

Drugs ³⁴²⁶ and American Youth

Lloyd Johnston

A REPORT FROM THE
YOUTH IN TRANSITION
PROJECT



See pencil sketch - an
✓ Card 4.2.1 Terrorism
Card 4.2.2 Drugs
Youth
4.8.2 Drugs
Youth

DC Pelz

To Don

so you won't have to
"steal into my office" to borrow
a desk copy.

Hayes 4/26/74.

Drugs and American Youth

by
Lloyd Johnston

a report from the youth in transition project

INSTITUTE FOR SOCIAL RESEARCH
THE UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN

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Preface

The research presented in this volume is an integral part of a large nationwide study of adolescent boys begun in 1966 under the primary sponsorship of the U.S. Office of Education. The study, entitled Youth in Transition, has longitudinally followed a panel of some 2200 young men from the fall of 1966, when they were in tenth grade, to the spring of 1970--a year past high school graduation for the great majority. During that three and one-half year interval a number of research objectives have been added to the original one, which was to study the causes and consequences of dropping out of high school.

The research which led to the present volume reflects one such addition. As the 1970 data collection approached, it became clear to the major investigators that the use of illicit drugs had emerged as an important youth phenomenon and that our project was in a rather unique position to make a contribution to the body of research which was slowly emerging in that field. The study already had a wealth of information on the personalities, backgrounds, and major social environments of a national sample of young men; therefore, with the addition of a relatively limited number of questions, it would become possible to examine a great many of the possible correlates of drug use.

This author, in collaboration with Jerome Johnston, developed a short questionnaire dealing with drug use and related issues, which was then included in the 1970 data collection. However, no funds were then available for the considerable analysis and writing task which lay ahead.

We were particularly fortunate at that point to make contact with The Grant Foundation of New York, which generously provided an immediate grant for the completion of the research on drug use. I would like to join the other principal investigators on this project, Jerome Johnston and Jerald Bachman, in expressing our appreciation to The Grant Foundation and particularly to its director, Dr. Philip Sapir, for providing the responsiveness and flexibility which was necessary to make this research possible.

A number of people at the Institute for Social Research have also contributed directly to this research effort. Jerome Johnston, in addition to participating in the development of the original questionnaire and research proposal, played a major role in the early analysis phase, for which I am particularly grateful. Jerald Bachman, the principal investigator of the parent study, has generously given of his time and counsel throughout.

Both of these valued collaborators read and reacted to the first draft of the manuscript, as did two other colleagues at the Institute for Social Research, Patrick O'Malley and John Robinson. I am grateful to all of them for their keen insights.

Several others have helped immensely in handling the various technical and procedural problems inherent in the production of a research publication. Gayle Ackley has provided valuable assistance in generally managing the editing and typing of manuscripts, as well as in preparing the technical tables contained here. Susan Shapiro

ably assisted in the early stages of the literature review and is also responsible for drawing the many figures which appear throughout, while Pamela Deasy was responsible for typing the final draft of the text. Gayle Ackley and Kathleen Yale were responsible for indexing the volume.

One cannot do justice to all individuals nor enumerate all of their contributions, but I would like to acknowledge in a general way the assistance of the members of the Survey Research Center's Sampling, Field, Coding, and Computer Service sections; and to thank the many past and present members of the Youth in Transition staff, who are listed below:

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Finally, the contribution of the thousands of participants in the study must be acknowledged. We are particularly indebted to the young men in the study, as well as to many staff members in the 87 high schools, for their splendid levels of cooperation. We consider the general public's willingness to participate in social science research to be a critical and by no means unlimited resource. Therefore, we hope that by the way we have treated our respondents and the ways that we have used their information, we have at least not

depleted that fund of good will; we would be very pleased to think that we had augmented it.

FUTURE PLANS

Since the Youth in Transition study is an ongoing project, there will be more publications and, hopefully, more data collections in the future. By the fall of 1973, most of our respondents will have been out of high school a little over four years. Soon after that point we hope to add a fifth data collection to assess the experiences of our panel in major post-high school settings (college, work and military service) and to continue to assess the changes in drug use (and attitudes toward drug use) which occur within those important socializing environments.

PLAN FOR THIS VOLUME

Several different types of questions are addressed sequentially in this volume. After the introduction to the study and survey of existing research given in the first chapter, the second chapter grapples with the oft-debated question of how widespread and how serious the "drug problem" is among American young people. The important issue of multiple drug use is also treated there at some length and a brief guide to interpreting the figures to be used in subsequent chapters is presented. Chapter 3 goes on to address the related topic of young people's acceptance of the use of the various drugs and of the ways in which their feelings about the use of one drug relates to their feelings about the use of others.

Chapter 4 then launches us into an examination of different subgroups in the population in an attempt to clarify just who the

drug users are. It treats a variety of background, demographic, and ability measures both separately and in combination. The multivariate statistical procedure used throughout, Multiple Classification Analysis, is introduced and described (mostly in non-statistical terms) at the beginning of Chapter 4.

Drug experiences during two major time intervals are addressed in this volume: they are the period prior to high school graduation in the spring of 1969, and the year after graduation (spring, 1969, to spring, 1970). Chapter 5 continues the search for particular "user groups" by examining a number of important characteristics of the school experience in relation to drug use prior to graduation. Chapter 6 then focuses on use after high school (and changes in use) as a function of major career lines. Comparisons are made between those who go on to college, trade school, civilian employment, and military service. Chapters 5 and 6 continue to present the results of multivariate prediction, primarily for the purpose of controlling for other variables.

Chapter 7 begins to deal with the question of how the users and non-users of various drugs differ from a psychological standpoint. Delinquency, political alienation and anti-Vietnam sentiment are the primary variables addressed.

Finally, in the summary chapter the major findings are highlighted and an attempt is made to link the results of this study to some of the serious policy questions now under discussion at various levels of government. In a complex area such as this, no one study is going to arrive at "the" best policy alternative; the factors to be weighed are simply too numerous. What such a study *can* do, however, is to help raise some of the relevant issues and to fill in some of the missing pieces of information, so that a more thoughtful and informed set of conclusions becomes possible.

If we have succeeded in any way in accomplishing these more modest goals, then we will consider our efforts to have been successful.

L. J.

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Chapter 1

An Introduction To The Study

"The drug problem in American high schools has reached epidemic proportions." This statement has been heard so frequently in recent years that it has come to be taken as a virtual truism; yet there is still a very real question of what it means, let alone whether it is true or just how seriously it should be taken.

Although most people think they share a common notion of the phenomena encompassed by "the drug problem," the apparent consensus quickly disappears when people begin to elaborate on their various understandings of the term. Drugs are presumed by many to be substances that affect the mind (psychoactive substances), *all* of which are associated with an evil and clandestine trade. But this definition succumbs quickly when it is pointed out that not all psychoactive substances are illegal to sell or use. The thriving cigarette and alcoholic beverage industries constitute two dramatic exceptions.

But, many would reply, the phrase "the drug problem" encompasses only those psychoactive drugs which really constitute a problem for the society--the implication again being that only illegal drugs should be included. However, to really operationalize this definition,

it is still necessary to clarify what is meant by a problem. If a problem is presumed to exist when there is widespread public disapproval of a drug, then marijuana is clearly an integral part of the drug problem along with most other illegal drugs. Alcohol and cigarettes are probably not included under this definition. But, if a societal problem is defined in terms of actual *dysfunction* for the individual and the society, then alcohol and cigarettes surely qualify for inclusion, while perhaps marijuana does not. Under this latter definition, the legality of a drug does not accurately indicate whether it should be viewed a part of a larger drug problem.

But even if we do define the drug problem in terms that most people would, i.e., in terms of those psychoactive drugs which are sold and used illegally, there are still many ways of understanding or misunderstanding what the size or nature of that problem really is in contemporary America.

Beginning in the late 1960's, the media began raising the spectre that drug use was rampant in our high schools, and the suggestion was often fairly explicit that drug use meant hard drugs like heroin. Graphic and alarming specifics were often provided. So one major question concerns just how widespread the use of drugs really is among young people. A related, but less often heard question concerns exactly which drugs are being used and with what degree of frequency.

Then comes the question of who the users are. Hypotheses abound. The users are mostly in the ghettos or mostly in the cities. They are the social misfits living on the margins of mainstream America--the dropouts, the hippies. The campuses are usually credited with contributing a disproportionate share of the problem. Users are people who are coping with deep psychological problems, screening the pain and realities they face. Others say users are mostly normal conformists, uncritically adopting the latest fad like

many generations before them. The one thing on which most people agree is that the user population is to a large extent young people.

We must be jogged out of the simplification, however, that a user is a user is a user. The term helps the conversation but blurs the understanding. Any of the above hypotheses may be true for users of one drug but not for users of another. Perhaps a more unsettling reminder is that there may not be any single "user type" or reason for using--that as with many other social issues, we are dealing with a very complex phenomenon with multiple patterns and dynamics. If true, this suggests that "the drug problem" in America may not be amenable to simple solution--that we may not be able to legislate it away, nor enforce it away, nor in other ways submerge it through quick collective action. We may even continue to have difficulty agreeing what it is.

THE OBJECTIVES OF THIS STUDY

These difficulties arise largely because a social problem of really great complexity has grown dramatically in a rather short time, and the society is still trying to catch up with it in terms of language and concepts and understanding. We must now unravel the shorthand terms we have hastily acquired for describing and discussing the complex set of phenomena known as "the drug problem"; we must come to understand the misconceptions we have unwittingly adopted, and in the process, perhaps, gain some insight into our reasons for our adopting them.

The present study is presented as a contribution to that general process. Inevitably, it moves us toward a level of greater complexity than that to which we are accustomed. There is not a monolithic "drug problem" discussed here, nor a simple "drug user." We deal

with the use of each of seven discrete drugs (or classes of drugs), and differentiate experimental, occasional, and regular users of each. Not all illegal drugs are included in this study, but most of the major classes are: marijuana, hallucinogens, amphetamines, barbiturates, and heroin.

The use of certain legal drugs is examined as well: specifically, the use of cigarettes and the use of alcoholic beverages. Interestingly enough, we find that the usage patterns of legal and illegal drugs are not unrelated by any means.

We attempt to assess the prevalence and intensity with which each type of drug has been used both during and after high school by examining a recently-graduated class of American high school students. The sheer incidence of use is something about which surprisingly little is known. We also attempt to assess young people's attitudes toward drug use and sources of drug help, with some rather surprising results.

Most importantly, we explore the relationship of a number of social environments to drug use: region, community, family, high school, college, work, and military service. The young person's performance and personal experiences in a number of these settings are also related to drug use: stability of residence, dropping out of high school, participation in extracurriculars, grades achieved in high school and college, and alienation from the political order. All are factors commonly assumed to be related to drug use. Again, many widely held conceptions are seriously challenged by the research results.

Finally, the often-mentioned relationship between drugs and crime is examined. Having the power of a longitudinal design, the present study presented a unique opportunity to separate out cause and effect in this important area.

Taken alone, we do not assume that these research results are going to provide any quick solutions to solving "the drug problem ", no matter how one defines it. But we do think that we are able to contribute some important new evidence to the fund of knowledge now being cumulated to deal with it. Before launching into the results of the present study, however, it is worth considering briefly the state of the field to which this work contributes.

THE CURRENT STATE OF KNOWLEDGE IN THE FIELD

Because any summary of this field will soon be obsolete, and given the ponderous nature of the existing literature, no exhaustive review will be attempted here. The major purpose of this section is to familiarize the reader with the general state of the field along with some of the findings of particular relevance to the current study. Major existing studies and publications will be referenced as well as some forthcoming works of importance.

It should be recalled that seven different drugs are treated in this volume, a rather wide array, which turns out to mean that at least three different literatures are of relevance. The two legal drugs included here, alcohol and cigarettes, have a considerably longer history of widespread use in the culture and, as a result, have each given rise to earlier and separate lines of research.

Cigarette Smoking

Over the last two decades, cigarette smoking has received considerable attention as evidence has been amassed of its role in the etiology of a host of serious diseases. Those who are interested in further exploration of the literature dealing with the psychology

and sociology of cigarette smoking should consider the following sources: McKennell and Thomas (1967), National Interagency Council on Smoking and Health (1967), Smith (1969), Gallup Index (September, 1969), Purdue Opinion Poll (1969), and U.S. Department of Health, Education and Welfare (1964, 1969, 1971, 1972). Findings from several of these sources will be summarized here.

National Clearinghouse Studies. A series of three national surveys concerning the smoking habits of teenagers was conducted by the National Clearinghouse for Smoking and Health (Department of Health, Education, and Welfare; 1971 and 1972). Telephone interviews of large samples of the age range 12 to 18 were conducted in 1968, 1970, and 1972--dates which bracket the present study. During that period they found that teenage girls showed a slightly higher incidence of regular smoking at each subsequent survey (going from 8% to 12% to 13% smoking weekly or more often). Boys, on the other hand, increased use from 1968 to 1970, but decreased use between 1970 and 1972 (going from 15% to 19% to 16% sequentially). The net effect of these shifts was to narrow sex differences in smoking levels considerably. Among 18 year olds in 1972, 30% of the males were actively smoking on a daily basis compared with 25% of the females.

Smoking habits among members of the immediate family, a subject unfortunately not explored in the present study, proved to have a very important relationship to youngsters' smoking habits (Department of Health, Education and Welfare, 1971). Among boys 12 to 18 in intact families, 24% smoked regularly if both parents smoked, 17% if one parent smoked, and only 12% if neither parent smoked. Differences related to the smoking patterns of older siblings were fully as strong. Of those boys with older siblings who smoked, 30% smoked regularly; whereas only 13% smoked regularly among those whose older siblings did not smoke and only 15% among those without older siblings. The smoking habits of girls showed basically

similar relationships to family practices except that the relationship to parental smoking habits was less strong than for boys, while the relationship to older sibling practices was even more pronounced.

Several demographic and background factors were also examined in that study. Modest regional differences were found, with the Northeast and the South having the greatest prevalence of cigarette smoking for boys, the North Central region somewhat less, and the West having the least (21%, 20%, 17% and 14%, respectively, in 1970). This ordering is replicated in our own work, to be discussed later. Regional effects are different for girls, with the Northeast clearly highest, the North Central next, then the West and the South (16%, 13%, 10% and 9%, respectively).

The National Clearinghouse surveys also showed smoking to be slightly higher in metropolitan areas, a finding not replicated in the present study. Smoking was found to be considerably lower than average among youngsters from high socioeconomic levels, those in college preparatory studies in high school, and those attending college; all of these findings are replicated here and are discussed in more detail in Chapters 4, 5, and 6.

Studies in Great Britain. McKennell and Thomas (1964) reported a number of findings which parallel those of the National Clearinghouse, based on nationwide samples of adults and adolescents in Great Britain. For example, they found that, although males are still heavier smokers, the sex differences have been narrowing for years. They found smoking to be negatively related to social class and level of education, and determined that parental smoking practices related strongly in a positive direction to their children's propensity to smoke. They also discovered that parental disapproval of their children smoking (as perceived by the children) was associated with considerably lower levels of use.

There was a very strong, positive relationship between the proportion of a young person's peers who smoked and the probability that he was a smoker. Finally, those who were non-church goers and those who drank alcoholic beverages regularly were found to be considerably more likely to be regular smokers.

Personality Characteristics of Smokers. Smith (1969) provided a succinct review of the considerable literature on personality characteristics related to smoking. His view was that the literature supported only two clear conclusions: that smokers are more "antisocial" on the average than non-smokers, and also more extroverted. Of the 32 analyses he cited dealing with antisocial tendencies (including variables such as rebelliousness, belligerence, defiance, misconduct, psychopathic deviance, and disagreeableness), 27 showed a significant, positive relationship between the antisocial tendency and smoking. Of the 25 analyses he cited which related smoking to extroversion, 22 yielded statistically-significant, positive associations.

In the present volume, we will be dealing with delinquent behavior in relation to smoking, and our findings turn out to be consistent with those cited by Smith. No measures of extroversion are treated here.*

Smith also cited research evidence, but in his opinion not conclusive evidence, which suggested that smokers tend to have a

*Unfortunately Smith's review focused on the statistical significance of differences rather than their magnitude, so one must return to the original source material to assess the real importance of differences found. Nor did he deal with the possibility that third variables on which smokers and non-smokers differ, socioeconomic level in particular, might account for the personality differences cited.

lower sense of internal control or personal efficacy; to be more impulsive; to be more oral; and to have poorer "mental health" than non-smokers. He concluded that much research remains to be done before a reasonable understanding of the psychology of smoking is achieved, and he presented some specific suggestions for research strategies. Among his suggestions were the use of longitudinal designs and multivariate analyses.

Alcohol Use

Alcohol use has long been considered worthy of study because of the social and psychological costs associated with alcoholism. Very recently the public's attention has been drawn again to what some call "the nation's number one drug problem," with publicity focusing on the incidence of excessive alcohol use by those responsible for traffic fatalities and crimes of violence. Alcohol is probably the most widely used psychoactive substance in America today, with the exception of caffeine, and this fact is as true among young people as it is among their elders.

A National Survey of College Students. Gallup (1971) reported that of a national sample of college students surveyed in 1970, about one-half had used hard liquor in the previous thirty days, one-half had used wine, and 60% had drunk beer. For each type of alcoholic beverage, about 80% of the sample reported having used it at some time in the past.

There were no sex differences in current use of beer (e.g., use in the past thirty days) and only modest differences in the use of wine and hard liquor, with males being the heavier users. Users of each of the illicit drugs (marijuana, hallucinogens, amphetamines, and barbiturates) reported higher than average use of all three types of alcoholic beverage.

A National Adult Survey. In an important 1965 national survey of adults 21 years and older, Cahalan, Cissin, and Crossley (1969) were able to look quite intensively at American drinking behaviors and associated factors. They developed a five-category system for classifying people based on the quantity, frequency, and variability of their alcohol consumption. They classified 32% as "abstainers," 15% as "infrequent drinkers," 28% as "light drinkers," 13% as "moderate drinkers," and 12% as "heavy drinkers." The last group includes people who drank at least weekly or more often with five or more drinks on some of those occasions. Only 22% had never used alcoholic beverages.

Consistent with the Gallup results, a larger proportion of men than women used alcohol, particularly at the heavier levels of usage. While only 5% of the women were heavy drinkers, 21% of the men were so classified. Heaviest drinking was found in the Northeast, while the South had relatively low rates of alcohol use. In the present study of young men, usage levels were found to be quite similar in the different regions of the country, suggesting that regional patterns may be changing with newer generations.

Another finding reported by Cahalan, et al., which failed to match the results of the present study concerns the difference associated with urbanicity. They found drinking to be most prevalent in large cities and least prevalent in rural areas. The findings from the current study are just the opposite, possibly reflecting a generational shift in urbanicity patterns as well.

Racial comparisons indicated very similar usage distributions for blacks and whites, particularly for men. The present research yields similar results for adolescent males. In religious comparisons, they found Catholics to have a disproportionately high number of regular drinkers, particularly Catholic men.

Parental permissiveness about drinking (as recalled by the respondent) was found to be positively correlated with the respondent's own frequency of drinking. (Recall that McKennell and Thomas [1964] reported a similar finding in relation to cigarette smoking.) Also, heavy drinking by one spouse proved to be more likely if the other spouse drank heavily.

The primary reasons given for drinking by the majority of these adult respondents were social ones. The authors concluded that only about 29% of the drinkers could be classified as "escape drinkers." To be so classified, a respondent had to indicate that two or more of the following five were "very important" or "fairly important" reasons for their drinking: it helped them relax (45%); it cheered them up (25%); they needed to drink when tense and nervous (18%); it helped them forget worries (15%); it helped them forget everything (7%). Social reasons for drinking were given high ratings by much larger proportions of the sample: to celebrate special occasions (75%); to be sociable (72%); and to be polite (59%).

In examining public attitudes toward alcohol use, the investigators found a pronounced ambivalence. About three-fourths of all respondents thought drinking did more harm than good. The negative effects they were most concerned about included health, family life, accidents, and economic and psychological consequences. On the positive side, many felt that drinking helps people to mix socially (26%) and helps people to relax (25%). Over 40% of the respondents reported having close relatives with a serious drinking problem and 31% a close friend with such a problem. About 9% said they worried about their own drinking.

A very strong relationship was found between cigarette smoking and drinking for men (ranging from 38% of the abstainers smoking to 60% of the heavy drinkers), but the relationship was even more pronounced among women (ranging from 19% to 81% for the respective

groups). Experiences with illicit drugs were not asked about in the study, so they could not be related to alcohol use.

Finally, two personality characteristics were found to distinguish people who drink to varying degrees. The heavier drinking groups scored somewhat higher than average on an index of impulsivity, while abstainers and infrequent drinkers were the least impulsive. However, heavier drinkers came out lowest on an index of rigidity, and abstainers were considerably higher than average.

Surveys of High School Students. Several of Cahalan's colleagues at the Rutgers Center of Alcohol Studies had conducted a prior survey of nearly 2000 high school students in the early 1960's. (Maddox and McCall, 1964.) Like so many studies in the field, it was local rather than national in scope. They drew their sample from the junior and senior classes of three high schools in a medium-sized Midwestern city.

The illicit nature of drinking for the age group, at least in the early 1960's, was indicated by the fact that respondents thought teen-age drinking most often occurred at "wild" or "unsupervised" parties, and the most frequent locations cited were "secret, out of the way places." The investigators found that personal approval of drinking varied considerably with the respondent's own use of alcohol. While only 36% of the non-users thought drinking was "all right," about 84% of the users thought so.

The teen-agers were asked to list the three most important reasons why people their age drank. The most frequent mention (about 40% of the responses) was coded "to enhance conception of self as smart and grown-up." About 30% of the mentions were "to be sociable" or "to avoid being different or left out," while less than 3% were coded "to reduce anxiety."

Maddox and McCall concluded that the use of alcohol "is a socially structured and culturally defined pattern of behavior to which almost all adolescents in our society are exposed in the process of growing up and with which most of them sooner or later experiment." (p. 99) They emphasized the importance of adult role-playing as a factor in drinking behavior by noting that, when adulthood is perceived as involving alcohol use (as it is in most segments of American society), the increasing identification of a young person with adult status is likely to lead to his personal use of alcohol.

The Purdue Opinion Panel (March, 1969) conducted a later study on alcohol use which was based on a broader sample but afforded less in-depth analyses. Using a large, non-random sample of high school students in grades ten through twelve (which was reweighted to match a national sample in terms of demographic composition), the Purdue investigators asked a few questions about personal experiences and attitudes related to alcohol use. Since some of the questions had been included in Purdue surveys done in 1949 and 1957, certain cross-time comparisons were possible.

It was found that approval of alcohol use had increased over the twenty year period from 1949 to 1969. At the earlier date 59% of the high school students expressed disapproval of the use of intoxicants, but by 1969 the proportion had dropped to 37%. Approximately 30% indicated a position of neutrality on the issue on both occasions. Girls were generally more disapproving than boys at both times.

The data also suggested that young people may begin drinking at an earlier age in recent years. In 1957 only 27% of the high school students indicated that they had taken their first drink by age 14, but by 1969 the percent had jumped to 55%. However, there was a very high non-response rate in 1957, over 40%, which was

interpreted by the authors as indicating no use of alcohol, but which could also be interpreted as reflecting high concealment; therefore the findings must be treated as very tentative.

In the 1969 survey, 36% of the teen-agers said neither of their parents drank, while 39% said both parents drank. More parental drinking was reported in the higher socioeconomic level homes and in the Eastern and Midwestern regions of the country.

Some 45% said their parents forbade them to drink, while an additional 24% said drinking was permitted only at home. These parental restrictions did not seem to be much different for boys than for girls nor for tenth, eleventh, or twelfth graders. Fewer parents were reported as forbidding alcohol use in 1969 than in 1957, indicating some relaxation of adult as well as adolescent mores in relation to alcohol use by young people.

The Use of Illegal Drugs

A great deal of the existing research on the use of illegal drugs (such as marijuana, hallucinogens, amphetamines, barbiturates and the opiates) suffers from some rather severe methodological limitations. Many studies have started with populations of known drug users, often patients in rehabilitative programs, and have tried to work back the chain of causation using retrospective data. The limitations of this "after the fact" method, in terms of validity of the data, representativeness of the sample, absence of control data, and generalizability to wider populations are well documented in the literature.

Many other studies--in fact most others--have involved surveys of normal but geographically very limited populations, such as particular schools or towns. The information on usage rates,

attitudes, and so forth are obviously of restricted generalizability, although this fact is unfortunately often overlooked by both the investigators and the media.

Such studies also have the disadvantage of limited variation in potentially important causal factors--particularly different types of social environments--with the result that the effects of such factors cannot be assessed. Finally, most such studies are cross-sectional snapshots at one point in time, which leave the direction of causality between related variables very much open to question.

Berg (1970) summarized most of the research and literature on natural populations up to 1970 in a very thorough review article. Of the 69 surveys she included in her compilation, the vast majority were studies in single institutions and, according to her, "rather haphazard in design." Only four involved national samples, three of college students and one of the adult population. Gallup conducted all of the college polls, one under contract with *Reader's Digest* (1967), one for *Newsweek* (1969), and one independently (Gallup and Davies, 1969). The single survey of adults 21 years of age and over was also conducted by Gallup (Gallup Opinion Index, 1969b).

National College Surveys. Since Berg's original review article, more national college surveys have been conducted, several of which she cites in a more recent publication supplementing the original article (Berg and Broecker, 1972). These include Gergen, Gergen, and Morse (1971), *Playboy* (1970, 1971), Groves, Rossi, and Grafstein (1970), and Gallup (1971). Gallup has since completed an additional college poll in late 1971 (Gallup Opinion Index, 1972).

The Gallup data provide the best information on trends currently available. They show a continuing rise in the use of

marijuana across the time intervals covered, with 51% of college students in late 1971 saying they had at least tried marijuana once, up from 42% in 1970 and 22% in 1969. According to Gallup, hallucinogen use has also been rising on the campus from 4% in 1969 saying they had ever used it to 14% in 1970 and then to 18% in 1971. Amphetamines were only included in his 1970 and 1971 surveys, and the percent reporting ever having used them climbed from 16% to 22%. Barbiturate use, on the other hand, seems to have peaked at 15%, the rate reported in 1970 and 1971, after a rise from 10% in 1969. The most recent survey, made in late 1971 (Gallup Index, 1972) included heroin and cocaine for the first time, so no trends are available. Only about 2% reported having ever used heroin, but a surprising 7% reported experience with cocaine.

While the above findings tend to indicate a continuing sharp rise in usage rates on campus for most illicit drugs, they may be somewhat misleading, since they include all people who say they "ever used" the drug. There is considerable evidence in the statistics concerning *active* use that the upward trend in drug use may have peaked. Between 1970 and 1971 the percent reporting use of marijuana in the prior thirty-day period increased only a little (from 28% to 30%); hallucinogen use for the same period dropped (from 6% to 4%) as did barbiturate use (from 5% to 4%); and amphetamine use rose only slightly (from 7% to 8%). Further the profile of active drug use for the incoming freshman classes in each of the two years were very similar, perhaps indicating a peaking of active use in the high schools as well.

Gallup reports college men to have a higher incidence of use of all of the drugs than college women. For example, in the 1971 survey, 23% of the female respondents had used marijuana in the preceding thirty-day period versus 36% of the male respondents. The level of education attained by the respondent's father was found to be positively associated with use of all of the illicit drugs except heroin.

Gergen, Gergen, and Morse (1972) recently reported on a large scale national survey of college students, focusing particularly on the relationship of marijuana use to three classes of variables: characteristics of the educational institutions, social and personal characteristics of the students, and personal reactions to the Vietnam War. Based on a survey completed in early 1970 on a sample of 5000 college students (located in 38 colleges and 5 junior colleges), the investigators reported that 37% had used marijuana at some time in the past, 12% had used hallucinogens such as LSD, 8% had used stimulants or depressants, and 2% had used heroin or cocaine. Marijuana was used by over 96% of the users of heroin or cocaine and 85% of the users of stimulants and depressants.

The institutional characteristics which they found to be associated with higher than average marijuana use included being located at a college in the Northeastern or Western regions of the country, being at a larger institution, being at a non-denominational institution, and attending an all-male or all-female school. Usage was lowest for both males and females among those who attended coeducational institutions. The difficulty of gaining admission to the school was found to be directly related to marijuana use, with usage rates ranging from 23% in the least competitive group up to 56% in the most competitive one.

Among the student characteristics found to be positively related to marijuana use were the educational attainment of the student's father, the level of education to which the student himself aspired, and the student's grade-point average in college. (In the present study, grade-point average in the freshman year of college turned out to be unrelated to college grades. Those majoring in social sciences, the humanities, and the arts were also relatively more likely to use marijuana.)

In examining the relationship of marijuana use to religious preference, they found that those who defined themselves as Jewish had a much higher than average level of use (62%). Those reporting no affiliation with a recognized religious group had the highest incidence of use (69%).

Reaction to the Vietnam War was found to be the most important "predictor" of marijuana use in the study. Of those who supported unilateral withdrawal by the U.S., 60% used marijuana, versus 41% of those desiring unilateral, phased withdrawal and 17% of those desiring anything less than some kind of unilateral withdrawal. Similar distributions emerged when the sample was divided according to participation in anti-war demonstrations and according to personal dislike for President Nixon. (Those who demonstrated against the war and who most disliked the President were the heaviest users.)

The relationship between the use of all drugs and alienation from the war (as well as the political order generally) are examined in Chapter 7 of the present volume. Our results are quite consistent with those of Gergen, et al.

A brief preliminary report was recently released on a large-scale survey of life styles on campus, under the direction of Peter Rossi at Johns Hopkins (Groves, Rossi, and Grafstein, 1970). Based on 1969 data from about 8000 freshman and juniors at fifty colleges across the country, they found that the great majority disapproved of the non-medical use of heroin, psychedelics, and "pills" (presumably amphetamines and barbiturates). About an equal number of students approved of marijuana use as disapproved of it.

Users of each drug, when asked to check the one or two most important reasons for use, indicated quite different reasons for different drugs. Marijuana, like alcohol, had 52% indicating that the primary reason for use was "to get pleasure, to get moderately

high, feel good." However, the second-ranked reason for marijuana use was "to use with others, to enjoy the effects together," whereas for alcohol use it was "to be sociable and feel comfortable with other users."

The major reasons for using psychedelics were "to produce intense, exciting experiences" and "to explore the inner-self or enhance creativity." "Pills" were taken most often "to help with work, performance, or weight," then came "to experiment once or twice," followed by "to relax, to reduce anxiety or tension, to help sleep."

Users were also asked to rate how satisfying their experiences had usually been with each drug. The modal (and median) answer of "moderately satisfying" resulted for tobacco, alcohol, pills, and heroin. (There were only 48 self-reported heroin users.) For marijuana and psychedelics, however, the modal (most frequently chosen) answer was "very satisfying."

National Adult Surveys. In his 1969 interview survey of the adult population, Gallup found only 4% admitting to the use of marijuana. Usage rates were by far the highest among the young, of course; but were also higher than average for males, the more educated, those from urban areas, and those from the West and the East. Use of marijuana was admitted by 9% of the adult respondents in the West. Unfortunately, no other illegal drugs were included in that survey.

CBS conducted a telephone interview survey in August, 1970, of the national adult population 18 years of age and older (Geiger, 1971). Based on 1128 completed interviews, the following information was secured on people's use of (or their exposure to) marijuana. About 6% had at least tried it, 7% said they would like to try it, and another 12% who had neither tried it nor wanted to try it said

they had friends who used it. Again, use was highest among the young, with 21% of the 18-24 year olds reporting prior use, 9% of the 25-29 year olds, 7% of the 30-34 year olds, and 2% of those 35 and over. These sharp differences between fairly close age groups indicate the dramatic speed with which drug use emerged among the young. It also seems to indicate that those who passed the college years without having tried marijuana are much less likely to try it than are those of a younger age. There is at present no national information on the use of other illegal drugs by adults.

Other Work in the Field. Richard Blum, in collaboration with others, published two volumes on drugs in 1970, *Society and Drugs* and *Students and Drugs*. These contain a historical perspective on the use of many drugs as well as a considerable amount of research on, and discussion of, their contemporary manifestations. While not working with national data, these investigators do have samples of a number of colleges and high schools for their data base. Blum and Associates (1972a, 1972b) have subsequently published two additional books of importance, one dealing with the role of the family in drug use and the second focusing on drug dealers.

Other references which the reader may find useful in exploring the drug literature include Goode (1969, 1970), who has written extensively on marijuana use; and the *International Journal of the Addictions*, perhaps the most important journal in the drug research field.

Forthcoming Research. The reader should also be aware of several national surveys of drug use which will be published in the near future. The nationwide college survey under the direction of Peter Rossi, already mentioned, should be issuing further reports fairly soon. Another very large study of drug use is underway at Columbia's School of Public Health under the direction of Dr. Jack Elinson. It is a longitudinal study of some 35,000 junior and

senior high school students, the first wave of which was completed in the spring of 1971. Presumably some major publications will be forthcoming from that group soon.

Finally, the President's Commission on Marijuana and Drug Abuse sponsored a 1971 national survey of adults and young people dealing with drug use and related attitudes. The first report of that Commission, focusing specifically on marijuana, was issued in 1972 along with some of the survey results.* The second report, dealing with the use of other illicit drugs is due for publication in 1973.

However, despite the number of forthcoming works, the fact remains that at present there is relatively little information from national samples on drug behavior and drug attitudes--particularly surveys which include the non-college population--and what little there is has been gathered more for opinion-poll purposes than for in-depth analysis. Therefore, we hope to be able to fill in some of the gaps in present understanding of drug behavior among American youth by bringing to bear the power of multivariate analysis on the nationally representative data base of the Youth in Transition Study, of which the present research is but one part.

THE YOUTH IN TRANSITION STUDY

Youth in Transition is a long-term study of young men in a single high school class. Originally conceived of as a study of

*Because the vast majority of the text of this volume was completed by the time the first report of the President's Commission became available, no attempt has been made to integrate the results of that report with the main body of this text. However, some of the Commission findings of particular relevance to the present work are noted in an epilogue to this volume.

the causes and effects of dropping out of high school, it is comprised of four sequential data collections from a national sample of young men over a period of about four years.

The Sample

The sample was drawn to be representative of the national population of boys who were starting tenth grade in public high schools in the continental United States in the fall of 1966, i.e., those who would become the class of 1969. Approximately 2200 young men located in 87 high schools across the country were selected in the initial sample (See Figure 1-1).

A three-stage random sampling procedure was used. First, the 76 Primary Sampling Units (PSU's) used by the Survey Research Center were selected as the geographical domains for further sampling.* Within each of 88 strata, a single high school was randomly sampled, with the probability of selecting each school being proportionate to its estimated number of tenth-grade male students. (Since we wanted to draw equal-sized samples in each school, it was necessary to include a disproportionate number of large schools because they contained a disproportionate number of students.)

Originally, 88 schools were asked to participate: 71 agreed to do so, while the remaining 17 declined for a variety of reasons. Replacement schools were located in the same strata for 16 out of the 17 declining schools.

*The Primary Sampling Units are geographical areas which have been selected as containing a population representative of the population of the continental United States based on the 1960 Census. Since some PSU's represent more than a single sampling stratum of the population, there are actually 88 strata represented in the 76 Primary Sampling Units.

FIGURE 1-1
LOCATION OF SAMPLING CLUSTERS



A predetermined number of tenth-grade boys were then randomly sampled in each of the selected high schools. Roughly equal-sized samples were drawn, averaging around 25 boys per school. (Complete details of the research design are given in Bachman, et al., 1967, Chapter 3.)

The Four Data Collections

The fourth data collection, made in the spring of 1970, is the one of primary concern for this volume, for it contained the questions dealing specifically with drugs. However, variables measured at other points in time will be dealt with here, so a short synopsis of the full sequence will be presented.

The initial data collection was conducted in the high schools when the respondents were just beginning tenth grade (fall, 1966).

It entailed a two-hour personal interview, a group-administered questionnaire of considerable length, and a battery of group-administered tests. All instruments were administered by a professional interviewer from the Survey Research Center. Over 97 percent of the total sample of boys invited to participate did so, providing a highly accurate initial sample and a rich set of initial data for analyzing the nature of eventual panel attrition.

All data collections after the first were conducted at locations other than the school--settings which were judged to be more "neutral" for drop-outs. Various locations were secured, depending upon the available facilities in each neighborhood, including community centers, libraries, church basements, and so on. Interviewers sought locations near to the school which would afford privacy.

The second administration took place in the spring of 1968, a point corresponding to the end of the junior year. It included an interview and paper-and-pencil questionnaire, which altogether took respondents about three hours to complete. The third collection, made just prior to the point of normal graduation from high school, was comprised only of questionnaires, which were administered to small groups of respondents.

The fourth and most recent data collection was made in the spring of 1970, a point corresponding to one year after normal high school graduation. Once more, "neutral sites" were used and respondents were paid ten dollars for participation. The two-hour interview was reinstated and an individually-administered set of questionnaires, which took about one and one-half hours to complete, was also included. One of these questionnaires contained all of the questions in this study dealing specifically with drugs. Of the original sample, 71% were secured for participation in this fourth data collection. The importance of the panel attrition will be discussed below.

The Drug Questionnaire

All questions concerning drugs at Time 4 were included in four pages of a short "Confidential Information Questionnaire," which is presented in its entirety in Appendix B. Questions were asked concerning the respondent's own use of seven drugs both during and after high school; the number of friends he had who used the various drugs; his own attitudes about drug use; the extent to which he thought marijuana and heroin were accessible to him; and the places he would turn for help in the event he got into trouble with drugs.

This questionnaire, which contained an identification number but not the young man's name, was completed by the respondent working alone in a sufficiently private setting that no one could view his answers. Once finished, he sealed the questionnaire in a special envelope to ensure that it would not be read by the interviewer. It was mailed to Ann Arbor in a larger envelope by the interviewer along with the other materials, and the respondent was assured that his answers always would remain in strict confidence. (A more detailed description of the situation is presented in Appendix A in the context of a discussion of the validity of the data.)

A NOTE ON METHODOLOGICAL ISSUES

Two major methodological questions are particularly germane to the results presented in this volume. They concern the representativeness of the sample at Time 4, upon which all of the drug data are based, and the validity of the answers given to the drug-use questions in general. Both of these issues are treated in more depth in Appendix A for the reader wishing to explore them further, but the basic conclusions are summarized here.

Representativeness of the Sample

By the fourth data collection, some 29% of the original sample had been lost from the study for a variety of reasons. After comparing the composition of the retained sample to that of the original sample along a number of important dimensions, and examining the reasons for panel loss, we concluded that the population estimates of such things as drug use were probably changed very little due to panel attrition. Where drug use is itself presumed to be a cause of non-participation, an assumption we make only for heroin at an addictive level, we conclude there is likely to be a systematic underestimate of use--though as a proportion of the sample this should be a very small underestimate.

High school dropouts were the one subgroup we know to be systematically underrepresented in the retained sample. They are estimated to comprise 18% of those who were in the original sample, but comprised only 10% of the Time 4 respondents. After exploring at some length the consequences of reweighting the responding sample to compensate for differential retention rates--as in the case of dropouts--it was concluded that such reweighting would alter the population estimates extremely little, too little to justify the added complexity. Examples of such corrections are presented in Appendix A.

Validity of the Answers

One of the first questions raised whenever one presents survey research findings concerning illegal behaviors is whether the respondents have really been honest. Is it not reasonable to assume that people will lie about such matters to protect themselves from embarrassment and possibly even from self-incrimination?

Naturally, the investigators were concerned about these questions. We took particular pains to reduce such motivations to lie and, further, to increase the respondent's positive desire to be honest. The situation provided privacy, and the questionnaire identification and handling was designed to assure the confidentiality of the respondent's answers. The instructions emphasized the importance of research on the subject of drugs; and we tried to communicate to the respondents, both in the instructions and by including cigarettes and alcohol among the drugs, a position of neutrality and objectivity on the part of the researchers.

One must assess the success of our efforts through inference, since no definitive sources of information are available concerning whether each respondent actually used drugs. The investigators conclude from the inferential data available that the validity of the self-reported answers is quite high. Among the facts leading to this conclusion are (a) nearly 40% of the sample admitted to some illegal drug behavior, (b) the percent of missing data in this section was about normal, (c) the proportion of non-users is consistent with the proportion who say they disapprove of drug use, (d) the drug use questions relate strongly and in expected directions to variables such as the individual's drug-related attitudes and his reports of drug use by his friends, (e) strong relationships are also found to be different, but theoretically related variables, and (f) other methodological studies suggest that our methods should elicit a relatively high degree of "truth telling." In sum, we are inclined to view the collective answers of our respondents about drug use and related matters as being quite accurate.

Chapter 2

The Use of Drugs During and After High School

One important fact should be kept in mind when reading the following statistics on the prevalence of drug usage; namely, that what we have here are figures based on a single graduating class of students as they pass through a particular chronological stage of development. Thus, while they may be quite accurate descriptions of usage rates in that group of young people (i.e., the high school class of 1969), they may be less accurate for preceding and following classes. (This is probably less true for the legal drugs investigated--cigarettes and alcohol.) Rates of illegal drug usage have been changing rapidly, and may continue changing; but, many of the relationships and dynamics discovered here are likely to remain fairly stable across a number of classes. This fact, in conjunction with the serious lack of good national information on drug usage for any class of high school students, make the exploration of these statistics still very worthwhile.

