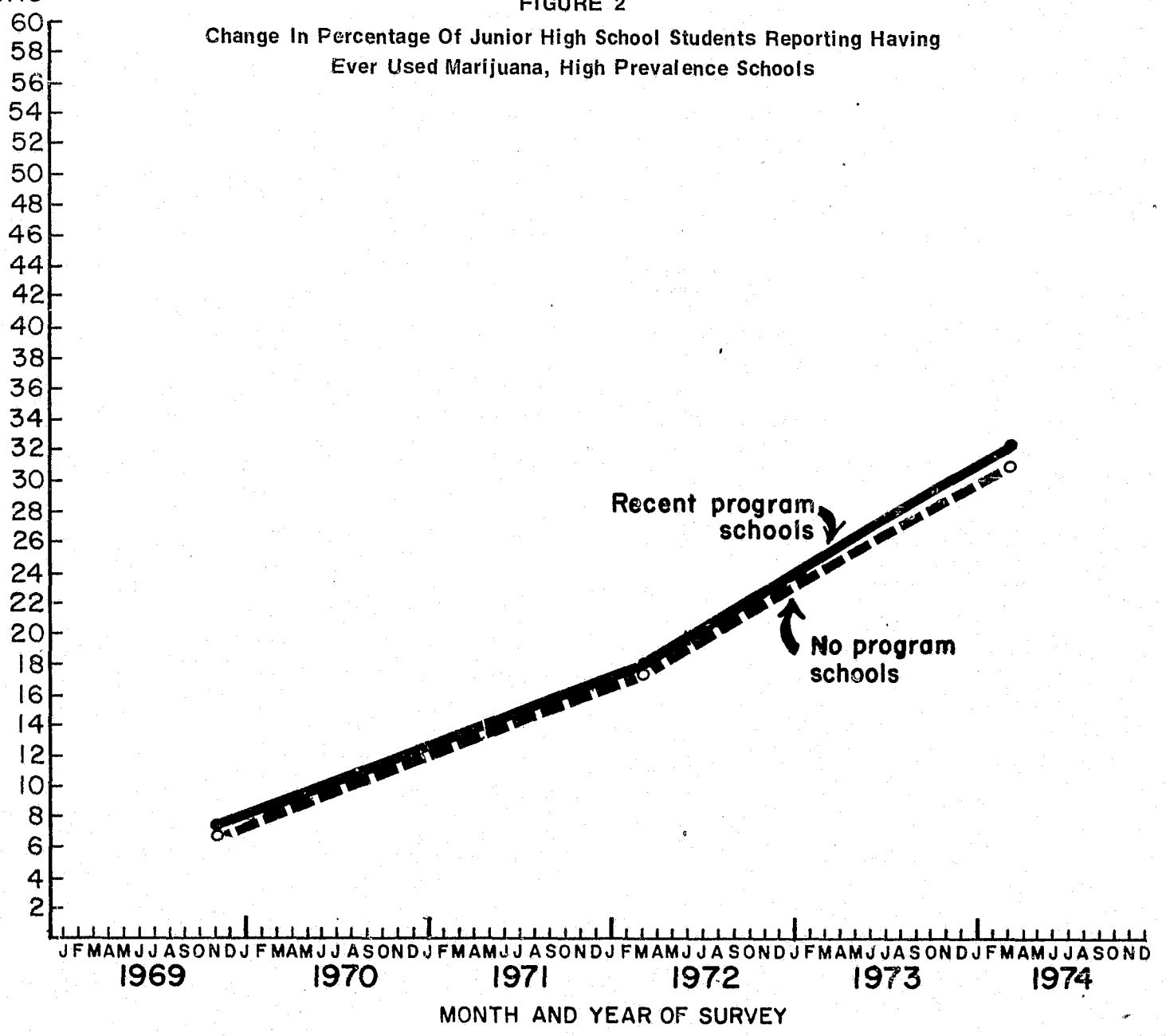


FIGURE 2

Change In Percentage Of Junior High School Students Reporting Having Ever Used Marijuana, High Prevalence Schools

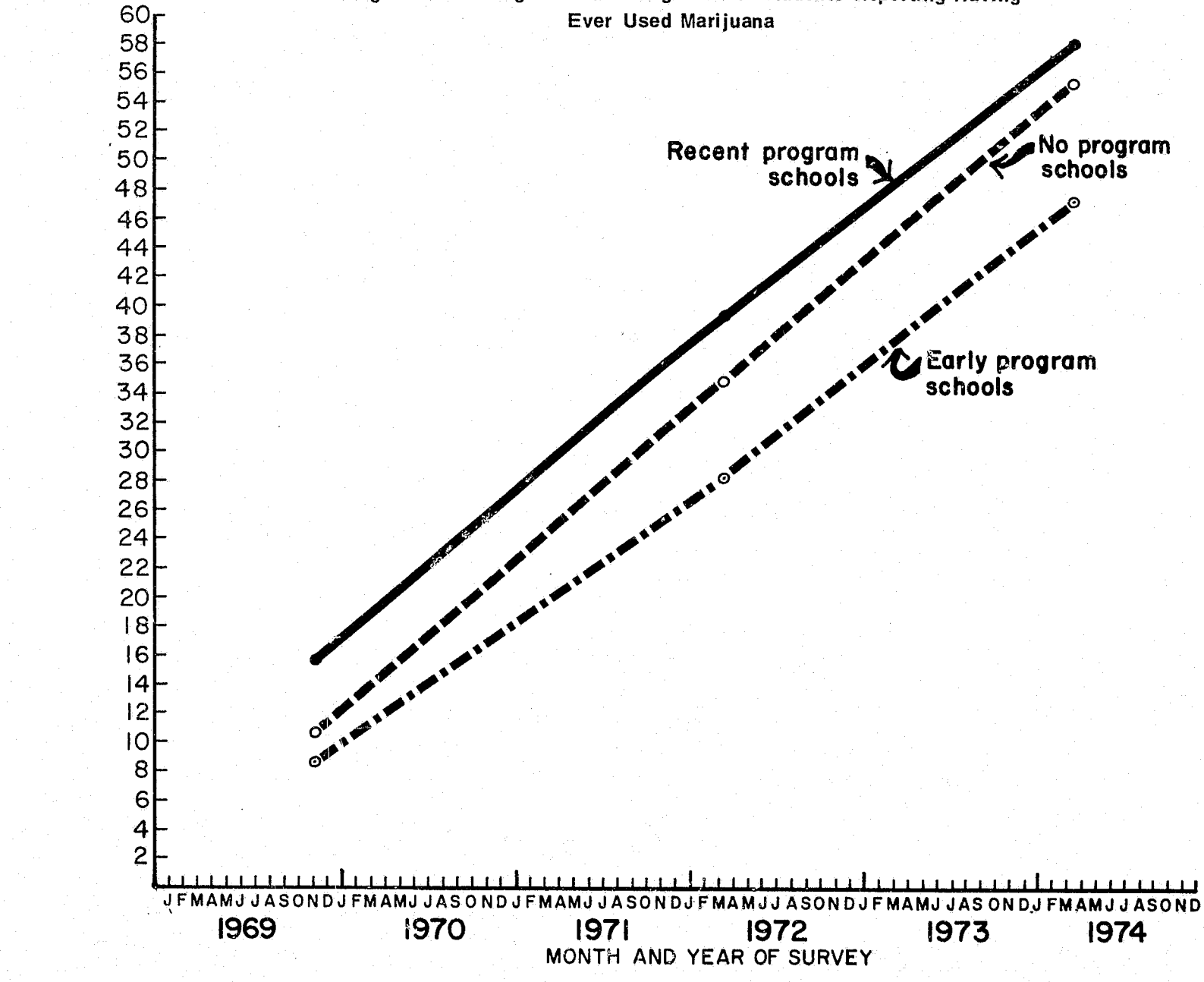


CONTINUED

1 OF 2

FIGURE 3

Change in Percentage of Senior High School Students Reporting Having Ever Used Marijuana



Percentage of Students who Have Ever Used Marijuana in High Prevalence Junior High Schools

	Experimental	Nonexperimental
1969 Survey	7.4%	6.8%
1972 Survey	18.1%	17.7%
1974 Survey	32.2%	31.2%
Change from 1969 to 1972	10.7%	10.9%
Change from 1972 to 1974	14.1%	13.5%

The high prevalence nonexperimental schools did not have a higher rate of increase between 1972 and 1974 than did the high prevalence schools who got the drug education program during the 1972-73 and 1973-74 academic years (Figure 2).