THE USE OF DRUGS DURING THE HIGH SCHOOL YEARS

One frequently hears that the use of illegal drugs is filtering down to younger and younger age groups. While we unfortunately

do not have evidence on the age at which our respondents first tried these drugs, we do have information about the prevalence and intensity of drug usage among these young people before the point of high school graduation. Table 2-1 presents the figures for seven drugs along with the original question, which was asked retrospectively one year after the majority of the class graduated.* The reader may wish to take a moment to familiarize himself with the question, since it and another like it are the sources of the major dependent variables for this book.**

It should be noted that particular drugs or classes of drugs chosen for inclusion here are by no means an exhaustive set of all psychoactive substances currently in use. They were chosen from the larger set on the basis of their presumed social and medical importance, as well as on their prevalence of use. Among the substances missing from the set are caffeine, glue, aerosols, and

*A relatively small fraction (9.3%) of the sample on which these statistics are based is composed of young men who dropped out of high school at some point after the beginning of tenth grade. This group is discussed separately in Chapter 5 but is also included in the statistics throughout, since they comprise part of the grade cohort. References to drug usage "during high school years" includes the dropouts even though they were not in high school for some portion of that time interval.

**Recall the question was asked during the fourth data collection or late spring, 1970--a time which corresponded to one year after graduation for the vast majority. Therefore, it asks for retrospective information--drug taking which occurred prior to the twelve month interval just ended. The validity of such retrospective data is, of course, open to question. However, the fact that the termination of the time interval in question is clearly demarcated by a major event like high school graduation, and the fact that the behaviors being asked about have such great significance to young people, suggest the respondents should have been able to recall fairly accurately their own drug related behaviors during high school.

TABLE 2-1
Drug Use During the High School Years

<i>Percentage Frequencies</i>							
Previous to this past year (that is, before last summer), how often had you done this for other than medical reasons?	Nearly every day	Once or twice a week	Once or twice a month	3-10 times a year	Once or twice a year	Never	% Missing Data
	(1)	(2)	(3)	(4)	(5)	(6)	
(a) Smoked cigarettes	36.2	7.5	5.4	5.5	11.6	33.7	1.6
(b) Smoked marijuana (pot, grass) or hashish	1.4	4.9	4.1	3.8	6.6	79.3	1.8
(c) Taken amphetamines (pep pills, bennies, speed, uppers)	0.8	1.1	1.8	2.6	3.7	90.0	1.2
(d) Taken barbiturates (yellow jackets, red devils, downers)	0.2	0.5	1.6	1.6	2.3	93.7	1.4
(e) Taken heroin (smack, horse, "H")	0.3	0.3	0.4	0.4	0.4	98.2	1.1
(f) Taken hallucinogens (LSD, mescaline, peyote, etc.)	0.4	0.7	1.7	1.6	2.4	93.1	1.9
(g) Used alcoholic beverages (liquor, beer, wine)	6.4	26.1	23.0	14.0	12.0	18.5	1.2
Total N for Each Row = 1798							

opiates other than heroin, such as cocaine. Among the drugs chosen for inclusion are four broad drug classes (alcoholic beverages, hallucinogens, amphetamines, and barbiturates) and three specific drugs (marijuana--including its concentrated derivative, hashish; cigarettes; and heroin). Alternate and slang names for some of these drugs are presented in the original question.

Illegal Drugs

Table 2-1 represents a report on all drug use up to the time the vast majority of this class of students graduated from high school. Given that this was the class of 1969, it seems likely that most of the illegal drug use which is reported here (i.e., everything except cigarettes and alcohol use) took place during the high school years and not earlier, since it was during the late sixties that illegal drug use burgeoned on the campuses and in high schools (See Berg, 1970).

One prominent theme which emerges from these data is that there certainly was not a widespread "epidemic" of illegal drug use among these high school students as the popular press had suggested. Marijuana was the only one of the illicit drugs used by more than 10% of the students. About 21%, or one in five, had made some use of marijuana at some time, but note that even among those students about a third had tried it only once or twice, leaving just 14% who had used marijuana on more than an experimental basis during high school. Only 6% had ever used it on any kind of a regular basis--that is, weekly or more often. Of course, considering that in the late 60's, the possession and use of marijuana were classified as serious crimes in virtually every state and punishable by up to life imprisonment, the existence of a 21% occurrence rate in a national population of young people is rather astounding. But in comparison to the prevalence of drug use suggested by innumerable reports in

the media, the 20% rate seems modest. Furthermore, since the incidence of illegal drug use among males tends to be higher than among females, these statistics are higher than we would have found for the full age cohort, both male and female.

As far as the more serious illegal drugs are concerned, there are substantially lower usage rates reported than for marijuana. As we would expect, heroin is the least frequently used of the illegal drugs with only 1.8% or one in fifty reporting any experience with it. About a quarter of those had experimented only once or twice in a year's time, but more importantly only one-sixth or .3% of the entire sample had ever used the drug on a daily basis--the usage rate associated with physical addiction. Undoubtedly, we have underrepresented to some degree the portion of our sample who are heroin addicts, since it seems very likely that such people are less likely to show up for personal interviews, but it seems unlikely that such people constitute anything more than a tiny fraction of the total sample.*

The heaviest usage rate among the more serious illegal drugs is found for amphetamines, "uppers," where approximately one student out of ten reported at least trying them during high school; but again about a third of the users had only experimented with the drug on one or two occasions. Roughly one in fourteen or 7% had

*Because heroin use was such a rare behavior in this sample of young men, we have only 27 unweighted cases upon which to base our analyses during the high school years, and thirty-six unweighted cases for the year after high school. While acknowledging the fact that any relationships found must be treated as more suggestive than definitive, I will compare these small groups of users to non-users with the expectation that at least some valuable hypotheses will emerge. It would indeed be a shame not to make use of this rare national data based on a normal population, despite the very tentative nature of any conclusions which arise.

made some use of hallucinogens such as LSD, again with a third of them being experimental users. About 6% had used barbiturates with over one-third experimenting only.

So, overall, we are talking about a relatively small percent of the high school population who reported using each of the illegal drugs, and a substantial proportion of them were really only experimenting. Furthermore, as we shall see later in this chapter, because the users of the different illegal drugs tend to be the same people, it turns out that less than a quarter of the total sample (22.5%) had used *any* illegal drug before the point of normal graduation.

Legal Drugs

The two legal drugs included in this survey, tobacco and alcohol, present a dramatic comparison in terms of the breadth and intensity with which they are used. Two-thirds had tried smoking by the end of their high school years and more than four-fifths had at least tried alcohol. The unusual circumstance, then, in the case of these drugs was not to have tried them by age 18. More important is the fact that over a third were regular (daily) cigarette smokers and a third drank alcoholic beverages weekly or more often, despite the fact that in most states the minimum legal drinking age was twenty-one. Thus, there can be no doubt that, while the use of illegal drugs has risen markedly during the last decade among American youth of high school age (particularly the use of marijuana) the traditional-legal drugs, alcohol and tobacco, have not lost their widespread appeal and have by no means been displaced as the preferred drugs among high school students. Those drugs which are sanctioned by the society are still the most prevalently used by young people of high school age.

ABBREVIATING THE CATEGORIES OF DRUG USE

Table 2-2 presents a parallel question to the one we have just been discussing. It asks respondents about drug use during the year immediately preceding the data collection (i.e., late spring of 1969 to late spring of 1970). For the vast majority of respondents, this time interval corresponds to the year after high school graduation and will be referred to as such henceforth.

Tables 2-1 and 2-2 have been presented here in their original detail to permit the reader to acquaint himself with the two sets of usage questions which are central to this report, and also allow examination of the detailed answers. However, to simplify both the analyst's and the reader's task, more condensed versions of these answer categories will be used for the remainder of the book.

Four terms will be used to describe levels of drug use: "experimental use"; "occasional use"; "regular use"; and--where occasional and regular use are combined into a single category--"more-than-experimental use." Table 2-3 shows for each drug the correspondence between these general terms and the specific answer categories in the original question. The particular divisions have been selected to satisfy two criteria: (a) to retain the most important distinctions while (b) encompassing a large enough number of cases in each category to permit meaningful statistical analyses. When in conflict, the latter criterion prevailed; the most important result being that distinctions were lost between regular and occasional use of each of the more serious illegal drugs. For alcohol and marijuana, it seemed reasonable to encompass weekly as well as daily use in the "regular" category. On the other hand, for cigarettes the most important distinction on this answer scale obviously lies between daily use and everything else.

TABLE 2-2
Drug Use During the Year After High School

Percentage Frequencies

How often have you done this during part or all of the last year for other than medical reasons?	Nearly every day (1)	Once or twice a week (2)	Once or twice a month (3)	3-10 times a year (4)	Once or twice a year (5)	Never (6)	% Missing Data
(a) Smoked cigarettes	40.7	7.7	5.6	4.9	8.9	32.2	1.6
(b) Smoked marijuana (pot, grass) or hashish	2.6	6.9	7.8	5.9	11.0	65.7	1.3
(c) Taken amphetamines (pep pills, bennies, speed, uppers)	0.2	1.5	3.0	4.2	5.0	86.1	1.3
(d) Taken barbiturates (yellow jac- kets, red devils, downers)	0.1	0.7	2.1	2.0	3.8	91.2	1.3
(e) Taken heroin (smack, horse, "H")	0.4	0.4	0.2	0.3	0.9	97.7	1.7
(f) Taken hallucinogens (LSD, mesca- line, peyote, etc.)	0.2	1.0	3.0	3.1	4.1	88.7	2.5
(g) Used alcoholic beverages (liquor, beer, wine)	9.1	34.7	23.3	12.7	8.7	11.4	1.8

Total N for Each Row = 1798

TABLE 2-3

Definitions of "Regular",
"Occasional", and "Experimental" Use

<i>DRUG</i>	<i>CATEGORY</i>	<i>FREQUENCIES INCLUDED IN CATEGORY</i>
Marijuana	"Regular use"	Nearly every day Once or twice a week
	"Occasional use"	Once or twice a month 3-10 times a year
	"Experimental use"	Once or twice a year
Hallucinogens, Amphetamines, Bar- biturates and Heroin	"More than experi- mental use "	Nearly every day Once or twice a week Once or twice a month 3-10 times a year
	"Experimental use "	Once or twice a year
Alcohol	"Regular use "	Nearly every day Once or twice a week
	"Occasional use "	Once or twice a month 3-10 times a year
Cigarettes	"Regular use "	Nearly every day
	"Occasional use"	Once or twice a week Once or twice a month 3-10 times a year Once or twice a year

INTRODUCTION TO THE FIGURES DESCRIBING DRUG USE

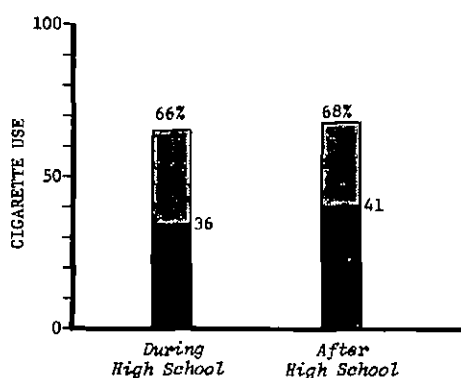
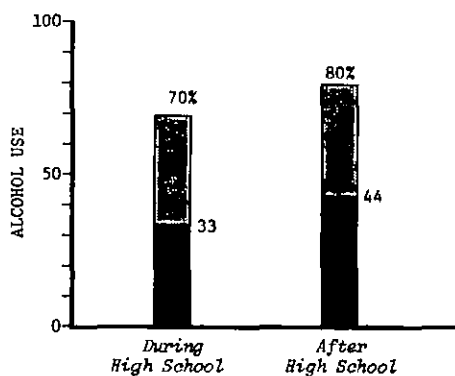
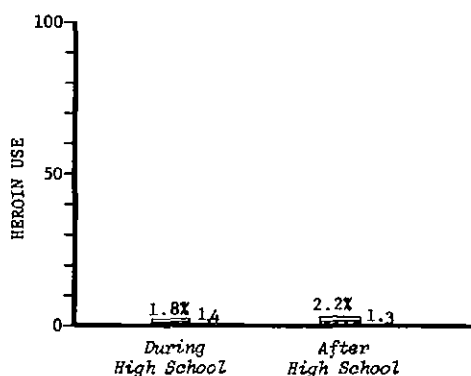
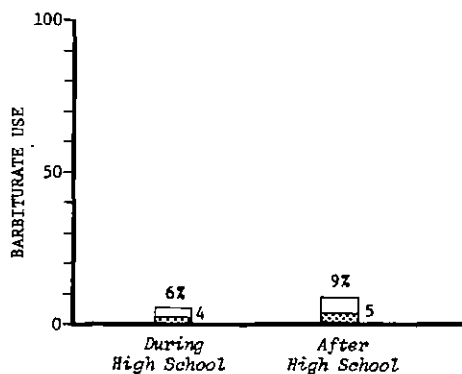
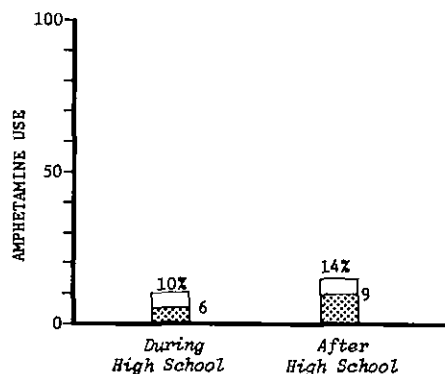
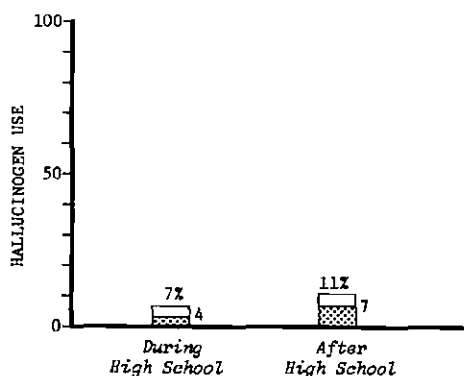
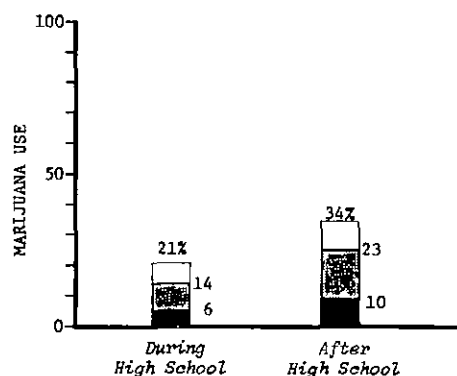
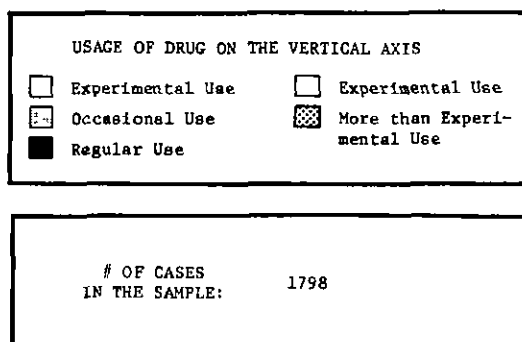
Figure 2-1 relates the drug-use information presented in Tables 2-1 and 2-2 in terms of these simplified usage descriptions. Note that seven bar graphs are given in Figure 2-1, one for each of the seven drugs being discussed in this volume. In all of the figures to follow, the same set of seven drugs will be included, each located in the same position in the figure. What changes from figure to figure is the variable being described on the horizontal axis. In the case of Figure 2-1 the total population is being described during each of two time intervals. Later figures will have subgroups described by separate bars.

User Groups. The total percent using the drug during the time period in question is represented by the number at the top of the bar.* The proportion of these "users" who have taken the drug at the various levels of intensity can be deduced from the shaded portions which can be interpreted by using the key in the upper left-hand corner of the figure. For example, the bar describing marijuana use during high school indicates that 21% made some use of marijuana. The 21% breaks down to 6% regular users, 8% occasional users, and 7% experimental users. The percentages on the bars are cumulative percentages, indicating the total who use the drug that frequently or more often.

Weighted Data. The number of cases represented by each bar is also given in the upper left-hand corner. The numbers stated there are the number of *weighted* cases, which is generally slightly more than the unweighted number. A small degree of weighting was introduced to compensate for certain underrepresented strata in the

*Alcohol is the one exception, since those who used only alcohol once or twice are not shown in the figures (see Table 2-3).

FIGURE 2-1 USAGE RATES FOR SEVEN DRUGS DURING HIGH SCHOOL AND IN THE YEAR AFTER



original design. It was accomplished by double weighting 299 respondents and triple weighting one respondent in the original Time 1 sample. Weighted numbers have been used in the bar charts (and elsewhere, unless otherwise indicated) in order to accurately represent the proportion of the universe which we estimate falls into each category based on random sampling. Also, weighted cases were used in all bivariate and multivariate analyses. On the average the number of actual cases is 13% less than the number of weighted cases given, since the total Time 4 sample was comprised of 1571 actual respondents, which yielded 1798 weighted cases.

Important Distinctions. In examining such figures, one finds that whatever happens to total usage (indicated by the top of the bars), generally also happens to the various shaded portions. So, for example, if total use of marijuana is going up, regular use is also rising in a similar manner. Therefore, the reader's task is simplified if he concentrates primarily on the *tops* of the bars when examining the bar charts dealing with illegal drug use.

This is not true, however, for the charts dealing with alcohol and cigarettes, where the majority of these young men were at least occasional users. Therefore, since the most important distinction to be made on those drugs is between regular users and all others, the reader may want to concentrate on the portion of the bar having the darkest shading. For alcohol and cigarettes then, regular user groups will be the focus of primary attention in the remainder of the text.

Having taken this aside to explain our use of bar graphs, let us return to the major topic of this chapter, drug use during and after high school.

DRUG USE IN THE YEAR AFTER HIGH SCHOOL

The year following high school brings dramatic change for most American young people--particularly males--for it is apt to terminate a long period of residence with their parents and association with high school friends, and bring exposure to a whole new social milieu in college or the military or in a civilian job. It seems reasonable to ask whether there might not be a dramatic shift in drug use which accompanies this period of adjustment to new-found freedom and friends.

The answer seems to be more yes than no, although both sides can be argued. As the data in Figure 2-1 show, the answer is "no" in the sense that the proportion of the sample using any of the seven drugs is not all that much higher a year after high school than it was during the high school years. The usage increase does not exceed 4.5% of the sample for five of the seven drugs. (Marijuana use and regular alcohol use are the exceptions.)*

The more compelling fact, however, may be that while the shift in the percentage of the whole population is not great for five drugs, the percentage increase in the *number* of users is quite dramatic. Table 2-4 shows this percentage for each of the drugs. It is apparent that all of the illegal drugs show a dramatic increase in the number of users during the year following high school. About 65% more people report using marijuana in that year

*These differences tend to understate the shift in the rate of usage insofar as they compare the highest rate of use during the single year following high school with the highest rate of use at any prior time. At least some of those reporting usage during their high school years would have stopped by senior year. Therefore, if the upward shifts in drug use were stated in terms of an annual rate of usage, slightly larger shifts than those shown in Figure 2-1 would probably result.

TABLE 2-4
Increases in Drug Use in the
Year After High School

	<u>Increase in the Percent of the Sample Reporting Use *</u>	<u>Increase in the Number of Users **</u>
Marijuana	13.4 %	65 %
Hallucinogens	4.4	65
Amphetamines	3.9	39
Barbiturates	2.5	40
Heroin	.6	35
Alcohol	7.2	19
Cigarettes	1.7	3
Alcohol-regular users	11.3	35
Cigarettes-regular users	4.6	13

* For example, 21% of the sample smoked marijuana in high school and 34% smoked it in the year after high school; thus there was an increase in the number of users which is equivalent to 13% of the sample (actually 13.4%).

** For example, there were 366 boys who used marijuana during high school and 608 who used it in the year after high school, which represents a 65% increase in the absolute number of users.

as had reported use during high school. The same is true for hallucinogens. There is roughly a 40% increase both in the number of amphetamine users and in the number of barbiturate users. Overall, then, there really is a substantial increase in illegal drug use associated with leaving high school.

Increases in the number of users of alcohol or cigarettes are not nearly as dramatic. However, if we concentrate on the shifts in the incidence of regular use, the results are more mixed, with regular alcohol users increasing their number by a third while the number of regular smokers increases by only 13%.

Stability of Use by Individuals. To really talk about stability of drug usage it is necessary to go beyond gross shifts in incidence rates in the population. It would be possible, for instance, for the incidence rate to remain perfectly stable while individual usage was very unstable over time--increases in usage by some being offset by decreases in usage by others. Table 2-5 gives the information necessary to assess the stability of both the incidence and intensity of usage across the two time intervals.

A number of facts are found to be true across all or at least most of the drugs. One which is consistently true is that only a small proportion of the "users" of a drug cease to be users after high school. Heroin has the highest rate of quitting, with approximately one-fourth of the previous users reporting no further use after high school. Marijuana, cigarettes and alcohol have the lowest rate of quitting.

On the other side of the coin, the proportion of non-users who became users is also low, particularly for the more serious illegal drugs. For marijuana, however, about a fifth of the non-users took up usage. One out of nine who had previously avoided regular

TABLE 2-5

Changes in Frequency of Drug Use
in the Year After High School
(as a Percent of the Total Sample)

Percent of Sample Who Are:	Percentage Frequencies						
	Marijuana	Hallucinogens	Amphetamines	Barbiturates	Heroin	Alcohol	Cigarettes
Non-users who remain non-users	64.4	87.7	84.6	90.5	97.3	10.0	27.7
Non-users who start	14.8	5.5	5.5	3.3	1.0	8.7	6.2
Users who stop	1.6	1.0	1.6	0.9	0.4	1.5	4.6
Users who decrease usage	2.0	1.3	1.7	1.0	0.2	6.1	3.3
Users who maintain usage	11.4	2.8	5.1	3.4	0.6	47.4	48.1
Users who increase usage	5.8	1.7	1.5	.9	0.5	26.3	10.1
	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Not regular users who remain so						53.0	57.2
Not regular users who become regular users						14.5	6.9
Regular users who cease regular use						3.2	2.3
Regular users who remain so						29.3	33.6
Total Percent Remaining at Same Level of Use or non-use	75.8	90.5	89.7	93.9	97.9	57.4	75.8

cigarette smoking took it up, while about a fifth of those who did not drink regularly began to do so.

These facts taken together mean that the great majority of these young men maintained the same rate of use (or non-use) after leaving high school as they had shown during high school.* *To the extent that there was change, it tended mostly in the direction of beginning or increasing the use of a drug.* The most noteworthy upward shift occurred for marijuana, (where there was a net increase of 13% of the sample who reported some use) and alcohol (where there was a net increase for regular or weekly use of 11% of the sample).

PATTERNS OF MULTIPLE DRUG USAGE

While it is both interesting and informative to talk about the proportions of people using one drug or another, there still remains the question of the extent to which these user groups are comprised of the same people. Or, put another way, is the rate of usage observed on one drug related to one's rate of usage on the others?

Working with the usage data for the year following high school, two different statistical methods for addressing these questions were chosen. First, a series of bar graphs is presented in Figures 2-2 through 2-8. In these figures respondents are grouped according to their rate of use on one drug and then each of those

*As we will see in the next section, the cross-time Pearson product-moment correlation coefficient for each of the five illegal drugs lies at or near .68, indicating a high level of stability as measured by that statistic.

FIGURE 2-2 MARIJUANA USE RELATED TO THE USE OF OTHER DRUGS IN THE YEAR AFTER HIGH SCHOOL

USAGE OF DRUG ON THE VERTICAL AXIS



MARIJUANA USE

	Regular	Occasional	Experi- mental	None
# OF CASES IN EACH BAR:	169	243	196	1166

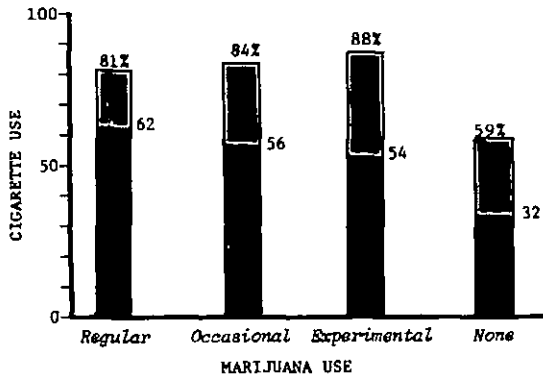
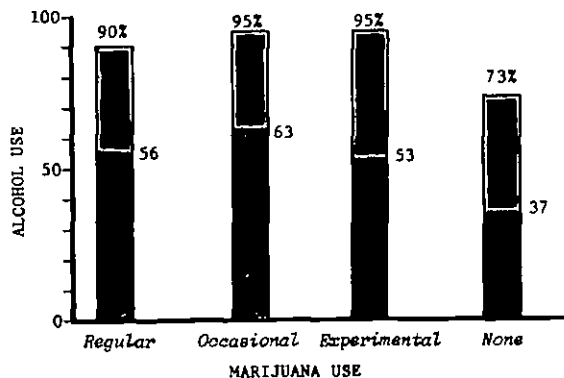
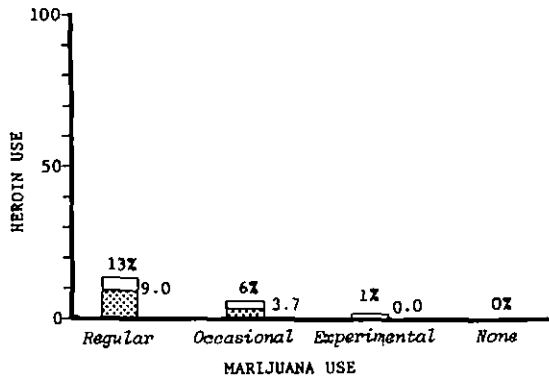
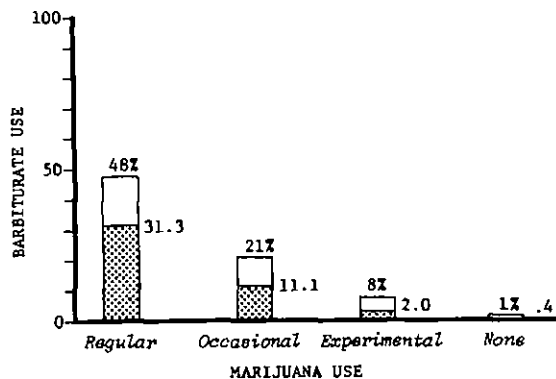
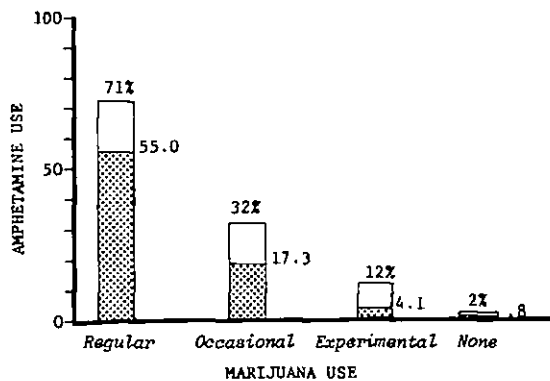
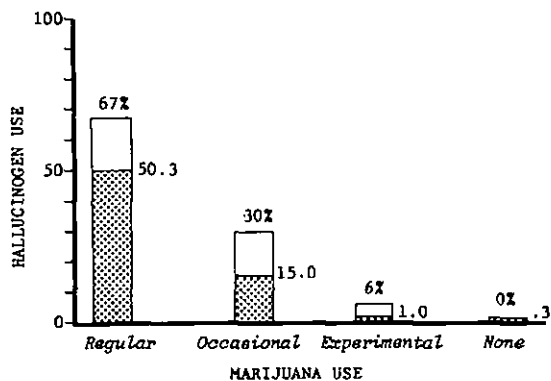
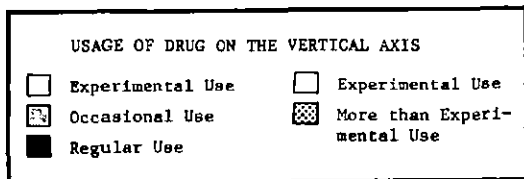


FIGURE 2-3 HALLUCINOGEN USE RELATED TO THE USE OF OTHER DRUGS IN THE YEAR AFTER HIGH SCHOOL



HALLUCINOGEN USE			
	More than Experimental	Experimental	None
# OF CASES IN EACH BAR:	126	72	1555

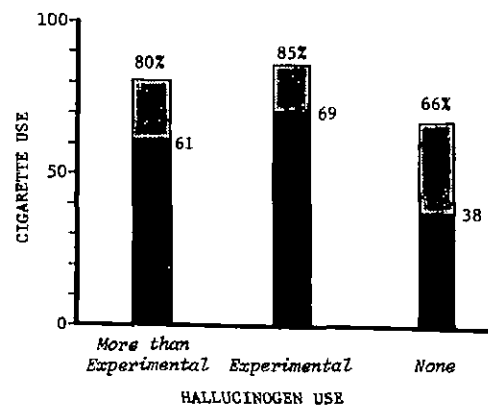
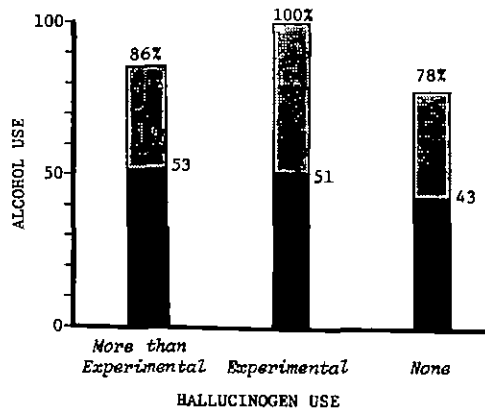
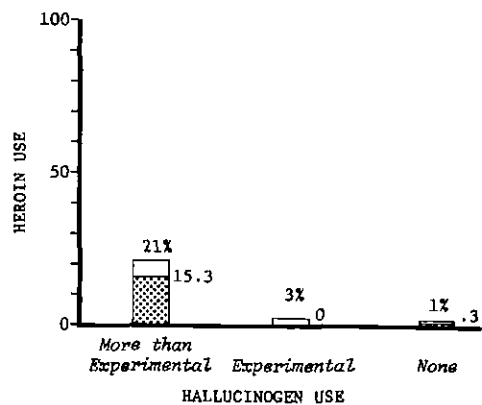
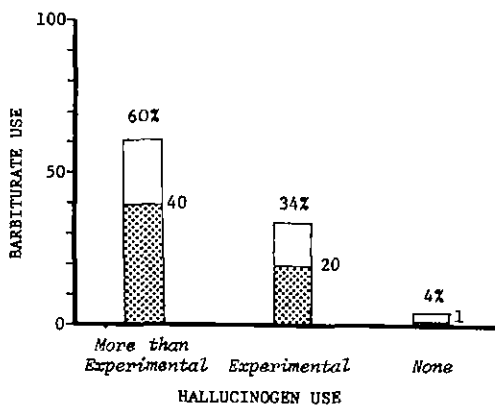
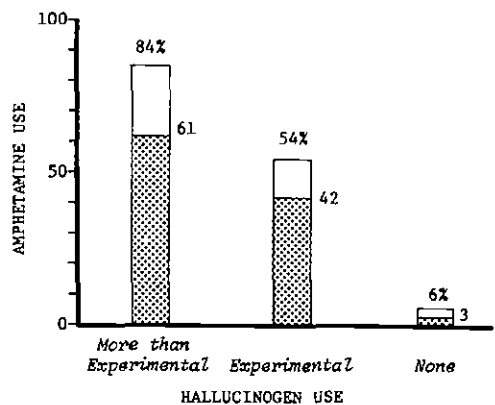
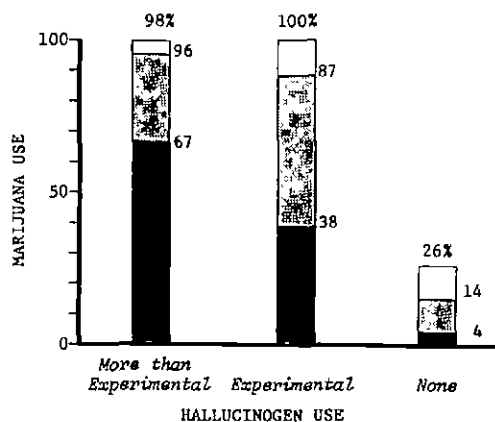


FIGURE 2-4 AMPHETAMINE USE RELATED TO THE USE OF OTHER DRUGS IN THE YEAR AFTER HIGH SCHOOL

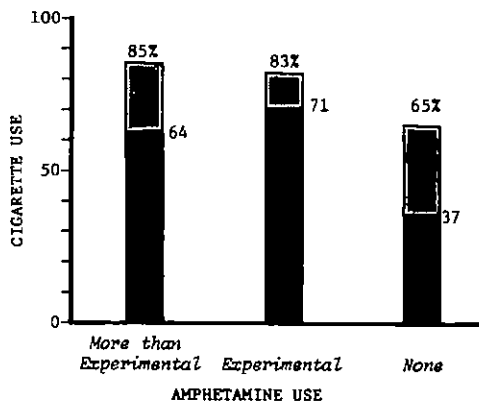
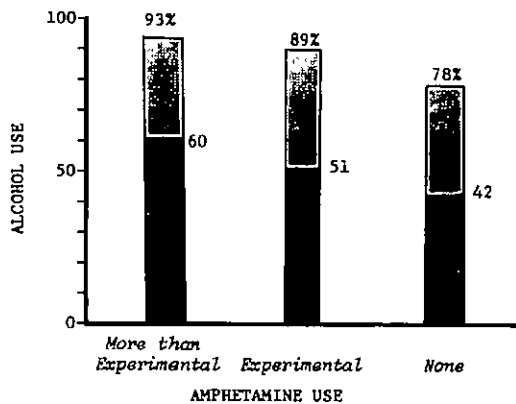
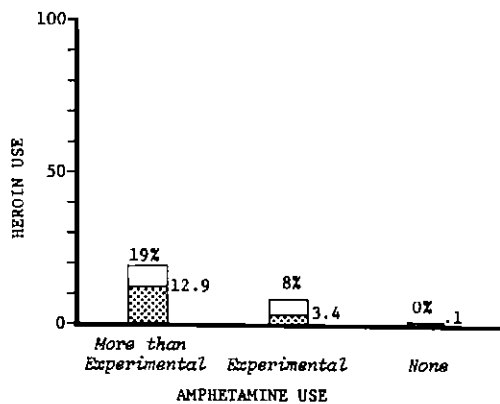
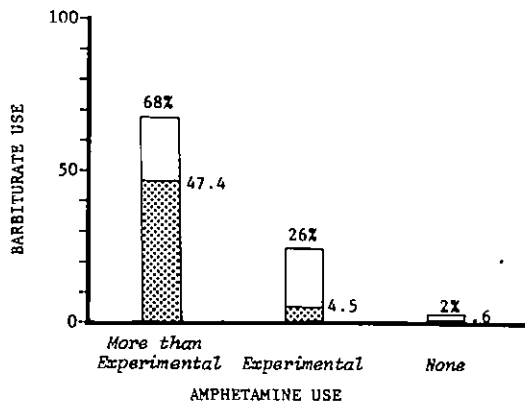
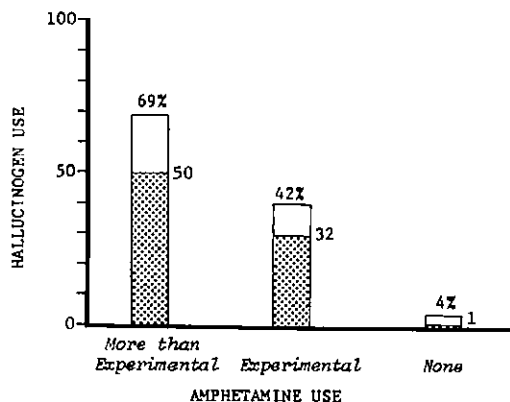
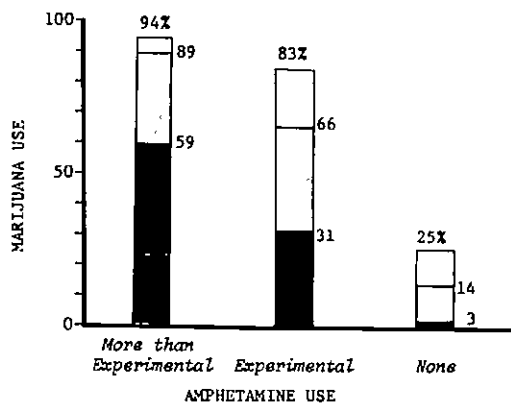
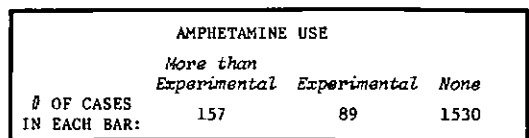
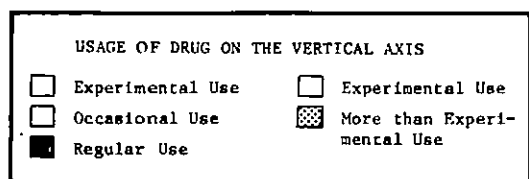
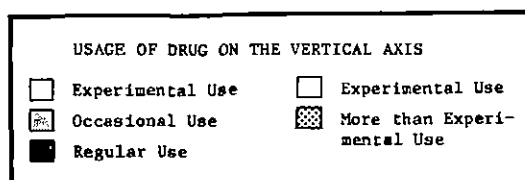


FIGURE 2-5 BARBITURATE USE RELATED TO THE USE OF OTHER DRUGS IN THE YEAR AFTER HIGH SCHOOL



BARBITURATE USE			
	More than Experimental	Experimental	None
# OF CASES	88	68	1619
IN EACH BAR:			

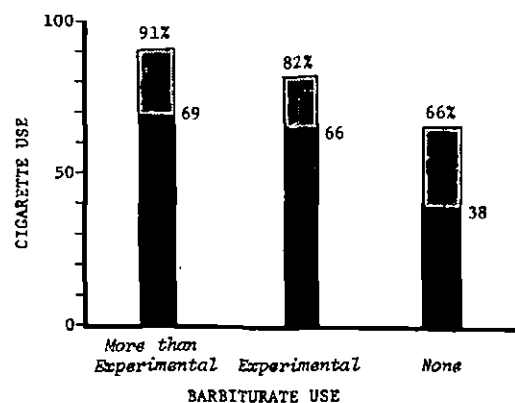
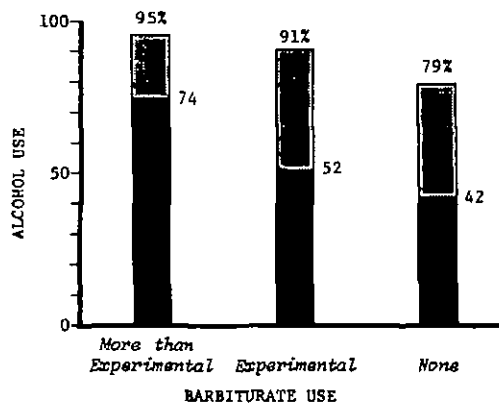
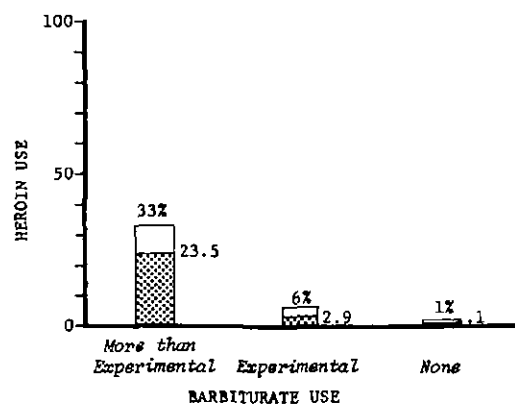
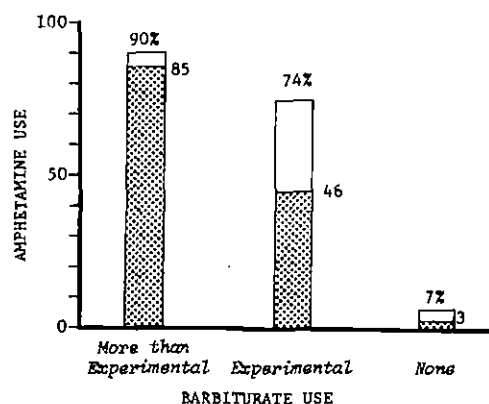
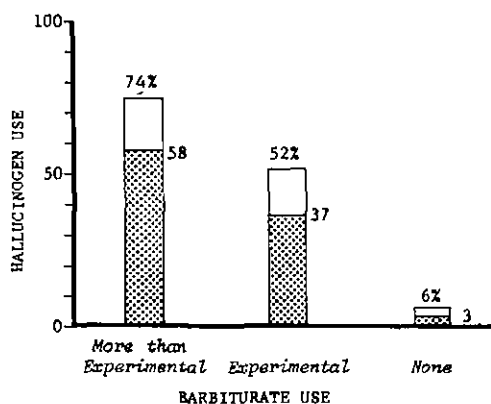
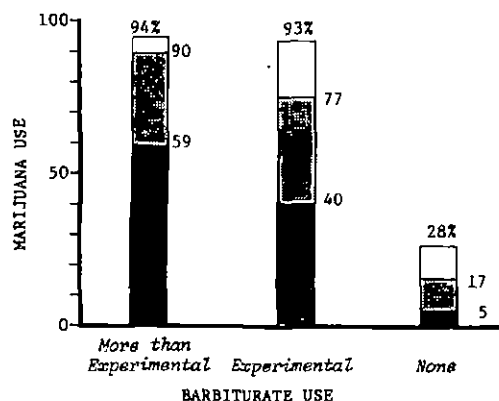


FIGURE 2-6 HEROIN USE RELATED TO THE USE OF OTHER DRUGS IN THE YEAR AFTER HIGH SCHOOL

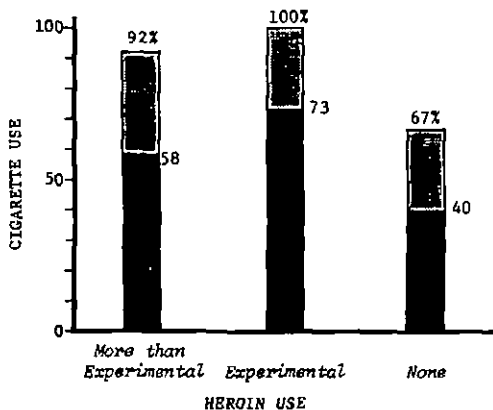
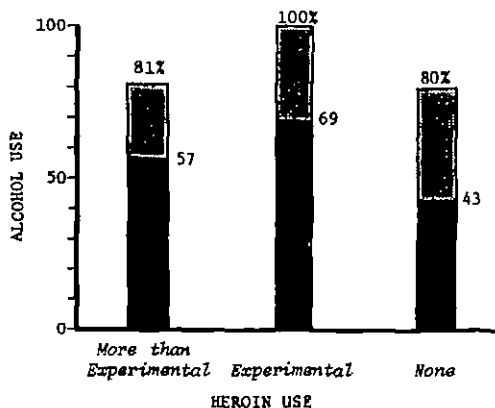
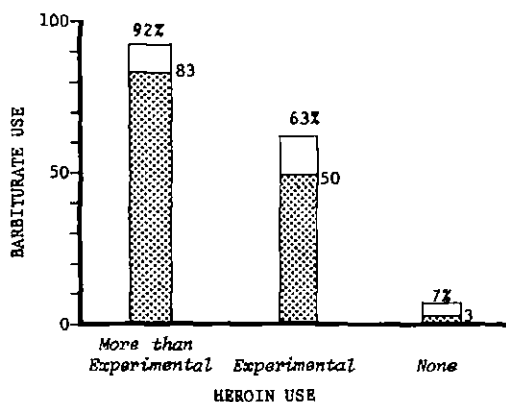
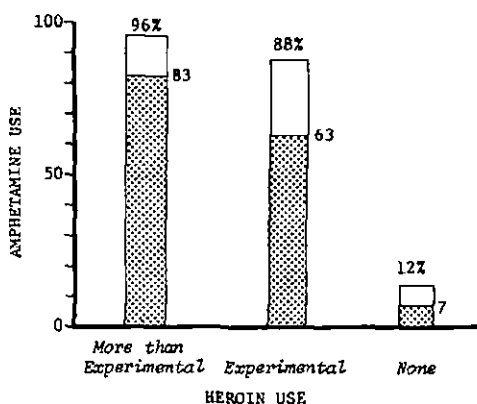
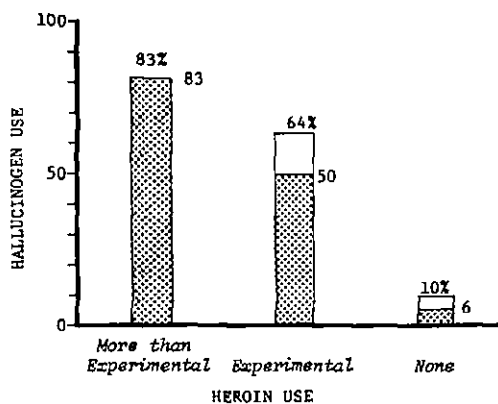
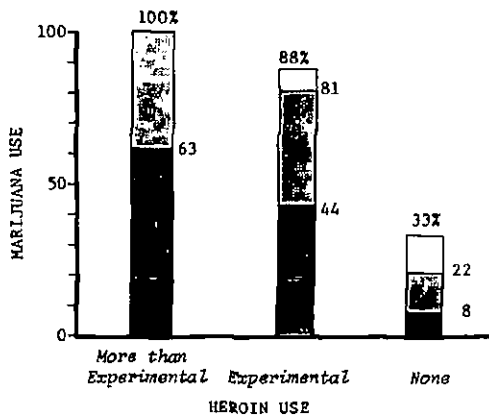
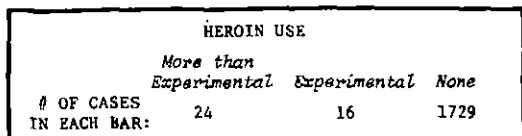
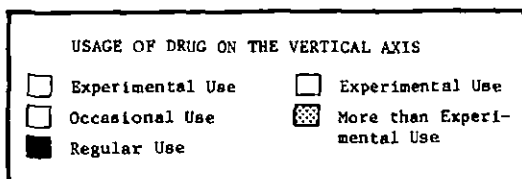
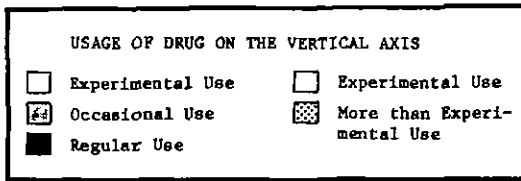


FIGURE 2-7 ALCOHOL USE RELATED TO THE USE OF OTHER DRUGS IN THE YEAR AFTER HIGH SCHOOL



ALCOHOL USE:			
# OF CASES IN EACH BAR:	Regular	Occasional	Experimental or None
	775	636	356

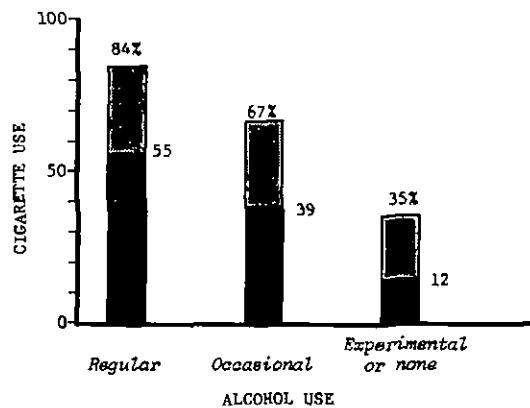
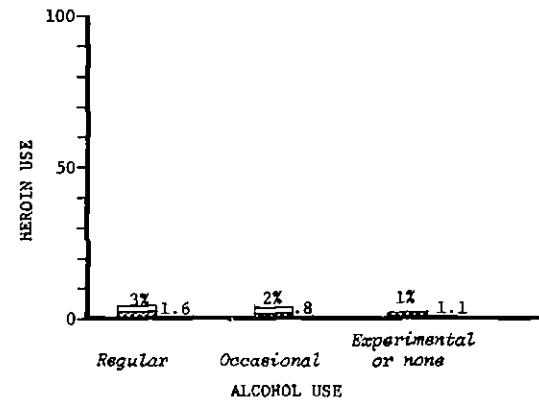
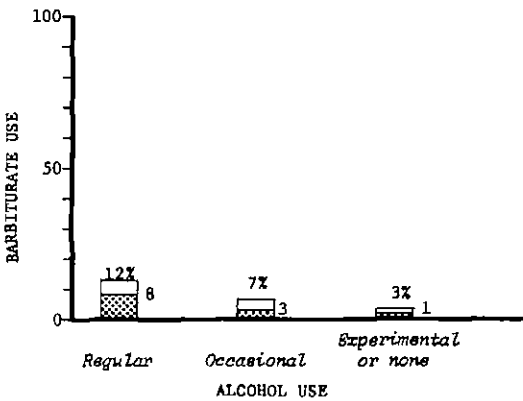
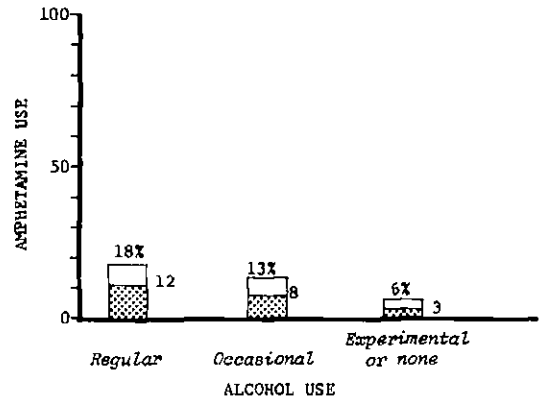
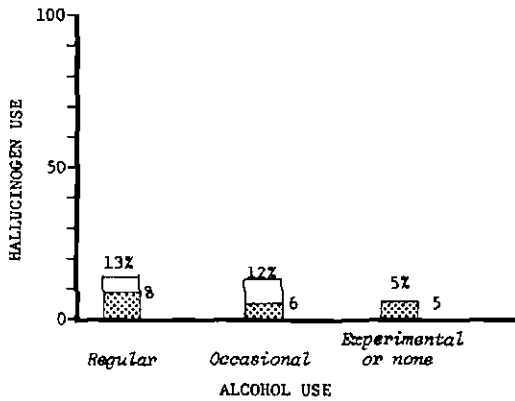
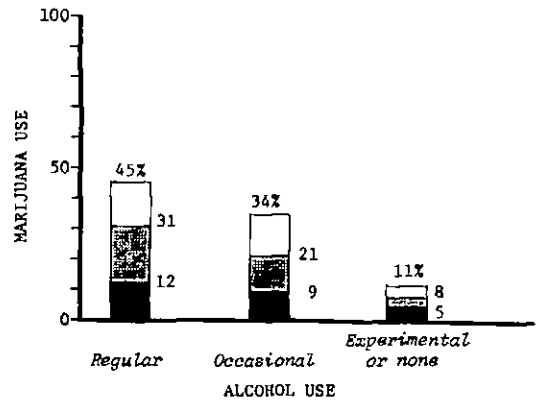
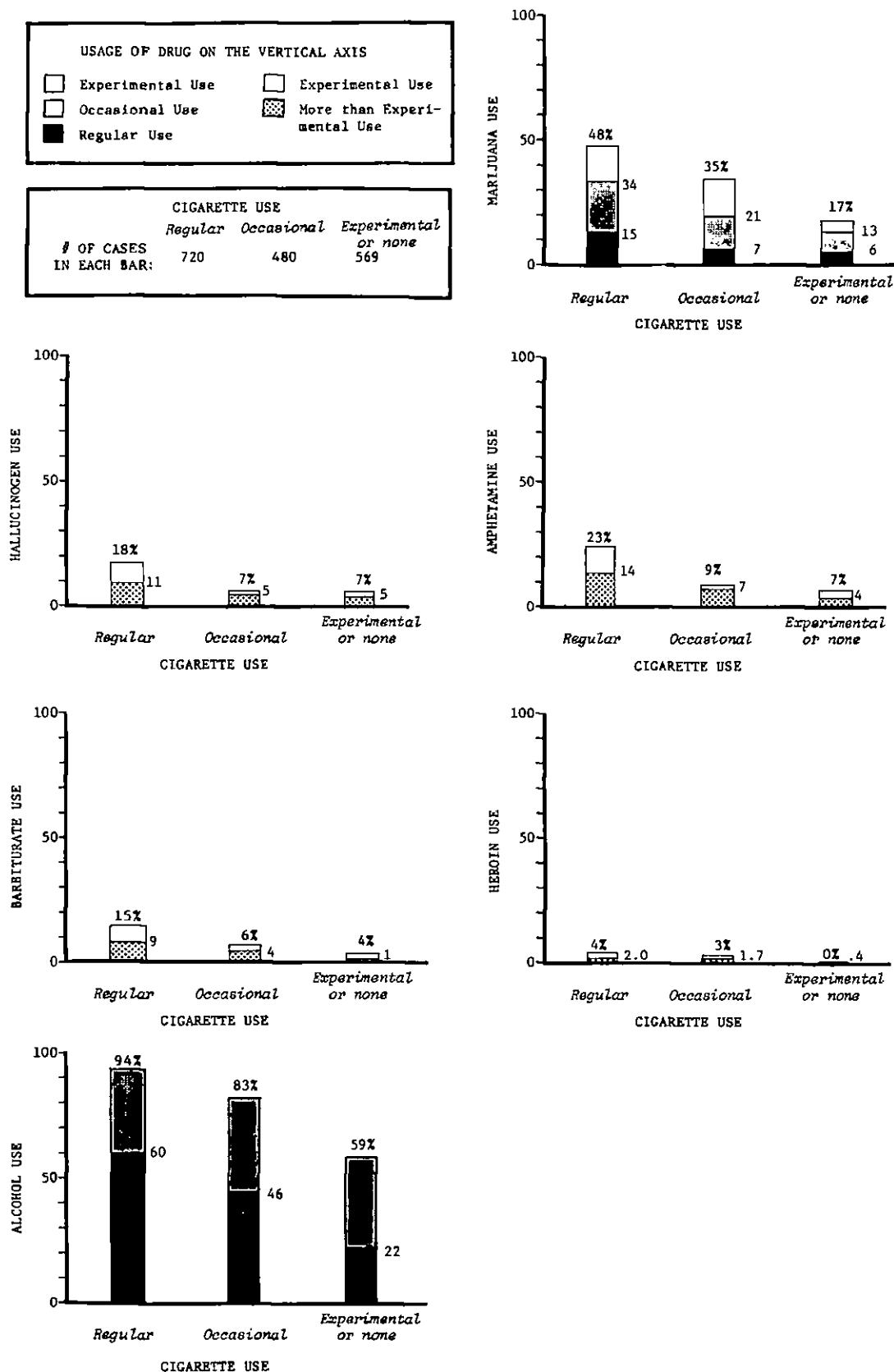


FIGURE 2-8 CIGARETTE USE RELATED TO THE USE OF OTHER DRUGS IN THE YEAR AFTER HIGH SCHOOL



subgroups is described in terms of the frequency with which they use the other six drugs.*

Summary statistics are also presented here to reflect the bivariate relationships between drug usage items. Table 2-6 presents the Pearson product-moment correlations among all fourteen drug usage measures (seven drugs measured for two time intervals each). These statistics are indices of the strength of linear association between pairs of variables assuming interval properties in the underlying scales. The original seven category answer sets to the drug use questions were used in calculating the correlations.

A General Propensity to Use Drugs. Several important facts can readily be observed in both the figures and the summary statistics. The first is that *there is an impressive degree of positive association among the usage rates of all seven drugs, legal and illegal.* While the strength of the association varies considerably within the set, the fact remains that all correlations are positive. In other words there seems to be an underlying factor which might be termed a general propensity to use drugs. Even cigarette use is related to the use of all illegal drugs, with regular smokers more than three times as likely to have tried marijuana during the year than are those who have not smoked at all, more than twice as likely to have tried hallucinogens, three times as likely to have tried amphetamines, and four times as likely to have tried barbiturates. While based on small numbers, heroin use is also proportionally much higher among regular smokers.

*In examining these tables be sure to note the total number of cases being described by each bar, since in some instances the numbers are relatively small (e.g., "experimental" and "more than experimental" users of heroin, where the numbers of cases are 24 and 16 respectively). When the N's are small, there is a fairly wide interval of confidence around any percentage estimate.

TABLE 2-6

Product-Moment Correlations Between the Drug Use Variables

(1)	Cigarettes After H.S.														
(2)	26	(2)	Marijuana After H.S.												
(3)	19	60	(3)	Amphetamines After H.S.											
(4)	18	47	70	(4)	Barbiturates After H.S.										
(5)	09	26	43	49	(5)	Heroin After H.S.									
(6)	15	61	67	56	43	(6)	Hallucinogens After H.S.								
(7)	46	23	14	14	06	11	(7)	Alcohol After H.S.							
(8)	85	23	16	17	08	13	39	(8)	Cigarettes During H.S.						
(9)	24	71	54	46	32	49	17	28	(9)	Marijuana During H.S.					
(10)	17	43	68	56	42	48	11	20	65	(10)	Amphetamines During H.S.				
(11)	13	39	54	70	48	42	12	17	59	75	(11)	Barbiturates During H.S.			
(12)	08	21	32	32	64	28	00	08	32	40	45	(12)	Heroin During H.S.		
(13)	13	43	53	49	42	63	10	15	60	69	66	45	(13)	Hallucinogens During H.S.	
(14)	44	26	18	16	05	14	76	48	26	19	17	03	16	(14)	Alcohol During H.S.

A very similar pattern is to be found for the one other legal drug in the set, alcohol. Young men who regularly used alcohol beverages sometime during the year, when compared to those who seldom or never used them, are four times as likely to have tried marijuana, three times as likely to have tried amphetamines, almost three times as likely to have tried hallucinogens, and four times as likely to have tried barbiturates. Again the pattern for heroin is similar to that of the other illegal drugs.

Looked at from another perspective, we can say that the user groups on all of the illegal drugs show considerably higher rates of cigarette and alcohol consumption than do the non-user groups. Contrary to popular belief, marijuana does not appear to be a substitute for cigarettes or alcohol. Of the regular marijuana smokers, 62% smoke cigarettes daily and 56% report using alcoholic beverages on a weekly basis or more often.*

An Illegal Drug-Use Factor. Moving beyond this base level of interrelatedness among the seven usage items, one can discern some quite specific clusters in the matrix of drug correlations. There is an impressively high degree of association between the usage rates of all five illegal drugs, whether you look at the table of correlations or the bar charts. Starting with the correlations, we find that the strongest relationship seems to exist between barbiturates and amphetamines, which correlate with each other .75 during high school and .70 in the year following--very high levels of association. Hallucinogen use is also strongly related to the use of both of these drugs, having an average correlation with them

*Gallup (1971) reports that among a national sample of college students, the incidence of hard liquor use during the previous thirty-day interval was 56% among those who had also used marijuana in the same time period, whereas among those who had not used marijuana the incidence of hard liquor use was only 46%.

of .68 during high school and .61 afterward. Marijuana seems to be the next most related, having average correlations with the three above drugs of .61 and .56 in the respective time intervals. Finally, heroin joins the set with average correlations to the previous four drugs of .40, both during and after high school.

However, it is important to note that there is a fairly wide range in the strength of heroin's relationship with the various other illegal drugs. For example, the correlation of heroin use with marijuana use is only .26 in the year after high school, while the correlation of heroin use with use of the other more serious drugs is considerably higher--in particular barbiturate use, with which it has a correlation of .49.

In summary, then, we could deduce from the correlation table alone that there is a strong illegal drug use cluster which shows a similar structure both during and after high school. Amphetamine, barbiturate, and hallucinogen use are particularly strongly related. Marijuana and heroin use also have a quite strong relationship to each of those other three drugs, but a less strong relationship to each other.

Asymmetrical Relationships. If we turn to the bar charts presented in Figures 2-2 through 2-8, we find no evidence which is directly contradictory to the conclusions just derived from the correlation table. However, we do gain insight into a quality of the relationships which is lost in correlations which are symmetric statistics; namely, their degree of symmetry or asymmetry.

For example, we find that nearly all of the people who had more than experimental contact with heroin during the year ($N = 24$) also had used marijuana, hallucinogens, amphetamines, and barbiturates. Even experimental users of heroin report very high usage rates for the other illegal drugs. But when we reclassify our respondents

according to their usage rates on the other drugs, we find that only a small proportion of the user groups report any use of heroin. Among those reporting "more than experimental" use of hallucinogens, only about one-fifth have also used any heroin. The comparable fractions for amphetamines and barbiturates are one-fifth and one-third respectively. In other words, in the type of population being examined here, heroin users are almost certain to be users of marijuana, amphetamines, barbiturates and/or hallucinogens, but the reverse is definitely not true--the relationship is asymmetric. Most users of marijuana, amphetamines, barbiturates, and hallucinogens do not use heroin.

More symmetrical relationships do exist among the other three serious drugs--hallucinogens, amphetamines, and barbiturates. Of those who used hallucinogens more than once or twice during the year, most (84%) also used amphetamines and the majority (60%) also used barbiturates. Of those who used amphetamines more than once or twice, 69% also used hallucinogens and 68% used barbiturates. Finally, of those using barbiturates more than experimentally, most (74%) used hallucinogens and nearly all (90%) used amphetamines. In other words, knowing that a young man is more than an experimental user of one of these drugs makes it quite likely that he is also a user of each of the others. The least symmetric relationship in this set occurs between amphetamines and barbiturates. Among the people who report any use of barbiturates, even experimental use, 83% say they have used amphetamines. However, only 53% of the amphetamine users say they have used barbiturates. A plausible explanation for this asymmetry is that barbiturates ("downers") are most often taken as an antidote for the effects of amphetamines ("uppers"). Therefore, practically all barbiturate users have used amphetamines. However, because not all amphetamine users had occasion to use an antidote, particularly light users, not all amphetamine users have used barbiturates.

The bar graphs also reveal some important asymmetries in the relationships involving marijuana which cannot be deduced from the correlations. For example, it can be said that users of any of the more serious drugs--even experimental users--are almost certain to have used marijuana as well. On the other hand, of all the young men who used marijuana during the year after high school, only about a third also used hallucinogens, a third used amphetamines, a fifth used barbiturates, and only one-sixteenth used heroin. Therefore, the mere fact that a young man used marijuana does not even make it likely that he uses any one of the more serious illegal drugs, much less make it a near certainty.

Given this general point about the asymmetry, though, it is important to make some further distinctions *among* the marijuana users. Those who used the drug only once or twice show very little use of the more serious drugs--even less than the fractions just quoted--but those who use marijuana regularly (weekly) do report very high use of the other drugs. Put another way, there is a direct relationship between how deeply a young person becomes involved in marijuana and how probable it is that he will also be "turning on" with more serious drugs. Of the regular pot smokers, about two-thirds also use barbiturates. About an eighth used heroin during the same time interval. These are high proportions indeed, and justification for some concern, although they tell us nothing about the causes for this degree of association.

Alcohol and Cigarettes. The two remaining variables in the original set of seven are rate of cigarette smoking and rate of alcohol consumption. As we discussed earlier, the use of both of these drugs is positively related to the use of all of the illegal drugs, particularly marijuana. However, the correlations are quite modest, in large part due to the highly skewed distributions on the illegal drug use variables. Thus the cluster or factor

mentioned earlier--a "general propensity to use drugs"--can only account for a limited proportion of the variance in alcohol or cigarette use.

Much of the remainder of the relationship between cigarettes and alcohol may be attributable to a legal drug-use factor, but with only two legal drugs in the set we can hardly draw such a conclusion. It is clearly the case, however, that the use of these two legal drugs is rather strongly related. Their usage rates correlate .48 during high school and .46 in the year following. The bar graphs, which are based on the latter time interval indicate that of those who drank on no more than two occasions during the year, only 12% were regular smokers, versus 55% of those who drank alcoholic beverages weekly or more often. Occasional drinkers fall in between, with 39% smoking regularly. A very comparable picture emerges if we turn the situation around and look at how alcohol consumption varies as a function of cigarette use. Only 22% of the non-smokers report regular drinking experiences whereas 60% of the regular smokers do.

As with the two drug use clusters identified earlier--the "propensity to use drugs" and the "propensity to use illegal drugs"--we cannot tell from these data the reasons for the observed relationships. Perhaps the use of one drug somehow causes or leads to the use of another, perhaps certain personality characteristics lead to such general propensities, and perhaps characteristics of the social environment influence young men to use particular sets of drugs or to use drugs generally. We do know, however, that becoming involved in the various drugs examined here are not happenstance events. Involvement with one bears a systematic connection to involvement with others.

Previous Findings

Some of the findings presented here replicate earlier work on more limited populations. Blum (1970) reported on a survey of students from five college campuses conducted in the mid to late 1960's. Dealing with a similar (though slightly larger) list of drugs, he also found a manifold of positive correlations among them, which he felt indicated a general disposition toward psycho-active drug use.* As in the present study, he found a clustering between alcohol and cigarettes and between hallucinogens and marijuana. Unlike the present study, he did not find a very strong relationship between the use of amphetamines and the use of sedatives (barbiturates), nor did he find a strong, illicit drug use cluster. The reasons for these differences are not clear, but may be explainable in terms of the different types of samples and different age cohorts being examined.

SERIOUSNESS OF DRUG USE

So far in this discussion of multiple drug use we have worked with figures or statistics which relate the usage variables for the drugs taken two at a time. Another approach to answering the question, "To what extent are users of the different drugs the same people?" is to create a set of mutually exclusive categories based on more than two drug use variables. We have built such a variable based on the individual's answer to the questions concerning his use of all five illicit drugs. The variable, entitled "seriousness of drug use," has eleven ordered categories ranging from most to

*The drugs examined included tobacco, alcohol, marijuana, hallucinogens, amphetamines, tranquilizers, sedatives, illicit opiates, and special substances. (Blum, 1970, pp. 102-103)

least serious according to our conceptions of "seriousness." Table 2-7 presents the definitions for the eleven categories, and the percent of the sample falling into each category for each time interval.

Again, one has to be struck by the relative infrequency with which the young men have become deeply "involved" in drugs, compared with popular conceptions. About 78% used no illicit drugs at all during high school and 87% took nothing more serious than an occasional "joint" of marijuana. In other words, only 12% tried some illegal drug more serious than marijuana, and even in that group a third did no more than experiment. In the year after high school, 64% or nearly two-thirds refrained from contact with any illegal drugs, and 80% did nothing more serious than use marijuana occasionally. However, the number who went beyond the point of experimentation into a serious illegal drug climbed from 8% to 12%, an appreciable increase in a national population.

PATTERNS OF USE ACROSS TIME

The patterns of drug use we have been examining so far are static patterns, a snapshot of one interval of time. A more dynamic view can be gained by examining patterns across the two time intervals for which we have data. Certainly, the dynamic picture is the more interesting one, for it indicates the sequential use of drugs. (The most controversial hypothesis about sequential use is that marijuana use somehow "leads to" the use of heroin and other more dangerous drugs.)

The correlation between the use of one drug during one interval of time and the use of another during the following interval is not a sufficient tool for summarizing the dynamic relationship between

TABLE 2-7
Seriousness of Drug Use

Note: Respondents are classified into the top(most serious) category for which they qualify based on their self-reported drug use during the time interval in question.

	<u>During</u> <u>High School</u>		<u>After</u> <u>High School</u>	
	<u>%</u>	<u>No. of Cases</u>	<u>%</u>	<u>No. of Cases</u>
1. Heroin--more than experimentally	1.4	(25)	1.3	(24)
2. Heroin--experimentally	.4	(7)	.9	(16)
3. Amphetamines, Barbituates, Hallucinogens-- more than experimental use of all three	1.5	(26)	1.2	(22)
4. Amphetamines, Barbituates, Hallucinogens-- more than experimental use of two	1.7	(30)	3.3	(59)
5. Amphetamines, Barbituates, Hallucinogens-- more than experimental use of one	3.0	(53)	5.3	(94)
6. Amphetamines, Barbituates, Hallucinogens-- experimental use of one, two or three	4.4	(78)	5.7	(102)
7. Marijuana--regular use	.8	(15)	1.8	(32)
8. Marijuana--occasional use	4.7	(84)	7.5	(134)
9. Marijuana--experimental use	4.7	(83)	9.0	(160)
10. No use of any of the five illicit drugs	<u>77.5</u>	<u>(1378)</u>	<u>63.9</u>	<u>(1137)</u>
	100.1	(1779)	99.9	(1780)
11. Missing data on all five drug use questions*	-	(19)	-	(18)

*Those with partially missing data were classified into the highest usage category based on known data.

them, for it may simply reflect an ongoing *but non-sequential* association between two drugs. For example, we know that the usage rates for amphetamines and barbiturates are highly correlated for a given interval of time. We also know that people remain fairly constant across the two time intervals in their use of both drugs (stability coefficients = .68 and .70 respectively). Thus, we would expect there to be some correlation between amphetamine use during the first interval and barbiturate use during the second interval, *even if* the use of one did not precede use of the other, simply because a lot of people continued to use both drugs actively.

The concept of cross-lagged panel correlations was developed precisely to deal with this dilemma (Campbell and Stanley, 1963). Rather than looking at single correlations, under this method one examines all static and cross-time correlations between pairs of variables in order to deduce whether A predicts B at some future time *better than* B predicts A. Figure 2-9 presents the cross-lagged correlations between all pairwise combinations of seven drugs.*

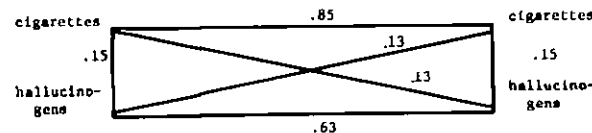
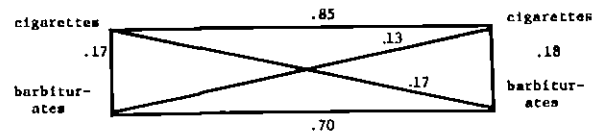
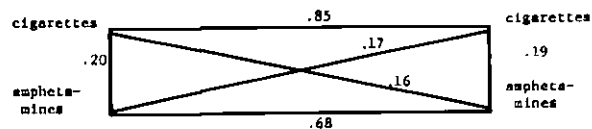
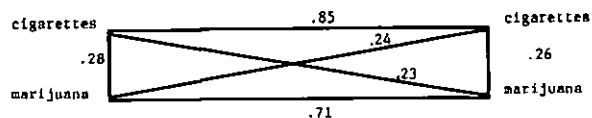
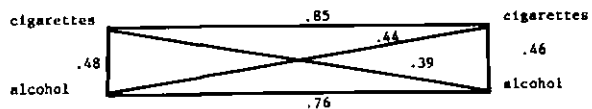
Let us concentrate for a moment on the first of these figures--that showing the relationships between cigarettes and alcohol--to demonstrate the way in which the cross-lagged panel correlations can be used. First, note that the two vertical lines represent the static relationships between alcohol and cigarette use for two different time intervals. They remain fairly constant (.48 vs. .46) in this case, as they do for almost all other pairs of variables. The numbers associated with the two horizontal lines represent the stability coefficients for each drug. These values are high for

*These cannot be accurately called panel correlations since all of the data on which they are based was gathered at one point in time. However, since the responses refer to non-overlapping sequential periods of time, the logic is still the same.

FIGURE 2-9 CROSS-LAGGED CORRELATIONS BETWEEN PAIRS OF DRUG USE VARIABLES

Note: The numbers in each figure indicate the Pearson product-moment correlations between pairs of variables (based on the original 6 point answer categories).

Rate of Use During High School CIGARETTES Rate of Use After High School



Rate of Use During High School ALCOHOL Rate of Use After High School

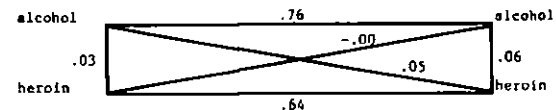
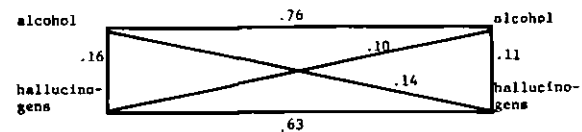
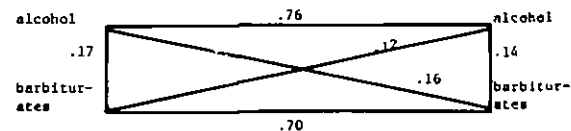
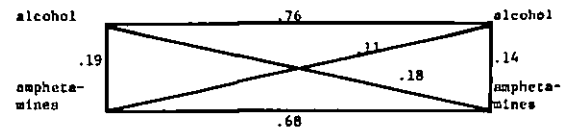
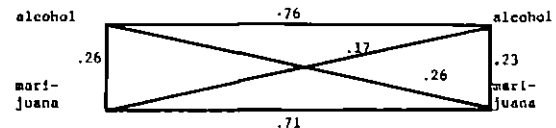
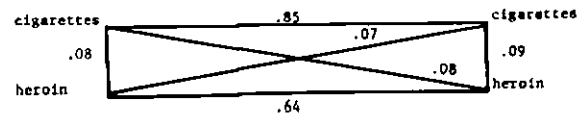
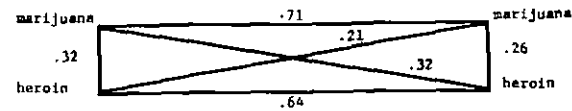
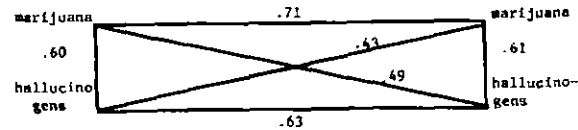
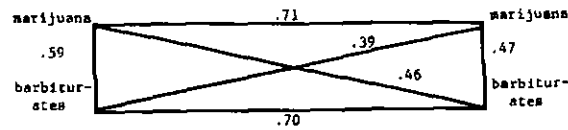
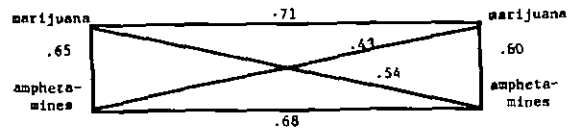


FIGURE 2-9 Cont'd

Rate of Use
During High School

MARIJUANA

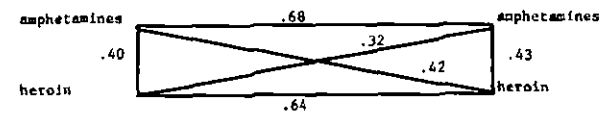
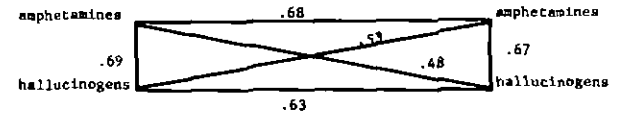
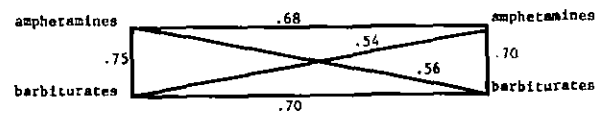
Rate of Use
After High School



Rate of Use
During High School

AMPHETAMINES

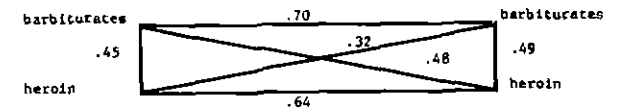
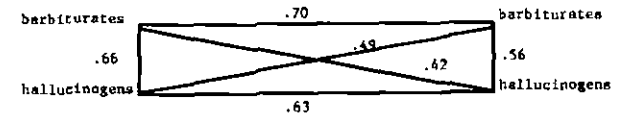
Rate of Use
After High School



Rate of Use
During High School

BARBITURATES

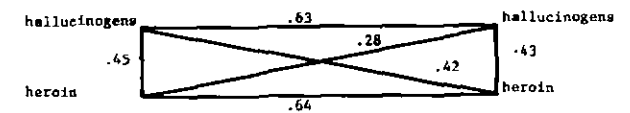
Rate of Use
After High School



Rate of Use
During High School

HALLUCINOGENS

Rate of Use
After High School



all drugs and particularly so for cigarettes, reflecting the stability in usage patterns referred to earlier. The two diagonal lines and their associated correlations represent the cross-time "predictions" which can be made from one drug to the other. In this case, we can predict cigarette use from prior alcohol use ($r = .44$) slightly better than we can predict alcohol use from prior cigarette use ($r = .39$), suggesting that cigarette use is more related to prior experience with alcohol than vice versa.

Before proceeding further with the cross-lagged panel correlations, an additional set of data will be introduced which provides a valuable supplement. Remember that the correlations discussed in the cross-lagged panel correlations are relating four different usage variables, each of which has an underlying six point scale ranging from "daily use" to "no use." In other words, the variables are intensity-of-use variables, not simply use versus non-use variables. The latter type of variable would be useful for definitely answering the question, "Which drug came first?," by allowing us to focus only on people who started to use the drug in question after high school. We can then establish what other drugs they had used previously and then determine whether their previous use of other drugs was higher than we would have expected. If it is higher, we have evidence of a sequential pattern of drug use. The relevant comparison group for determining what we would have expected would be non-users who do *not* become users of the drug in question after high school. Table 2-8 presents this type of information for all seven drugs. Used in conjunction with the cross-lagged panel correlations, it should reveal rather definitely the cross-time patterns which exist in this sample of young men.

Cigarettes

By scanning down the column labeled "cigarettes" in Table 2-8, we can see that people who used each of the other drugs for the

TABLE 2-8

Previous Use of Other Drugs by
New Users and Non-Users

% who used these drugs during the high school years

	No. of Cases	Cigarettes	Alcohol	Marijuana	Hallucinogens	Amphetamines	Barbiturates	Heroin
Cigarettes								
New users after high school	109	--	63	8	3	5	1	2
Continuing non-users	487	--	60	8	3	4	2	0(.2)
Alcohol								
New	152	36	--	9	5	5	4	2
Non	176	22	--	2	2	3	1	1
Marijuana								
New	262	74	91	--	1	2	0	0(.4)
Non	1135	58	75	--	0(.2)	1	0(.1)	0(.1)
Hallucinogens								
New	96	75	94	44	--	15	7	1
Non	1525	64	80	14	--	5	2	0(.3)
Amphetamines								
New	98	75	91	45	6	--	0	0
Non	1501	63	80	12	2	--	1	0(.3)
Barbiturates								
New	59	76	92	36	10	9	--	0
Non	1602	64	80	15	3	5	--	0(.3)
Heroin								
New	17	82	82	71	53	65	41	--
Non	1720	66	81	19	5	8	5	--

first time after high school had a higher incidence of cigarette use *during* high school than did their peers who *remained* non-users. In other words, among non-users of any of the six other drugs, those who smoke are more likely than those who do not smoke to start using each of the other drugs subsequently. If we turn the question around to ask whether taking up cigarettes is more likely among previous users of other drugs, we find that it is not. As we can see from the row labeled "cigarettes" in Table 2-6, previous use of other drugs is equally infrequent among new cigarette users as it is among those who remain non-users. So, we know that cigarette use tends to precede the use of other drugs a little more often than expected but the use of other drugs does not tend to precede cigarette use to an exceptional degree.

We would not have made this deduction had we looked only at the cross-lagged panel correlations, which take into account not only use versus non-use, but varying degrees of use as well. They indicate no consistent directional relationship between the *rate* of cigarette smoking and the rate of use of most of the other drugs.*

Alcohol

In contrast to cigarettes, more evidence of a directional sequence can be found in the case of alcohol, e.g., heavier alcohol

*In the case of alcohol there is some indication that its rate of use predicts to later use of cigarettes better than the rate of cigarette use predicts to later use of alcohol. This mild effect is in apparent contradiction to our earlier finding that *new* users of alcohol had higher than expected prior experience with cigarettes. However, the findings can be reconciled by the fact that only a small proportion of the sample refrained from alcohol use during high school; therefore, they have rather limited influence on a cross-time correlation based on the entire sample.

use precedes heavier use of marijuana (while the opposite relationship is less true). A similar statement could be made for alcohol in relation to amphetamines, barbiturates, and hallucinogens, although the cross predictions are much less asymmetrical than was true between alcohol and marijuana. The new users of each of these illegal drugs provide confirming evidence for these sequences; that is, a greater proportion of them have had prior experience with alcohol than have the continuing "non-users."

Marijuana

The most pronounced sequences, however, and therefore the most interesting occur when we get to the figures on marijuana. Marijuana shows a considerably higher predictive relationship across time to all of the other illegal drugs than they show to it. These findings are borne out dramatically in Table 2-8, where we find that new users of amphetamines, barbiturates, hallucinogens, and heroin have very high proportions who were previous marijuana users (ranging from 36% to 71%). These proportions are three to four times as great as the proportions in the comparison groups who reported using marijuana.

Because of the importance of this type of finding and its relevance to some very heated controversies now transpiring in the public arena, it seems important to pause to consider exactly what this information does and does not mean. It does mean that among the rather limited number of young men who tried each of the four more serious illegal drugs for the first time after high school, previous marijuana use was uncommonly prevalent. It does not mean that *all* of them had previously used marijuana. (For example, only 36% of the new barbiturate users reported marijuana use in high school.)

Another thing which the finding does not mean is that all marijuana users move on to more serious drugs. We know, for example, that during the year after high school fully one-half of those who used marijuana did not use any of the more serious drugs. Neither do these findings mean that marijuana "caused" or "led to" the use of more serious drugs for those who did use them. We have no way of knowing how many of these young men would have tried the more serious drugs had there been no marijuana experience available to them. It seems quite likely that a number would have, particularly given our finding that there may be a personality factor which inclines people toward or away from drug use in general, including the legal drugs.

While the "causal" hypothesis is not proven by these data, neither is it disproven. In a society which attaches a social, moral, and legal meaning to marijuana use which is synonymous with the use of these other illegal drugs, it seems quite likely that its young people will come to see them as logically connected. For example, a young person may decide to try marijuana with the belief that there is no compelling argument against trying it. But he may then come to accept society's definition of that experience as a first major step into a counter-culture or drug-culture, making the next step much less difficult psychologically. If the use of marijuana were legal, the social and psychological meaning of using it might change--rendering it no longer a first step into the world of illicit drugs. In other words, even if there is a type of causal link between marijuana and harder drugs, it may be based more on existing social policies and definitions than on any mechanistic or physical link.

The More Serious Illegal Drugs

Amphetamines, barbiturates, and hallucinogens all show considerably better ability to predict later use of heroin than the

reverse. The information in Table 2-8, while based on an extremely small number of new users of heroin ($n = 17$), lends support to the patterns suggested by the cross-lagged panel correlations. Prior to the time of high school graduation, 65% of them had used amphetamines, 53% hallucinogens, and 41% barbiturates--all very high rates of use. These data indicate (although quite tentatively because of the number of cases) that the use of one or more of these three drugs tends to precede the use of heroin.

The cross-lagged panel correlations also indicate that earlier amphetamine usage rates predict well to later barbiturate use. We already know that the use of these two drugs is highly associated, but these cross-time data suggest a certain sequential pattern between them. One interpretation already mentioned, is that for most of these users, amphetamines are taken for their direct effects and barbiturates are taken primarily to reverse those effects, i.e., their use reflects an attempt to return to a "normal" state, rather than an attempt to leave it. The data on new users of these drugs in Table 2-6 lend slight support to this interpretation. Nine percent of new barbiturate users had used amphetamines during high school while none of the new amphetamine users had used barbiturates during the same time interval. However, the interpretation given would suggest a rather short sequential cycle between amphetamine use and barbiturate use, thus we would not expect data based on the large time intervals dealt with in this study to catch many people who become dual users in the middle of the cycle--that is, after having started on amphetamines but before proceeding to barbiturate use. Therefore, the rather modest support for the hypotheses found in Table 2-8 is not contradictory to the basic hypothesis.