Looking at the senior high schools, we find that the early program schools were low prevalence schools in 1969 and that the recent programs were high prevalence schools. Yet the high prevalence recent program schools still did better than the control schools between 1972 and 1974. The apparent reason is that the two senior high schools during 1973-74 were given a much more intensive program than the six junior high schools received.

What do these different rates of change say to us about drug education programs? This interpretation is consistent with the data: A program designed to prevent experimental usage of drugs will be much more effective if the program is implemented when the prevalence of experimental usage is low (around 4% or 5%). If program intervention does not come till the prevalence of experimental usage has reached about 15%, it can still prevent experimental usage. But to do so, the resources invested must be much greater (about ten-fold) to achieve the results than could be

obtained from early intervention. This attribution of reduced drug usage to early intervention could be incorrect if there were other conditions that affected the low prevalence early program schools but not the low prevalence of nonexperimental schools. We do not know that there were any such conditions but we do not have the information needed to rule out that possibility.

Length of Program Exposure

Students who attended for a two-year period one of the schools that had the recent drug program showed more favorable change in both the psychological states and drug usage categories than students who attended one of these schools only in 1973-74. We included length of program exposure as an independent variable along with variables defining the drug education program the school received, the innovativeness or inflexibility of the principal, school size, grade, race, and sex. At the .95 confidence level, length of program exposure accounted for enough change to be statistically significant in 6 of the 15 psychological states and 8 of the 29 drug usage categories. Statistical significance occurs too frequently to attribute these results to chance variations.

Is the Program Worth the Cost?

This drug education program, conducted in 14 junior and senior high schools over a two-year period, cost about $150,000. Stated in terms of man-years of effort, this cost provided about 1/2 staff person spread over one academic year for each school. This paper has described the impact of this program upon drug usage among the student population. Measures of the program's productivity and its projected impact upon the quality of life in the community at large have already been presented in another paper.[14] Here we merely recapitulate the program's anticipated long-range impact described by a single measure.

Perhaps the truest expression of a program's cost is what the money spent on it could have bought if it had been spent on some other program. We do not know what the impacts of most social programs are and therefore cannot say what the $150,000 would have bought if it had been invested in one of them instead of the Drug Education Center's program. We do, however, have a pretty good idea of what that amount of money would buy if invested in any one of several drug law enforcement or treatment programs. Given a common measure of impact, we can compare the results of this drug education program with the probable results had the money been spent on drug treatment or enforcement.

The impact measure used is the number of years of drug addiction that a program prevents. We can compare the results of alternative programs in terms of what each program costs to avoid one year of

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[14]Gloria A. Grizzle, "Accountability in Local Government: Impetus, Methods, Prospects" (Paper presented at the 47th Annual Meeting of the Blue Ridge Institute for Southern Community Executives at Black Mountain, N.C., July 21-26, 1974).

addiction. The costs of preventing one year of addiction were estimated for each of these possible programs:[15]

1. Provide a daycare treatment center for heroin addicts who are motivated to seek help.
2. Provide a therapeutic community for heroin addicts who are motivated to seek help.
3. Concentrate upon making arrests for heroin possession in heroin copping areas and maximize the length of term for those imprisoned in order to reduce the spread of addiction.
4. Provide methadone maintenance to heroin addicts who have previously failed in a therapeutic community program.
5. Concentrate upon sentencing to prison to the maximum term those arrested for selling illicit drugs in order to disrupt the drug distribution network.

Calculating cost per year of addiction prevented for the drug education programs requires that one determine the value of avoiding a year of alcoholism relative to a year of heroin addiction. For purposes of comparing drug education to alternative program results, two determinations of relative value will be used. First, it will be assumed that the two conditions are of equal value. The equal value assumption permits adding years of alcoholism avoided (estimated at 685 years)[16] to years of heroin addiction avoided (estimated at 240 years) and dividing

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[15]The derivation of these estimates are explained in Gloria A. Grizzle, Rehabilitation Policies for Heroin Addicts (Chapel Hill, N.C.: Institute of Government, 1973) and Gloria A. Grizzle, Law Enforcement Policies Directed toward Controlling Possession and Sale of Illegal Drugs (Chapel Hill, N.C.: Institute of Government, 1973).

[16]These estimates are explained in Grizzle, "Accountability in Local Government," pp. 12-13. The method followed in making these estimates can be reviewed in Gloria A. Grizzle, Prevention Policies Directed Toward the School Population (Chapel Hill, N.C.: Institute of Government, 1973), pp. 42-64.

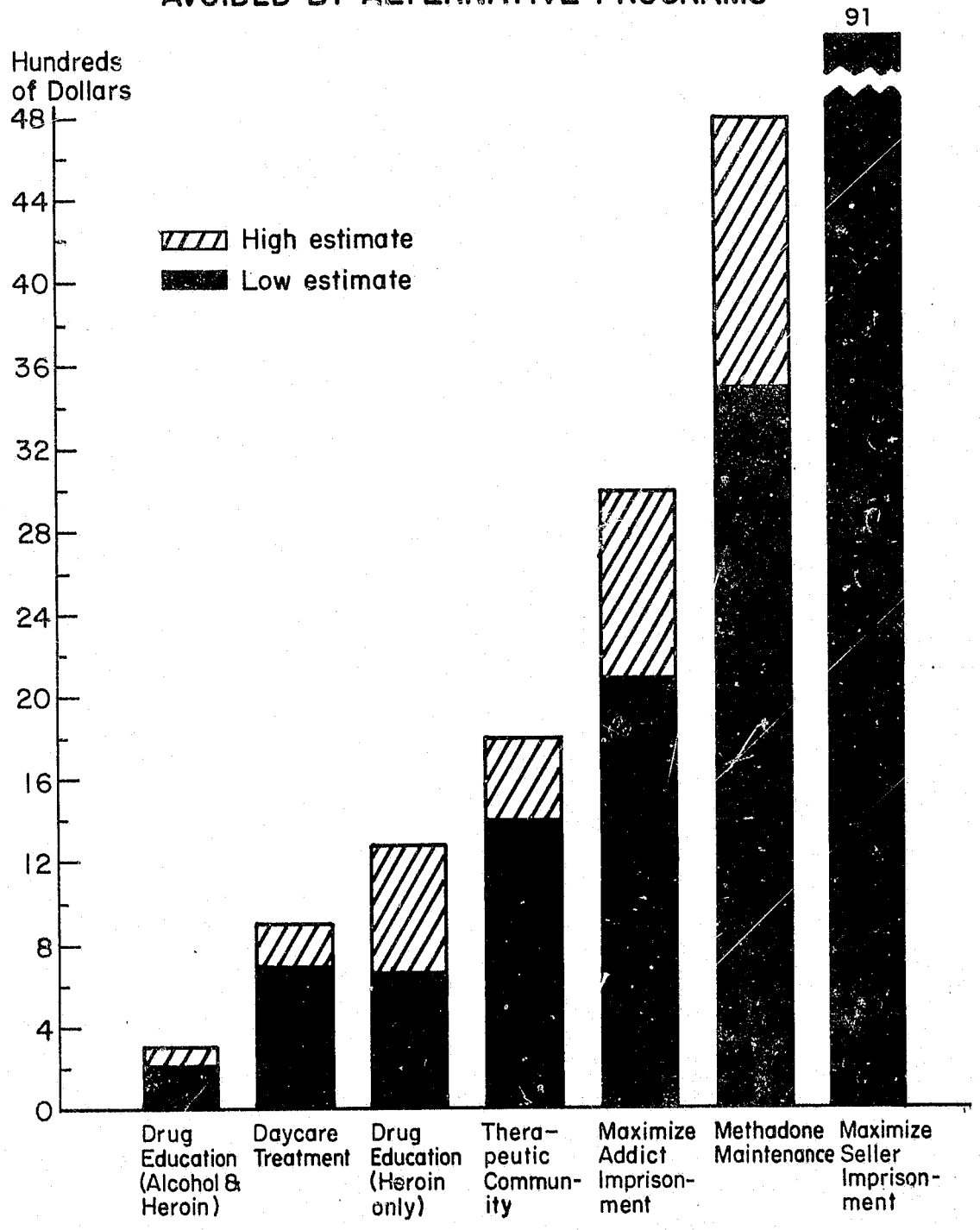
this sum into total program cost (estimated at $150,000). This calculation yields a cost per year of addiction avoided of about $160. Some people might argue that the other programs being compared are limited to heroin addicts and that for purposes of comparison the alcoholics should be ignored. Following this argument would lend one to give a zero value to alcoholism prevented, divide the total program cost by 240, and arrive at a cost per year of heroin addiction avoided of $625.