Turning now to the remaining relationships, we find that there does not appear to be any directional cross-time relationship between amphetamines and hallucinogens or between barbiturates and hallucinogens. The cross correlations are roughly equal in both

cases. For all three of these drugs we find that people who become users after high school are a little more likely than those who do not to have had previous experience with the other two drugs. The one exception, which has already been mentioned, is that none of the new amphetamine users had previously used barbiturates. Thus, it looks as if prior experience with any one of these drugs increases the probability of experience with the others, but there is no indication of a dominant sequence.

One final technical point should be made before closing this section on the dynamic patterns of multiple drug use, and it is one which has already been alluded to above. Namely, the units of time across which we are looking for sequential patterns are rather large (i.e., the years before graduation and the year after graduation) and therefore are unlikely to be anywhere near optimal for uncovering behavioral sequences, particularly where the cycle is a short one. That is, most of the individual sequential behaviors will occur *within* either the first or the second time period, not across them. Thus we find, for instance, that in the cross-lagged panel correlations there are few instances where the cross-interval correlation between two drugs is higher than either within-interval correlation. Usage questions collected on shorter intervals or which specifically asked the respondent the sequence in which he started to use different drugs would provide better data from which to extract sequential patterns and, in particular, to assess the strength (prevalence) of those patterns.

However, despite this handicap in the study design, we have been able to identify certain indications of a tendency toward sequential use of some of the drugs. Alcohol and cigarette use seem to precede use of the various illegal drugs more often than would be expected. Marijuana use tends to precede the use of each of the other illegal drugs in a similar way; and, finally, the use

of amphetamines, barbiturates, and/or hallucinogens tends to precede the use of heroin. It must be emphasized again that the phrase "tends to precede" does not say "always precedes" or "causes." We have no evidence of a necessary or fixed sequence in these patterns of drug use, nor any compelling evidence of causal connections.

Chapter 3

The Attitudes of Youth Toward Drug Taking

The "new youth culture" is popularly assumed to consist of a whole new complex of values, attitudes, and behaviors--a radically different life style and orientation from those of previous generations. In addition to new attitudes toward sex, war, and material goods, newer generations are generally assumed to have changed their stance on drugs. We considered that notion worth testing and, therefore, decided to include a set of questions which ask respondents for their attitudes about the use of most of the drugs we have been discussing. In this chapter, we will address a number of questions about youths' attitudes on drugs. What are their general attitudes about the use of both legal and illegal drugs? Are attitudes about experimental use different from those on regular use? Are attitudes about the use of different drugs related? How different are the attitudes of users and non-users?

EXISTING ATTITUDES

Table 3-1 presents the questions concerning drug attitudes along with the percentagized answer distributions. As the table

TABLE 3-1

Attitudes Toward Drug Use

People differ in how they feel about individuals doing certain things. How do you feel about people your age doing each of the following things?	Strongly approve	Approve	I feel neutral	Disapprove	Strongly disapprove	I CAN'T SAY, UNFAMILIAR WITH DRUG	% Missing Data
	(1)	(2)	(3)	(4)	(5)	(6)	
Smoking one or more packs of cigarettes per day	1.4	4.3	36.2	29.5	28.0	0.7	1.3
Trying marijuana (pot, grass) once or twice	4.7	16.7	25.6	13.1	33.7	6.1	1.9
Smoking marijuana occasionally	2.9	14.0	25.9	14.2	36.5	6.5	1.8
Smoking marijuana regularly	2.4	6.6	20.0	19.7	44.9	6.3	2.0
Trying LSD once or twice	1.2	4.7	11.7	15.0	58.5	8.9	1.5
Taking LSD regularly	0.5	0.7	6.7	13.6	69.6	8.9	1.7
Trying heroin (smack, horse, "H") once or twice	0.6	0.9	4.5	10.7	73.9	9.3	1.7
Taking heroin occasionally	0.3	0.4	3.5	10.0	76.9	8.9	1.4
Taking heroin regularly	0.3	0.3	2.8	8.2	79.5	8.8	1.8
Trying a barbiturate (yellow jacket, red devil, downer) once or twice	0.5	3.5	12.5	15.7	57.3	10.5	1.6
Taking barbiturates regularly	0.3	0.7	6.5	13.7	68.8	10.0	1.9
Trying an amphetamine (pep pill, bennie, speed, upper) once or twice	0.7	5.7	14.3	14.3	55.8	9.2	1.7
Taking amphetamines regularly	0.3	0.7	6.8	14.5	67.4	10.2	3.1
Trying alcoholic beverages (liquor, beer, wine) once or twice	8.5	38.3	38.7	5.0	8.0	1.4	1.7
Drinking alcoholic beverages regularly	3.6	19.0	41.6	20.0	15.1	0.7	1.6

indicates, separate questions were asked about experimental use and regular use for most drugs. Occasional use was added for marijuana and heroin, while experimental use of cigarettes was not included.

Respondents were asked to indicate their degree of approval or disapproval on a five point scale or, if they were not sufficiently familiar with the drug to hold such an opinion, to indicate that fact by checking the sixth point. All of the more serious illegal drugs ended up with nine or ten percent answering in the "unfamiliar with drug" category, a rather surprising fact in this age of mass media. The great majority, however, did express some attitude on all scales.

Attitudes Toward Illegal Drugs

The major findings are indeed striking. Use of any of the more serious illegal drugs, even experimental use, received the disapproval of the great majority of these young people. Experimental use of amphetamines drew the least condemnation among the more serious illegal drugs, and even this behavior received the disapproval of 70 percent of these young men who were one year out of high school at the time. It received the *strong* disapproval of 56 percent. Attitudes are roughly comparable for amphetamines, barbiturates, and hallucinogens; that is, over 70 percent of the respondents disapprove of their use even on an experimental basis, while over 80 percent disapprove of regular use. Heroin use is an even less admired activity, with only 6 percent saying they approve of or feel neutral about experimenting with the drug, and less than 4 percent expressing such attitudes about regular use.

Marijuana smoking, on the other hand, elicits a negative reaction from a much smaller fraction of the sample. Only 47 percent disapprove of the experimental use of marijuana, while an

equal number either approve of the activity or feel neutral about it. More intensive use of marijuana receives more disapproval, a finding which also holds true for all of the other drugs, with the result that regular use of marijuana receives the disapproval of nearly two-thirds of the respondents. But, it is still the case that a substantial 29 percent approve of or feel neutral about their peers using the drug regularly.

In addition to reflecting a more tolerant reaction, the distribution of attitudes toward marijuana use is noteworthy in another respect. The distribution is bimodal; that is, the two most frequently chosen answers are not in adjacent positions on the scale. People tended either to strongly disapprove of use of the drug or to express a position of neutrality about its use, suggesting that there is some polarization of positions within this age group on the subject of marijuana use. It is the only drug for which such a polarization emerged so clearly.

The findings discussed so far about attitudes toward the use of illegal drugs have some interesting implications. The first is that there have undoubtedly been some gross distortions in the public's perception concerning the receptiveness of our young to drugs or a "drug culture." The great majority of these young men express strong disapproval of the use of all illegal drugs except marijuana. It follows, therefore, that for drug use to become substantially much more prevalent than it currently is, the attitudes of youth are going to have to change considerably.

Second, it should be noted that marijuana is seen by these young people as in a class by itself. They react to its use quite differently than they react to the use of the other illegal drugs. Put another way, there are a great many who say they do not disapprove of the use of marijuana but who strongly disapprove of the use of the other more serious drugs.

Another way of assessing the current feeling of young people toward marijuana is to compare how favorably they rate its use compared to the use of legal drugs. Regular cigarette smoking, for example, is viewed more favorably than regular marijuana use; but, surprisingly, it gets no better rating overall than the occasional use of marijuana. About 42 percent of the respondents say they do not disapprove of each of these activities; that is, they approve of or feel neutral about them.

Attitudes Toward Legal Drugs

Some 58 percent of the sample disapprove of cigarette smoking, which indicates rather clearly that cigarettes have lost their glamour for a very large segment of this generation of young people. In fact, only 6 percent say they particularly approve of smoking, less than the number approving of regular marijuana use!

Alcohol has not fared as badly. To try alcoholic beverages once or twice is almost universally accepted, if not approved. Only about a third of these young men disapprove of drinking alcoholic beverages regularly and nearly a quarter still positively approve of the activity, making it the most accepted drug in the set. It may provide comfort to the distillers and brewers of America to find that this generation of America's youth still rate the use of their products as socially acceptable. Cigarette manufacturers, on the other hand, have considerable reason for concern.

THE ATTITUDES RELATED TO EACH OTHER

We would undoubtedly expect to find some relationship between people's attitudes toward these different drugs. For example, a

person would seem inconsistent if he said he approved of the use of heroin but not of marijuana. So the question really is how strong are the interconnections, and are there some higher order concepts or factors which help to explain attitudes toward specific drugs?

To help answer these questions, the fourteen attitude variables were related in a table of Pearson product-moment correlations, with one correlation for each pairwise combination of variables. (See Table 3-2.) These correlations were then entered into a type of cluster analysis program which treats the correlations as similarity (or proximity) measures and proceeds to build clusters based on the similarity of the variables. The similarity of a variable to a cluster is measured by the lowest correlation between that variable and any variable already in the cluster. The lower that lowest correlation is, the lower is the similarity. In the present instance the program started by treating all fifteen variables as separate clusters, and then through a series of fourteen sequential steps combined clusters one at a time, each step joining the two clusters having the greatest similarity. The first step simply combined those two variables having the highest pairwise correlation.*

*A correlation matrix was first generated based on the original five-answer variables ("unfamiliar with drug" is excluded). Because the correlations turned out to be so high, it seemed possible that the few respondents out in the "approve" end of the scale may be accounting for a great deal of the correlation. This would be a problem if the distinction between saying one "approves" versus he feels "neutral" reflects only differences in semantic style and not differences in attitudes. So, a second product-moment correlation table was created based on variables in which the first three answer categories ("strongly approve," "approve," and "feel neutral") were collapsed into a single category. However, the correlations turned out to be practically identical to those generated by the original method, indicating that variation within the "approve" end of the scale was not critical to the resultant correlations. Though it makes little difference, the correlations which are cited in this chapter are based on the bracketed versions.

TABLE 3-2

Correlations Among the Drug Attitudes

Note: These correlations are based on bracketed versions of the attitude variables in which answers (1) through (3) in the original question are collapsed into a single code. Those giving answer (6), "unfamiliar with drug", are treated as missing data.

	(1)	Cigarettes: Regular										Attitude Toward the Use of:				
(2)	25	(2) Marijuana: Exptl.														
(3)	24	90	(3) Marijuana: Occasional													
(4)	26	79	86	(4) Marijuana: Regular												
(5)	24	56	59	64	(5) LSD: Exptl.											
(6)	26	41	45	55	76	(6) LSD Regular										
(7)	21	33	36	41	58	63	(7) Heroin: Exptl.									
(8)	21	28	31	36	51	61	87	(8) Heroin: Occasional								
(9)	21	25	26	33	44	60	77	85	(9) Heroin: Regular							
(10)	21	52	53	56	71	61	57	53	47	(10) Barbiturates: Exptl.						
(11)	25	39	42	49	58	67	60	63	65	73	(11) Barbiturates: Regular					
(12)	22	54	54	56	70	57	51	47	40	87	67	(12) Amphetamines: Exptl.				
(13)	25	39	41	46	57	65	58	62	62	68	85	68	(13) Amphetamines: Regular			
(14)	21	33	33	28	19	14	11	07	06	21	14	22	13	(14) Alcohol: Exptl.		
(15)	28	30	29	27	17	16	14	13	14	16	19	19	20	47	(15) Alcohol: Reg.	

A General Factor

The first thing to be mentioned about the results of these analyses is that they yielded a table containing all positive correlations, just as the drug usage questions earlier. The lowest correlation occurred between heroin use and alcohol use, where they got down as low as .06.

Two interpretations suggest themselves. One is that the observed relationships are valid, meaning that there is a general attitude toward the use of all drugs, legal and illegal, on which individuals vary. The other is that some response bias (position bias, etc.) explains this general factor--that it is really an artifact and not a valid attitude. Our previous finding that there appeared to be a general tendency for the use of all drugs to be related, suggests that this similar factor derived from the attitude variables is not a methodological artifact. (Because the drug usage scale deals with discrete behaviors, it seems much less likely that the usage-proneness factor is itself a methodological artifact based on position bias.)

Drug-Specific Clusters

As the cluster analysis proceeded through its early stages, it became apparent that attitudes about different levels of usage of the same drug (i.e., experimental use of marijuana and regular use of marijuana) were more highly correlated with each other than with other variables. The three marijuana questions clustered with each other, as did the questions on heroin, those on LSD, and those on alcohol. (Because there was only one question about cigarette smoking, no such cluster could emerge.) The notable exception occurred for amphetamines and barbiturates, where the attitude toward experimental use of amphetamines first clustered

with the attitude toward the experimental use of barbiturates ($r = .87$). The questions about the regular use of both drugs also joined with each other initially ($r = .85$). Later all four questions joined into a larger amphetamine-barbiturate cluster.

This early patterning of clusters suggests that there are underlying attitudes specific to each drug regardless of level of usage, and there are also differing attitudes about the degrees of use, regardless of drug. In most cases, the drug-specific attitude prevailed first. However, in the case of amphetamines and barbiturates, the intensity/specific attitude prevailed--probably because the drug-specific attitudes toward barbiturates and amphetamines are very highly correlated, leaving the attitudes about acceptable degrees of use to give rise to any differential relationships among the four variables.

These two amphetamine-barbiturate clusters merge into a single four variable cluster, with the lowest correlation between any two variables in the set being .67. The two questions about LSD then join this cluster, with the lowest correlation in the resulting set of six variables being .51. The three questions regarding heroin join the cluster next, still bringing the lowest correlation down to only .40. No other attitude clusters were then able to join this set without bringing the minimum and average correlation levels down substantially. This fact in conjunction with the conceptually meaningful nature of the existing set suggested that this was a useful stopping point in the clustering process. The name to be assigned to the cluster or factor is "Attitude Toward More Serious Illegal Drugs," since it includes the questions asked about all illegal drugs except marijuana.

Attitudes about marijuana use are highly correlated to questions about three of the drugs encompassed by this cluster: LSD,

barbiturates, and amphetamines. However, the marijuana questions are considerably less related to attitudes about heroin use; thus their failure to enter the cluster after the heroin questions had entered it. The marijuana cluster failed to merge with any other cluster until a quite low proximity level was reached (.27 with the questions about alcohol), so it will be treated separately here.

Similarly, the two questions on alcohol use remained as a separate cluster as did the single question on cigarette use, suggesting that attitudes toward these drugs are quite distinct from attitudes about the other drugs being investigated. So we end up with four attitude clusters derived from the fourteen original attitude variables: cigarettes, alcohol, marijuana, and "the more serious illegal drugs" taken as a set. Attitude indices were built to correspond to these clusters by calculating a mean value from the scores (standardized) of the ingredient variables, all equally weighted. In the remainder of this book discussions of attitudes will focus on these indices rather than on the larger set of items on which they are based.*

ATTITUDES RELATED TO USAGE

Knowing, as we do, that the majority of young people disapprove of the use of all illegal drugs as well as the use of cigarettes, it is not hard to deduce that actual users must disagree with the majority of their age peers in their attitudes about the drugs they use. We do, in fact, find that regular smokers are about a standard deviation lower than non-smokers in their

*A fifth index was also built for heroin, based on the three questions about heroin, because of the particular importance of that drug.

disapproval of cigarettes (although, interestingly enough, their mean answer is still 3.3 which is slightly in the direction of disapproval). Regular users of alcohol are about one and one-half standard deviations away from non-users in their score on the alcohol attitude index, while regular marijuana smokers are nearly two standard deviations away from non-users on the marijuana attitude index. People who have used heroin more than experimentally are two and a half standard deviations distant from non-users on the "more serious illegal drugs" attitude index. Finally, people who have used amphetamines or barbiturates or LSD more than experimentally are about one and three quarters standard deviations away from their respective non-user groups in the direction of approving of the use of the "more serious illegal drugs." The intermediate usage groups for all of these drugs (occasional and experimental) lie somewhere between the extremes, yielding a consistently ordinal relationship in every case between one's degree of use of a drug and his approval of its use.

These findings are surely not surprising, but those to follow next are less intuitively obvious. They concern the relationship between one's use of one drug and his attitudes toward the use of other drugs. Table 3-3 shows the amount of variance explained in five different attitude indices by the seven drug use variables (based on use after high school) in a one-way analysis of variance. What is not shown is the shape of the relationship represented by each η^2 value. In a phrase, every relationship is again a positive ordinal one.* That is, the higher is one's rate of use

*The relationship between marijuana use and attitudes toward alcohol is a slight exception. All users are more approving of alcohol use than are non-users. However, the relationship is not quite ordinal, it is slightly curvilinear. Experimental marijuana users are .45 standard deviations away from non-users, occasional marijuana users .65 standard deviations away, and regular users .45 standard deviations.

TABLE 3-3

Drug Use Predicting to
Drug Attitudes

Eta² Value
(decimals omitted)

Dependent Variable is Attitude Toward:

Comparison of Different Usage Groups for:	Marijuana	More Serious Illegal Drugs	Heroin	Alcohol	Cigarettes
marijuana (4 category)	50	19	05	07	02
hallucinogens (3 category)	21	21	06	01	02
amphetamines (3 category)	20	27	08	02	03
barbiturates (3 category)	12	20	07	02	02
heroin (3 category)	04	11	16	01	02
alcohol (3 category)	06	01	005	29	05
cigarettes (3 category)	04	02	01	06	18

Note: The ability of one variable to account for variance on another depends in part on its own distribution of cases. Highly skewed variables, as are most of the illegal drugs, have a limited ability to predict less skewed variables. Therefore, a low eta² value for a highly skewed predictor such as heroin use, may still represent very large attitudinal differences between categories.

of any drug, the higher is his approval of the use of each of the other drugs. This means that a marijuana user is *more* favorably inclined toward cigarette smoking and alcohol use, not less as some have argued.* Conversely, cigarette smokers are more favorably inclined than are non-smokers toward marijuana use, as well as the use of the more serious illegal drugs. Users of all of the more serious drugs are substantially more approving of marijuana use. The reverse is also true. (Table 3-4 shows the differences in attitudes toward each drug [stated in standard deviations] between the highest and lowest usage groups.)

Of course, these findings might simply be due to the fact that all drug use variables are positively intercorrelated to some degree. For example, we would expect marijuana users to express more favorable attitudes than non-users toward cigarette smoking on the average simply because more of them smoke cigarettes. The important question, then, is whether marijuana use still relates to attitudes toward cigarette smoking after we control for cigarette use.

The answer is that it does. If we look only at people who were not smoking cigarettes regularly in the year after high school, we find that the more they used marijuana, the more approving they were of cigarette smoking. (Among non-smokers, regular marijuana users were nearly four-tenths of a standard deviation higher in their approval of cigarette smoking than non-users.) A similar finding results if we look only at people who did not drink regularly after high school, and examine their attitudes about drinking as a function of their marijuana use. Marijuana users are considerably more tolerant of drinking.

*Regular marijuana users are about four-tenths of a standard deviation from non-users in the direction of approving of cigarette use, occasional users three-tenths of a standard deviation, and experimental users two-tenths.

TABLE 3-4

Attitudinal Differences Between
Highest and Lowest Usage Groups
of Each Drug

Attitudinal Difference Between Groups
in Standard Deviations

Dependent Variable in Attitude Toward:

Comparison of Highest with Lowest Usage Group Based on Their Use of:	Marijuana	More Serious Illegal Drugs	Heroin	Alcohol	Cigarettes
Marijuana (4 category)	1.9	1.3	.7	.5	.4
Hallucinogens (3 category)	1.5	1.6	.9	.3	.4
Amphetamines (3 category)	1.4	1.7	.9	.4	.5
Barbiturates (3 category)	1.2	1.8	1.1	.5	.5
Heroin (3 category)	1.3	2.5	3.0	.5	.9
Alcohol (3 category)	.7	.3	.1	1.5	.6
Cigarettes (3 category)	.5	.3	.2	.6	1.0

Assuming that the observed relationships between the use of each drug and attitudes about all of the others remain after an analogous control procedure, we can make a rather interesting generalization. It is that the more one uses any of the drugs studied here, illegal or legal, the more likely he is to approve of the use of any of the other drugs, legal or illegal, regardless of whether or not he actually uses them.

Why such a state of affairs should exist is as yet unclear. We do know, from a statistical viewpoint, that all drug behaviors are positively correlated to one another, all drug attitudes are positively correlated to one another, *and* all drug attitudes are positively correlated to all drug behaviors. Therefore, there is a very general attitude/action factor which could be extracted. Unfortunately, factors tend to tell us a lot more about how things are at some point in time than how they got to be that way. Whether such an orientation preceded the specific attitudes and behaviors measured here, or whether behaviors emerged in a way consistent with attitudes, or the attitudes came into line with behaviors cannot be determined from our data. What we can say is that specific drug-taking behaviors and specific attitudes reflect in part a general orientation toward the use of psychoactive substances.

Chapter 4

Background and Intelligence Related To Drug Use

In this chapter we will be examining the differences in drug use which exist between young men from varying types of backgrounds. We will also be looking at the nature of the relationships between intelligence and use of the various drugs, both during and after high school.

There are several rather important reasons for exploring these issues, perhaps the most straightforward of which is that we need such basic descriptive information to accurately understand the gross contours of the "drug problem" among American young people today. How widespread is the use of drugs and are all drugs equally pervasive? Further, as we learn more about the relationship between any behavior and other important variables such as demographic and family background characteristics, we begin to understand more about the dynamics involved in that behavior. Drug use is surely no exception. Finally, in order to accurately assess the effects of various social environments in relation to drug use, which we will attempt to do in later chapters, it is necessary to be able to remove effects which are due to the different types of young people who go into those environments in the first place. To

remove those differences, one needs to know the importance of the background characteristics in relation to drug use.

For all of these reasons, the roles of demographic, family background and ability characteristics are being explored here. Among the specific variables to be examined are region of the country, urbanicity, socioeconomic level, intactness of family, stability of residence during high school, race, and measured intelligence.

Before moving into the specific analyses, though, it is necessary to make a short detour into methodology in order to briefly explain the multivariate technique which will be used routinely in this chapter and again in Chapters 5 and 6. Even those readers with an aversion to mathematics may want to skim this short section, since the basic ideas are presented at an intuitive rather than on a formal mathematical level, and an intuitive grasp of the technique will be helpful to understanding many of the subsequent results.

INTRODUCTION TO A MULTIVARIATE ANALYSIS TECHNIQUE: MCA

The simple descriptive relationships between the several background characteristics discussed in this chapter and use of the seven drugs under examination are of great interest in their own right. Therefore, they will be presented in the form of bar graphs in this chapter. However, when we examine a natural phenomenon, as opposed to a controlled event in the laboratory, there is always the question of whether a relationship between two variables would remain if we could "hold other things equal." Supposing, for instance, one region of the country had an exceptionally high level of drug use, but it also had an exceptionally wealthy population.

If we felt that wealth was related to heavy drug use, we might well wonder whether differences in wealth really account for all of the regional differences. In this straightforward example there would be some fairly routine techniques for separating the effects of the two variables. However, once we start dealing with three or more predictors, the problem of disentangling their effects becomes more complex.

An analytic technique which is particularly well suited to this purpose has been created and adapted to computer application by Andrews, Morgan, and Sonquist (1969). They have entitled it "Multiple Classification Analysis." Other discussions of the technique may be found in Blau and Duncan (1967), Sonquist (1969), and Barfield and Morgan (1969). In this as well as subsequent chapters, I will be using Multiple Classification Analysis to estimate the effects of each variable after holding other variables constant.

Characteristics of MCA

Since Bachman (1970) has already summarized the characteristics of this statistical procedure in an earlier volume from the Youth in Transition study, I will draw upon it rather than attempt to duplicate his efforts.

MCA permits us to predict a criterion dimension, say QT [Ammon's Quick Test of Intelligence] scores, using a number of background factors (or predictor dimensions) simultaneously. The procedure operates as follows: we begin with the mean of QT scores for all respondents (the grand mean) - this represents our best guess about any individual's QT score if we know nothing else about him. Then from that starting point we make adjustments upward or downward according to whatever information we have about the individual. These adjustments to the grand mean

represent the effects of that individual's background--how he ranks along the predictor dimension; ...The difference is that MCA provides an estimate of the effect of each predictor as if it were uncorrelated with all other predictors. To put it another way, when MCA is examining the effects of a particular predictor category (e.g., the category 'seven or more siblings') it estimates what the effects of that category would be if other background factors (e.g., race and SEL) were distributed within that category exactly as they are for the total sample...MCA looks at predictors simultaneously and adjusts each predictor to take some account of its relationship with the other predictor(s).... (pp. 64-65)

* * *

Now let us review some of the most basic characteristics of MCA:

1. MCA can deal with predictors that are only nominal in form. This is essential, since most of our background variables--race, broken home, community size, religious and political preferences--are of this nature. In fact, predictors must be in categorical (nominal) form for MCA procedures. This represents no problem, since any continuous variable can be treated as a series of categories.

2. MCA can handle missing data on the predictor variables, simply by treating absence of data as another predictive category. This characteristic of the program is quite valuable when dealing with a number of predictors each of which involves some missing data.

3. MCA can handle a wide range of interrelationships among predictors and between predictors and criteria. This general-purpose feature of MCA means that we can apply the same technique to all of our variables, thus avoiding the shifting frames of reference necessitated by alternate modes of analysis. A more basic advantage of this feature is that MCA can deal directly with intercorrelations that are the rule rather than the exception among background factors.

4. MCA requires that dependent variables be either (a) interval scales--such as test scores,

grades, status of aspired occupation, or (b) dichotomies--such as planning to go to college or not...

5. MCA assumes that the effects of predictor variables are combined additively; that is, it assumes that there is no interaction among predictors. This assumption is of critical importance, for it means that either the investigator must assume that no appreciable interaction exists (based on the other findings, theory, or intuition), or he must search the data for such interactions prior to applying the MCA technique. (p. 68)

It should be noted here that, although some checks were made for interaction between selected pairs of variables where interaction was most suspected, no comprehensive systematic search has been conducted for this volume. The results of the focused looks we have taken indicate that there is probably very little interaction to be found among the variables.

More will be said later in the chapter about MCA. For the time being, the primary idea to understand is that values can be generated for predictor categories (in this case the values refer to the percent of the people in the category who are using a drug), and that these values are estimates of what the observed values would be if all other predictors were uncorrelated with this one.

Interpreting Symbols in the Bar Charts

The adjusted values given in this chapter have been derived from a Multiple Classification Analysis which used as its predictor set all of the background and ability variables discussed in the chapter. These adjusted values are indicated in the bar graphs by a carat (◀) next to each bar. The top of the bar indicates the actual percent of the people in the category using a drug.

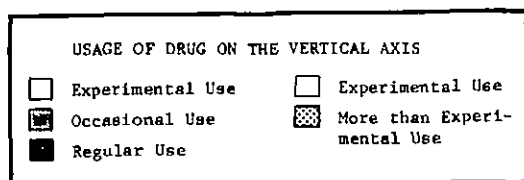
The carat indicates the adjusted percent of people we would expect to find using the drug if the predictor in question (say, socioeconomic level) were uncorrelated with all of the other predictors in the set. For alcohol and cigarettes, the MCA adjusted values have been calculated to correspond to regular use. Therefore, the carats appear near the top of the black portion of the bar, indicating the percent of people we would expect to find drinking regularly (or smoking regularly) if the predictor in question were uncorrelated with the other predictors.

REGION OF THE COUNTRY

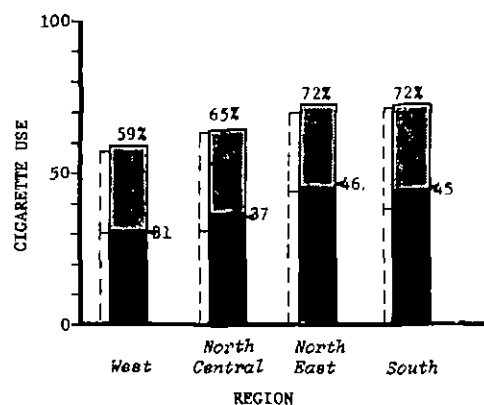
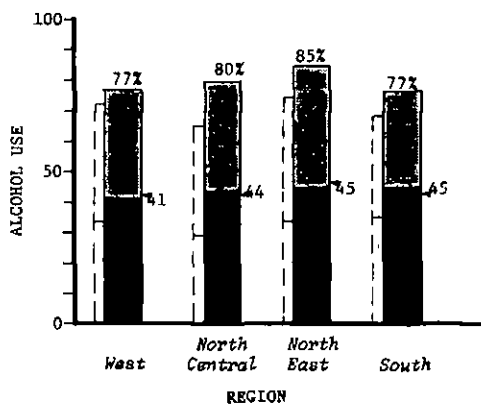
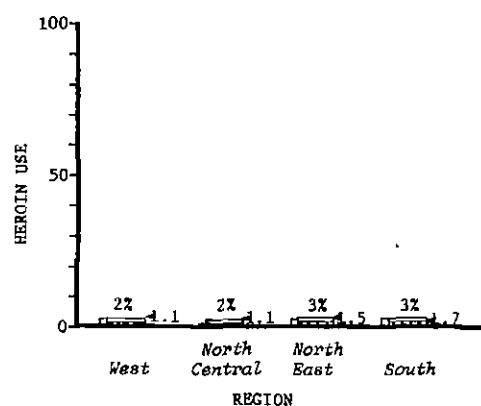
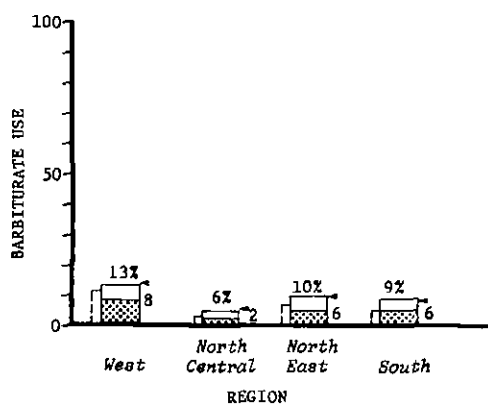
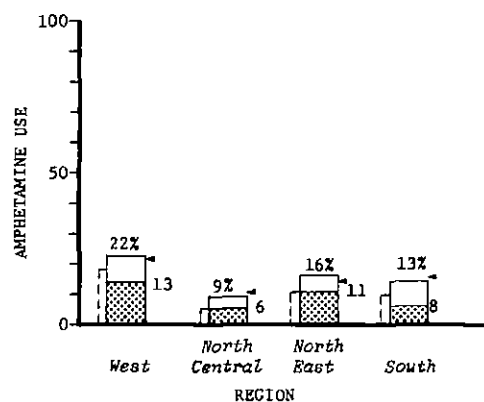
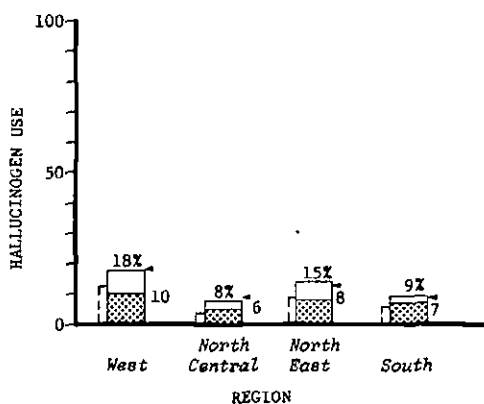
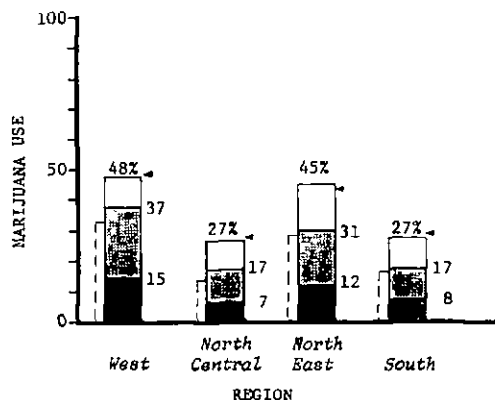
It has long been believed that different regions respond in different degree and with differential speed to new trends and fads in the nation. It would not be surprising, therefore, to find regional differences in the use of drugs, particularly illegal drugs, since widespread drug use among college and high school age youth is a relatively new phenomenon.

We do, in fact, find quite substantial differences, as the data in Figure 4-1 illustrate. Except for heroin, for which there are no regional differences worth discussing, illegal drugs were used most frequently in the West and next most frequently in the Northeast. For marijuana, these two regions showed usage rates nearly twice as high as those reported in the Southern and North Central states. In the year after high school (1969-71), marijuana use by young people from the West and Northeast approached 50%. Hallucinogen and amphetamine use was substantially higher for both of these regions. While placing in the two top positions on barbiturate use as well, the West and Northeast did not differ much from the South.

FIGURE 4-1 REGION OF THE COUNTRY RELATED TO DRUG USE AFTER HIGH SCHOOL (SOLID BARS) AND DURING HIGH SCHOOL (DOTTED BARS)



	REGION			
	West	North Central	North East	South
# OF CASES IN EACH BAR:	273	556	415	554



As mentioned earlier, we would not expect such dramatic regional differences for behavior patterns which have long been diffused throughout the society. Thus the finding that rates of alcohol use are very similar across all four regions is not entirely unexpected. Cigarette use, however, does differ considerably between the regions, perhaps indicating some new trends in this widespread practice.

It is fascinating to find that the West, where the use of illegal drugs is highest, shows the lowest use of cigarettes. Whether this is a leading indicator of where the rest of the country is going is still an open question. However, there is strong evidence that an important generational change in smoking habits is taking place in the West. A Gallup poll of the adult population taken in August of 1969 indicated that regular smoking among adults occurred *most* frequently in the West (45% of the men and women reported smoking during the previous week vs. a national average of 40%). By way of contrast, young men from the West in our sample reported the lowest incidence of smoking (31% reporting regular smoking in the year after high school vs. a national average of 41%). Whether the trend continues or whether young people in the rest of the country follow suit remains to be seen.

All of the basic regional differences we have discussed for drug use in the year after high school also hold for drug use prior to graduation. The "shadow bar" to the left of each solid bar in Figure 4-1 indicates the usage rates *during* the high school years. The "shadow bars" reflect the total percent using each of the illegal drugs; but for alcohol and cigarettes they also indicate the percent making *regular* use of those more prevalent drugs, since that seems to be the most important distinction. For all illegal drugs except heroin, the rank orderings by region are exactly the same as existed after high school (i.e., West, Northeast, South and North Central). There are greater regional

differences in heroin use during high school, though, with 3% in the South, 2% in the Northeast and in the West, and 1% in the North Central. The major post-high school findings for the legal drugs also apply to the high school years; namely, that regional differences in alcohol use are very minor and that regular smoking is more prevalent in the Northeast and South (44% and 38%) than in the North Central and Western states (31% and 30%).

One might reasonably ask whether some of the differences which we have found to exist between different regions might not actually be due to differing characteristics of the populations comprising them, differences in socioeconomic level or degree of urbanicity for example. The results of a Multiple Classification Analysis, in which all of the variables discussed in this chapter were entered into a simultaneous prediction, indicate that the regional differences pretty much remain after we control for these other variables.* The carats (►) in Figure 4-1 indicate the values we would expect to find if all of the other population characteristics used in the analysis were comparably distributed across all four regions. The adjustments are really very small and do not change any of the statements made earlier about regional differences or regional "effects." Therefore, we must conclude that something about the sub-cultures in these regions must account for the considerable differences between them.

COMMUNITY SIZE (URBANICITY)

There is incredible diversity in the nature of the physical and social environments in which young people grow up in America,

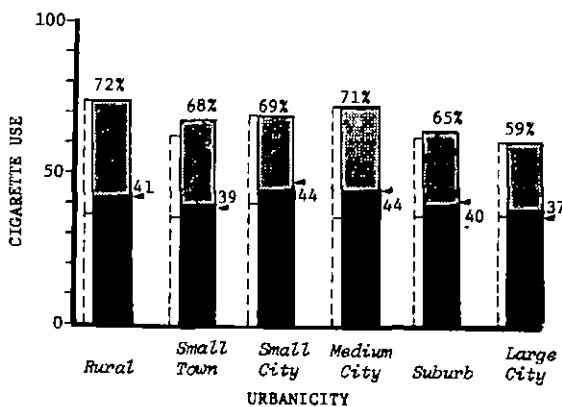
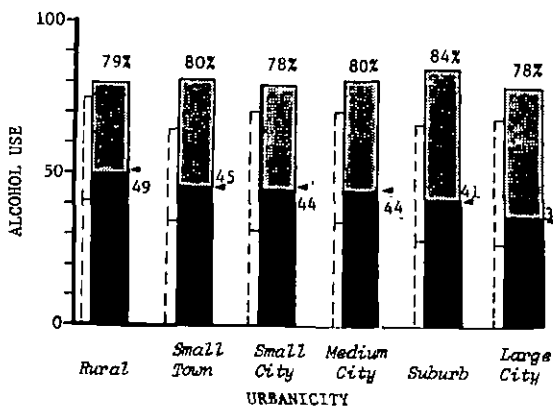
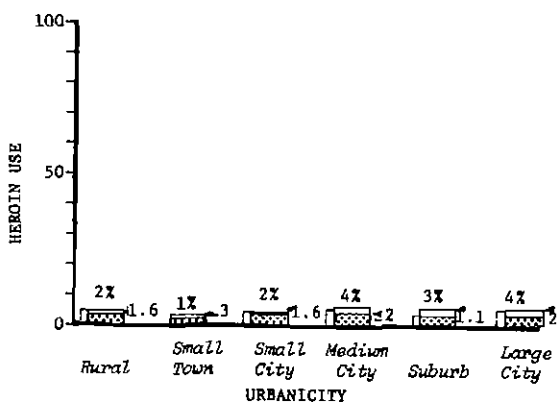
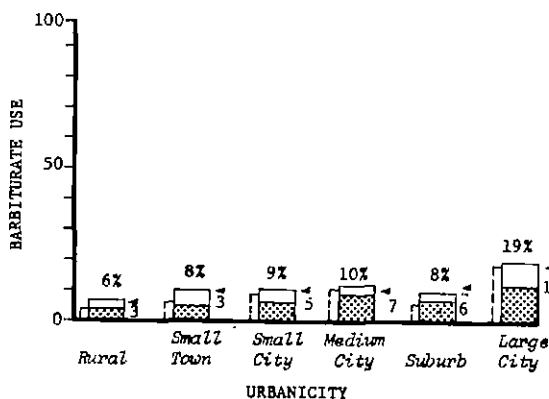
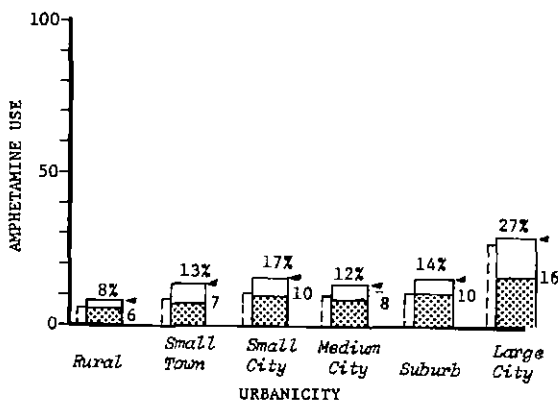
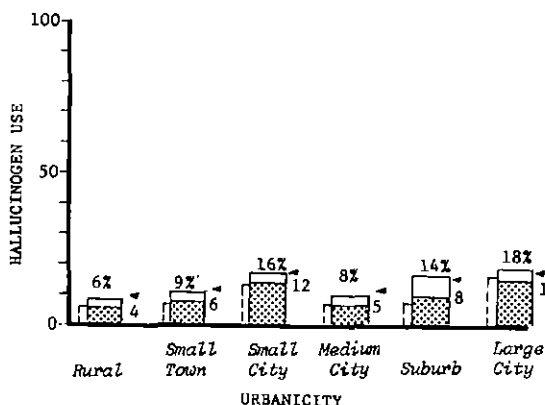
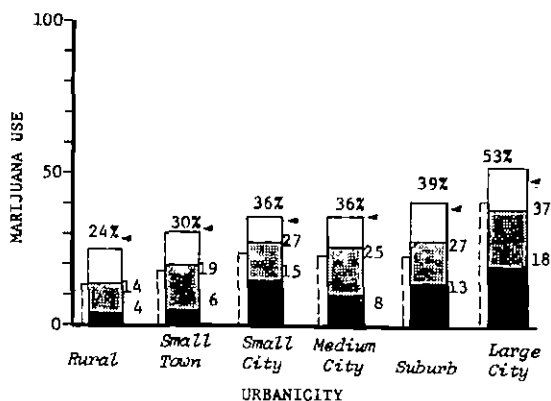
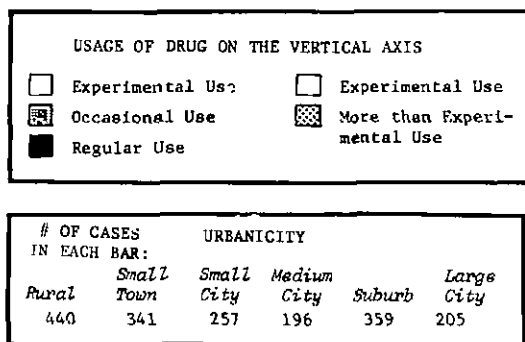
*The other variables are urbanicity; socioeconomic level; intelligence; intactness of family; stability of residence; and a combination variable based on race, region, and school segregation.

ranging from isolated farmhouses surrounded by thousands of acres of corn to crowded tenement houses surrounded primarily by concrete and people. One dimension which captures a great deal of this diversity is urbanicity or community size. Certainly a study such as this would be incomplete if it ignored this important demographic factor, particularly given that illegal drug use has long been assumed to be concentrated in America's larger cities.

The particular measure of urbanicity used in these analyses is based upon reports by the principals of the high schools in which our samples of young men were originally drawn as they began tenth grade. There is, of course, some slippage in this measure due to respondents moving to different types of communities either during or after high school, but for the vast majority it is an accurate measure of the type of community in which they live and in which they grew up. The principal was asked to characterize the areas from which his school drew pupils as being primarily a rural area, a small town under 15,000, a city of 15,000 to 50,000 which was not a suburb, a suburb, or a city of over 50,000. (The last two categories were further differentiated in terms of being residential vs. industrial or commercial areas, but those distinctions will not be discussed here.) Each student in a school who fell into our random sample was assigned the answer category supplied by his principal. We then further divided those students in the "city over 50,000" category into two subgroups --those in cities of 50,000 to 300,000, defined as "medium-sized cities," and those in cities of 300,000 or more ("large cities"). As we shall see, this distinction proved to be an important one as far as drug use is concerned.

The drug use data for the communities of varying size are given in Figure 4-2. The first figure, describing marijuana use, shows a smooth trend of increasing use with increasing urbanicity. During the year after high school only about a quarter of those in

FIGURE 4-2 COMMUNITY SIZE RELATED TO DRUG USE AFTER HIGH SCHOOL (SOLID BARS) AND DURING HIGH SCHOOL (DOTTED BARS)



rural areas had ever smoked marijuana while over half of those from large cities had used the drug. As we shall discover from examining the remaining figures, use of each of the illegal drugs is from two to six times as high in large cities as it is in rural areas both during high school and in the year after. The intermediate sized communities generally lie somewhere in between.

The curves are not always smooth, however, as we see in the case of marijuana use during high school, where large cities have considerably higher rates than any other type of community including suburbs. But, due to an 18% jump in usage by the suburban group, the curve smooths out in the year after high school.

A relatively large increase among suburbanites also occurs for reported hallucinogen use which, as we will see later, may be explainable in terms of the proportion of suburbanites going to college. During high school, the students with clearly higher hallucinogen usage rates are those in small cities and large cities. In the year after high school, the suburban group has joined the other two as a high user group.

A less irregular positive relationship is to be found between urbanicity and both amphetamine use and barbiturate use. Those in large cities have sharply higher usage rates than any other group. Across the large middle range of community size from small town to medium-sized city and suburb there is very little difference in the incidence of amphetamines or barbiturates; and, as usual, the rural youngsters report the lowest incidence. Young people from large cities seemed to show the least increase in the use of these two drugs after high school, but none of these groups exhibited an exceptionally high rate of increase.

Overall, there are rather small percentage differences between different sized communities in heroin use, either before or after

we control for other factors. Thus there is little evidence in this body of data that being in a large city makes a person of this age substantially more susceptible to involvement with heroin. That does not mean that specific schools, neighborhoods, or cities do not have a high risk factor--undoubtedly some do--but rather that large cities *on the average* do not appear to involve appreciably more risk for a given type of person than do suburbs or small cities.* In fact, looking across all of the illegal drugs, we find that illegal drug use is by no means as predominantly concentrated in the larger cities as many reports would have had us believe. It does tend to be highest there, but it is occurring in fairly comparable proportions in the suburbs and smaller cities as well; and it has certainly reached the small town and rural areas. It is no longer an urban phenomenon, as it was once purported to be.

Turning now to the two legal drugs, it should come as no surprise that alcohol and cigarette use are even more pervasive behaviors. Regular alcohol use has a slightly negative relationship to community size, but its range goes only from 49% in rural areas to 34% in big cities. As was the case for most illegal drugs, differences in alcohol use across the broad middle band of community sizes are very small. The location of the carats in this figure indicate that the modest differences in regular alcohol use associated with urbanicity are not explainable in terms of any of the other variables discussed in this chapter.

Regular smoking occurs with about equal frequency in communities of all sizes both during and after high school. The adjustments

*The caution should be repeated, however, that our findings regarding heroin use are quite tentative, given that we have so few reported users and the likelihood that a disproportionate number of addicts have left the study.

emerging from the multivariate analysis which take into account other background factors associated with urbanicity, change the values slightly but do not give rise to any very interpretable pattern.

In fact, an examination of the adjusted values in all of the bar graphs in Figure 4-2 indicates that for the most part the differences in drug use associated with urbanicity are not explainable in terms of the other background characteristics discussed in this chapter. The greatest adjustment occurs for marijuana, where the adjusted values show smaller urbanicity differences than the unadjusted ones, but the basic shape of the relationship remains the same. Less adjustment takes place in the case of hallucinogens and little or no adjustment is observed for amphetamines, barbiturates or hallucinogens.*

SOCIOECONOMIC LEVEL

A composite variable developed by Bachman (1970, p. 9) will be used to define the socioeconomic level of the young men in the sample. It is an index of several equally weighted components, some fairly traditional ingredients (father's occupational status on the Duncan scale, father's education, mother's education, and number of rooms per person in the house), and two less common ingredients (an index of possessions in the home and an estimate

*It is worth noting, however, that while background and demographic factors do not seem to explain the urbanicity differences the average size of the high schools attended in these areas we observe, does have a strong bearing on the observed differences. (It is the case that youngsters from larger communities attend larger high schools.) A fairly lengthy discussion of this important issue is presented in the next chapter under the section entitled "School Size."

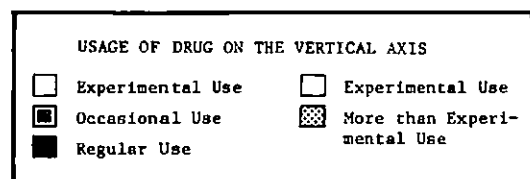
of the number of books in the home). Bachman found all of these ingredients to be interrelated and to have more predictive power to a number of personal outcomes than any subset taken alone. Obviously a measure comprised of these different ingredients represents a number of important factors about a person's background, including family status, the intellectual resources and encouragement he found in his home environment, and suggests as well the types of neighbors and peers with which he has grown up, etc. Bachman reports this composite SEL index to predict rather strongly to academic achievement, occupational aspirations, college plans, political knowledge, self-concept of school ability, etc. It also relates to other important background characteristics such as number of siblings (largest families in low SEL categories), divorce rate (high for low SEL), family religious preferences (higher SEL for Jewish, Presbyterian, Lutheran, and Episcopal), family political preferences (higher SEL for Republicans), race (lower SEL for blacks), and intellectual aptitudes and abilities (which are higher for high SEL students).

Let us now turn to the relationship between this important background characteristic and the use of drugs. Figure 4-3 presents a series of bar graphs which show the usage rates on seven drugs for each socioeconomic level category.*

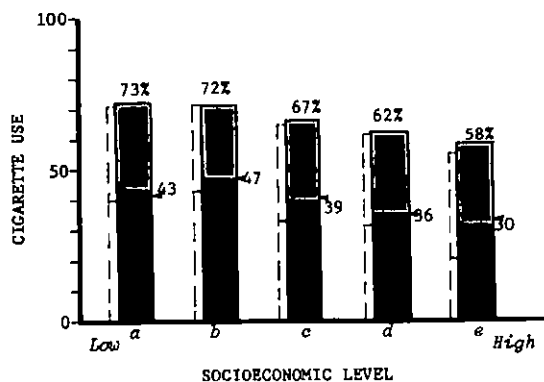
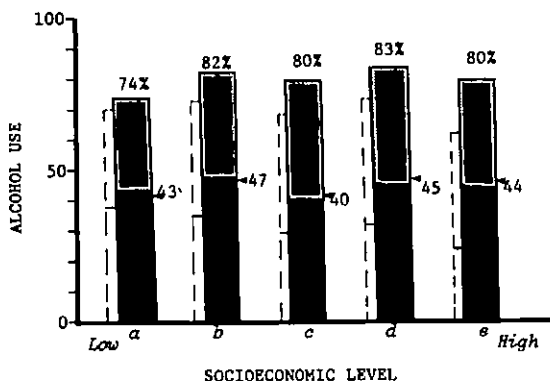
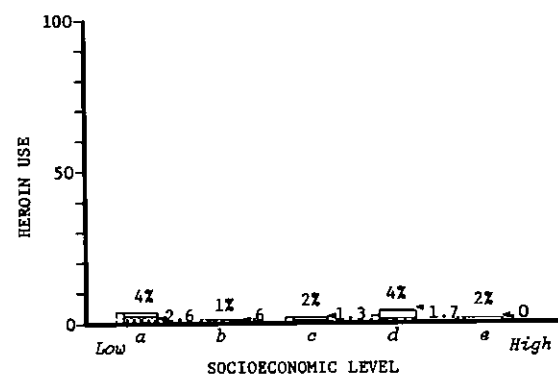
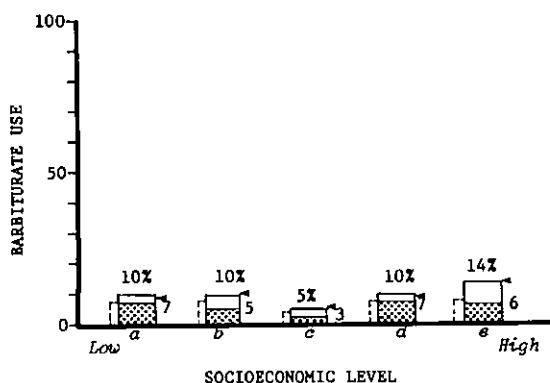
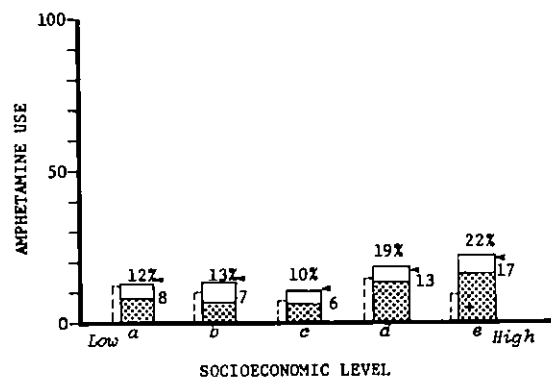
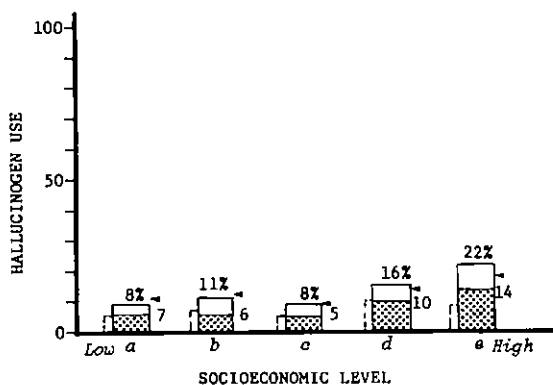
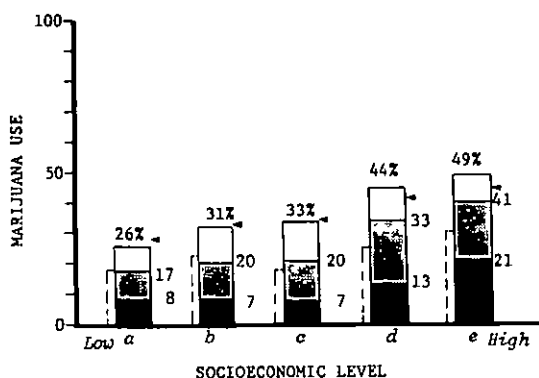
What we find in Figure 4-3 is that quite different patterns emerge for different drugs. Marijuana use, for instance, shows a fairly regular positive relationship to SEL both during the high

*This variable (SEL) has been broken into five groupings for purposes of constructing bar graphs. The particular breaking points were chosen so as to yield a minimum of 130 cases in each category and, where reasonably convenient, roughly equal numbers of cases--not to retain the original shape or interval properties of the continuous distribution. This general approach has been used for most classificatory variables discussed in this book.

FIGURE 4-3 SOCIOECONOMIC LEVEL RELATED TO DRUG USE AFTER HIGH SCHOOL (SOLID BARS) AND DURING HIGH SCHOOL (DOTTED BARS)



SOCIOECONOMIC LEVEL					
	Low				High
	a	b	c	d	e
# OF CASES IN EACH BAR:	353	476	484	294	143



school years and after high school as well. That is, the higher the socioeconomic level of the young man, the more likely he is to smoke marijuana--a finding which is consistent with the work of previous investigators (see Berg, 1970). During high school 17% of the lowest SEL group have used some marijuana versus 29% of the highest group. By the end of the year after high school, the relationship has become considerably stronger, 26% versus 49% or just about two-to-one. The differential increase associated with various levels of SEL may well be explained by the different types of environments entered by these different SEL groups after high school (college, work, etc.). As we shall see in Chapter 6, drug use does change differentially in different post-high school environments.

A similar, but much less distinct, pattern can be found in the figures on hallucinogen and amphetamine use. That is, the higher the level of SEL the greater the percentage increase in usage rate across the two time intervals, with the result that the top two SEL categories show particularly high usage rates of both hallucinogens and amphetamines in the year after high school. These two groups also had shown higher than average usage during high school, but unlike what we found for marijuana, they did not have simple linear relationships with SEL during the high school years. In fact, if anything, the relationships were slightly curvilinear.

Barbiturate use also shows a slightly curvilinear relationship to SEL during high school with the middle group being the lowest. However, the relationship gets even more curvilinear during the year after high school, with the highest and lowest groups showing the greatest increase in usage and the highest resultant usage rates.

The findings for heroin are fairly ambiguous since they indicate that the lower SEL group and the second highest SEL group report greater heroin use than any other group. This yields an s-shaped curve which, though possible, can hardly be confirmed using the number of cases we have here.

The findings for alcohol use are intriguing and demonstrate the power of time-sequence data. If we only looked at the data on the use of alcoholic beverages during high school, we would conclude that there is a definite negative relationship between SEL and alcohol use. On the other hand, if we had only the statistics for the year after high school, we would have concluded that no relationship existed at all. Had these findings resulted from two separate surveys, we would probably be more inclined to suspect their comparability or validity than to have accepted their seemingly conflicting findings. Yet, both findings are right and are reconciled by the fact that changes in alcohol usage rates were a direct function of SEL. The group highest in SEL increased its incidence of regular use by 21% after high school, whereas the group lowest in SEL increased by only 5%. If such differential changes continue, the relationship between SEL and alcohol use will reverse directions from negative to positive.

Finally, we come to the use of cigarettes during and after high school. Generally speaking, we find a strong inverse relationship between SEL and regular smoking. There are no important differences between the two lowest SEL groups, which comprise about one-half of the sample, but from there on up we find a continual decrease in usage, running from 43% down to 20% during high school and from 47% to 30% after high school. Obviously socioeconomic background is a central variable to consider in developing an understanding of the etiology of smoking habits, just as it is for the use of alcohol and marijuana.

Turning now to a multivariate approach, we find from the carats next to each bar that "holding constant" the effects of the other variables discussed in this chapter does little to alter the levels of use associated with each SEL category. For marijuana, hallucinogens, and amphetamines, the usage rates associated with high SEL categories are adjusted downward slightly and the usage rates for low SEL categories are adjusted slightly upward. Nevertheless, the basic shapes of the curves remain.

INTELLIGENCE

Although several different measures of intellectual aptitudes and abilities were included in the first data collection in the Youth in Transition study, only one will be discussed here--the Ammons Quick Test of Intelligence--primarily because there was a high intercorrelation among those measures. Other reasons are included in the following quote from Bachman (1970) which describes the measure.

The Ammons Quick Test is a brief, individually administered test designed to measure general intelligence (Ammons and Ammons, 1962). The Quick Test has three forms, all of which were given at the end of the interview (administration time for all three forms ranged from six to ten minutes). Each form consists of a list of fifty words ordered according to increasing difficulty, accompanied by a stimulus plate on which there are four line drawings. The test administrator (interviewer) reads each word to the respondent, who answers by pointing to one of the four pictures. For example, the word 'building' would lead the respondent to point to a picture which included a house, or the word 'disaster' might involve pointing to a picture of an auto accident. An item cardboard which lists all fifty items is handed to the respondent so that he may read along as the interviewer presents the items; it is not necessary, however, that the respondent be able to read the stimulus words.

The Quick Test seemed well-suited to our purposes for several reasons. As noted above, it does not require reading ability or a written response. It is individually administered, thus avoiding some of the problems that can occur in group-administered tests. Finally, it is practical for administration by interviewers with no previous experience in test administration. (pp. 46-47.)

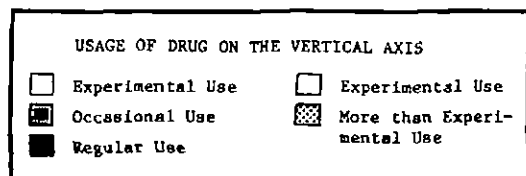
Because intelligence, as measured by the Quick Test, has a strong positive correlation with SEL, it is not surprising to find a very similar pattern of drug use emerge for the various intelligence levels as for the various socioeconomic levels.

Intelligence, like SEL, relates positively to marijuana use and negatively to regular cigarette and alcohol use during high school. (Figure 4-4) After high school its relationship to marijuana gets much stronger, while its relationship to alcohol and cigarettes abates quite substantially. Nevertheless, unlike SEL, intelligence maintains a slight negative relationship to regular alcohol use in the year after high school.

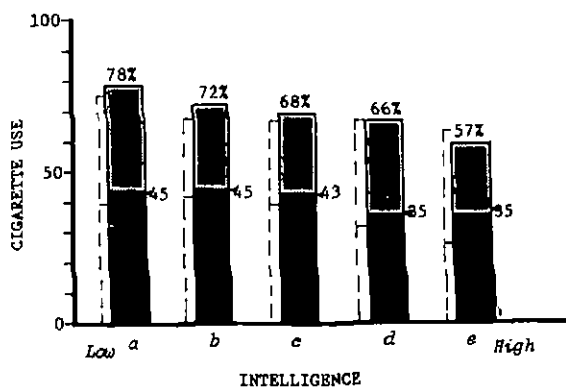
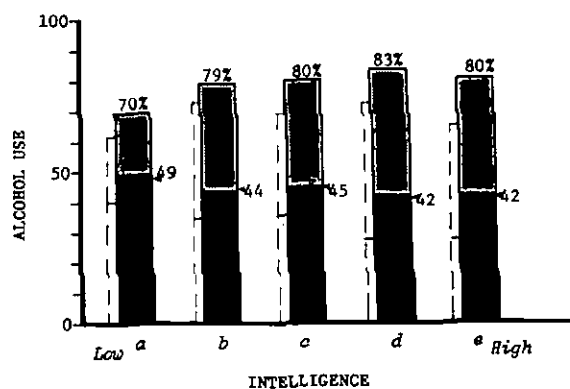
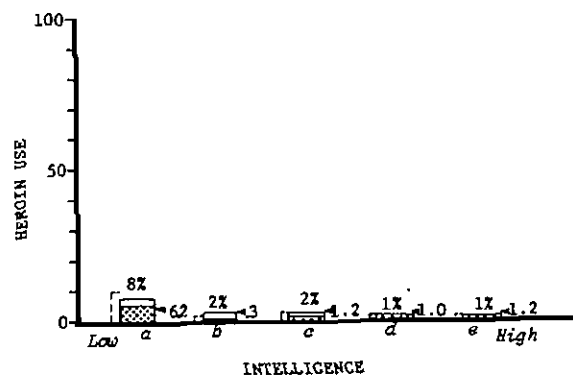
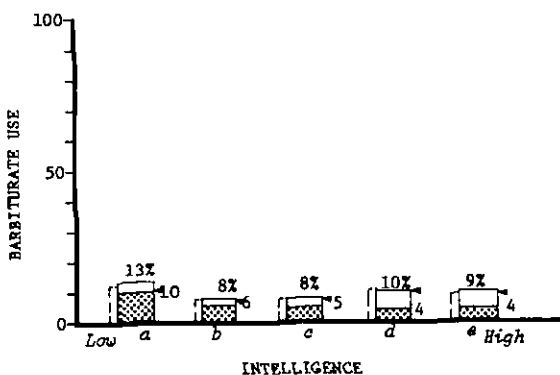
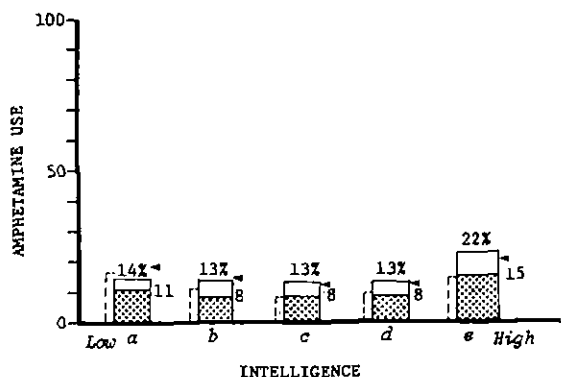
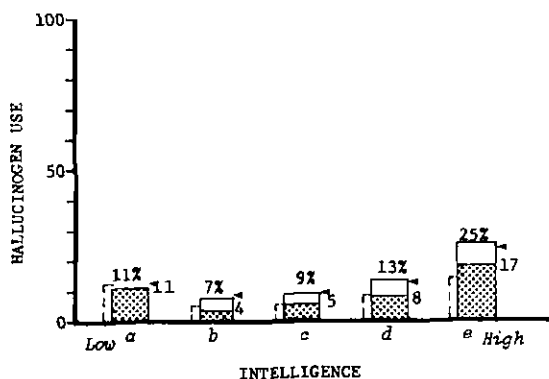
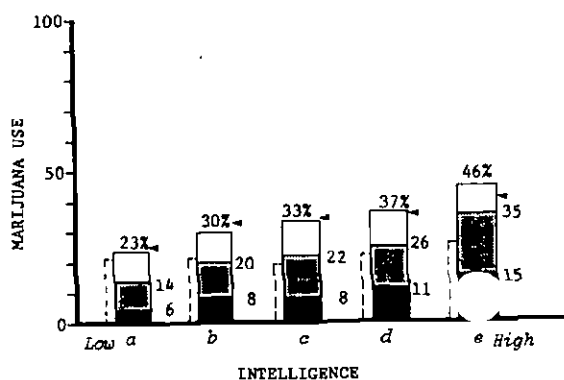
Turning to the more serious illegal drugs, we find that during the high school years there is an intriguing curvilinear relationship between intelligence and the use of hallucinogens and amphetamines. The young men at both extremes are heavier users than those in the middle and use both drugs at about equal rates. While these curvilinear relationships do remain in the year after high school, they seem to be giving way to a more linear positive association due to the fact that usage increases occur in direct relation to the level of intelligence, with the most intelligent increasing the most. This is the same phenomenon we observed with SEL.

Barbiturates relate somewhat differently to intelligence than they did to SEL. While one could argue that during the high school

FIGURE 4-4 QUICK TEST OF INTELLIGENCE RELATED TO DRUG USE AFTER HIGH SCHOOL (SOLID BARS) AND DURING HIGH SCHOOL (DOTTED BARS)



INTELLIGENCE							
	<i>Low</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>High</i>
# OF CASES							
IN EACH BAR:		137	323	671	505	162	



years there is a slight curvilinear relationship, it is a small one and has disappeared by a year out of high school. At that point the lowest intelligence group is higher than all others. Recall that for SEL, the lowest *and highest* SEL groups had high usage.

Heroin use shows up most often in the lowest intelligence group both during and after high school. Thus we can say that those who are lowest in intelligence have the heaviest usage rates of barbiturates, heroin, alcohol, and cigarettes for both time intervals, and the lowest usage rates for marijuana in the year after high school.

The adjusted values which result from the multivariate analyses show that adjustments to the QT categories are very similar to those found for SEL. For instance in the cases of marijuana, hallucinogens, and amphetamines, the usage rates for the upper QT groups are adjusted down and the usage rates for the lower QT groups are adjusted up.* The rather high incidence of barbiturate and heroin use among those in the lowest intelligence group is lowered somewhat when other factors are taken into account. Nevertheless, both remain above average. Very little adjustment takes place for cigarette and alcohol consumption as a result of controlling for other factors.

*It will generally be the case, as it is here, that adjustments tend to move a category toward the grand mean because that category is being forced to share some of its "effect" (deviation from the grand mean) with other variables. In this case, SEL and QT are sharing effects primarily with each other because they are so highly correlated. Sometimes, however, two correlated variables have off-setting effects (masking); and when one is "held constant" statistically, the effect of the other becomes more apparent (i.e., it shows an even greater deviation from the grand mean). This result is called "unmasking."

A mild instance of unmasking occurred in the heroin graph in Figure 4-3 where the adjusted usage rate for the second highest SEL group was even further from the grand mean than was the unadjusted value.

BROKEN HOME

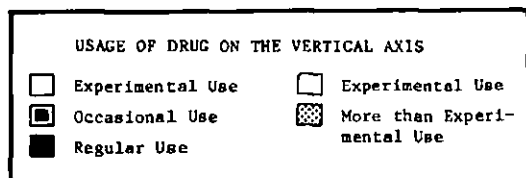
The approach to understanding drug use which views it as a mechanism for escaping reality would probably predict that young people whose natural family has been broken by death or divorce would have more reason to seek escape through drugs.* Figure 4-5 presents the necessary information to test this notion. It gives the drug use levels for young men from intact families, those from homes that have been broken by death, and those from homes broken by divorce.

For the year after high school, some considerable differences in drug use do appear and in the hypothesized direction. Those boys whose families have been broken by either death or divorce report a higher level of use of all of the illegal drugs except heroin (in which case only the latter group report higher than average use). Substantial differences exist for marijuana use but only moderate differences for hallucinogens, amphetamines, and barbiturates. However, these differences do not seem to be explainable in terms of differences in the background characteristics of the three groups, because when the "broken home" variable is run into a Multiple Classification Analysis along with the other background characteristics being discussed in this chapter, the adjusted values which result for these three groups (i.e., while "controlling" for other things) are very similar to the original values.

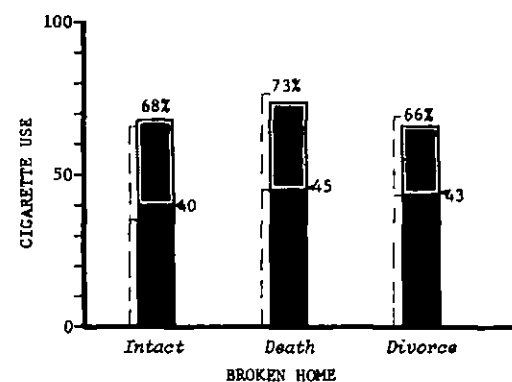
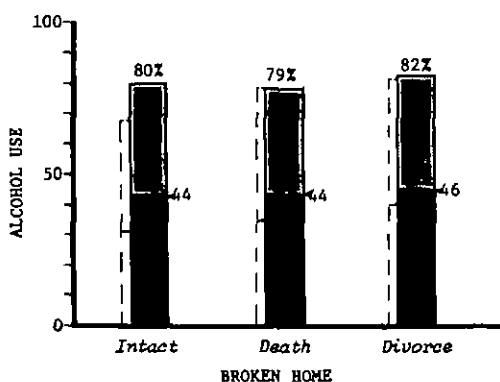
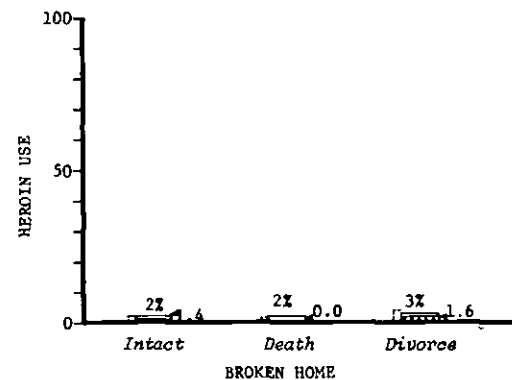
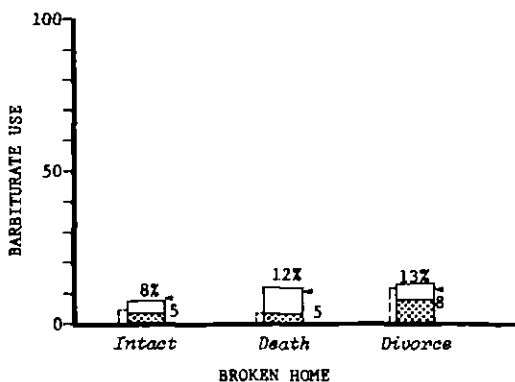
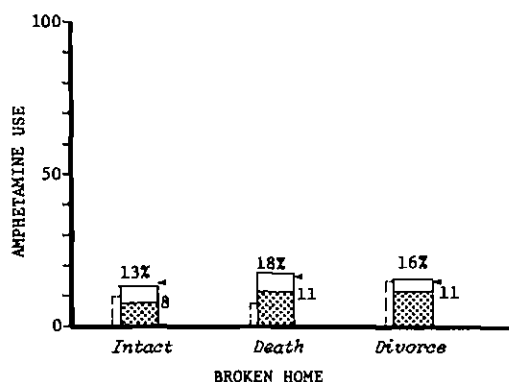
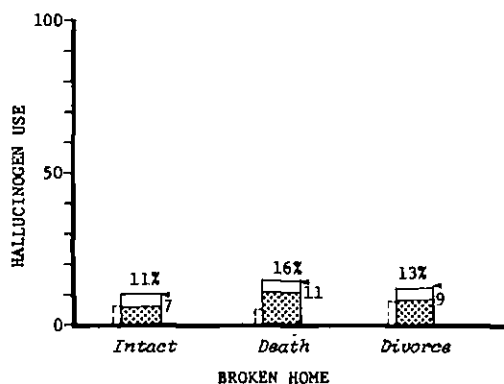
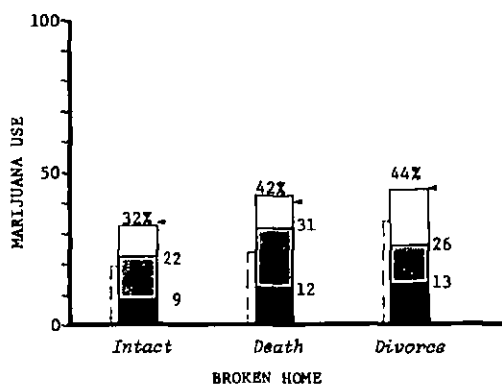
Parallel findings do not emerge for the two legal drugs. Boys from broken homes and intact homes exhibit quite similar habits in regard to alcohol and cigarettes.

*Of course, other explanations could be summoned in the event that differences were found, including the argument that other background characteristics relate to divorce rates, or that the absence of one natural parent results in less parental control.

FIGURE 4-5 INTACTNESS OF FAMILY RELATED TO DRUG USE AFTER HIGH SCHOOL (SOLID BARS)
AND DURING HIGH SCHOOL (DOTTED BARS)



	BROKEN HOME		
	Intact	Death	Divorce
# OF CASES IN EACH BAR:	1474	131	193



Strangely enough, a quite different set of findings emerges if we look at drug use during the high school years. What we find is that during high school those whose homes were broken by divorce had considerably higher usage rates on all seven drugs than did the vast majority who came from intact families. However, those whose families were broken by death had usage levels which were *very* similar to those with intact families. (The only real exceptions exist for cigarette smoking.) Thus, coming from a family broken by death is associated with an exceptional *increase* in illegal drug use during the year after high school, which results in usage rates which are then roughly as high as are found among boys coming from divorced homes.

It should be noted that the numbers of cases in the broken home groupings are limited and that the observed difference--particularly for a single broken home category taken alone--could simply be the result of sampling error. However, because the two broken home groups (combined N=324) are so similar to each other and different from the intact home group after high school, one is inclined to believe the differences. What, then, could explain the fact that the home-broken-by-death group showed drug habits which differed from the majority only after high school. The best explanation, in this author's opinion, is that families broken by divorce were disturbed families for a longer time on the average, whether or not the parents were actually separated. Therefore, social and psychological problems have been experienced for a longer time among those boys than among those whose homes were broken by death, leading to an earlier effect in terms of drug-taking behavior. Further analyses in which the young men whose families were broken-by-death could be subdivided according to recency of the parental death, which would give some further evidence regarding this hypothesis. The prediction, of course, would be that those having earlier deaths in the family would show greater use of drugs during high school than those experiencing a comparable loss at a later age.

STABILITY OF RESIDENCE

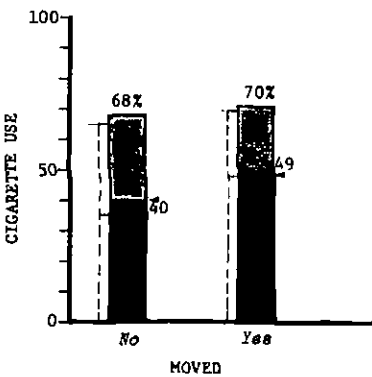
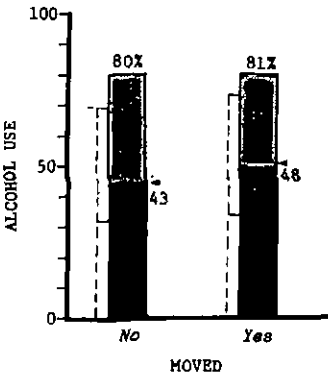
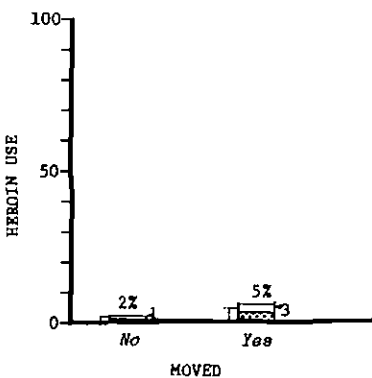
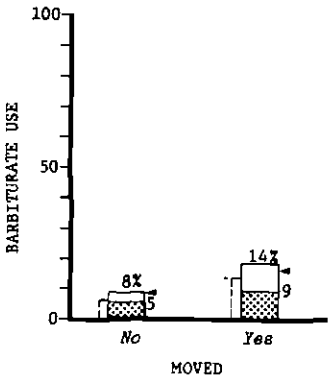
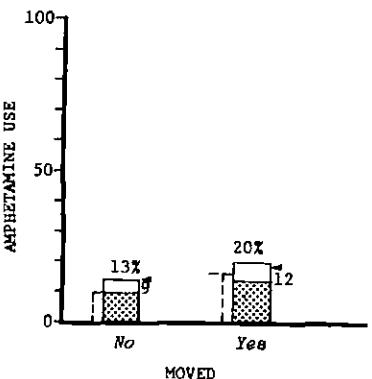
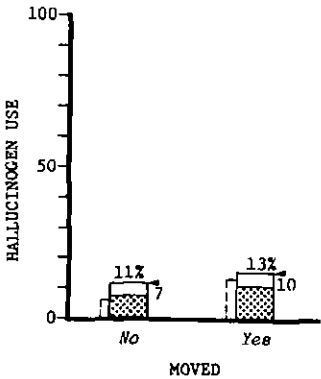
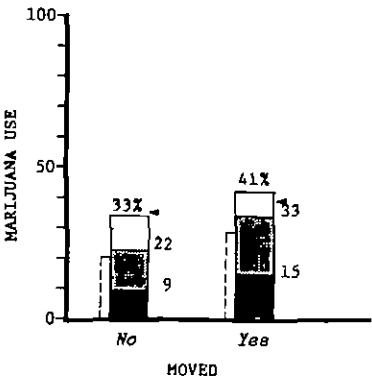
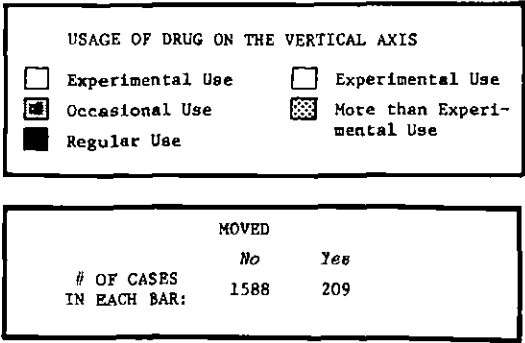
Stability of residence was chosen for examination here because it seemed likely that one who leads a transient life also leads a more stressful life. It turned out that during the high school years there is very little transience. The variable used is a simple one. It is based on whether or not a respondent reports--in response to specific interview questions--that he has moved at any time between the first data collection (beginning of tenth grade) and the third one, two and a half years later (end of twelfth grade). Those reporting no moves, the majority, were put into one group while all others were put into a second.

As is apparent from Figure 4-6, those leading a more transient life during the high school years report substantially higher use of all illegal drugs both during and after high school. They also show a somewhat higher rate of cigarette use and a slightly higher rate of alcohol use.

Whether these observed differences can be best explained in terms of other background characteristics which covary with stability of place of residence, or reflect the social and psychological consequences of leading a more transient life is another matter.

The adjusted usage rates for the year after high school resulting from an MCA, which statistically holds other things constant, indicate that part of the difference is explainable in terms of the other background characteristics dealt with in this chapter; but most of the difference still remains. It could be, of course, that the transient life does not "cause" higher drug use but instead is caused by other factors which also lead to heavier use of drugs.

FIGURE 4-6 STABILITY OF RESIDENCE DURING HIGH SCHOOL RELATED TO DRUG USE AFTER HIGH SCHOOL (SOLID BARS) AND DURING HIGH SCHOOL (DOTTED BARS)



Nevertheless, one could think of ways in which transience might play a more direct role in the causation of drug use. At the psychological level, drugs could provide a way of escaping the painful realities of loss of friends, or difficulty making new friends, or the more general anxiety which usually accompanies the task of coping with a new environment. At the social level, one could imagine the active use of drugs as being one of the easier ways of breaking into new friendship circles after moving. Unfortunately, the testing of some of these hypotheses is beyond the scope of this book.

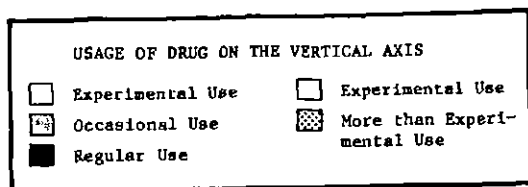
RACE

Unfortunately this study is not geared to examine racial differences in any definitive way, since it contains drug data on only 167 black respondents (weighted N=198), of whom a fair number are clustered in five or six high schools. These limitations derive from the low proportion of the population which is black, in combination with our clustered-by-school sampling design. However, because race has for so long been assumed to be an important variable in the etiology of drug behavior, it seemed worthwhile to examine racial differences in the sample with the assumption that the findings must be considered to be quite tentative.

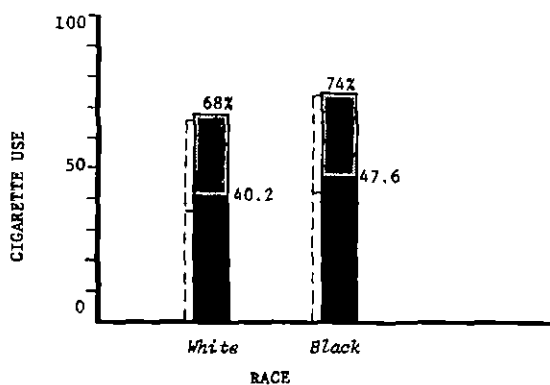
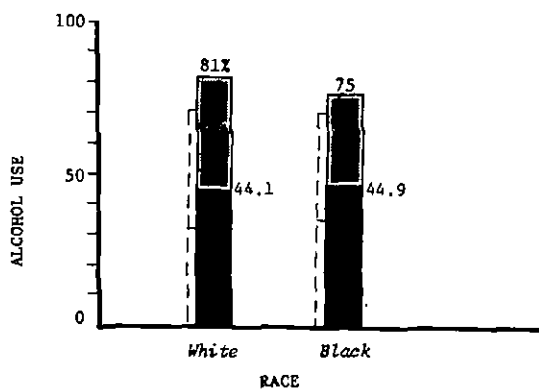
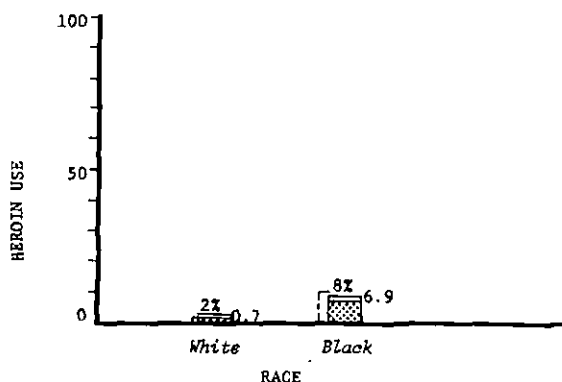
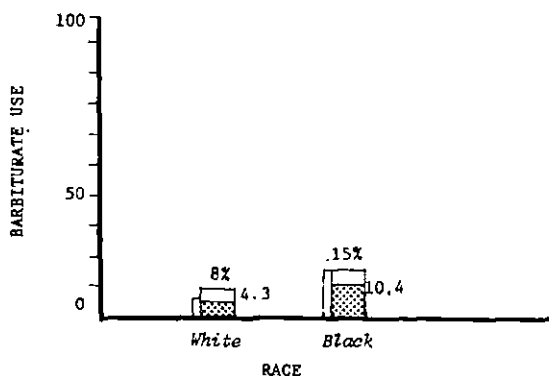
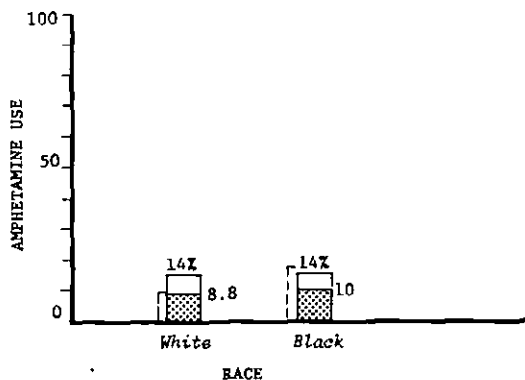
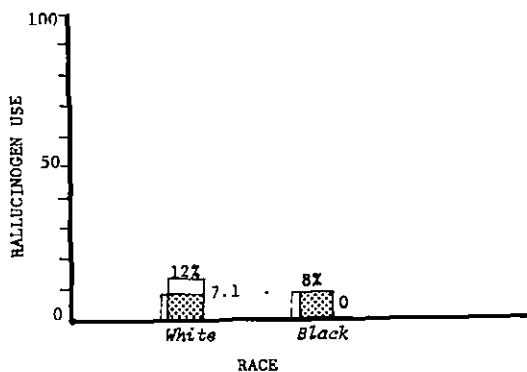
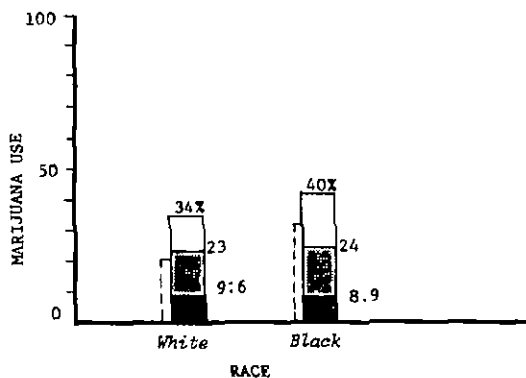
Figure 4-7 presents drug use information for whites and blacks separately (other racial minorities are deleted from these analyses due to their small number of cases). Data for both during and after high school are displayed because a number of racial comparisons come out differently at the two points in time.