Point estimates such as these are misleading because they do not recognize the uncertainty contained in the assumptions made in translating frequent drug users prevented into years of addiction prevented. We do not know whether the actual figures will turn out higher or lower than those calculated, but to be on the conservative side we can assume that the program may be only half as effective as we estimate it to be. Under the two relative value assumptions, the costs per year of addiction would then become $320 and $1250. It seems reasonable to reflect the uncertainty involved by speaking of the cost per year of addiction avoided as being in the range of $160 to $320 when alcoholism and heroin addiction are valued equally and $625 to $1250 when only heroin addiction is considered.

Figure 4 compares the estimated cost per year of addiction avoided for the drug education program with estimates for the five alternative programs. Each bar shows a high and low estimate for preventing a year of addiction through one of the six proposed programs. When both alcohol and heroin prevention are included, the drug education program has the lowest cost (about $200-300 per year prevented). If alcohol is ignored and the total program cost is applied to heroin,

Figure 4

EXPECTED COST PER YEAR OF ADDICTION AVOIDED BY ALTERNATIVE PROGRAMS



then the estimated cost of the daycare treatment program (about $700-900 per year prevented) may be lower than the drug education cost (about $600-$1200). The other treatment and law enforcement programs proposed are clearly more expensive than the drug education program. These programs have costs per year of addiction avoided that range from a low estimate of $1400 for the therapeutic community to $9100 for maximizing seller imprisonment (Table 25). If the decision criterion were to implement the program that avoided a year of addiction at the least cost, then one who considered preventing alcoholics as important as preventing heroin addicts would select the drug education program. One interested only in preventing heroin addiction, however, would have to weigh the cost range for drug education ($625 to $1250) against that for the daycare treatment center ($700 to $900) and would probably choose the daycare treatment program.

Of course, one would in reality take many other factors into consideration before choosing a program. Nothing has been said about the quality of the addiction year prevented by the various programs. The quality of a year in prison may be different from that of a year in a methadone maintenance program. Nor has anything been said about the bad effects associated with addiction that have been prevented. Table 25 summarizes some of these other expected program results, assuming that each program were given $100,000 to spend.

Table 25

SELECTED PROGRAM RESULTS EXPECTED FROM IMPLEMENTING ALTERNATIVE PROGRAMS, ASSUMING $100,000 ALLOCATED TO EACH PROGRAM

Program	Years of Addiction Prevented*	Number of People		Theft Prevented	Economic Productivity Increased	Heroin Adicts Motivated to Accept Treatment	Cost per Year of Addiction Prevented
		Emotionally Rehabilitated	Frequent Drug Usage Prevented*				
Drug education	685/a 240/H	0 0	132/a 24/h	$850,000	Less than $1,850,000	0	$200-$300 $600-$1200 heroin only
Daycare treatment	142/h	23	0	$542,000	Less than $286,000	23	$700-$900
Therapeutic community	71/h	12	0	$271,000	Less than $143,000	12	$1400-$1800
Maximize addict imprisonment	47/h	0	5/h	$567,000	0	0	$2100-$3000
Methadone maintenance	29/h	Less than 12	0	$111,000	Less than $58,000	Less than 12	$3500-$4800
Maximize seller imprisonment	11/h	0	16/h	0	0	0	$9100

*a = alcohol; h = heroin

SUMMARY OF FINDINGS AND CONCLUSIONS

Fourteen schools, designated "experimental," participated in a drug abuse prevention program conducted by the Charlotte Drug Education Center. Drug usage, drug knowledge, and the percentage of students in high-risk states believed to increase the likelihood of drug usage was measured in these schools in 1972 and again in 1974. The changes in these factors were compared with changes in twelve schools, designated "controls," that did not participate in the program.

Change in Drug Usage

Generally, a higher proportion of students in both the experimental and control schools reported using drugs in 1974 than in 1972, but the experimental schools reported a lower increase than the control schools. In terms of students reporting that they had never used drugs, the experimental schools did better for all drug types except alcohol. For those reporting that they had used drugs within the past month, the experimental schools did better for all drug types except alcohol (where both experimental and control schools changed by the same amount) and hallucinogens (where the control schools did better). For frequent usage within the last month the experimental schools again did better for all drug types except hallucinogens. Experimental schools also did better with students reporting that they had access to drugs but had not used them within the last year. For students who reported using drugs but not within the last year, however, the experimental schools did worse in hallucinogens, amphetamines, barbiturates, and inhalants.

We looked at a number of other factors that might be expected to affect drug usage and raised the question of whether these factors caused drug usage in the experimental schools to increase at a lower rate than in the control schools. It is unlikely that any of the following factors account for the relatively better performance of the experimental schools: (1) external events affecting drug usage (such as a change in the penalty structure for possessing illicit drugs and an accelerated law enforcement effort), (2) a change in pupil assignments to schools, (3) a change in the race-grade-sex composition of the students in the experimental schools compared to the control schools, (4) the school atmosphere, (5) the existence of another drug education program operating in the same school system, (6) the point at which Charlotte-Mecklenburg was located in 1972 on the time curve showing the growth and decline of drug usage, (7) a change in the percentage of students who did not respond to the questionnaire, (8) a change in the trust level of students who did respond, and (9) measurement error resulting from invalidity or unreliability of a survey instrument.

Change in Drug Knowledge

The percentage of drug knowledge questions answered correctly changed little from 1972 to 1974 in either the experimental or control schools. The average percentage of correct answers was 39%. Experimental schools improved relative to control schools by 0.9%.

Change in Psychological States

The drug education program was designed to reduce the number of students in several psychological states believed to increase the likelihood

that a person uses drugs. These "high-risk" states were lacks commitment, lacks attachment to school, poor parent-child relationship, hopelessness and inability to cope, boredom, rebellion, poor self-image, and peer pressure. Changes in the percentage of experimental-school students in these states compared favorably with change for the control schools only for rebellion and poor parent-child relationship. The amount of error occurring from the way these high-risk states were measured probably makes this finding unreliable. Work now underway to refine these measures may increase their reliability.

Early Intervention

A one-semester program conducted in 1972 in junior high schools with a low prevalence of marijuana usage (4.5%) was more effective in reducing drug usage than a four-semester program conducted later in schools with a high prevalence of marijuana usage (18.1%). Intensive effort in senior high schools with a high prevalence of marijuana usage (39.8%) can be effective but requires a much greater allocation of resources than does early intervention.

Cost-Effectiveness

The long-range program impact may be defined as the number of years of heroin and alcohol addiction prevented. Under this drug education program, the cost of preventing a year of addiction is estimated to be between $200 and $300. This cost compares favorably with several possible drug treatment and law enforcement programs analyzed, whose estimated costs for preventing a year of heroin addiction ranged from $700 to $9000.

APPENDICES

Appendix A

Figure A

THE HYPOTHESIZED RELATIONSHIP OF SELECTED EVENTS TO THE BAD EFFECTS OF DRUG ABUSE

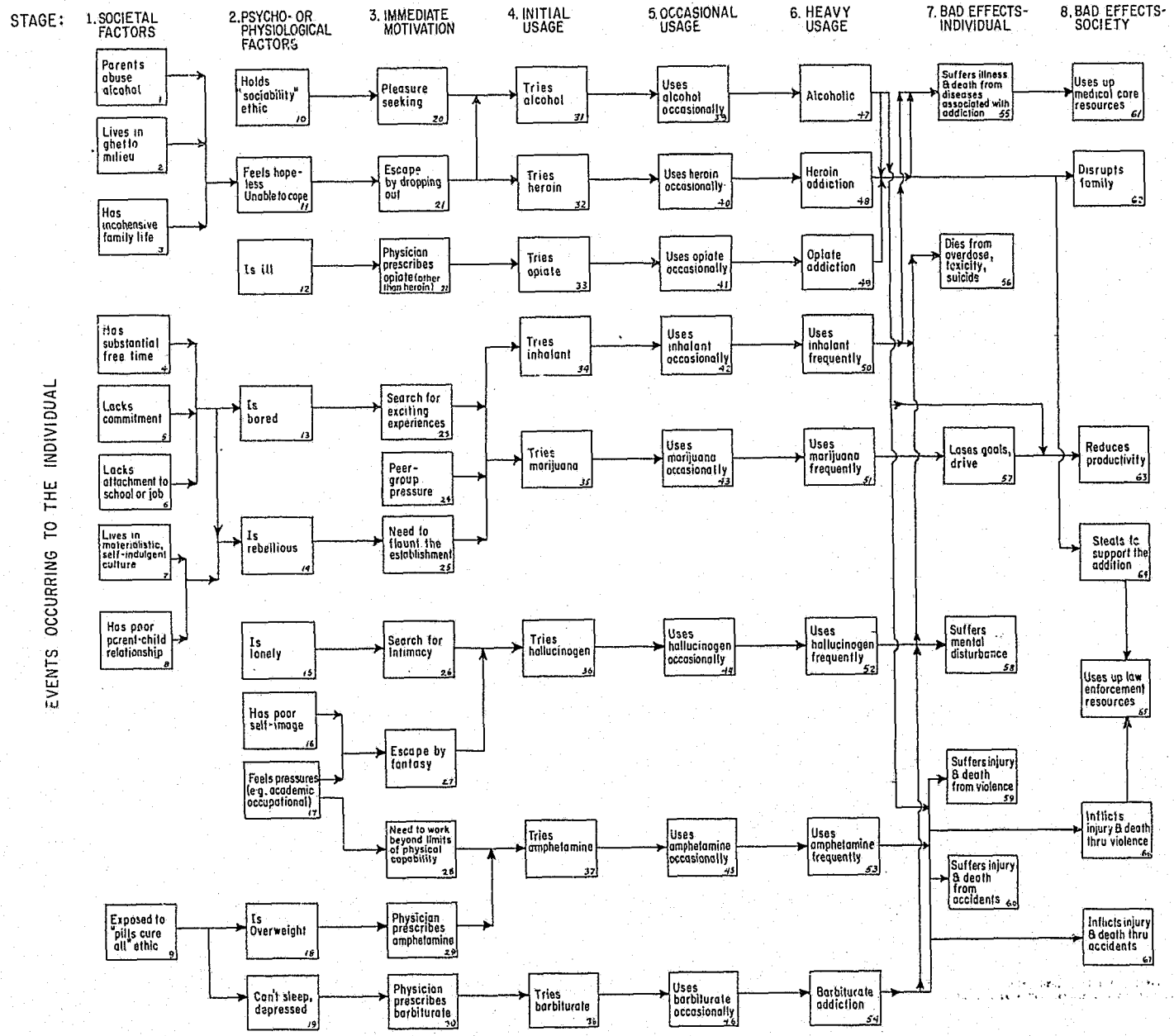


Exhibit A-1

CHARLOTTE DRUG EDUCATION CENTER

1402 E. MOREHEAD STREET
SUITE 207
Telephone 333-7731
CHARLOTTE, N. C. 28204

JONNIE H. McLEOD, M.D.
EXECUTIVE DIRECTOR

1972 SURVEY

QUESTIONNAIRE

Instruction Sheet

TO THE PRINCIPAL:

The following questions have been compiled by the Charlotte Drug Education Center, Inc. and the Mecklenburg County Medical Society. The questions are devised to obtain information concerning attitudes, especially about drug use among the students of Charlotte/Mecklenburg schools. The information obtained from this study is for scientific purposes only and there is no way in which any response can be traced to a particular student. Only the number of students who feel a certain way or use certain drugs will ever be made public. The name of your school will be kept confidential.

TO THE TEACHER:

We request that you allow each homeroom president or appropriate officer to conduct the questionnaire. This will put the questions on a student-to-student basis. If a student does not desire to answer the questionnaire, he need not indicate this to you. Just permit him to place the unanswered questionnaire in the envelope provided. This envelope is to be sealed in the presence of the class.

TO THE STUDENT:

DO NOT SIGN YOUR NAME TO THIS QUESTIONNAIRE. We recognize and understand that there might be many reasons why you would not want to tell us how you feel about drugs and whether or not you have used them. We really need to know your HONEST REACTIONS as a student to get the facts. You need not fear giving us this information because great care has been given in setting up this study to conceal your identity and to assure every student that the questionnaire he or she fills out can in no way be identified. Since there are no clearly "right" or "wrong" answers, you should not spend too much time on any one question. If you do not wish to answer this questionnaire, just hold on to it and put it in the envelope provided at the end of the time period.

Card number

For each of the following questions, write in the box the ONE NUMBER that best gives your answer.

6. Are you male or female?
   1. male 2. female

7. How old were you on your last birthday?
   1. 13 or under 2. 14 or 15 3. 16 or 17 4. 18 or older

8. What grade are you in?
   1. seventh 2. eighth 3. ninth 4. tenth
   5. eleventh 6. twelfth

9. Which of the following best describes you?
   1. Black, Negro, or Afro-American 2. White
   3. American Indian 4. Oriental
   5. Cuban, Latin American 6. other

10. What do you think your grade average is for the year so far?
    1. A(excellent) 2. B(good) 3. C(average)
    4. D(below average) 5. F(failing)

11. Who are you now living with?
    1. mother and father 2. mother only 3. father only
    4. brother and sister only 5. guardian 6. other

12. In what religion have you been raised?
    1. none at all 2. Catholic 3. Jewish 4. Protestant
    5. other

13. How often do you go to church now?
    1. almost every week 2. at least once a month
    3. few times a year 4. almost never, or never

14. What is the highest level of education completed by one of your parents or guardian?
    1. less than high school 2. high school graduate
    3. some college 4. college graduate
    5. postgraduate college

15. How would you rate your parents' income?
    1. far above average 2. above average 3. average
    4. below average

16. Do you own or have use of a car?
    1. yes 2. no

17. How much time do you spend getting to and from school each day?
    1. less than 15 minutes each way
    2. more than 15 minutes but less than 30 minutes each way
    3. more than 30 minutes but less than 45 minutes each way
    4. more than an hour each way

18. How much free time do you have each day?
    1. less than 1 hour 2. 1 to 2 hours 3. 2 to 3 hours
    4. 3 to 4 hours 5. more than 4 hours 6. no free time

19. Are you sick
    1. frequently 2. once in a while 3. rarely

20. Your parents' or guardian's discipline of you is
    1. deserved and fair 2. undeserved and unfair
    3. deserved but unfair 4. I am never disciplined.