During the high school years, the black students in this sample reported appreciably higher usage rates of marijuana and

FIGURE 4-7 RACE RELATED TO DRUG USE AFTER HIGH SCHOOL (SOLID BARS)
AND DURING HIGH SCHOOL (DOTTED BARS)



	RACE	
# OF CASES	White	Black
IN EACH BAR:	1577	198



amphetamines, and much higher usage rates for barbiturates and heroin. Their usage rates were about the same as for whites on hallucinogens, alcohol, and cigarettes.

But during the year after high school, they showed a quite different pattern of change than did whites. In a phrase, the whites were catching up. For every one of the more serious illegal drugs, the black group either held constant or reduced its usage, while the white group made considerable increases in use. As a result, more whites used hallucinogens (12%) after high school than did blacks (8%), and the proportions using amphetamines have balanced off at 14% for both groups. Blacks still report substantially higher usage rates for barbiturates and heroin, but the differences have narrowed. Marijuana usage patterns for the two groups are almost identical, except that a few more blacks are experimental users.

The two races exhibit virtually identical rates of alcohol use for both time intervals and very similar rates of cigarette use. Whatever stereotype may have existed in the past, we find no evidence of excessive alcohol use in this sample of young black men.

Another common belief to which these data are relevant is that illegal drug use is dramatically higher among blacks than among whites. Certainly there are important differences--primarily for barbiturate and heroin use--but by the end of the year after high school, both races show roughly equivalent amounts of marijuana, hallucinogen, and amphetamine use.

A MORE COMPLEX VARIABLE: RACE-REGION-SEGREGATION

Other investigators from the Youth in Transition study (Mednick, 1968; Bachman, 1970) have concluded that analyses of racial

differences in this sample are incomplete without a further breakdown of the black sample according to region and racial composition of the high school. Focusing on tests of intellectual ability, Mednick found that black students in integrated schools differed from a matched sample of whites in the same schools by only one-third the amount that all blacks differed from all whites. Bachman further discovered that among the black respondents in segregated (predominantly black) schools, important test score differences exist between those five segregated schools in the South and the other four in the Northeast and North Central regions, with the Southern segregated schools showing considerably lower mean scores on the Ammons Quick Test of Intelligence (Bachman, 1970, p. 77). Those analyses also indicated that the differences among black subgroups cannot be explained in terms of corresponding differences in socioeconomic level. Therefore, a more refined race variable was constructed and is being used routinely in analyses of Youth in Transition data. It takes into account the fact that in predicting to another important dimension, intellectual ability as measured by the Ammons Quick Test of Intelligence, there is a three-way interaction between race, region, and school segregation. The resultant variable, which seems to capture the major distinctions, has four categories: whites, blacks in integrated schools, blacks in Northern segregated schools, and blacks in Southern segregated schools. However, while we may want to use this variable to capture all explainable variance which may be related to race, the fact is that the sample sizes in the three black subgroups are very small.* Thus, any point estimates made from these samples for the corresponding populations from which they are drawn are highly unreliable. In other words they must be treated as even more tentative than our estimates for the total black population.

*In all Multiple Classification Analyses referred to in this book, race has been included in this complex-variable form, not as simple black-white dichotomy.

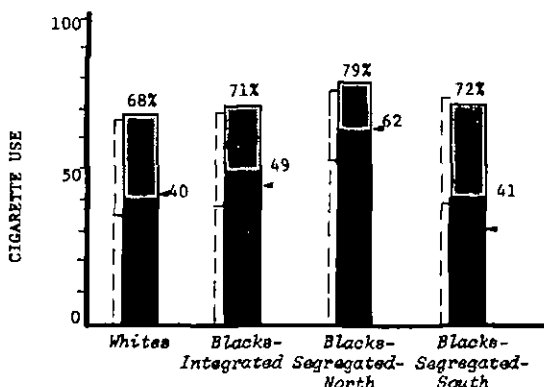
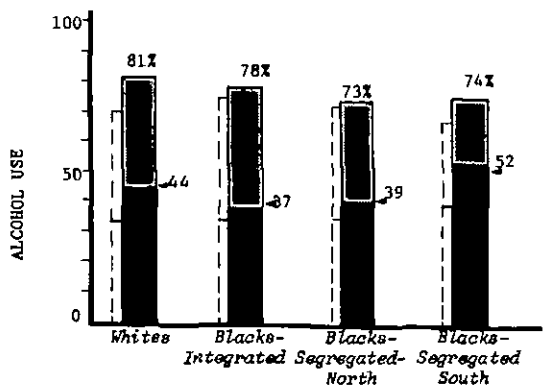
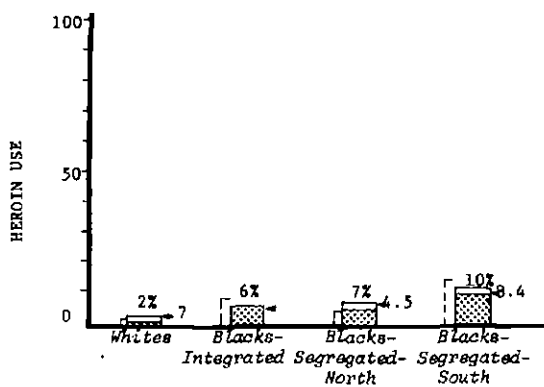
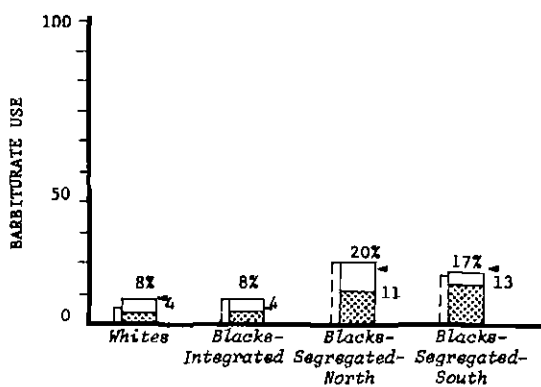
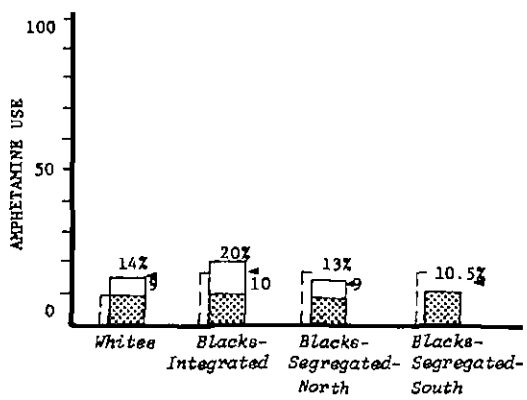
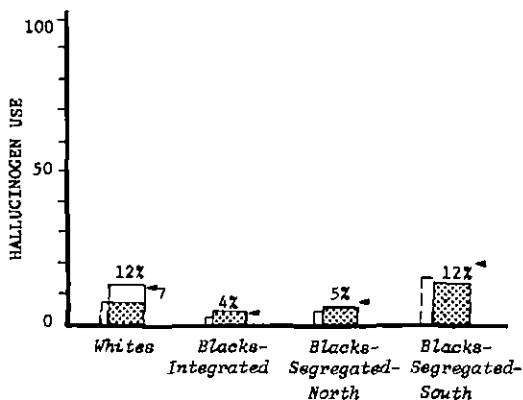
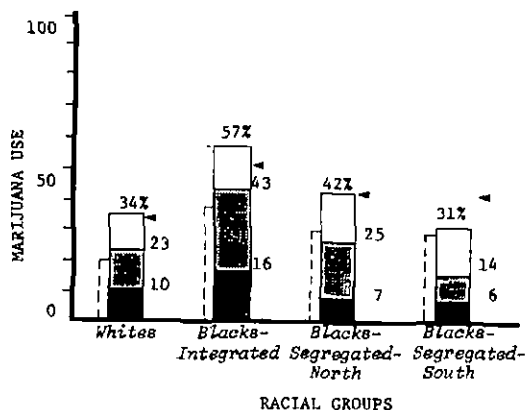
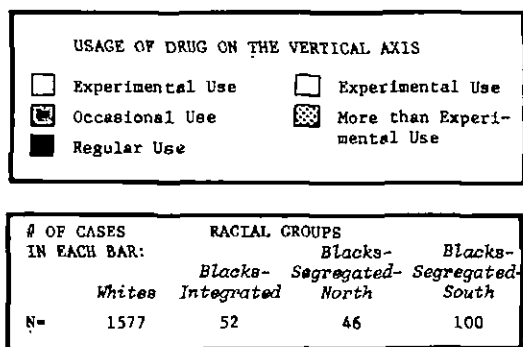
With this *caveat* in mind, the reader is directed to the set of drug-use breakdowns by the four racial subgroups in Figure 4-8. Again, note that our weighted number of black respondents from integrated high schools is 52, from Northern segregated (black) high schools is 42, and from Southern segregated (black) high schools is 80. Further, each group is drawn from only a few schools.

One feature to be noted in these figures is the amount of adjustment which occurs for Southern segregated blacks as a result of multivariate analysis. Most of this adjustment is occurring due to the relationship this complex race variable has with the Ammons Quick Test of Intelligence. Recall that in Southern segregated schools there were particularly low scores on the QT measure. That means that based on QT scores we would expect young men in this group to have lower than average usage rates for drugs like marijuana where low QT is associated with much lower usage. However, they do not demonstrate a much lower than average incidence of marijuana use, which means that being in this category must increase the likelihood of marijuana use, other things being equal. The adjusted usage rates, then, simply indicate what usage rates we would expect if other things (including QT scores) were equal across the four racial categories.

Because all multivariate analyses involving race have used this complex race variable only, we were not able to examine the "effects" of race (holding other things constant) in the previous set of figures comparing all whites to all blacks.* Therefore, the reader

*I should make explicit here my own predilection for interpreting racial differences as reflecting primarily differences in environments and experiences. That the black and white experience is different in this country, even for people who are matched on many other important characteristics, is a fact which I assume requires no empirical documentation here.

FIGURE 4-8 RACE (DETAILED VERSION) RELATED TO DRUG USE AFTER HIGH SCHOOL (SOLID BARS)
AND DURING HIGH SCHOOL (DOTTED BARS)



may wish to deduce the effects of these adjustments on black-white comparisons from this more complex race variable. In general, the multivariate adjustments tend to slightly increase the difference between all blacks and all whites on marijuana use (blacks were already somewhat higher), decrease the differences on hallucinogen use (still leaving blacks lower), increase the differences on amphetamine use (making blacks lower), and decrease the racial differences on barbiturate and heroin use (still leaving blacks higher). Use of alcohol would remain almost identical for blacks and whites, and the small difference in cigarette use (blacks were higher) would just about disappear.

Returning now to the issue of differences in drug use between the three black groups, it should be noted that they vary considerably from each other in their usage rates on all of the seven drugs under consideration. This is true both during high school (except for amphetamine use) and after high school and also holds true for both adjusted and unadjusted usage rates.

Compared to all other blacks, those in integrated schools tend to report a higher incidence of marijuana and amphetamine use; but, more importantly, less use of hallucinogens, barbiturates, and heroin. Those in Southern black segregated schools show just the opposite pattern when compared to all other blacks. They also report greater use of alcohol and less use of cigarettes, particularly in the year after high school. Blacks from Northern segregated (black) schools differ from other blacks primarily in their lower than average use of hallucinogens and heroin and then higher than average use of barbiturates.

To repeat the point once more, these distinctions are made on the basis of very small samples clustered in a fairly limited number of schools. They are useful for understanding the structure

of data from this particular sample and as pieces of evidence to be combined with findings of other studies. However, as estimates by themselves of the real state of affairs in the larger population, they are highly unreliable and should be treated as such.

MULTIVARIATE ANALYSES

Corrections resulting from the multivariate procedure MCA have been given throughout this chapter. For those interested in more detailed information, the summary statistics resulting from the seven MCA runs--one run predicting to each of the seven drugs using background and demographic characteristics--are presented in Appendix C.

BACKGROUND FACTORS AND THE PERCEIVED AVAILABILITY OF DRUGS

We have found that a number of background factors relate rather strongly to drug use. One reason why they might relate is that young men growing up in different kinds of environments have differential access to drugs. To examine this possibility, three central background-demographic characteristics were chosen for exploration: SEL, Region, and Urbanicity.

The data on availability of drugs were gathered in the last data collection and, therefore, really pertained to young men in their situations in the year after high school. Therefore, the region and urbanicity variables, which were based on the location of the high schools, may have some slippage in them, particularly urbanicity. Nevertheless, they are likely to correctly characterize the majority of these young people, so they are reported here.

The first question on availability read as follows:

*How difficult do you think it would be for you
to get marijuana (pot, grass) if you wanted some?*

1. *Probably impossible*
2. *Very difficult*
3. *Fairly difficult*
4. *Fairly easy*
5. *Very easy*

A parallel question was asked for heroin. The percent giving the answer of "very easy" has been chosen as an indicator of relative availability. Furthermore, only data from those people not using the drug in question during the year after high school will be examined, to remove differences between groups which are due entirely to differences in the proportion actually using the drug. (Obviously, most recent users of a drug know where to obtain it.) Table 4-1 contains the availability data from non-users (after high school) for the different background categories, and it contains some impressive findings.

The availability of marijuana seems to be very much a function of one's socioeconomic level. Only 19 percent of the lowest level think it would be very easy to get some, while 44 percent of the highest SEL group think they could. Certainly this is a parallel relationship to the one reported earlier between SEL and actual marijuana use, and it is not the only such parallel.

The two regions of the country which showed strikingly higher levels of marijuana use, the West and Northeast, also turn out to contain the most easy access to it. Urbanicity also shows the same pattern for availability as it did for usage, which was a progressive increase with increasing urbanicity, *but* the top category (large and medium cities) is an exception. For some

TABLE 4-1

Availability of Marijuana and Heroin Related
to Background and Demographic Characteristics
(Based on Data from Non-users of the Drug in Question)

		MARIJUANA		HEROIN	
		# of Non-users	% Saying "Very Easy" to Get	# of Non-users	% Saying "Very Easy" to Get
Socioeconomic Level					
1	Low	256	19%	332	8%
2		315	27	462	11
3		310	32	470	12
4		157	41	276	13
5	High	69	44	134	11
Region					
1	West	131	44%	262	11%
2	North Central	394	28	539	8
3	Northeast	216	39	392	15
4	South	394	21	527	11
Urbanicity					
1	Rural	327	20%	425	7%
2	Small town	234	31	337	11
3	Small city	161	35	247	15
4	Suburb	205	39	338	11
5	Large & medium cities	208	28	373	12

reason they show only average availability although usage rate is highest there.

The availability of heroin varies much less as a function of region, urbanicity, and does not relate as clearly to different levels of usage as did marijuana. Recall that we found heroin use to be most prevalent in the lowest SEL group and the second highest SEL group. However, availability is lowest for the first of these and only slightly above average for the second. There was little difference in heroin use in the different regions of the country, yet there are considerable differences in perceived availability; 15 percent of the non-users in the Northeast said it would be very easy to get some, whereas only 8 percent of the non-users in the North Central states made that statement. Finally, there is virtually no correspondence between perceived heroin availability and usage rates for the different urbanicity categories. Rural areas show the lowest availability, 7 percent, while small cities show the highest, 15 percent.

What explanation could account for the general correspondence of usage and availability reports for marijuana and the absence of such a correspondence for heroin? The most plausible one, in this author's opinion, is that availability becomes established more through friendship circles for marijuana than it does for heroin. Therefore, when substantially larger proportions of the population use marijuana, a great many more non-users have at least one person in their friendship circle who they know is a user; and, therefore, can provide access to the drug. In other words, more common use leads to more common access for the non-users.

Heroin use, on the other hand, occurs in only a tiny fraction of the population and only varies from one group to another in terms of tiny fractions. In addition, heroin use is still considered a more illicit activity than marijuana use, as our attitudinal data

indicate, which probably motivates users not to "broadcast" the fact of their own use. Finally, many of the heroin "users" may have had access at a party or other temporary situation, meaning that they do not have regular access. All of these things taken together are likely to mean that differences in proportions using the drug will not necessarily lead to corresponding differences in the proportions of non-users who know where to get it. Or put another way, factors other than friendship contacts play a larger role in determining availability.

The availability of these two drugs will be dealt with again in Chapter 6. There the role of the social environment entered after high school will be examined and some important differences explored.

Chapter 5

Drugs and the High School Experience

The high school years are often thought of as comprising that difficult middle ground between childhood and adulthood. In those years and the one or two following, some rather important rights and responsibilities fall to today's teenagers: the right to drive, to drink, to vote; the responsibility of deciding whether to drop out of school, continue education after high school, join the armed services, get married, and so on. It is surely an important period in the formation of one's identity--particularly his occupational and sexual identities--and for making decisions of life-long importance.

During this period, the young person's major social environment other than his home is the high school he attends. Therefore, it seems rather important to understand what effect the high school experience has on young people. The Youth in Transition study is currently addressing that question across a broad spectrum of student outcomes and using a great array of measures of the high schools and the high school experience. While there are a great number of those measures which might be appropriately examined in relation to drug use, only a few have been selected for attention here.

MULTIVARIATE ANALYSIS

We will focus on the relationship between the use of drugs during the high school years and the following five variables: dropping out, course of study, grades, extracurricular participation, and the size of the school. All of these variables (except dropping out) were entered into a Multiple Classification Analysis along with the following background variables: socioeconomic level, Quick Test of Intelligence, region of the country, urbanicity, and the complex race variable discussed in the last chapter.* For each variable discussed in this chapter (again with the exception of dropping out), the adjusted usage rates resulting from MCA will be indicated for each drug by a carat (◀) next to each bar in the figures. Recall from our discussion of MCA in the last chapter that the adjusted levels are statistical estimates of what the level of drug use would be for each subgroup if all other variables in the analysis were uncorrelated with the characteristic in question. It is a way of answering the question, "What is the effect of this variable, all other things being equal?"**

DROPPING OUT

A relatively small number of our respondents in the data collection in which drug use was measured had dropped out of high school at some time (weighted number of cases = 168). In looking

*See the beginning of Chapter 4 for a description of Multiple Classification Analysis (MCA). Two background variables dealt with in Chapter 4 are omitted from these analyses because of the small percent of variance they were able to explain.

**It should also be noted that dropouts are not included in the MCA analyses reported in this Chapter, since they had missing information on most of the high school experience variables.

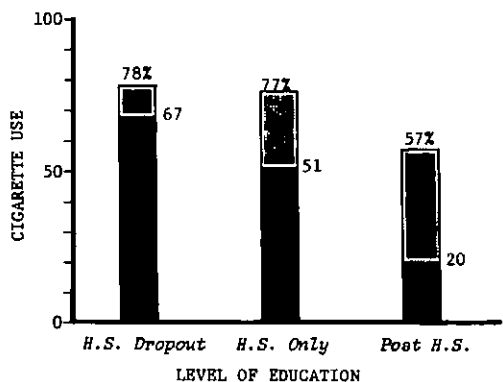
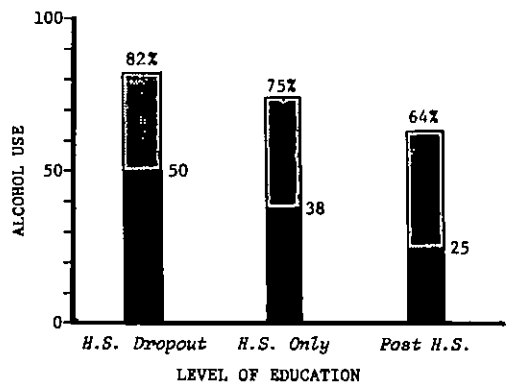
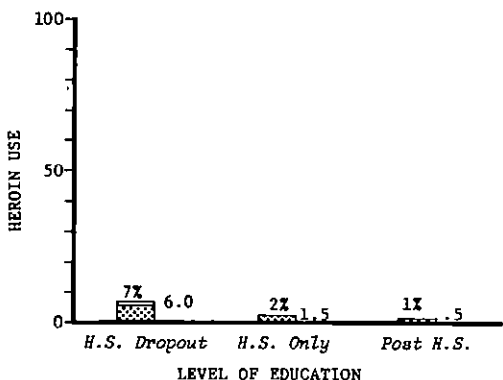
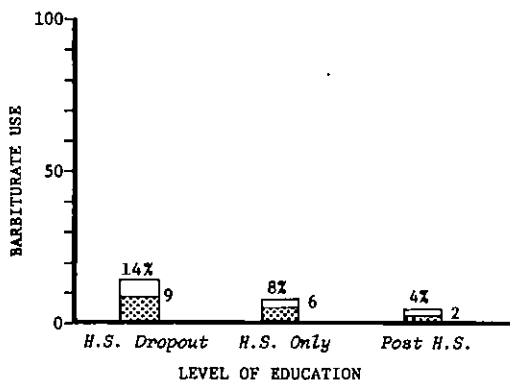
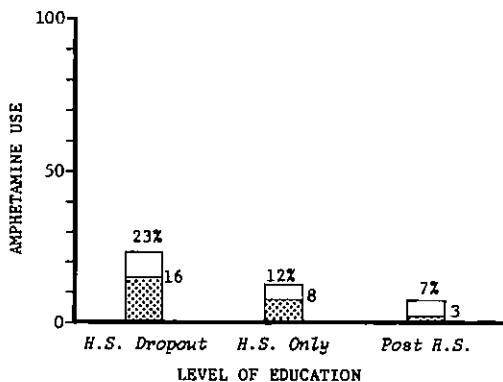
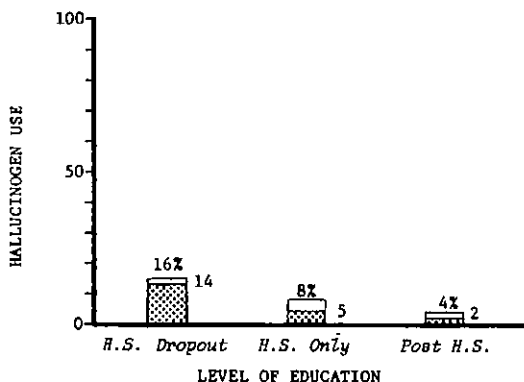
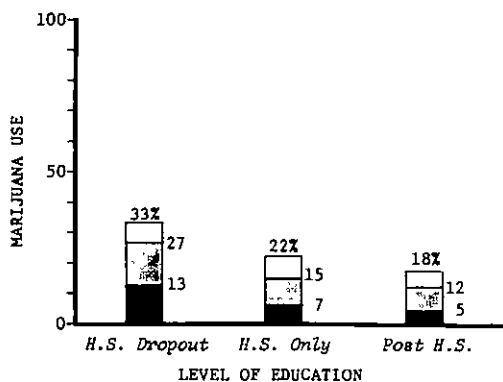
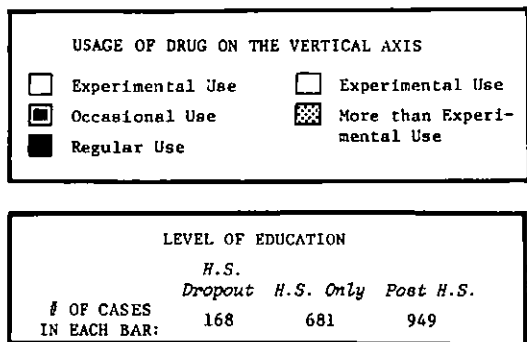
at the effects of the high school experience, it is obviously relevant to ask whether those who totally withdrew from that environment show any patterns of drug use which are different from their peers. This group is compared in Figure 5-1 to two other groups--those who continued their education in the year following high school graduation and those who did not. The three groups can be thought of as comprising three categories on a "level of education" continuum.*

It is quite obvious that level of education is inversely related to the use of every one of the drugs, legal and illegal, during the high school years. The shapes are particularly steep for the more serious illegal drugs with dropouts using them about twice as frequently as do high school graduates and three to seven times as frequently as do those headed for further education. One-third of the dropouts used marijuana during the school years (although not necessarily while they were still in school) versus 22% and 18% for the other two groups.

Very dramatic differences in regular cigarette and alcohol consumption are also to be found in Figure 5-1. However, dropouts do not differ all that sharply from those who finish high school and then stop their formal education--probably the most relevant comparison group--and some or all of those differences would probably be eliminated by controlling for other factors. The other comparison group, comprised of those who go on to further education, exhibits very low use of both alcohol and cigarettes, even during high school.

*Volume IV in the Youth in Transition monograph series (Bachman, et al., 1971) deals extensively with the causes and effects of young men ending up in each of the three levels on this education continuum.

FIGURE 5-1 EDUCATIONAL ATTAINMENT IN THE YEAR AFTER HIGH SCHOOL RELATED TO DRUG USE PRIOR TO LEAVING HIGH SCHOOL



It is important to mention here that, although there are large differences in the use of all drugs which are associated with dropping out; we have by no means demonstrated any causal connection between them. This fact is emphasized because there are undoubtedly many who would argue either that drug use leads to dropping-out, or dropping-out leads to increased drug use, or both. We unfortunately do not have repeated drug use measures *within* the high school years which would permit us to test some of these hypotheses, and the application of some more elaborate analytic techniques on the data we do have must await the next publication. Probably the most relevant set of findings are those presented by Bachman, et al. (1971) in which they show that although dropouts differ from the other two comparison groups on a number of characteristics by the end of high school (including another deviant behavior--delinquency), the differences were present and fully as large back at the start of tenth grade. They conclude, then, that dropping out is more a symptom than a cause of problems. If the data were available, it would not be at all surprising to get a parallel finding for dropouts in relation to drug use.*

COURSE OF STUDY

Within a given high school there tend to be a number of sub-cultures coexisting. One dimension which often separates students into separate groupings with somewhat different interests and experiences is their course of study. Those in college preparatory, for example, tend to take one set of courses and generally share

*Adjusted values based on multivariate analyses are not given in Figure 5-1 because dropouts could not be included in a multivariate analysis involving other high school experience variables in this chapter on which they consistently had missing information.

the expectation (and related problems) of going on to college. Vocational students take a different set of courses for the most part and have quite different career plans; and so on.

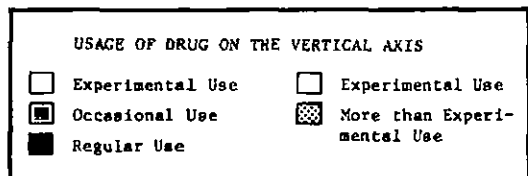
Figure 5-2 gives the drug usage rates for students who identify themselves within one of four major courses of study by the end of their senior year. (A number of students transfer between programs during high school.) For the five illegal drugs, the differences between courses of study turn out to be rather minor. Differences in marijuana use and heroin use are very small. Those in the general program of studies do report a somewhat higher incidence of hallucinogen, amphetamine, and barbiturate use than do the other groups, which are all pretty much alike. The adjustments resulting from multivariate analyses do not really change any of these facts enough to be worth discussing.*

A little more variation is to be found in the figure giving alcohol use. Only a quarter of those in college prep have used alcohol regularly during their school years, whereas 40% of those in general studies have done so. The vocational and business students lie somewhere in the middle.

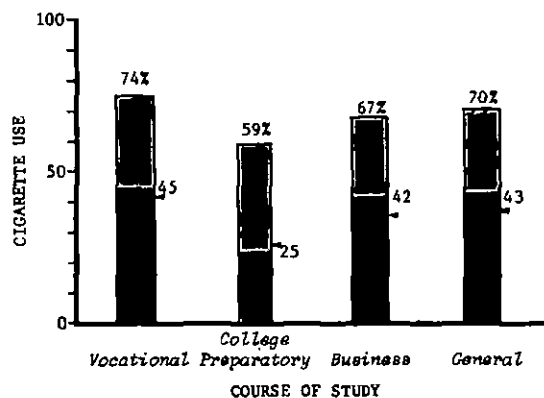
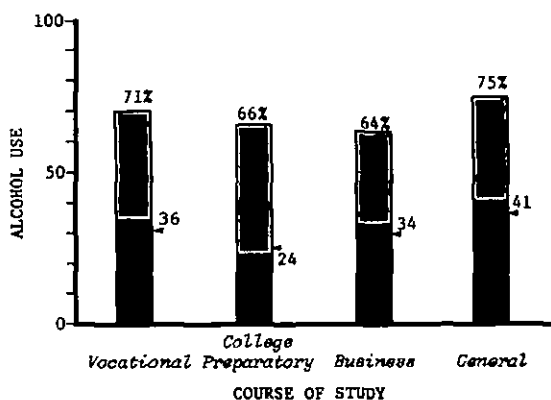
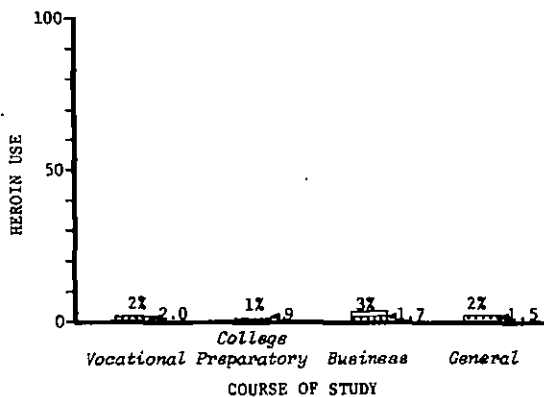
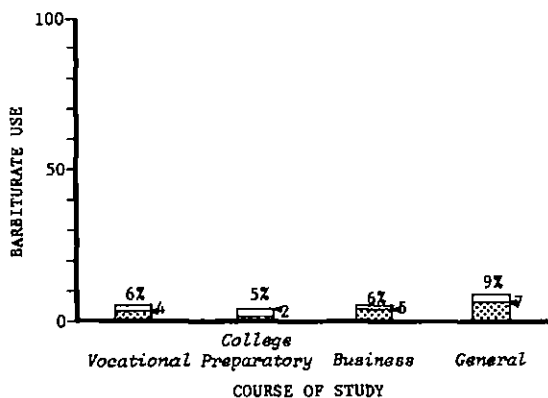
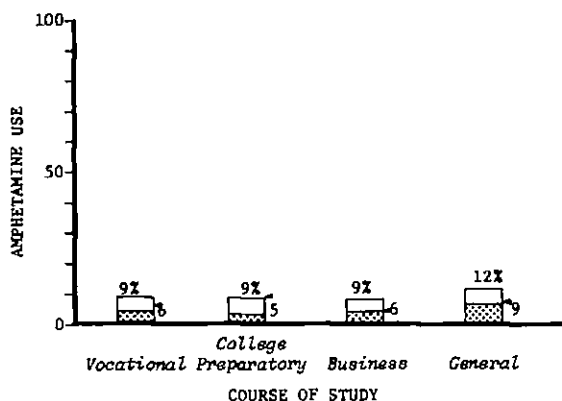
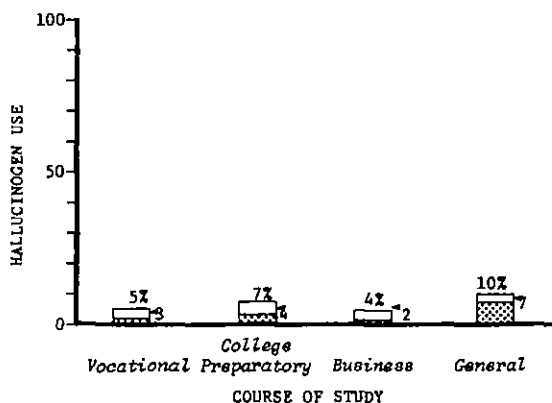
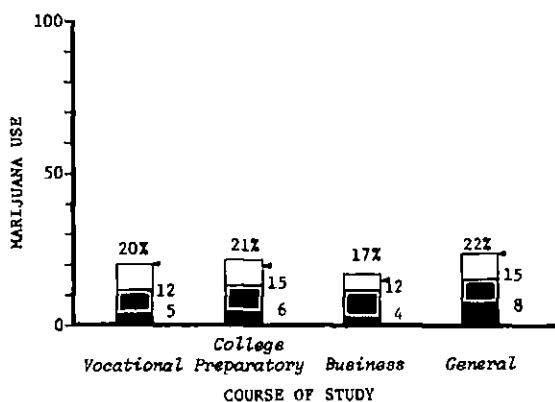
College prep students also report the least amount of regular smoking (only 25%), while students in all other curricula report about a 43% incidence rate. This is a considerable difference which might well reflect a difference in subculture norms within a school. Certainly some of the observed differences can be explained by covarying background characteristics and abilities, as the adjusted usage figures show. Still, a substantial proportion of the between group differences are not attributable to the other characteristics.

*A test was made for statistical interaction between socio-economic level and curriculum in predicting marijuana use. No interaction was found.

FIGURE 5-2 COURSE OF STUDY RELATED TO DRUG USE DURING HIGH SCHOOL



COURSE OF STUDY				
	Voca- tional	College Prep.	Business	General
# OF CASES IN EACH BAR:	200	772	181	529



The college group still would show a 28% adjusted smoking rate versus 37% for general and 41% for vocational.

Thus we come up with the somewhat surprising conclusion that course of study during high school is more related to differences in the use of conventional drugs, cigarettes and alcohol, than to differences in the use of illegal drugs. In fact, except for slightly higher use by students in general studies of hallucinogens, amphetamines, and barbiturates, there are practically no differences in illegal drug use related to which program of study the young man is in.

SCHOOL SIZE

The average size of American high schools has been increasing over the last decade or so. A number of factors have contributed to this process including the extensive consolidation of school districts, widespread adoption of the beliefs that larger schools can offer a more diverse choice of subjects and curricula and can achieve economies of scale, and so on. While these virtues may be real, the potential drawbacks of the large school have received relatively little attention. Among them may be increased anonymity among students and among teachers, a decrease in the coordination and integration of staff efforts, and a depersonalization of the student-teacher relationship. If such unintended consequences do accompany the enlargement of the school as a social system (which usually coincides with the physical enlargement of the school), then one might predict a decline in social-psychological adjustment, a decline in social control, and concomitant behaviors such as higher delinquency and heavier drug use. These issues are being explored more intensively in other publications from the Youth in Transition series, but are raised here by way of explaining the

rationale for examining the relationship between school size and drug use specifically.

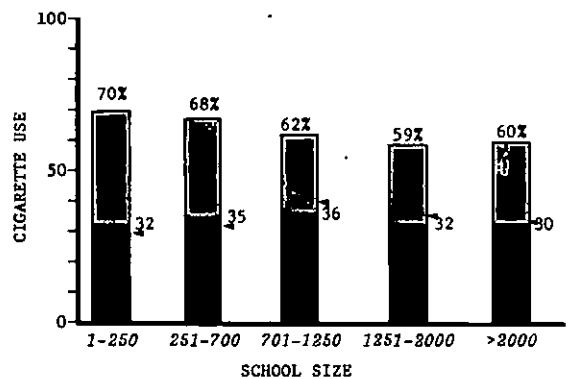
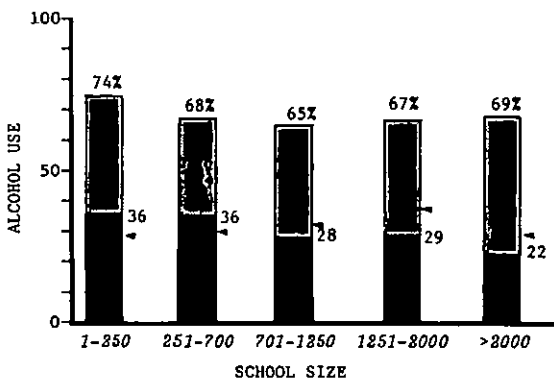
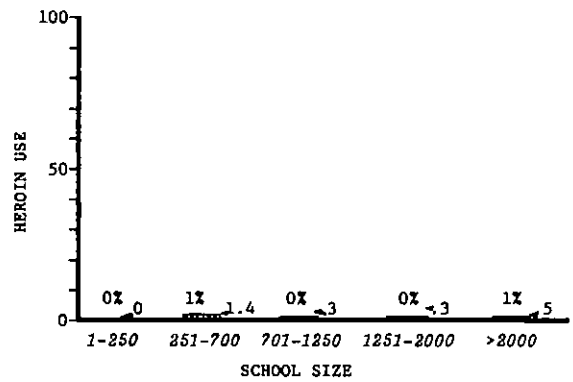
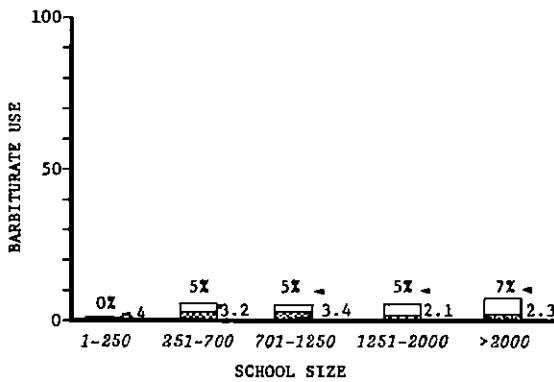
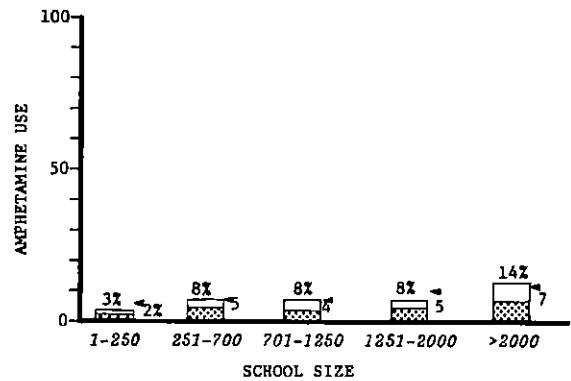
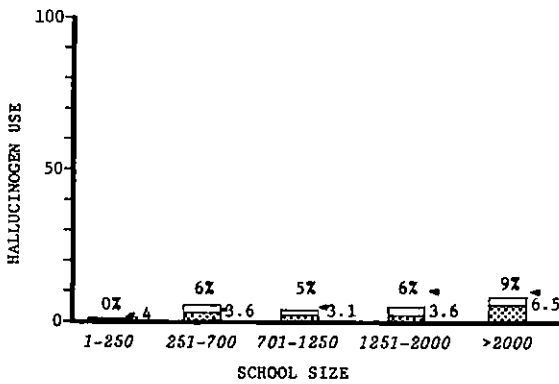
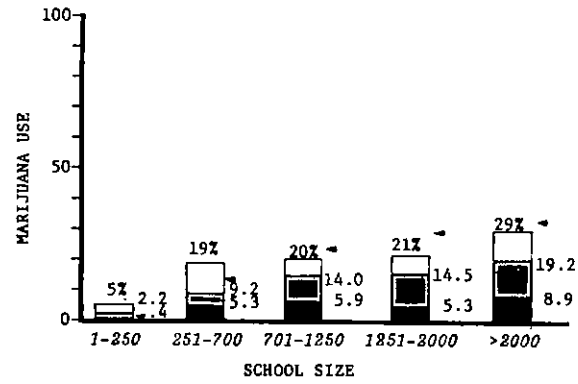
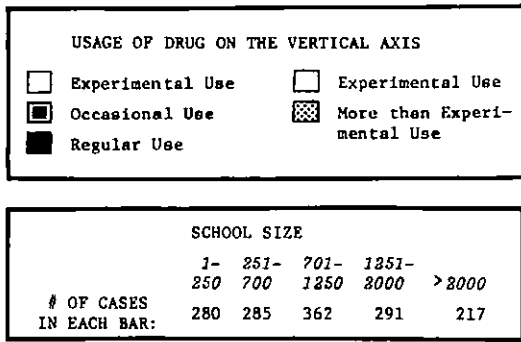
Figure 5-3 shows the relationship between the number of students in the school and the rate of drug use reported by those in our sample from schools of each size. The school size variable is based on the response of the school principal about the total number of students in his school.* The continuous variable was then bracketed to achieve five roughly equal-sized groups. Note that the size intervals spanned in each succeeding group are considerably larger, so that the bracketing amounts to something like a logarithmic rescaling. The model school size appears to be somewhere around 1000, but the range in size is extremely broad.