For each of the following statements, write in the box the ONE NUMBER that best fits your opinion.

21. I feel like getting back at my parents.
1. most of the time 2. often 3. once in a while
4. hardly ever

22. I feel lonely.
1. most of the time 2. often 3. once in a while
4. hardly ever

23. Life is a bore or "drag."
1. most of the time 2. often 3. once in a while
4. hardly ever

24. I would enjoy breaking laws.
1. most of the time 2. often 3. once in a while
4. hardly ever

25. I can take care of my problems.
1. most of the time 2. often 3. once in a while
4. hardly ever

26. I consider myself
1. fat 2. chubby 3. average 4. thin

27. I feel that I am under too much pressure.
1. most of the time 2. often 3. once in a while
4. hardly ever

28. My parents don't understand me.
1. true 2. false

29. My parents are pleased with me.
1. true 2. false

30. I'd like to be like one of my parents.
1. true 2. false

31. There is at least one living adult that is an ideal for me.
1. true 2. false

32. I feel comfortable talking to my parents about things that matter.
1. true 2. false

33. I feel uptight in situations where other kids my age seem to be handling things with no sweat.
1. true 2. false

34. I feel left out and passed over by the kids I'd like to be going with.
1. true 2. false

35. Taking everything into account, the word that best describes how I feel about my school is:
1. bored 2. happy 3. challenged 4. frustrated

36. I think Drug Education should begin
1. kindergarten 2. grades 1-3 3. grades 4-6
4. grades 7-9 5. grades 10-12 6. self-education

37. What Drug Education do you get at school?
1. not enough 2. enough 3. too much 4. enough but poor quality

38. The laws that make marihuana illegal should be eliminated.
1. true 2. false

39. If you or a friend are in trouble with drugs would you first go to
1. a minister 2. a doctor 3. Open House
4. a hospital 5. a school counselor 6. other

40. How often, if ever, have you used marihuana ("pot," "grass," "weed")?
1. never 2. once or twice 3. occasionally
4. frequently

41. If you have used marihuana, when was the last time?
1. never 2. over a year ago 3. over a month ago
4. over a week ago 5. within the last week

42. If you use marihuana, mark the <u>one</u> reason that <u>best</u> explain <u>why</u>.
1. don't use it 2. because my friends wanted me to use it
3. because I feel better when I use it.
4. because using it shows I am different from adults

43. Do you believe that using marihuana is harmful to your health?
1. It hasn't been proven one way or the other,
2. It is not harmful.
3. It might be harmful to my body.
4. It might be harmful to my mind or brain.
5. It might be harmful to both my mind and my body.
6. no opinion

44. Mark the <u>one</u> reason that <u>best</u> explains how you made up your mind about whether marihuana is harmful.
1. from my own experience 2. from what my friends have told me
3. from how I have seen what it does to others
4. from what my parents or other adults told me
5. in a school classroom
6. I haven't made up my mind yet.

45. How often, if ever, do you drink wine, beer, or some other drink containing alcohol? (DO NOT COUNT AN OCCASIONAL SIP.)
1. never 2. once a month or less often
3. several times a month or once a week
4. several times a week but not every day
5. every day

46. How do grownups in your home drink alcohol?
1. no one drinks 2. moderately 3. often too much

47. If you drink, mark the <u>one</u> reason that best explains <u>why</u> you drink.
1. don't drink
2. because I want to be like other people my age who drink
3. because I like the taste of alcoholic beverages
4. because drinking helps me to relax and have a good time

48. How often, if ever, have you used <u>hallucinogens</u> (LSD, mescaline, MDA)?
1. never 2. once or twice 3. occasionally
4. frequently

49. If you have used <u>hallucinogens</u>, when was the last time?
1. never 2. more than a year ago 3. more than a month ago
4. more than a week ago 5. within the last week

50. How often, if ever, have you used <u>amphetamines</u>("pep pills,""ups," "speed," Methedrine, Dexedrine, "bennies")? DON'T COUNT ANY TIMES YOU TOOK THESE ON A DOCTOR'S PRESCRIPTION.
1. never 2. once or twice 3. occasionally
4. frequently

51. If you have used <u>amphetamines</u>, except on medical prescription, when was the last time?
1. never 2. more than a year ago 3. more than a month ago
4. more than a week ago 5. within the last week

52. How often, if ever, have you used barbiturates (phenobarbital, "digits," Nembutal, Seconal, "downs")? DON'T COUNT ANY TIMES YOU TOOK THESE ON A DOCTOR'S PRESCRIPTION.
1. never 2. once or twice 3. occasionally
4. frequently

53. If you have used barbiturates, except on medical prescription, when was the last time?
1. never 2. more than a year ago 3. more than a month ago
4. more than a week ago 5. within the last week

54. Has a doctor ever prescribed diet pills or sleeping pills for you?
1. yes 2. no

55. How often, if ever, have you used opiates (morphine, heroin, methadone, demerol)?
1. never 2. once or twice 3. occasionally
4. frequently

56. If you have used opiates, when was the last time?
1. never 2. more than a year ago 3. more than a month ago
4. more than a week ago 5. within the last week

57. How often, if ever, have you sniffed inhalants (glue, gasoline, aerosols)?
1. never 2. once or twice 3. occasionally
4. frequently

58. If you have sniffed glue or other inhalants, when was the last time?
1. never 2. more than a year ago 3. more than a month ago
4. more than a week ago 5. within the last week

59. Have you ever tried to persuade any other person to use drugs?
1. yes 2. no

60. Have you taken any drugs (not prescribed by a doctor) with a needle?
1. yes 2. no

61. If you use drugs, which one, if any, of the following reasons best applies to you?
1. don't use drugs 2. because others my age use drugs
3. because I wanted to find out for myself what taking drugs was like
4. because I feel better about myself when using them

62. If you have tried drugs, how did you obtain them?
1. through friends 2. through seeking them on my own
3. through being contacted by a dealer 4. have not tried drugs

63. If you do not use drugs and never have, or if you have used drugs and stopped, which one, if any, of the following reasons best applies to you? (IF YOU USE DRUGS, OMIT THIS QUESTION.)
1. afraid of being arrested 2. afraid of hurting myself
3. afraid of hurting my parents 4. tired of the drug scene
5. because I don't need drugs

64. How easily could you get marihuana if you wanted it and had the money to pay for it?
1. very easily; it is available to those who want it
2. not too easily; but I would know how to find out
3. I would not know how to get it.

65. How easily could you get other drugs (amphetamines, barbiturates, heroin, etc.) if you wanted them and had the money to pay for them?
1. very easily; it is available to those who want it
2. not too easily; but I would know how to find out
3. I would not know how to get it.

66. Sniffing of glue and volatile chemicals such as gasoline, cleaning fluid, and hairspray can produce coma, seizures, and death.
1. true 2. false

67. A drug which can produce both physical (addicting) and psychological dependence (habit forming) and rapidly causes tolerance to develop is LSD.
1. true 2. false

68. Narcotics change the way a person sees things, usually appearing to change their form and color.
1. true 2. false

69. Treatment of those who have a well established drug dependence takes months or years and is frequently unsuccessful.
1. true 2. false

70. The use of marihuana can lead to psychological (mental) dependence.
1. true 2. false

71. The chief danger in using marihuana is the possibility of overdependence upon the drug to help face personal problems.
1. true 2. false

72. The United States is the only country in which the use of marihuana is restricted by law.
1. true 2. false

73. Research has shown that marihuana is a harmless drug that does not cause physical or mental damage.
1. true 2. false

74. More deaths are caused in the U.S. by overdose of heroin than any other drug.
1. true 2. false

75. Possession of 4 grams of marihuana in North Carolina is considered a felony.
1. true 2. false

76. The prolonged use of barbiturates may lead to:
1. needing more of the drug to get the same effect
2. psychological dependence upon the drug
3. physical dependence upon the drug
4. 1 and 2 5. all the above

77. Which is true of barbiturates:
1. they speed up body functions 2. they slow down body functions
3. are physically addicting 4. both 1 and 3
5. both 2 and 3

78. Hashish is a/an:
1. narcotic 2. amphetamine
3. concentrated form of marihuana's active ingredient
4. physically addicting drug

79. The effects of mescaline are most like the effects of
1. heroin 2. marihuana 3. benzedrine 4. LSD
5. alcohol

80. Prolonged heavy use of which of the following has been proven to have the most damaging effects upon the body organs.
1. heroin 2. LSD 3. alcohol 4. marihuana
5. opium

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1974 SURVEY
QUESTIONNAIRE

Instruction Sheet

TO THE PRINCIPAL:

The following questionnaire is a near-duplication of the March 1972 questionnaire. The repetition is for comparison purposes. The questions have been compiled by the Charlotte Drug Education Center and the Mecklenburg County Medical Society. The questions are devised to obtain information concerning attitudes, especially about drug use among the students of the Charlotte/Mecklenburg Schools. The information obtained from this study is for scientific purposes only and there is no way in which any response can be traced to a particular person. Only the number of students who feel a certain way or who use certain drugs will be made public. The name of your school will be kept confidential.

TO THE TEACHER:

We request that you allow each homeroom president or appropriate officer to conduct this questionnaire. This will put the questions on a student-to-student basis. The student is to distribute the questionnaires, collect them when the students are finished, and enclose them in the envelope provided. If a student does not desire to answer the questionnaire, he need not indicate this to you. Just permit him to place the unanswered questionnaire in the envelope. The envelope is to be sealed in the presence of the class. We would appreciate it if the teacher, or a student who is a good reader, would read aloud questions that may be difficult, particularly for lower junior high school grades.

TO THE STUDENT:

Do not sign your name to this questionnaire. We recognize and understand that there might be many reasons why you would not want to tell us how you feel about drugs and whether or not you have used them. We really need to know your HONEST REACTIONS as a student to get the facts. You need not fear giving us this information. Great care has been given in setting up this study to conceal your identity. We assure every student that the questionnaire he or she fills out cannot in any way be identified. Since there are no clearly "right" or "wrong" answers, do not spend too much time on any one question. If you do not wish to answer this questionnaire, just hold on to it, and put it in the envelope provided at the end of the time period.

For each of the following questions, write in the box the ONE NUMBER that best gives your answer.

1. Are you male or female?
   1. male 2. female

2. How old were you on your last birthday?
   1. 13 or under 2. 14 or 15 3. 16 or 17 4. 18 or older

3. What grade are you in?
   1. seventh 2. eighth 3. ninth 4. tenth
   5. eleventh 6. twelfth

4. Which of the following best describes you?
   1. Black, Negro, or Afro-American 2. White
   3. American Indian 4. Oriental
   5. Cuban, Latin American 6. other

5. What do you think your grade average is for the year so far?
   1. A(excellent) 2. B(good) 3. C(average)
   4. D(below average) 5. F(failing)

6. Who are you now living with?
   1. mother and father 2. mother only 3. father only
   4. brother and sister only 5. guardian 6. other

7. In what religion have you been raised?
   1. none at all 2. Catholic 3. Jewish
   4. Protestant (includes Baptist, Presbyterian, Methodist, etc.)
   5. Muslem 6. other

8. How often do you go to church now?
   1. almost every week or more often 2. at least once a month
   3. few times a year 4. almost never, or never

9. What is the highest level of education completed by one of your parents or guardian?
   1. less than high school 2. high school graduate
   3. some college 4. college graduate
   5. postgraduate college

10. How would you rate your parents' income?
    1. far above average 2. above average 3. average
    4. below average

11. Do you go to the same school that you went to last year?
    1. yes 2. no

For each of the following statements, write in the box the ONE NUMBER that best fits your opinion.

12. My school is so big I feel lost.
    1. true 2. false

13. I'm going to do what I want regardless of who cares.
    1. true 2. false

14. I am sick.
    1. frequently 2. once in a while 3. rarely

15. My parents' or guardian's discipline of me is
    1. deserved and fair 2. undeserved and unfair
    3. deserved but unfair 4. I am never disciplined

16. I feel like getting back at my parents.
    1. most of the time 2. often 3. once in a while
    4. hardly ever or never

17. I feel lonely.
    1. most of the time 2. often 3. once in a while
    4. hardly ever or never

18. Life is a bore or "drag." ☐
    1. most of the time 2. often 3. once in a while
    4. hardly ever or never

19. I would enjoy breaking laws. ☐
    1. most of the time 2. often 3. once in a while
    4. hardly ever or never

20. I can take care of my problems. ☐
    1. most of the time 2. often 3. once in a while
    4. hardly ever or never

21. I feel good about my school. ☐
    1. true 2. false

22. I feel that I am under too much pressure. ☐
    1. most of the time 2. often 3. once in a while
    4. hardly ever or never

23. My parents don't understand me. ☐
    1. true 2. false

24. My parents are pleased with me. ☐
    1. true 2. false

25. I'd like to be like one of my parents. ☐
    1. true 2. false

26. There is at least one living adult that is an ideal for me. ☐
    1. true 2. false

27. I feel comfortable talking to my parents about things that matter. ☐
    1. true 2. false

28. I feel uptight in situations where other kids my age seem to be handling things with no sweat. ☐
    1. true 2. false

29. I feel left out and passed over by the kids I'd like to be going with. ☐
    1. true 2. false

30. Taking everything into account, the word that best describes how I feel about my school is: ☐
    1. bored 2. happy 3. challenged 4. frustrated

31. I'd like to change the whole system, even if it meant burning it down in order to make a new start. ☐
    1. true 2. false

32. My daily life is full of things that keep me interested. ☐
    1. true 2. false

33. School is boring most of the time. ☐
    1. true 2. false

34. If you or a friend are in trouble with drugs would you first go to ☐
    1. a minister 2. one or both parents 7. other
    3. Open House 4. a hospital or doctor
    5. a school counselor or teacher 6. Drug Education Center

35. How often, if ever, have you used marihuana ("pot," "grass," "weed")? ☐
    1. never 2. once or twice 3. occasionally
    4. frequently

36. If you have used marihuana, when was the last time? ☐
    1. never 2. over a year ago 3. over a month ago
    4. over a week ago 5. within the last week

37. If you use marihuana, mark the <u>one</u> reason that <u>best</u> explains <u>why</u>. ☐
    1. don't use it 2. because my friends wanted me to use it
    3. because I feel better when I use it
    4. because using it shows I am different from adults
    5. none of these

38. Do you believe that using marihuana is harmful to your health? ☐
    1. It hasn't been proven one way or the other.
    2. It is not harmful.
    3. It might be harmful to my body.
    4. It might be harmful to my mind or brain.
    5. It might be harmful to both my mind and my body.
    6. I haven't made up my mind yet.

39. Mark the one reason that best explains how you made up your mind about whether marihuana is harmful. ☐
    1. from my own experience 2. from what my friends have told me
    3. from how I have seen what it does to others
    4. from what my parents or other adults told me
    5. in a school classroom
    6. I haven't made up my mind yet.