The results which emerge in Figure 5-3 are fascinating indeed. The very small schools (those under 250) stand out for their very low use of all illegal drugs. Only five percent even try marijuana during high school while less than one percent try hallucinogens, barbiturates, or heroin. At the other extreme the very large schools (those over 2000) show exceptionally high rates of use for marijuana, hallucinogens, and amphetamines. Their use of barbiturates is slightly higher than the other groups, but not much. Heroin use, on the other hand, seems to bear no direct relationship to school size.

However, across the broad mid-range of school size (from 250 to 2000 students in the school) there appear to be virtually no differences in rates of illegal drug use. These findings suggest at this point that school size *may* be an important factor in the "causation" of illegal drug use, but that within a broad middle

*Although some schools include more grades than others, the correlation is very high between this variable and one measuring the total number of students in grades ten through twelve only.

FIGURE 5-3 SCHOOL SIZE RELATED TO DRUG USE DURING HIGH SCHOOL

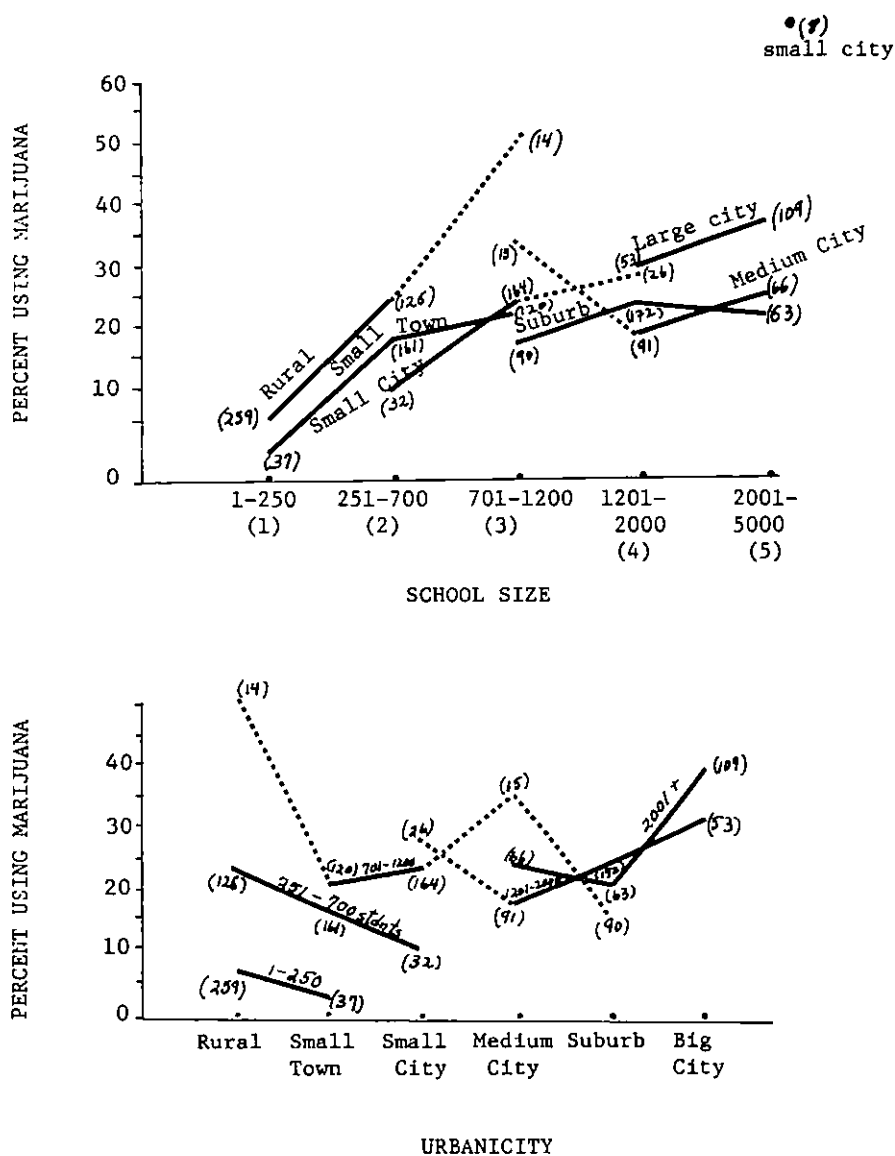


range it does *not* seem to be important. Multivariate analysis takes on some considerable importance here, because we know that school size is highly correlated to another predictor which also is related to drug use--urbanicity. We know for example that virtually all of the small schools (less than 250 students) are in small towns or rural areas. Thus, the problem becomes one of separating school size effects from urbanicity effects, with which they are confounded.

The usage rate indicated by the carats (►) in Figure 5-3 give us an idea of the levels of drug use we would expect to find if all other variables in the analysis were not correlated with school size...in particular, urbanicity. They do, in fact, indicate that a substantial amount of adjustment occurs when we control for other things, but that the adjustments sometimes result in an *increase* in the strength of the relationship between school size and drug use, not a decrease as we would have expected. In other words, we have discovered that other variables which are related to school size tended to offset or mask its "true" relationship to drug use. This is particularly true in the cases of marijuana and hallucinogen use, where the relationships with school size become considerably stronger after adjusting for other factors. A more in-depth examination of the data show that urbanicity is in fact the variable primarily responsible for masking the effects of school size.

To permit a more thorough examination of the joint relationships urbanicity and school size have with marijuana use, where the "unmasking" is most dramatic, two special line drawings have been constructed. They are presented in Figure 5-4. The first shows the relationship between marijuana use and school size reported separately for the students in each level of urbanicity. Solid lines connect the points based on more than thirty cases, i.e., the most reliable point estimates. The fact that each of these lines tends not to span more than two levels of school size is due to the fact that school size and urbanicity are so highly correlated.

FIGURE 5-4: SCHOOL SIZE AND URBANICITY RELATED TO MARIJUANA USE DURING HIGH SCHOOL



There are, for example, no students from rural areas attending high schools larger than 1200 students. The second part of Figure 5-4 presents the same data in a different format. This time, the relationship between urbanicity and marijuana use is given for each level of school size.

The basic conclusions to be drawn from these two line charts are that (1) urbanicity shows a very different relationship to marijuana use when we control for school size than it did without such a control and, (2) for students in a community of a given category of urbanicity, school size relates quite strongly to the percent smoking marijuana.* These are potentially quite important conclusions vis-a-vis policy decisions on the optimal size of a high school, assuming one attributes any causality to the relationship between school size and the use of illegal drugs. Therefore, it seems particularly important to test the basic validity of this relationship.

In this author's opinion, the most plausible alternative explanation to the one which attributes some causation to school size, is that it is really a better measure of urbanicity (albeit an indirect one) than is our urbanicity variable itself. That is, it may be a better indicator of population density, or population within community boundaries, or distance from an urban center than is our urbanicity variable, which is based on the school principal's categorization of the community. If so, then one might argue that the apparent school size effects, even in Figure 5-4, are really

*The adjusted values emerging for the *urbanicity* categories (not the school size categories) in this multivariate analysis indicate a curvilinear relationship instead of the original fairly linear one. Those in the most and least urban areas would be the heaviest users, the analysis tells us, if school size and the other variables were not correlated to urbanicity.

due to remaining differences in urbanicity which have not been removed. Such a condition is indeed possible. However, it is based on the assumption that urbanicity is positively related to marijuana use during high school, and it is not at all clear from the second part of Figure 5-4 that that is true. If it had been, we would have expected all lines to be sloped upward to the right. That is, looking at schools of any given size, we would expect those in the more populous communities to have higher reported drug use. However, only at the high end of the urbanicity scale does such a positive slope exist. At the low end the lines tend to be downward sloping and in the middle tend to be flat. Thus, the most plausible alternative explanation to there being true school size effects does not receive very good support in these data.

Our findings therefore strongly indicate that school size relates to illegal drug use and, in particular, marijuana and hallucinogen use--even when many other variables are controlled. Some possible reasons for this connection have already been mentioned: a decline in the social-psychological adjustment of the students with increasing school size, a decline in the control of authorities, and perhaps a fractionation of the peer system into more autonomous subgroups with a subsequent loss of a single dominant set of peer norms. The testing of these hypotheses of necessity remains for later analyses.

Thus far, we have limited our discussion in this section to the use of illegal drugs. Alcohol and cigarette use present a considerably less interesting picture. Regular alcohol use does decline with increasing school size, going from 36% in the smallest schools down to 22% in the largest. However, the adjusted rates presented in Figure 5-3 show that these differences are practically all explainable in terms of other variables, primarily urbanicity. Therefore, school size does not appear to be a very important consideration here.

Cigarette use is quite constant across schools of various size, with a slight peak in the mid-range. The multivariate analysis enlarges between group differences somewhat, increasing the curvilinear affect; but still the differences are not large enough to be worth much attention.

In general, then, it appears that the size of the school has rather little to do with the resulting use by its students of cigarettes and alcohol. Even though there is an apparent relationship in the case of the latter drug, the multivariate analyses attribute that relationship to urbanicity differences between the different groups of schools. This is the type of adjustment we would have expected, knowing the high correlation which exists between school size and urbanicity; and quite the opposite of the type of adjustments which took place in marijuana and hallucinogen use, when we controlled for urbanicity.

ACADEMIC GRADES

Certainly a major factor in the high school experience of just about any American student is his rated academic performance--his grade-point average. It tells him, his peers, and his family how well "the system" thinks he is doing. It also reflects his ability and willingness to function within the system. In other words, it is an indication of things other than itself, as well as an important input into the psychological experience of the student.

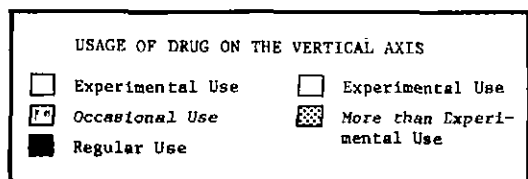
Self-reported average grades turn out to have an important relationship to the use of all drugs during high school. In the case of each of the seven drugs, legal and illegal, grades turn out to be inversely related to usage. That is, high grades are associated with low use.

The measure of academic grades used here is a self-report item in a questionnaire administered at the end of senior year. It reads, "What is the average grade you have been getting in your classes this year." The student then selects one of a specified set of answer alternatives. (In the first two data collections, a comparable method was used in an interview format.) Reported grades proved to be fairly stable across time, with cross-time product-moment correlations ranging from .59 to .69. A comparison of self-reported grades with school records on a subsample of approximately 900 students yielded an agreement coefficient of .71. Bachman (1970, p. 169) further reports that the Crowne-Marlowe scale for need-social approval is virtually uncorrelated with self-reported grades ($R = -.01$), and that SEL is positively related to grades ($\text{Eta} = .26$) as is the Quick Test of Intelligence ($\text{Eta} = .36$).

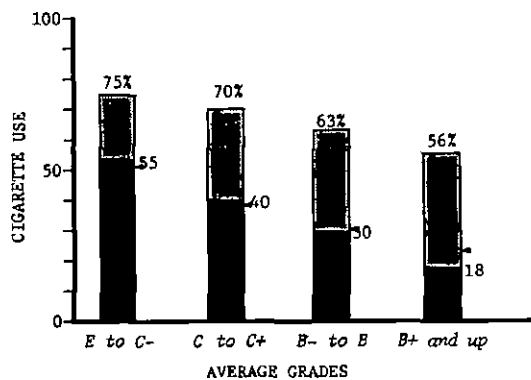
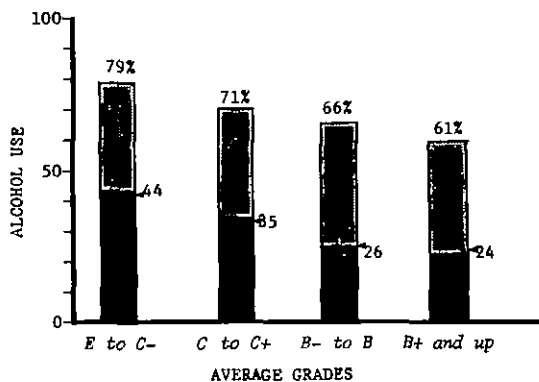
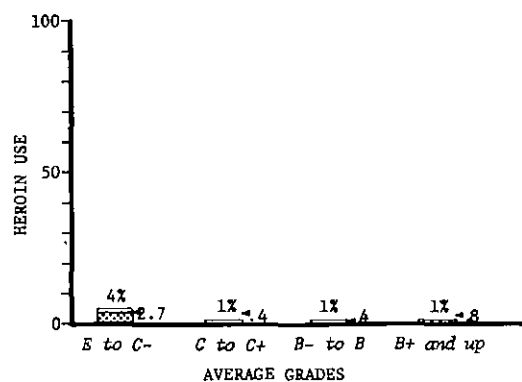
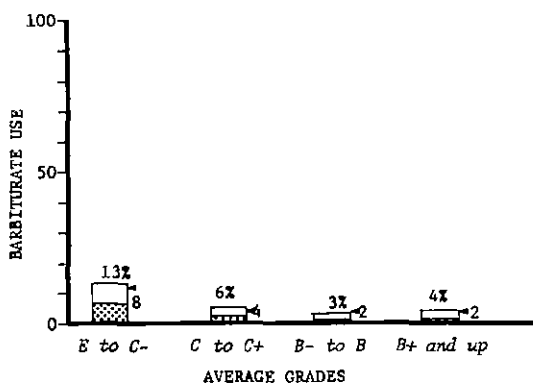
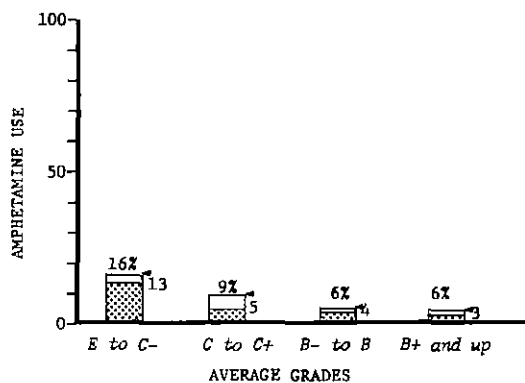
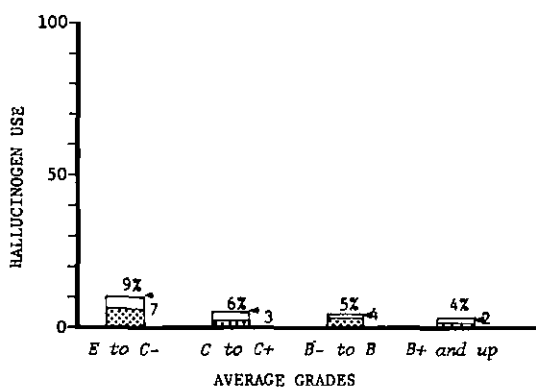
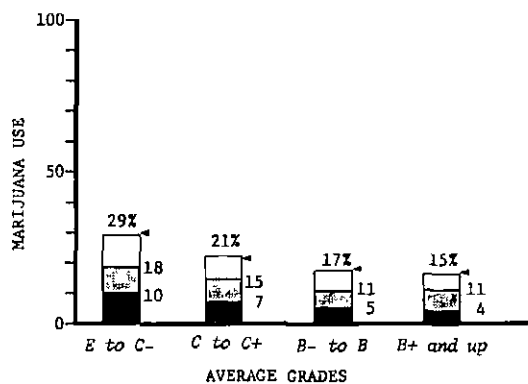
Turning now to grades in relation to drug use (Figure 5-5), we find that those with the lowest grade point average in senior year (C- or below) are clearly the most frequent users of marijuana, hallucinogens, amphetamines, barbiturates, and heroin; and the incidence of having used these drugs is from two to four times as great as is reported in the highest academic group (B+ and up). The relationships tend to be monotonic, although there tends to be very little difference in *illegal* drug usage between the top two grade categories (B- to B and B+ to A+). This is important since the top two categories account for over 50% of the respondents.

A number of these results are indeed surprising in light of our earlier findings on socioeconomic level and intelligence. Since SEL and intelligence are positively related to academic grades as well as to each other, we would expect parallel relationships to emerge for all three variables in relation to drug use. In fact, such a correspondence does exist for the two legal drugs, where those within the highest groups in intelligence, socioeconomic level, and academic grades exhibit the lowest rates of regular

FIGURE 5-5 AVERAGE GRADES IN SENIOR YEAR RELATED TO DRUG USE DURING HIGH SCHOOL



	AVERAGE GRADES			
	E to C-	C- to C+	B- to B	B+ and up
# OF CASES IN EACH BAR:	184	560	498	365



smoking and regular drinking during high school. However, in the cases of marijuana and hallucinogen use, the results are just the opposite of what we would expect. That is, while both SEL and intelligence tend to show a slightly positive relationship to marijuana and hallucinogen use during high school, grades show a distinctly negative one. In other words, some positively correlated predictors are having opposite (and therefore "masking" or off-setting) effects.* The multivariate analyses presented in Appendix C confirm this contention, in that the strength of the relationship between grades and both marijuana and hallucinogens goes up after the effects of other variables are statistically removed (i.e., the Beta^2 is larger than the Eta^2). The much more common pattern is a downward adjustment.

The shape of the relationship between grades and amphetamine use is also somewhat different from the relationships SEL and intelligence have with amphetamine use. Grades have a definite negative relationship to amphetamine use while SEL and intelligence showed a curvilinear one in which the high and low groups are the heaviest users. However, the contradiction is not as extreme as it was for marijuana or hallucinogens.

There are really no apparent contradictions in the way that grades, intelligence, and SEL relate to heroin and barbiturate use during high school. In general, those in the lowest category on each of these three variables exhibit unusually high rates of heroin and barbiturate use, while differences among the other categories are rather inconsequential.**

*A test for statistical interaction between SEL and grades predicting to marijuana use came out negative. The same result emerged in a test for interaction between Quick Test and grades, predicting to marijuana use.

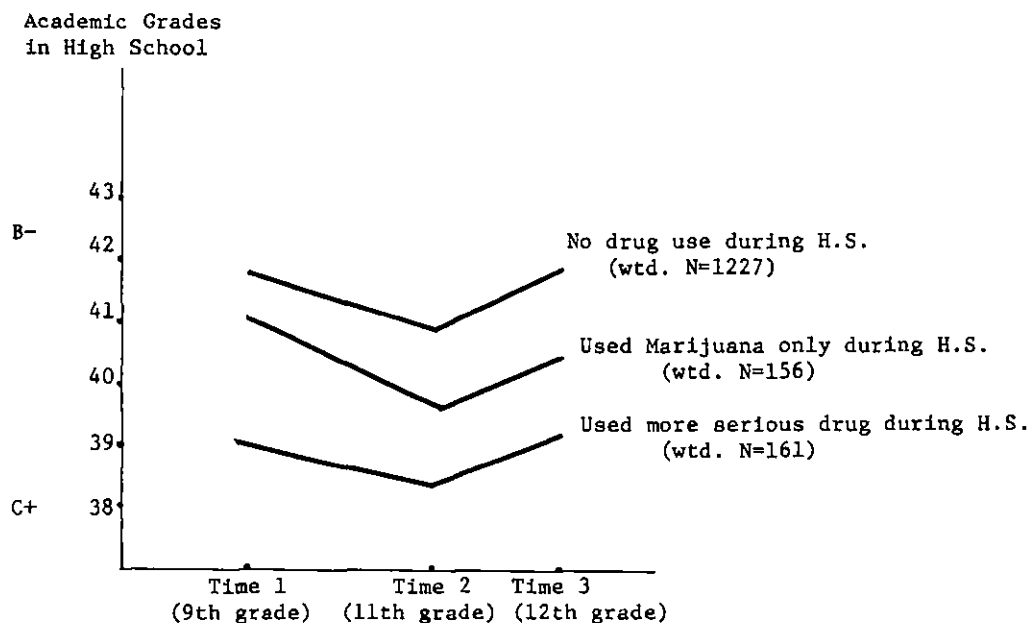
**The one exception occurs between SEL and barbiturate use during high school, when no group shows an unusually high rate of use.

How are these relationships between high school grades and high school drug use to be interpreted? They are certainly strong and are not explainable in terms of the major background and ability factors we have analyzed. To the contrary, controlling for those factors enhances some of the relationships. Unfortunately, it is not easy to select between alternative interpretations, and there are a number. One is that drug use has contributed directly or indirectly to a lowering of academic performance. Another is that poor academic performance led the student to seek compensating social or psychological rewards through drug use. Still a third is that both poor grades and active drug use result from the same prior determinants, such as having psychological problems or joining deviant subgroups of students.

The first of these hypotheses--that drug use leads to lower grades--can be eliminated. The usage rates of all seven drugs during high school were related to the students' average grades in *ninth* grade, a point which surely preceded the beginning of illegal drug use for most of the young men in this particular cohort (class of 1969). Although the data are not shown here, the curve of drug use across the various categories of academic grades is about as steep and regular based on average grades in the freshman year as it is based on average grades in the senior year, indicating that a disproportionate number of those who had low academic performance as early as ninth grade tended to become involved with illegal drugs during their high school years.

In a different analysis, the entire sample was categorized into three groups based on their level of drug usage: those who reported using no illegal drugs during high school, those who reported using marijuana only, and those who used some more serious illegal drugs. The average academic grades of these three groups were then traced across time in Figure 5-6, which reports academic performance in ninth, eleventh, and twelfth grades. One can readily see that

FIGURE 5-6: DRUG USE IN HIGH SCHOOL RELATED TO
ACADEMIC GRADES ACROSS TIME



1 S. D. = 6.88 6.94 7.04

NOTE: Statistics are based on students from whom self-reported grades were secured at all three points in time.

although the three groups have different average grades in twelfth grade (though not very different), those differences existed in a fairly parallel way as far back as ninth grade. Thus, we can say rather confidently that, for the great majority of students who remained in high school through twelfth grade, involvement with illegal drugs had no appreciable effect on their academic performance as measured by grades.*

The hypothesis that poor academic performance in school somehow led students into heavier than average drug use is still a possibility. If that is the case, the relevant pattern of academic performance was already established by ninth grade.

The hypothesis that both drug use and poor academic performance are caused by some third factor, such as membership in a deviant subculture or basic personality problems, also remains plausible. As we shall see later, juvenile delinquency (which could be taken as an indication of membership in a deviant subculture) related very strongly to illegal drug use. So, some important questions about the reasons for the relationship between grades in school and the use of drugs remain unanswered, although we *can* say rather confidently that the drug use does not seem to have been the "cause" of the bad grades.

Before leaving the issue of grades in school, we should note the strong relationship they exhibit to alcohol use and cigarette smoking during high school. Like the illegal drugs, higher grades are associated with sharply lower usage rates. Nearly twice as many of those receiving the lowest grades drink regularly during

*Those who used only marijuana show a slightly larger departure from non-users by grade twelve than they did in grade nine. However, the difference is still very minor, increasing from about one-tenth to two-tenths of a standard deviation.

the high school years as do those with the highest grades, and three times as many of them have been regular smokers. Also similar to what we found for illegal drugs is the fact that grades in *freshman* year predict every bit as strongly to cigarette and alcohol use prior to high school graduation as do grades in senior year. Unlike our findings for illegal drugs, some of the cigarette and alcohol use differences are explained by other variables in the multivariate analyses. However, an impressive relationship still remains, even after other things are "held constant" statistically in an MCA run. Again, membership in deviant subgroups remain a very plausible explanation for the relationships grades have with alcohol and cigarette use. Both activities are also substantially more prevalent among those reporting high levels of juvenile delinquency (see Chapter 7).

PARTICIPATION IN EXTRACURRICULARS

Part of the lore about drug use in high school is that drug users tend to be (or to become) marginal people in the life of the school. We have already found that drug users tend to be somewhat more marginal to the academic life of the school, but that is only one part of that social milieu. Social connectedness to peers in school--particularly in formal activities--is another. Such connectedness is participation in some of the many extracurriculars offered at most schools. Thus we have chosen to compare drug use for students who report varying degrees of extracurricular participation during their senior year.

The questions relating to extracurricular participation were presented in a self-administered questionnaire. Students were asked to check any of a rather exhaustive list of possible extracurricular activities in which they had participated in their senior year. The modal response was one activity.

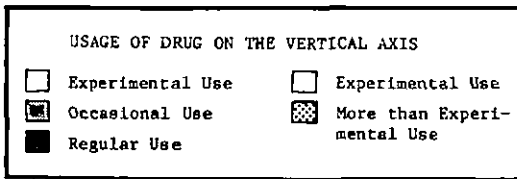
As can be seen in Figure 5-7, the lore about the more marginally involved being the heaviest users does not have much factual support. It is true that those with three or more extracurriculars do show *slightly* lower usage rates than the other groups on the five illegal drugs, but the differences are quite small. The largest difference occurs in the case of barbiturate use, where only two or three percent of the more active students have tried barbiturates versus six to eight percent of the less active. There are virtually no differences in illegal drug use between those participating in zero, one, or two extracurricular activities.

Cigarette use is about the only thing which relates systematically to extracurricular participation. Regular smoking drops from 46% among those having no extracurriculars to half that rate among those who participated in four or more. It seems quite likely that much of this effect can be explained by increasing proportion of athletes in the top extracurricular categories. Extracurricular participation is also positively correlated with grades, which would help to explain the observed relationship to cigarette usage. In fact, when the effect of background and other school variables are statistically removed in a Multiple Classification Analysis, the relationship between extracurriculars and cigarette smoking practically disappears. The very small relationship between extracurriculars and the other six drugs virtually disappear as well. So, it seems safe to conclude, at least for those who do not drop out of school completely, that one's level of participation in the social life of the school is neither a cause nor a result of drug use.

MULTIVARIATE ANALYSES

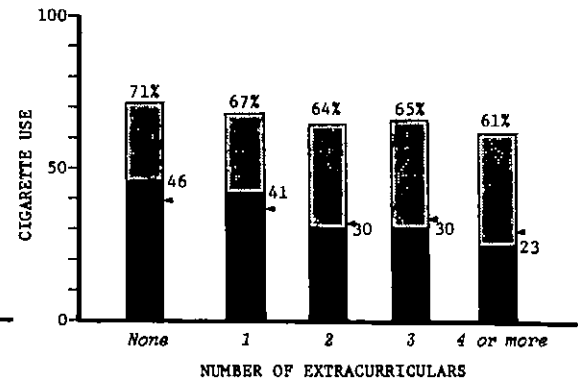
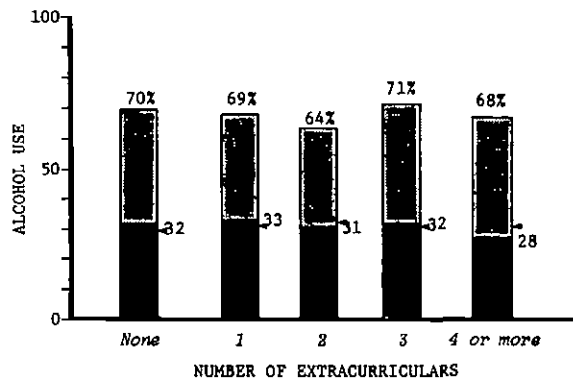
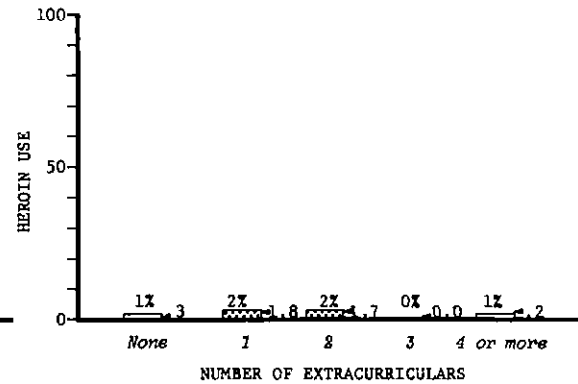
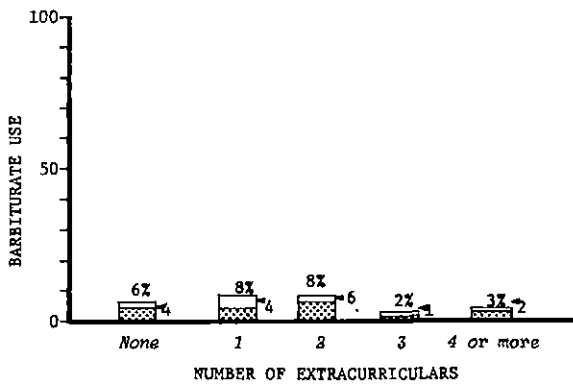
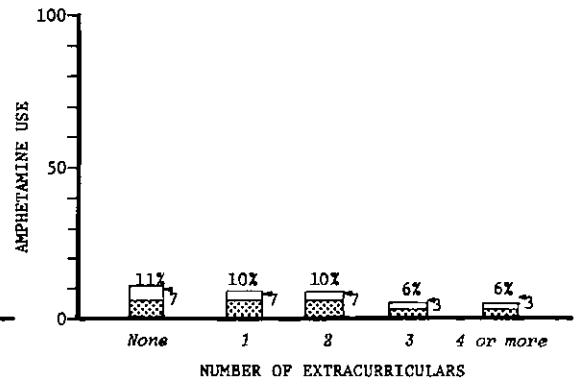
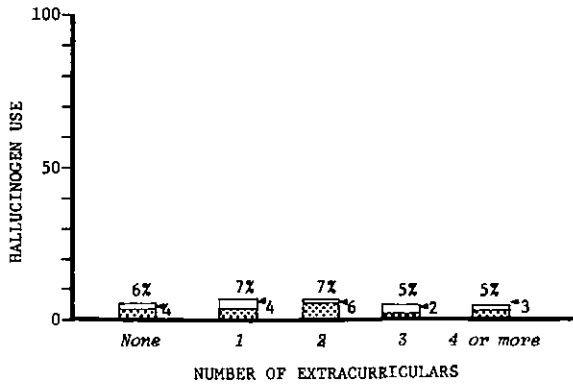
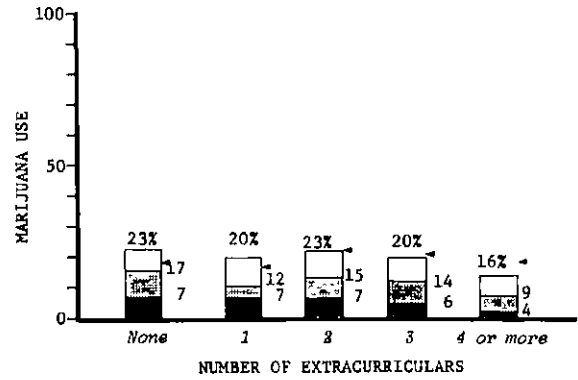
The MCA runs which generated the adjusted values shown in the Figures throughout the chapter also yielded summary statistics.

FIGURE 5-7 EXTRACURRICULAR PARTICIPATION RELATED TO DRUG USE DURING HIGH SCHOOL



NUMBER OF EXTRACURRICULARS

	None	1	2	3	4 or More
# OF CASES	322	391	293	202	427
IN EACH BAR:					



These are detailed in Appendix C, along with the estimates of percent of variance explained by each variable taken alone and in combination with the other background and school experience variables.

Chapter 6

Paths Taken After High School

In Chapter 2 we noted that during the year after high school there was a substantial increase in the number of young people using all seven drugs. In this chapter we will seek to determine the extent to which there are differential shifts in usage associated with the various social milieus which these young people entered after high school. We will also look for differences in the availability of drugs as a function of environment (college, work, military, etc.); and, finally, we will seek to determine the extent to which young people in these different cultures hold different attitudes about the use of drugs.

CONCEPTUALIZING THE ALTERNATIVE ENVIRONMENTS

Five different groups will be discussed in this chapter. All have been defined in terms of a young man's primary activity for the interval roughly six to twelve months after high school graduation (i.e., the first six months of 1970), as reported by him in a personal interview at the end of that period.

Nearly half (46%) reported that they were attending a two- or four-year college, and they are treated as a single group here. Those attending technical or vocational schools (6%) are treated separately. Another 31% indicated that their primary activity during that period was some type of civilian employment. They comprise the third group. Eight percent of our respondents in 1970 reported being in military service, but this fourth group is comprised of only those individuals who were on assignment in the continental United States. (These were the only ones accessible to our interviewers.) Therefore, their data should not be interpreted as if it were representative of all young men in the military, since a substantial proportion of military servicemen are stationed overseas.

The fifth group to be dealt with here is labeled "other," since it is comprised of the individuals not categorized into one of the earlier four groups and also because it is made up of more than one conceptual grouping. It contains sixty people who are still enrolled in high school and ninety-one who are out of school but unemployed. As we shall see below, this group exhibits drug-taking behavior which is substantially different from the four other groups. However, the two small subgroups of which it is comprised are quite similar to each other in their drug usage, so no serious differences are being masked by combining them.

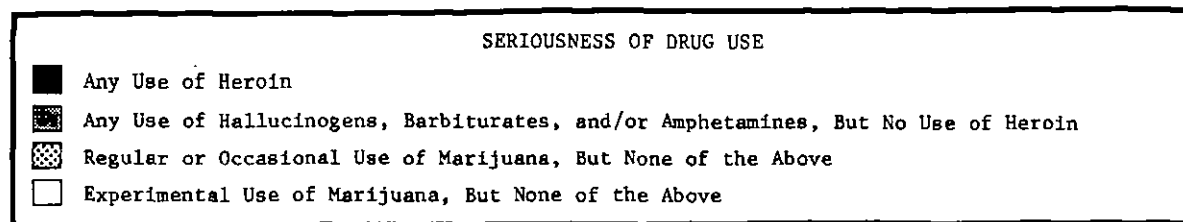
Overall, two of these environmentally defined groupings have large numbers of cases (827 in college, 559 employed) and therefore should generate descriptive statistics which are rather good approximations of the actual population statistics. The other three groups, however, are rather small (from 115 to 151 cases each), and therefore merit rather wide confidence intervals around the statistical values they generate. Thus, small differences involving these groups must be interpreted with some reservation. Nevertheless, to the best of our knowledge these groups are unbiased

samples of the populations they represent, so their data will be treated as the best approximation available of the correct statistics for their respective populations.

MEASURING THE IMPACT OF ENVIRONMENT

One's first tendency in looking for the impact of these social environments on the drug-taking behavior of their occupants is to look for gross differences in drug use during the year after high school--the time during which these young men were actually in these environments. However, to assess the *impact* of an environment we need to take into account not only how its occupants ended up but what they were like to begin with. Therefore, Figures 6-1 and 6-2, which give usage rates for each of the five environmental groups, include usage *prior* to the point of graduation as well as after, so that *changes* in usage rates can be assessed along with absolute levels. Table 6-1 expresses these percentage changes in the prevalence of drug use as "net conversion rates" which can be understood most simply as the percentage decrease in the number of non-users in the year after high school, i.e., the proportion of non-users who were converted to drug use while in the environment, corrected for the number who stopped using. For example, 669 of the college-bound students had not used marijuana prior to leaving high school. In the year after high school only 532 refrained from use. This decrease of 137 in the non-user count represents a 20.5% decrease ($137/669$), which by definition is the net conversion rate. Actually, more than 137 of these young people took up smoking marijuana in the year after high school, but some also stopped, thereby offsetting an equal number of beginners--thus the term "net" conversion rate. Obviously, if the same number started during the year as stopped, the net conversion rate would be zero.