40. How often, if ever, do you drink wine, beer, or some other drink containing alcohol? (DO NOT COUNT AN OCCASIONAL SIP.) ☐
    1. never 2. once a month or less often
    3. several times a month or once a week
    4. several times a week but not every day
    5. every day

41. How do grownups in your home drink alcohol? ☐
    1. no one drinks 2. moderately 3. often too much

42. If you drink, mark the one reason that best explains why you drink. ☐
    1. don't drink
    2. because I want to be like other people my age who drink
    3. because I like the taste of alcoholic beverages
    4. because drinking helps me to relax and have a good time
    5. none of these

43. How often, if ever, have you used hallucinogens (LSD, mescaline, MDA)? ☐
    1. never 2. once or twice 3. occasionally
    4. frequently

44. If you have used hallucinogens, when was the last time? ☐
    1. never 2. more than a year ago 3. more than a month ago
    4. more than a week ago 5. within the last week

45. How often, if ever, have you used amphetamines ("pep pills," "ups," "speed," Methedrine, Dexedrine, "bennies")? DON'T COUNT ANY TIMES YOU TOOK THESE ON A DOCTOR'S PRESCRIPTION. ☐
    1. never 2. once or twice 3. occasionally
    4. frequently

46. If you have used amphetamines, except on medical prescription, when was the last time? ☐
    1. never 2. more than a year ago 3. more than a month ago
    4. more than a week ago

47. How often, if ever, have you used barbiturates (phenobarbital, "digits," Nembutal, Seconal, "downs")? DON'T COUNT ANY TIMES YOU TOOK THESE ON A DOCTOR'S PRESCRIPTION. ☐
    1. never 2. once or twice 3. occasionally
    4. frequently

48. If you have used barbiturates, except on medical prescription, when was the last time? ☐
    1. never 2. more than a year ago 3. more than a month ago
    4. more than a week ago

49. Has a doctor ever prescribed diet pills, sleeping pills, or tranquilizers for you? ☐
    1. yes 2. no

50. How often, if ever, have you used opiates (morphine, heroin, methadone, demoral)? ☐
    1. never 2. once or twice 3. occasionally
    4. frequently

51. If you have used opiates, when was the last time? ☐
    1. never 2. more than a year ago 3. more than a month ago
    4. more than a week ago 5. within the last week

52. How often, if ever, have you sniffed inhalants (glue, gasoline, aerosols)? ☐
1. never 2. once or twice 3. occasionally
4. frequently

53. If you have sniffed glue or other inhalants, when was the last time? ☐
1. never 2. more than a year ago 3. more than a month ago
4. more than a week ago 5. within the last week

54. Have you ever tried to persuade any other person to use drugs? ☐
1. yes 2. no

55. Have you taken any drugs (not prescribed by a doctor) with a needle? ☐
1. yes 2. no

56. If you use drugs, which <u>one</u>, if any, of the following reasons best applies to you? ☐
1. don't use drugs 2. because others my age use drugs
3. because I wanted to find out for myself what taking drugs was like
4. because I feel better about myself when using them
5. none of these reasons

57. If you have tried drugs, how did you obtain them? ☐
1. through friends 2. through seeking them on my own
3. through being contacted by a dealer 4. have not tried drugs

58. If you do <u>not</u> use drugs and never have, or if you have used drugs and stopped, which <u>one</u>, if any, of the following reasons best applies to you? (IF YOU USE DRUGS, OMIT THIS QUESTION.) ☐
1. afraid of being arrested 2. afraid of hurting myself
3. afraid of hurting my parents 4. tired of the drug scene

59. How easily could you get marihuana if you wanted it and had the money to pay for it? ☐
1. very easily; it is available to those who want it
2. not too easily; but I would know how to find it
3. I would not know how to get it.

60. How easily could you get other drugs (amphetamines, barbiturates, heroin, etc.) if you wanted them and had the money to pay for them? ☐
1. very easily; it is available to those who want it
2. not too easily; but I would know how to find out
3. I would not know how to get it.

61. How often, if ever, have you used <u>methaqualone</u> (sopors, Quaalude)? DON'T COUNT ANY TIMES YOU TOOK THESE ON A DOCTOR'S PRESCRIPTION. ☐
1. never 2. once or twice 3. occasionally
4. frequently

62. If you have used <u>methaqualone</u>, except on medical prescription, when was the last time? ☐
1. never 2. more than a year ago 3. more than a month ago
4. more than a week ago 5. within the last week

63. I feel bored because I don't have enough to do. ☐
1. true 2. false

64. I'm really proud of my school. ☐
1. true 2. false

65. Sniffing of glue and volatile chemicals such as gasoline, cleaning fluid, and hairspray can produce coma, seizures, and death. ☐
1. true 2. false

66. A drug which can produce both physical (addicting) and psychological dependence (habit forming) and rapidly causes tolerance to develop is LSD. ☐
1. true 2. false

67. Narcotics change the way a person sees things, usually appearing to change their form and order. ☐
1. true 2. false

68. Treatment of those who have a well established drug dependence takes months or years and is frequently unsuccessful. ☐
1. true 2. false

69. The use of marihuana can lead to psychological (mental) dependence. ☐
1. true 2. false

70. The chief danger in using marihuana is the possibility of overdependence upon the drug to help face personal problems. ☐
    1. true 2. false

71. More deaths are caused in the U.S. by overdose of heroin than any other drug. ☐
    1. true 2. false

72. Possession of 4 grams of marihuana in North Carolina is considered a felony. ☐
    1. true 2. false

73. The prolonged use of barbiturates may lead to: ☐
    1. needing more of the drug to get the same effect
    2. psychological dependence upon the drug
    3. physical dependence upon the drug
    4. 1 and 2 5. all the above

74. Which is true of barbiturates: ☐
    1. they speed up body functions 2. they slow down body functions
    3. are physically addicting 4. both 1 and 3
    5. both 2 and 3

75. Hashish is a/an: ☐
    1. narcotic 2. amphetamine
    3. concentrated form of marihuana's active ingredient
    4. physically addicting drug

76. The effects of mescaline are most like the effects of ☐
    1. heroin 2. marihuana 3. benezedrine 4. LSD
    5. alcohol

77. Prolonged heavy use of which of the following has been proven to have the most damaging effects upon the body organs. ☐
    1. heroin 2. LSD 3. alcohol 4. marihuana
    5. opium

Exhibit A-3

INDICES USED TO DETERMINE WHETHER STUDENTS ARE IN SELECTED PSYCHOLOGICAL/SOCIOLOGICAL STATES

Questions in the school survey were used to construct indices for determining whether a student should be assigned to each of the 15 psychological/sociological states believed to be associated with drug usage. Individual responses making up a given index were weighted to reflect the relative importance attributed to them by Jonnie H. McLeod, Director of the Charlotte-Drug Education Center. The method of scoring responses to the questions and the score required for assigning a student to each of the states is listed below:

State	Question		If Response Is,	Then Record Score of,
	'72 Survey	'74 Survey		
A Lives in ghetto milieu				
Black	9	4	1,3	1
Income	15	10	4	1
Parents education	14	9	1	1
If score is 3, then is in State A.				
B Has incohesive family life				
Living with	11	6	2,3 4, 5, 6	1
Grownups drink	46	41	3	1
If score is 1 or more, then is in State B.				

State	Question		If Response Is,	Then Record Score of,
D Lacks commitment				
Adult is ideal	31	26	2	2
Religion raised in	12	7	1	1
Attend church	13	8	3,4	1
Life is a bore	23	18	1,2	2

If score is 4 or more, then is in State D.

E Lacks attachment to school				
Feel about	35	30	1,4	1
Grades	10	5	4,5	1

If score is 2, then is in State E

F Has poor parent-child relationship				
Discipline	20	15	2,3,4	1
Getting back at parents	21	16	1,2	1
Parents don't understand	28	23	1	3
Parents pleased	29	24	2	1
Like to be like parent	30	25	2	1
Talk to parents	32	27	2	3

If score is 3 or more, then is in State F.

State	Question		If Response is,	Then Record Score of,
G Parents abuse alcohol				
Grownups drink	46	41	3	1
	If score is 1, then is in State G.			
H Inability to cope				
Can take care of problems	25	20	3,4	3
Grades	10	5	4,5	1
Uptight	33	28	1	1
Left out	34	29	1	1
Life a bore	23	18	1,2	1
Feel lonely	22	17	1,2	1
Too much pressure	27	22	1,2	1
	If score is 3 or more, then is in State H.			
I Illness				
Sick frequently	19	14	1	1
	If score is 1, then is in State I.			
J Boredom				
Life a bore	23	18	1,2	1
	If score is 1, then is in State J.			
K Rebellion				
Enjoy breaking laws	24	19	1,2	1
Getting back at parents	21	16	1,2	1
	If score is 1 or more, then is in State K.			

State	Question		If Response is,	Then Record Score of,
L Lonely				
Feel lonely	22	17	1,2	1
Feel left out	34	29	1	1
If score is 1 or more, then is in State L.				
M Poor self-image				
Feel uptight	33	28	1	1
Feel left out	34	29	1	1
Take care of problems	25	20	3,4	1
If score is 2 or more, then is in State M.				
N Pressures				
Too much pressure	27	22	1,2	1
If score is 1, then is in State N.				
P Peer group pressure				
Too much pressure	27	22	1,2	1
Feel uptight	33	28	1	1
Feel left out	34	29	1	1
If score is 2, then is in State P.				
Q Physician prescribed diet or sleeping pill				
Diet pills	54	49	1	1
If score is 1, then is in State Q.				

Table B-1

LIKELIHOOD THAT A STUDENT IN DIFFERENT COMBINATIONS OF FOUR HIGH-RISK STATES HAS EVER USED ALCOHOL

LIKELIHOOD BASED ON 1972 SURVEY

High-Risk States	Is Bored and Lacks Commitment	Lacks Commitment	Is Bored	None
Is Rebellious and Lacks Attachment to School	82%	79%	71%	75%
Lacks Attachment to School	58%	76%	67%	61%
Is Rebellious	63%	57%	62%	60%
None	53%	58%	51%	41%

LIKELIHOOD BASED ON 1974 SURVEY

High-Risk States	Is Bored and Lacks Commitment	Lacks Commitment	Is Bored	None
Is Rebellious and Lacks Attachment to School	82%	87%	69%	76%
Is Rebellious	66%	60%	62%	64%
Lacks Attachment to School	66%	55%	57%	61%
None	58%	52%	55%	44%

Table B-2

LIKELIHOOD THAT A STUDENT IN DIFFERENT COMBINATIONS OF FOUR HIGH-RISK STATES HAS EVER USED OPIATES

LIKELIHOOD BASED ON 1972 SURVEY

High-Risk States	Is Bored and Lacks Commitment	Lacks Commitment	Is Bored	None
Is Rebellious and Lacks Attachment To School	36%	36%	24%	23%
Is Rebellious	24%	32%	15%	12%
Lacks Attachment to School	16%	19%	11%	9%
None	7%	11%	7%	3%

LIKELIHOOD BASED ON 1974 SURVEY

High-Risk States	Is Bored and Lacks Commitment	Lacks Commitment	Is Bored	None
Is Rebellious and Lacks Attachment to School	37%	43%	28%	26%
Is Rebellious	21%	21%	17%	15%
Lacks Attachment to School	23%	16%	11%	11%
None	10%	10%	8%	4%

Table B-3

LIKELIHOOD THAT A STUDENT IN DIFFERENT COMBINATIONS OF FOUR HIGH-RISK STATES HAS EVER USED HALLUCINOGENS

LIKELIHOOD BASED ON 1972 SURVEY

High-Risk States	Is Bored and Lacks Commitment	Lacks Commitment	Is Bored	None
Is Rebellious and Lacks Attachment to School	47%	43%	31%	32%
Is Rebellious	29%	37%	23%	20%
Lacks Attachment to School	28%	25%	21%	17%
None	15%	19%	14%	7%

LIKELIHOOD BASED ON 1974 SURVEY

High-Risk States	Is Bored and Lacks Commitment	Lacks Commitment	Is Bored	None
Is Rebellious and Lacks Attachment To School	53%	40%	45%	42%
Is Rebellious	34%	35%	26%	25%
Lacks Attachment to School	36%	15%	21%	25%
None	19%	17%	17%	10%

Table B-4

LIKELIHOOD THAT A STUDENT IN DIFFERENT COMBINATIONS OF FOUR HIGH-RISK STATES HAS EVER USED AMPHETAMINES

LIKELIHOOD BASED ON 1972 SURVEY

High-Risk States	Is Bored and Lacks Commitment	Lacks Commitment	Is Bored	None
Is Rebellious and Lacks Attachment to School	54%	50%	38%	39%
Is Rebellious	37%	37%	29%	23%
Lacks Attachment to School	34%	35%	25%	20%
None	21%	21%	18%	9%

LIKELIHOOD BASED ON 1974 SURVEY

High-Risk States	Is Bored and Lacks Commitment	Lacks Commitment	Is Bored	None
Is Rebellious and Lacks Attachment to School	60%	73%	49%	51%
Is Rebellious	42%	46%	35%	32%
Lacks Attachment to School	40%	21%	27%	30%
None	27%	22%	24%	13%

Table B-5

LIKELIHOOD THAT A STUDENT IN DIFFERENT COMBINATIONS OF FOUR HIGH-RISK STATES HAS EVER USED INHALANTS

LIKELIHOOD BASED ON 1972 SURVEY

High-Risk States	Is Bored and Lacks Commitment	Is Bored	Lacks Commitment	None
Is Rebellious and Lacks Attachment to School	56%	44%	43%	41%
Is Rebellious	38%	33%	38%	22%
Lacks Attachment to School	26%	27%	41%	23%
None	21%	30%	22%	12%

LIKELIHOOD BASED ON 1974 SURVEY

High-Risk States	Is Bored and Lacks Commitment	Is Bored	Lacks Commitment	None
Is Rebellious and Lacks Attachment to School	57%	54%	53%	47%
Is Rebellious	38%	38%	46%	32%
Lacks Attachment to School	36%	29%	21%	28%
None	25%	22%	13%	14%

Table B-6

LIKELIHOOD THAT A STUDENT IN DIFFERENT COMBINATIONS OF FOUR HIGH-RISK STATES HAS EVER USED MARIJUANA

LIKELIHOOD BASED ON 1972 SURVEY

High-Risk States	Is Bored and Lacks Commitment	Lacks Commitment	Is Bored	None
Is Rebellious and Lacks Attachment To School	64%	57%	52%	54%
Is Rebellious	46%	51%	41%	36%
Lacks Attachment to School	44%	44%	42%	34%
None	34%	34%	29%	19%

LIKELIHOOD BASED ON 1974 SURVEY

High-Risk States	Is Bored and Lacks Commitment	Lacks Commitment	Is Bored	None
Is Rebellious and Lacks Attachment to School	78%	80%	75%	72%
Lacks Attachment to School	68%	30%	59%	59%
Is Rebellious	64%	67%	57%	54%
None	52%	40%	47%	34%

Table B-7

LIKELIHOOD THAT A STUDENT IN DIFFERENT COMBINATIONS OF FOUR HIGH-RISK STATES HAS EVER USED BARBITURATES

LIKELIHOOD BASED ON 1972 SURVEY

High-Risk States	Is Bored and Lacks Commitment	Lacks Commitment	Is Bored	None
Is Rebellious and Lacks Attachment to School	44%	43%	32%	31%
Is Rebellious	29%	39%	24%	18%
Lacks Attachment to School	28%	29%	21%	16%
None	15%	21%	13%	6%

LIKELIHOOD BASED ON 1974 SURVEY

High-Risk States	Is Bored and Lacks Commitment	Lacks Commitment	Is Bored	None
Is Rebellious and Lacks Attachment to School	57%	57%	50%	46%
Is Rebellious	36%	42%	32%	28%
Lacks Attachment to School	40%	26%	25%	27%
None	24%	17%	21%	12%

END