FIGURE 6-1: TOTAL ILLEGAL DRUG USE (CLASSIFIED ACCORDING TO SERIOUSNESS)
BY MAJOR POST-HIGH SCHOOL ENVIRONMENT



MAJOR ACTIVITY AFTER HIGH SCHOOL

	<i>Employed</i>	<i>Military</i>	<i>Trade School</i>	<i>College</i>	<i>Other</i>
# OF CASES IN EACH BAR:	559	144	115	827	151

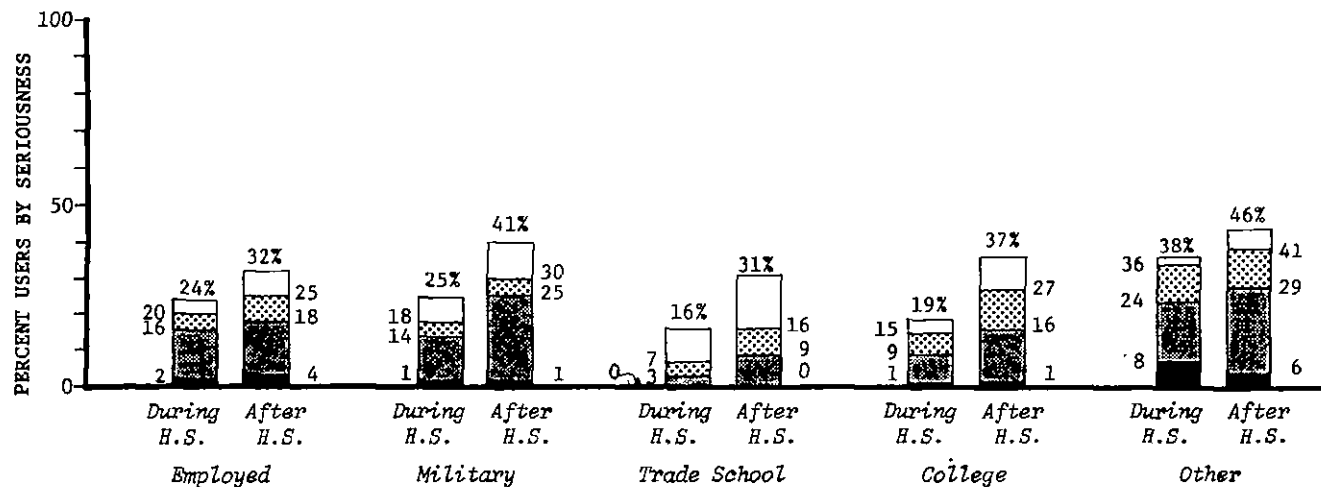
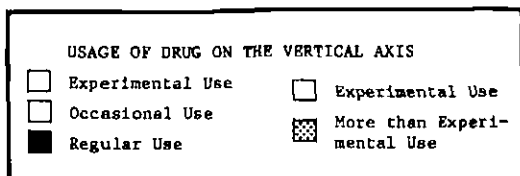


FIGURE 6-2: USE OF INDIVIDUAL DRUGS RELATED TO MAJOR POST-HIGH SCHOOL ENVIRONMENT



	MAJOR ACTIVITY AFTER HIGH SCHOOL				
	Employed	Military	Trade School	College	Other
# OF CASES IN EACH BAR:	559	144	115	827	151

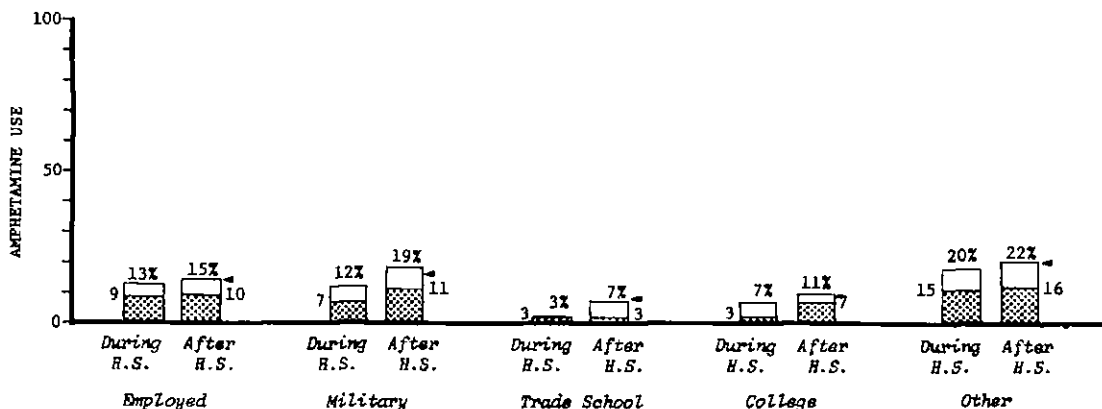
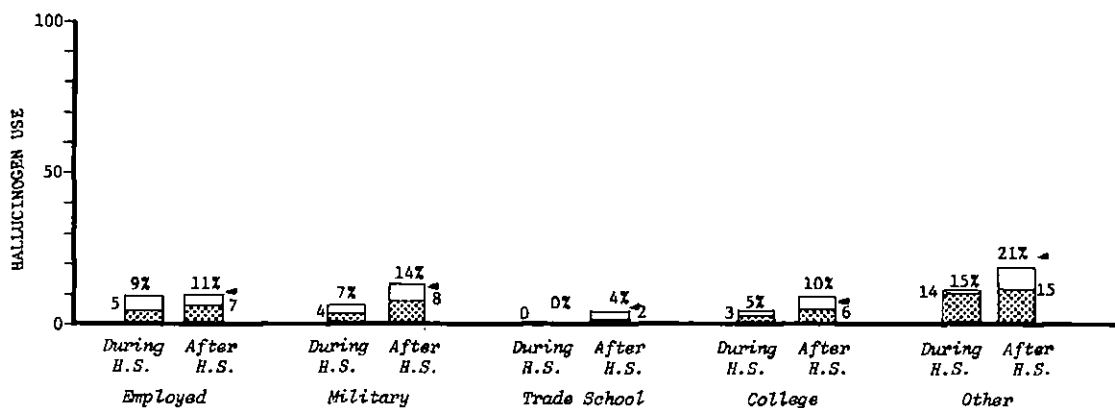
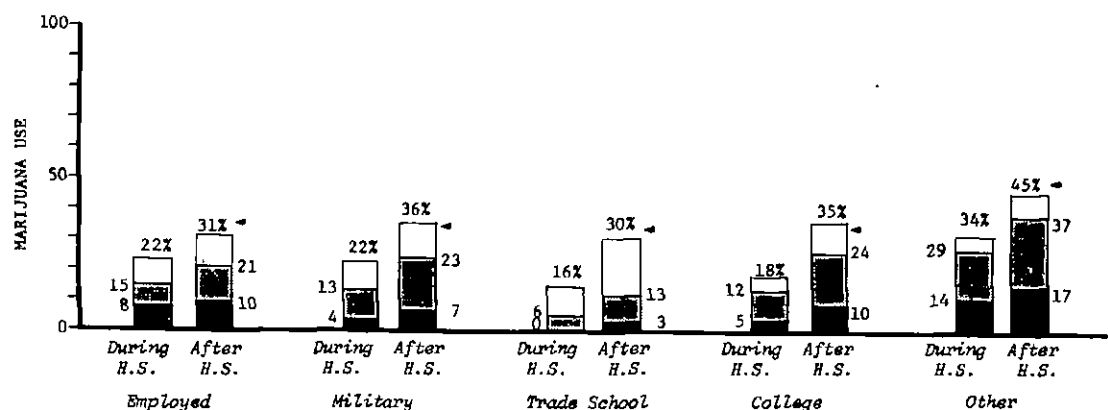


FIGURE 6-2 CONT'D

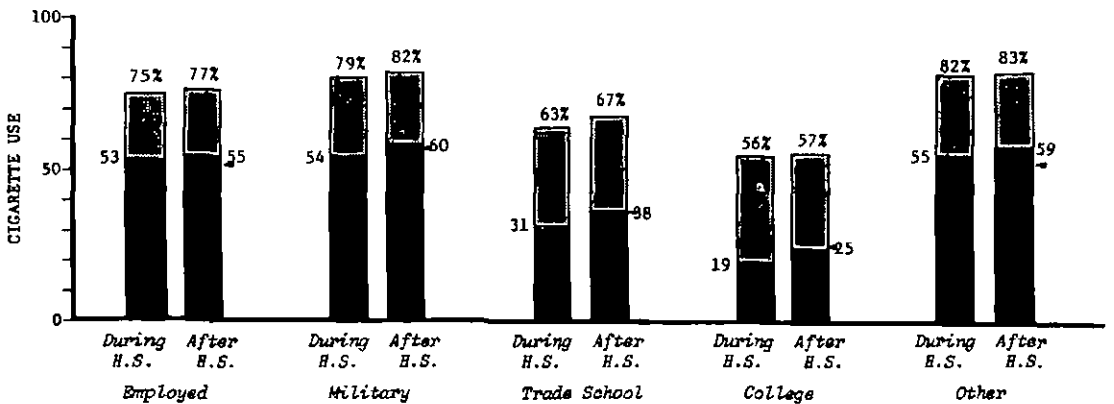
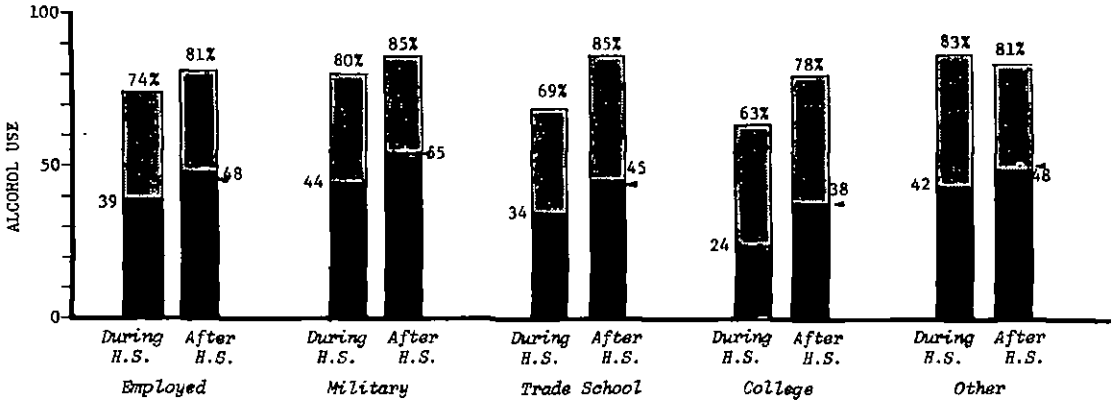
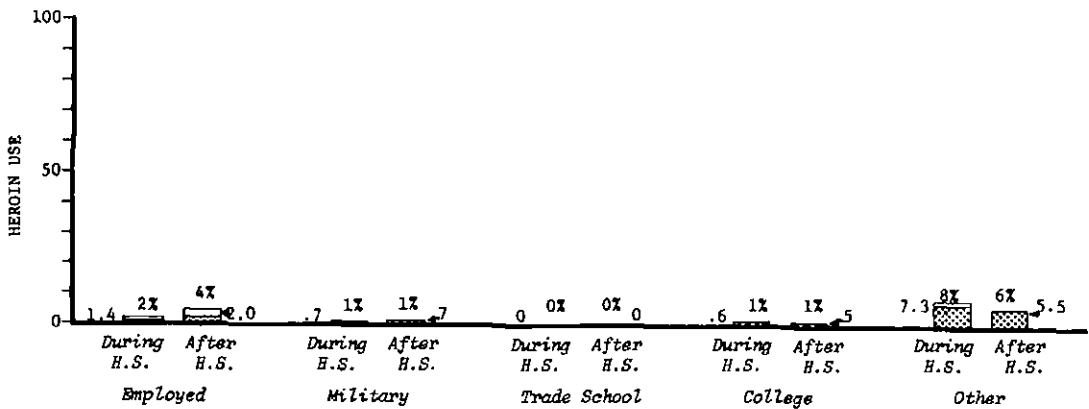
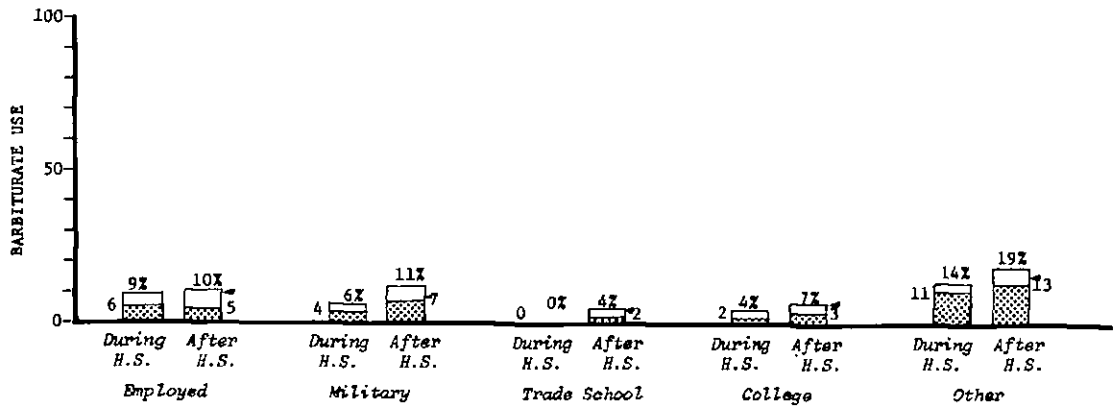


TABLE 6-1
Net Conversion Rates* Associated With
Major Post-High School Environments

	NET CONVERSION TO:			
	Regular Smoking	Regular Drinking	Any Illegal Drug Use**	Any Use of More Serious Illegal Drugs***
Employed	4%	15%	11%	2%
Military	13	20	21	13
Trade School	10	17	18	7
College	7	18	22	8
Other	9	10	13	7

* Net conversion rate is defined as the decrease in the total number of non-users during the year after high school, stated as a percent of the total number of non-users during high school. (See Figure 6-2 for raw data.)

** Marijuana, amphetamines, barbiturates, hallucinogens, and/or heroin.

*** Amphetamines, barbiturates, hallucinogens, and/or heroin.

I have introduced this concept because I think it may be the best single measure of the strength and direction of environmental impact. Unlike the absolute increase in the percent using a drug, it takes into account the group's usage rate when they first entered the environment. One, of course, might argue that differences which exist at the outset between these environmentally defined groups are the result of "anticipatory socialization" and, therefore, already reflect some impact from the environments. However, the data turn out the opposite of what would have been predicted using the anticipatory socialization concept.

THE "OTHER" GROUP

I will deal first with those young men in the "other" category (unemployed or still in high school) because of their markedly high rate of drug use. They use more of all five illegal drugs than any of the other groups during the year after most have finished high school. Almost one-half (45%) had used some illegal drug during that time interval.

However, during "the high school years" they were also the heaviest users of all five illegal drugs, with about a third of their number using one or more. Therefore, despite the heavy incidence of drug use observed in this group in the year after high school, it is one of the more stable groups across time. Table 6-1 shows that it has the second lowest net conversion rate to illegal drug use. Although its net conversion rate to the use of any of the more serious drugs is not particularly low, it actually showed a decrease in the percent using heroin, the most serious drug in the set.

These data seem to indicate that the adverse circumstances experienced by the boys in this group (failure to complete high

school on schedule or failure to secure employment) did not lead an exceptional number to become new users of drugs during this time period.

MILITARY SERVICE

Recently a great deal of public attention has been focused on the incidence of illegal drug use in the armed services. While most of the emphasis has been directed toward heroin use by servicemen in Vietnam (a population on which we unfortunately do not have drug data), there has also been speculation that drug use is more prevalent in the service generally than in other sectors. While our data on young men in the military are based on a rather limited number of cases (N=144), the results certainly tend to support that speculation.

Some 41% of these young men in service in the continental United States used one or more illegal drugs in the year after high school. This is a substantially higher proportion of users than we found among those in civilian employment (32% users) and a 4% higher usage rate than we found among college students. Furthermore, 25% of the military group had used amphetamines, barbiturates, and/or hallucinogens during that year, a quite substantial jump from 14% during high school. This 25% rate is also considerably higher than the 18% of employed young men or 16% of young men in college who used any of those drugs during the same period. In fact, the military group shows the second highest rate of conversion of non-users to the use of illegal drugs (including marijuana) and by far the highest rate of conversion to the more serious illegal drugs. (See Table 6-1)

However, it should be noted that heroin showed a different pattern than the other drugs. Less than one percent of the military

sample reported any heroin use in the year after high school, a net increase of zero. Certainly this fact argues strongly against the existence of anything like a heroin epidemic among young men in the military, at least among those in their first year of domestic duty.

Our sample in the military did, however, show the highest rate of conversion to regular smoking and to regular drinking of any of the five groups examined. Fifty-five percent reported drinking regularly (weekly or more often) and sixty percent smoking regularly (daily), making military men the heaviest users of cigarettes and alcohol of any of the groups; and while they started out with higher rates of usage than most other groups, they also showed the highest rate of conversion of non-users.

CIVILIAN EMPLOYMENT

Those who entered civilian employment exhibit drug-use behavior which is in marked contrast to their peers in the military. During the high school years, they showed a very similar pattern of drug use to the military-bound, with almost exactly the same proportion (one in four) having used one or more of the illegal drugs. However, during the year after high school the percent of users among the civilian employed climbed only 8% to give a total of 32%, reflecting the lowest net conversion rate to illegal drug use and to the use of the more serious illegal drugs as well; whereas the military group had the highest net conversion rates.

Nevertheless, those in civilian employment still report more widespread use of the more serious illegal drugs than do their peers in college or trade school. Some use of heroin during the year after high school is reported by 4% of the employed--the only group showing an increase in the percent using heroin--and about

one in five report using amphetamines, barbiturates, and/or hallucinogens. Only in the case of marijuana is there more widespread use among those in college than among those in civilian employment, and the difference is not large.

Turning to the legal drugs, we find that there are relatively low rates of conversion to regular cigarette use or to regular alcohol use in the work setting. The percent smoking daily jumped from 53% to 55% in the year after high school, a rate which is still more than twice as high as we find among their counterparts in college. Nevertheless, it appears that for this large segment of the age cohort, smoking habits have reached relatively stable, albeit high, levels. Their incidence of regular alcohol use increased somewhat (from 39% to 48%), but because all other groups were also shifting substantially, this turned out to be a lower than average rate of conversion.

COLLEGE AND TRADE SCHOOL

One of the most unexpected findings in this study arose from the drug use data on those in college and other post-high school educational settings. Although the American lore for a good many years has included the belief that American colleges and universities are the bastion of illicit drug use (heroin excluded) we find that, with only one exception, those in college and trade school were the groups with the *lowest* rate of usage for every drug both before and after high school graduation. The single exception is marijuana, where the college group showed very similar usage rates to both those in civilian employment and those in military service in the year after high school.

In all, 37% of the college students used one or more of the illegal drugs during their freshman year. They can be broken into

two component groups: 16% who used more serious illegal drugs and 21% who used marijuana only. By comparison, the employed group had 18% using the more serious drugs (a higher proportion), but only 14% using marijuana only, thus yielding a lower total percent using any illegal drug (32% vs. 37% for college).*

These findings are indeed surprising, but before we go much further we should take into account rates of change as well as static differences. Recall from our earlier discussion that the rates of conversion for non-users to the use of any illicit drug (and also to use of the more serious illicit drugs) was lower for the civilian employed than for any other group (11% and 2% respectively). The comparable figures for the college-bound are 22% and 8%, suggesting that although there are not substantial differences in the use of illegal drugs between college freshman and their counterparts who are working, there *may be* substantial differences emerging one or two years down the road. It is obvious that the first year of the college experience is associated with a much sharper increase in the use of all illicit drugs (except heroin) than is the first year of the work experience. If college continues to have a comparable impact on its sophomores, juniors, and seniors, the college group could end up being considerably more frequent

*It is interesting to note that 55% of the civilian employed who report using marijuana in the year after high school also report using one or more other illegal drugs. The comparable percentages for those in college is only 40%. This suggests the possibility, at least, that marijuana use is less a part of an illegal-drug culture in colleges than it is elsewhere. The differences are not due to there being a higher number of "experimenters-only" in the college sample. Roughly the same percent of both groups are experimenters. However, it could be due to the fact that a greater proportion of the marijuana users in civilian employment are long-time users and therefore have had more chance to become involved in other drugs. A later follow-up of the Youth in Transition sample should be able to resolve this question.

users of marijuana, amphetamines, barbiturates, and hallucinogens.* (Heroin follows the opposite pattern of change, with rates remaining at a very low 1% for college students while they increased from 2% to 4% among the employed.)

In light of their relatively low use of most illegal drugs, it is interesting to note the habits of college freshman in regard to regular smoking and regular drinking. Their incidence of regular smoking is less than half that of any other group except those in trade school. Only 25% report smoking regularly versus 55% of those in jobs and 60% of those in the military. However, most of this dramatic difference existed before graduation from high school and does not appear to result directly from the college experience. Net conversion to regular smoking is higher in college (7%) than in civilian employment (4%) as was true for the illegal drugs.

The incidence of regular drinking among college students (38%) is substantially below what we observe for those who are employed (48%) or in military service (55%) though the differences are not as dramatic as for smoking. All of these sectors showed a pretty high rate of conversion of people who previously were not regular

*Whether or not drug-use continues to increase past the freshman year is an open question. Probably the only reliable answer can be derived from further longitudinal study, or better yet a series of longitudinal studies, since this field is in a period of such rapid change. In February, 1971, Gallup reported on a representative cross-sectional survey of 1,063 college and graduate students. His figures indicate that an asymptote is reached in the sophomore year in the use of marijuana, amphetamines, barbiturates, and hallucinogens, and that there is even some tapering off past sophomore year. But, if we assume--as we might for that period--that each incoming class covered by his survey started college with a higher rate of drug usage than had previous classes, then a real upward trend during the four years of college may be masked in these cross-sectional data by initial differences between incoming classes. Only by following particular classes longitudinally or with repeated cross sections could we separate out those different factors.

users of alcoholic beverages: the college group is about average on this statistic. As with cigarettes, the basic differences in alcohol use observed in the year after high school existed prior to graduation.

Grades in College. Because academic grades were so strongly related to drug usage rates during high school, the possibility was explored that there might be comparable relationships between grades and drug use during college. Interestingly enough, a very similar pattern did emerge for alcohol and cigarettes, but did not for the illegal drugs.

High grades are associated with low use of both alcohol and cigarettes. These relationships are strong and show a smooth linear pattern across the five categories of grades which were used. Regular use of alcoholic beverages rises from 33% among those having top college grades (B+ to A+, N=171) to 43% among those having the lowest average grades (C to D-, N=262). Regular smoking for the same groups occurs at the rate of 17% and 35% respectively, a fairly dramatic difference. Preliminary investigation indicates that by controlling for the academic quality of the college attended, we would find an even stronger relationship between grades and the use of both alcohol and cigarettes. These findings, in conjunction with the earlier ones regarding high school grades, suggest rather strongly that the brighter students are taking seriously the campaign to avoid smoking for health reasons.

The more surprising finding, however, is that the grades in college do not seem to have any interpretable relationship to usage rates on any of the illegal drugs. The strong relationship found during high school no longer exists. An exploratory analysis limited to college students attending colleges of fairly comparable academic standing still fails to show any relationship between grades and illegal drug use in college.

Type of College Attended. Because of the size of the college sample and the breadth of environments covered under that category, differences between basic types of schools were examined. Three classifications were broken out separately: universities, liberal arts colleges, and junior/community colleges. (These three groups represented 55%, 23%, and 22% of the college sample respectively.) No appreciable differences were found between these subgroups on any of the seven drugs we have investigated. The largest differences observed for the year after high school occurred for barbiturates, where 9% of the junior/community college group reported some use (versus 7% for the total college group), and for cigarettes, where 29% of the liberal arts college students reported regular smoking (versus 25% for the total college group). In addition, the liberal arts college students exhibited a higher frequency of marijuana use while in high school (23% versus 18% for the total college group), but this difference had washed out by the end of the year after high school.

Therefore, it seems safe to conclude that there are not substantial differences in the incidence of drug use associated with the various types of higher education discussed here. That is not to say, of course, that there are not dramatic differences between individual institutions. There are, as Berg (1970) documented in her review article. But the differences are not systematically associated with one of these types of institution or another.*

*Gallup (1970) reports slightly higher rates of marijuana use ("in the previous 30 days") in private than in public institutions (32% vs. 26%). However, he found very similar rates of use of hallucinogens, amphetamines, barbiturates, and alcohol.

MULTIVARIATE ANALYSES

So far in this chapter we have been examining the simple bivariate relationship between environmental status and drug use in the year after high school. However, we know that certain characteristics of the individual which relate to where he goes after high school (e.g., socioeconomic level, high school grades, etc.) also predict to drug use. The question, then, is how much of the differences in drug use which we have observed between the various post-high school environments could be explained simply by differences in the types of young men who enter those environments. Perhaps the best way of answering the question is the one we have just been using; namely, looking at gross shifts in usage and at net conversion rates, both of which "control out" differences in drug use which existed before these young men ever entered the various post-high school environments. Presumably, most of the effects of background and high school experience are already being reflected in high school drug use behavior, which is being "controlled out." However, another approach to removing the effects of family background and high school experience is to enter them into a multivariate analysis along with a variable defining the respondent's post-high school environment.* We can then see to what extent the predictive power of the post high school environment is diminished by the presence of the other variables in the analysis.

A series of seven Multiple Classification Analyses (MCA's) were run, one predicting to a dichotomous version of each of the seven drug-use variables for the year after high school. (See Chapter 4 for a description of MCA.) As explained earlier, a

*Post-high school environment is a categorical variable with five categories: civilian employment, military, trade school, college, and "other."

comparison of the $Beta^2$ with the corresponding Eta^2 for any given predictor in a multivariate analysis is one means of determining the reduction in the relationship which would result if other things were controlled. Table 6-2 shows the Eta^2 associated with the environmental status variable for each drug to be very similar to the $Beta^2$. These statistics were generated in MCA's which simultaneously predicted from several background characteristics (region, urbanicity, socioeconomic level, race/region/segregation), several descriptors of the high school experience (school size, course of study, grades in senior year, number of extracurriculars), and environmental status after high school. Put another way, the adjusted usage level for each category of environmental status (those which the analysis program deduces *would* exist if environmental status were *not* correlated with the other variables) is very nearly the same as the actual usage level. The carats (►) inserted into Figure 6-2 indicate the adjusted values generated by the MCA program. They are extremely close to the observed values.*

These multivariate analyses, then, suggest that the differences in drug use associated with various post-high school environments are for the most part *not* explainable in terms of the differences in the background and experience variables we have been discussing.**

*Probably the most important adjustments occurred for marijuana use, where the Multiple Classification Analysis tells us that college students would actually show the lowest rate of marijuana use of any of the groups if the background characteristics were equally distributed among all groups.

**It should be noted that the MCA analysis for cigarette smoking did not yield a set of adjusted means which fully correct for the relationship to other variables. We can deduce this from the fact that the variance accounted for by the adjusted usage rates for environmental status ($Beta^2=.0775$) is considerably higher than the marginal variance accounted for when environmental status is added to the other variables in the set (increase in $R^2=.044$). What has happened in this case is that environmental status received credit for some variance in cigarette use which could also have been attributed to high school curriculum and high school grades. Thus,

TABLE 6-2
Predictive Power of Post-High School Environment
in a Multiple Classification Analysis

Dependent Variable	Eta ² *	Beta ² **
Marijuana (Any Use) ⁺	.0089	.0071
Hallucinogens (")	.0157	.0179
Amphetamines (")	.0109	.0127
Barbituates (")	.0149	.0082
Heroin (")	.0108	.0059
Alcohol (Reg. Use) ⁺⁺	.0134	.0131
Cigarettes (")	.0861	.0775

* Eta² is the percentage of variance accounted for by the environmental status variable taken alone in a one-way analysis of variance.

** Beta² is the percentage of variance accounted for by environmental status using adjusted category values derived in MCA. (See carats in Figure 6-2 for adjusted category values.)

+ Predicting to a dichotomous variable: any use vs. no use after high school.

++ Predicting to a dichotomous variable: regular use after high school vs. all other answers.

Table 6-3 summarizes for each of the seven drugs the increase in explainable variance which results from the addition of the post-high school environment variable to the predictor set. Clearly the greatest increase in predictive power occurs for cigarettes, where having the post-high school environment information increases the explained variance by nearly 60%. For the remaining drugs the rather small increases in explained variance indicate that the differences between the various sectors in drug use during the year after high school is not that great; and, in particular, the two largest groups (employed and in college), which account for most of the variance, do not differ much one from the other. The largest deviations from the grand mean occur for the smallest environmentally defined groups (military, trade school, and "other"), which restricts the ability of environmental status to account for much of the total variance in the normal population.

THE AVAILABILITY OF DRUGS

The accessibility of illegal drugs to American youth is a subject about which there is considerable conjecture and little good information. We included two questions in this survey intended to get at the issue, one asking about the judged difficulty of securing marijuana and the second asking the parallel question about heroin. The resulting answers are displayed in Tables 6-4 and 6-5, showing the percent of students in each type of setting which endorsed each of the answer alternatives. In an attempt to control

the adjusted scores for cigarette use in the various post-high school environments do not really reflect a very adequate "controlling" of other variables. Nevertheless, even with a more adequate control for other variables, substantial differences would still remain, since environmental status does increase by a substantial amount the total explained variance.

TABLE 6-3

Marginal Predictive Power of Post-High School Environment
to Use of the Seven Drugs After High School

Dependent Variable	$R^2(\text{adj.})^*$ without Post H. S. Environment	$R^2(\text{adj.})^*$ with Post H. S. Environment	Difference
Marijuana (Any Use)**	.078	.081	.003
Hallucinogens (")	.046	.057	.011
Amphetamines (")	.036	.042	.006
Barbituates (")	.044	.048	.004
Heroin (")	.041	.043	.002
Alcohol (Reg. Use)***	.016	.021	.005
Cigarettes (")	.070	.112	.042

* Multiple R^2 derived from a Multiple Classification Analysis, adjusted for degrees of freedom. All runs contain the following predictor variables: region, urbanicity, socioeconomic level, race/region /segregation, school size, course of study, grades in senior year, and number of extracurriculars in high school (senior year).

** Predicting to a dichotomous variable: any use vs. no use after high school.

*** Predicting to a dichotomous variable: regular use after high school vs. all other answers.

TABLE 6-4

Availability of Marijuana

QUESTION: "How difficult do you think it would be for you to get some marijuana (pot, grass) if you wanted some?"

	Employed	Military	Trade School	College	Other	Total
Very Easy	37%	55%	35%	41%	38%	40%
Fairly Easy	32	32	33	42	39	38
Fairly Difficult	14	8	21	11	6	12
Very Difficult	8	1	6	4	9	5
Probably Impossible	10	4	5	2	9	5
N	559	144	115	827	151	1773

Answers of Non-Users Only

	Employed	Military	Trade School	College	Other	Total
Very Easy	24%	50%	29%	31%	21%	29%
Fairly Easy	35	33	29	47	44	40
Fairly Difficult	16	10	25	14	8	14
Very Difficult	11	2	9	6	15	8
Probably Impossible	15	4	7	3	13	8
N	366	90	75	516	78	1125

TABLE 6-5

Availability of Heroin

QUESTION: "How difficult do you think it would be for you to get heroin (heroin, "H") if you wanted some?"

	Employed	Military	Trade School	College	Other	Total
Very Easy	13%	22%	10%	10%	15%	12%
Fairly Easy	24	28	23	24	27	24
Fairly Difficult	23	29	28	33	30	29
Very Difficult	22	9	25	26	15	23
Probably Impossible	18	13	14	8	13	12
N	559	144	115	827	151	1767

Answers of Non-Users Only

	Employed	Military	Trade School	College	Other	Total
Very Easy	11%	22%	10%	9%	13%	11%
Fairly Easy	24	28	24	23	26	24
Fairly Difficult	23	28	28	33	31	29
Very Difficult	23	9	24	26	16	23
Probably Impossible	19	13	14	8	13	13
N	512	138	109	798	134	1701

for differences in the number of users (most of whom presumably know where to get the drug) a revised version of each table was constructed based on the answers from only those who had *not* used the drug in question during the prior year.

The startling fact is that even among non-users of marijuana, seven out of ten judge it to be "very easy" or "fairly easy" for them to secure. It appears that whatever grand efforts have been made by law enforcement agencies to dry up the channels of supply, they seem to have failed abysmally. Furthermore, given the infrequency with which suppliers are reported to police, one can only conclude that the vast majority of young people this age have chosen to coexist with this illegal practice and its concomitant trade.

Looking back at the specifics, we find that a somewhat higher proportion of college students have access to marijuana than those in civilian work, but the most noteworthy fact is the ready accessibility of marijuana to those in military service. Among *non*-users in that environment, 83% claim it would be "fairly easy" or "very easy" to get. This is one more piece of evidence supporting the popular conception that drugs are readily available in the military service.

Again with heroin, one is struck with its accessibility in the military. Some 50% of the non-users in the military think it would be "very easy" or "fairly easy" to obtain compared with a 35% figure for the whole sample. The other four groups (college, trade school, employed, and "other") vary only a small amount one from the other.

DIFFERENCES IN ATTITUDES TOWARD DRUG USE

The question of the extent to which there are subcultural differences between the various environments we are examining is an interesting one. One might have expected to find that the practice of using drugs was more condoned among college students than among workers. However, only tiny differences were found in the attitudes held by the members of the five groups we have been discussing (college, trade school, work, military, and other). In a one-way analysis of variance, the five-category environment variable accounted for less than 2.5% of the total variance on five different drug-attitude indices. ($\text{Eta}^2 < .025$) The indexes were for marijuana, the "more serious illegal drugs," heroin specifically, cigarettes, and alcohol. After controlling in MCA analyses for differences in usage between these environments, the attitudinal differences become infinitesimal, with most groups differing from the grand mean on any index by no more than one one-hundredth of a standard deviation. ($\text{Beta}^2 \leq .013$) Therefore, whatever attitudinal differences do exist, they are explainable in terms of different proportions who are actually using drugs in each type of setting.

So we reach the surprising conclusion that, on the average, there are no meaningful differences in attitudes toward drug use between those in college, work, trade school, or the military. Not one of these environments has a general social milieu among peers which could be characterized as supportive of drug use, all headlines to the contrary notwithstanding. Of course, differences might emerge after these young people have spent a longer time in these environments, but the near total absence of differences at this stage offers little support for that hypothesis.

Chapter 7

Drugs, Delinquency, and Alienation

There are a host of personality and other characteristics of respondents in the Youth in Transition study which can be related to drug use, and many of those will be explored in future works. However, there were a few which seemed to justify an early look and which will be reported here. The first, delinquency, was chosen to see whether other forms of deviant or law-breaking behavior are related to illegal drug use.

DELINQUENCY

The same "Confidential Information Questionnaire" which contained the questions on drugs also contained a section on general delinquency. The 21-item checklist, which is presented in Appendix B, is an adaptation of one developed and validated by Gold (1970). The items range from fights with parents to crimes against property and other persons. The respondent indicates the number of times he committed each offense over a fixed time period. An

average is then taken across the items to yield a "Total Delinquency" score.*

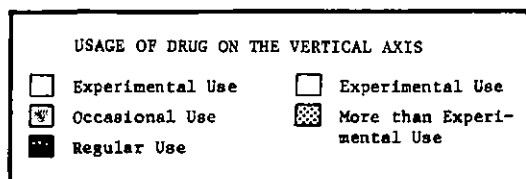
In a small validity study Gold found that 72 percent of the adolescents identified as unapprehended offenders by outside informants admitted to those offenses on his questionnaires. He classified them as "truthtellers." There was some ambiguity concerning the truthfulness of another 11%, classified as "questionables," and the remaining 17% were classified as "concealers." Since Gold's respondents were all identified offenders, we can conclude that when we include non-offenders in the sample the vast majority of all respondents are, in fact, telling the truth. Since Gold's study was based upon face-to-face interviews with less appearance of confidentiality, it could well be that our sample contains an even higher proportion of "truthtellers."

Our total sample was broken into three rather arbitrary groups based on their Total Delinquency scores, with about one-fifth in the low group and one-fifth in the high group. As Figure 7-1 shows, the fifth of the sample who report highest delinquency in senior year (which includes young men not still in school) have an exceptionally high rate of use of all drugs during high school, both legal and illegal ones. Conversely, the lowest fifth on delinquency have an exceptionally low rate of use on all drugs.

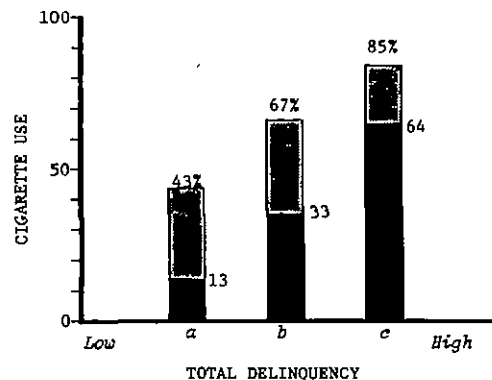
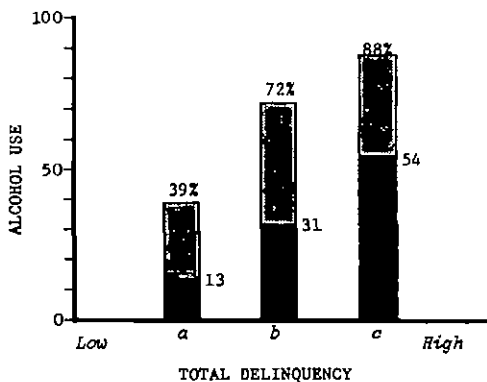
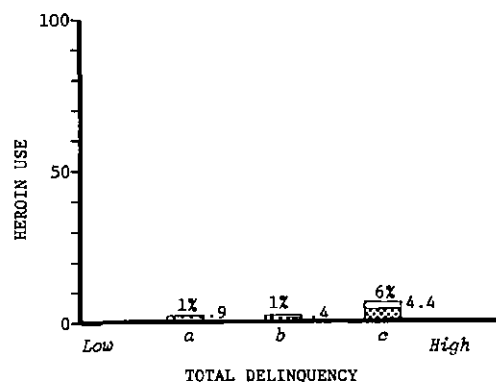
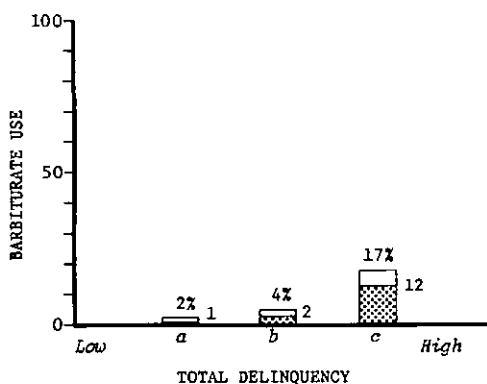
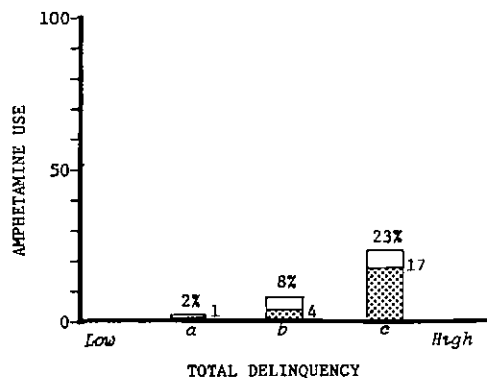
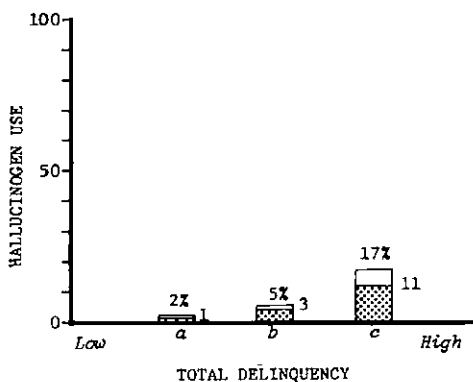
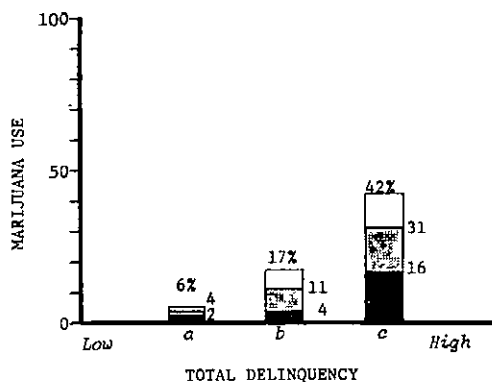
This strong association between other forms of delinquency and the use of all drugs is not surprising, in a way, since drug use is

*The Total Delinquency indices discussed here included five more items than the 21-item set in Appendix B. Since those five were all specific to offenses in school, they were dropped in the fourth data collection. See Arscott (1970) for the complete index.

FIGURE 7-1 DELINQUENCY REPORTED IN SENIOR YEAR RELATED TO DRUG USE DURING HIGH SCHOOL



TOTAL DELINQUENCY					
	<i>Low</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>High</i>
# OF CASES		343	1051	393	
IN EACH BAR:					



itself a delinquent or illegal act.* The critical question is whether involvement with drugs somehow caused users to branch out into other more general forms of delinquency. Does drug use lead to crime? Geiger (1971) reporting on a CBS poll, found that 82% of a national sample of adults believed that marijuana does lead people "to commit crimes and acts of violence."

If one accepts the assumption that has been made throughout this book, namely that the vast majority of *this class of students* (class of 1969) who used drugs prior to graduation did so *after* ninth grade, then it is possible to test the veracity of that belief. Since delinquency was measured at the beginning of tenth grade as well as at the end of twelfth grade, we can determine the rate of delinquency among drug users both *before* and *after* they started to use drugs.

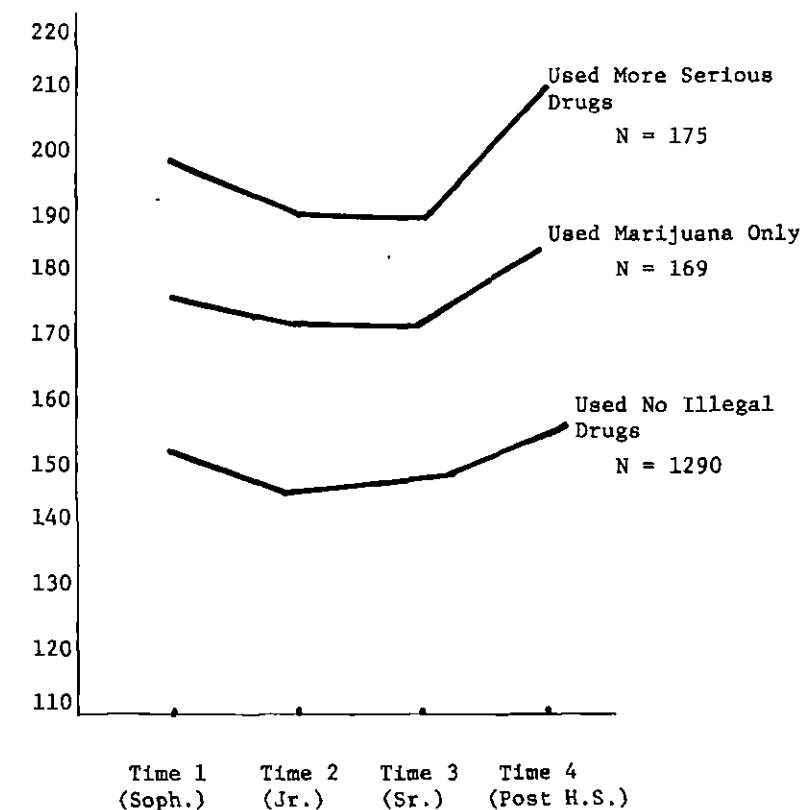
Figure 7-2 presents the relevant information. In it, respondents have been classified into three groups according to the severity of their drug use during high school, and then the self-reported delinquency scores for each of those three groups is traced across four points in time. The three groups are (1) those who reported using no illegal drugs in high school, (2) those who reported using marijuana only, and (3) those reporting some experience with more serious illegal drugs.

It is quite clear that there are substantial differences between these three groups in total delinquency. However, certainly the major finding in Figure 7-2 is that the large differences in delinquency between non-users and the two user groups which existed in senior year are paralleled by very comparable differences as far

*Cigarette smoking would generally not be illegal--although it may violate parental and school rules, but the possession of alcohol by minors generally is.

FIGURE 7-2: DELINQUENCY ACROSS TIME RELATED TO
DRUG USE DURING HIGH SCHOOL

Index of
Frequency of Delinquency



1 S.D. = 52 53 48 51

back as ninth grade.* In other words, those who are highly delinquent are considerably more likely to become users of drugs in high school than those who are not, but becoming a user of illegal drugs does not seem to lead to any important increase in delinquency.** This conclusion probably does not hold for addicts, who may have little choice but to resort to crime to support their compelling habit, but this sample is not purported to represent the relatively small addict groups in the population. Among non-addict users (which includes all users of marijuana--a non-addictive drug), there is little evidence of drug use leading to crime. The widely held belief to the contrary is probably a myth.+

DRUGS AND THE "COUNTER-CULTURE"

It is often heard, particularly from the young, that there is a counter-culture growing in American society--a class of young people who are "turned off" by many American institutions: the current system of government, the educational establishment, the organization-man style of life, etc. Those in the counter-culture

*A parallel statement can also be made about alcohol and cigarette use, although these drugs are not included in the figure.

**At Time 4, a year after high school, there is some divergence of the users of more serious drugs from the rest of the sample in terms of delinquency. However, drug use during high school is confounded with major social environments entered after high school, so it would be incorrect to conclude solely from the data in Figure 7-2 that drug use was the important factor underlying the divergence.

+Additional analyses indicate that the relationship between delinquency and drug use is just about as strong among the college-bound as it is among those not headed for college. They also show that, if we had used an index measuring the seriousness of delinquency committed by respondents in Figure 7-2 instead of a total delinquency index, the findings would be just about the same.

are said to be repulsed by American outer-directedness and to turn inward for their satisfactions. Drugs, it is alleged, provide some of the vehicles for that journey.

If all this is true, then it follows that a certain structure of relationships should exist among characteristics (behaviors, values, etc.) which are associated with the counter-culture. We hope to explore this issue in greater depth later; but for the time being we must content ourselves with a look at the relationship between drug use and two important attitudes of the type we have been discussing: alienation from government and attitude toward the Vietnam War.

Vietnam Dissent

It is hard to recall an issue which has divided this country as badly in recent years as the Vietnam War, unless perhaps it has been racial conflict. The young people going through high school and college at the time--particularly men, since they were eligible for the draft--could scarcely escape being affected by the existence of the War.

Vietnam, according to some of its critics, demonstrated beyond a doubt the corruptness of the American "system." It came to symbolize that which the counter-culture was counter to. We would expect then that, if drug use is part of the counter-culture, it should occur with exceptional frequency among those most opposed to the Vietnam War.

The measure we have of Vietnam attitudes was developed by J. Johnston and Bachman (1970). It is an index composed of six items, all statements of attitude about the Vietnam War. Three items are stated positively and three negatively; all are answered

on a four-point agree/disagree scale. Three items are reversed and a mean score calculated to create the index. Since all six items concern reasons for or against fighting the war in Vietnam, the index can be thought of as measuring the degree of perceived justification for the war. Those who categorize it as most justified are considered to be most in agreement with U. S. policy at the time (spring of 1970 or one year after normal graduation from high school*).

The relationship between disagreement with U. S. policy (measured a year after graduation) and the use of drugs in the year after high school is really quite dramatic, as the data in Figure 7-3 show. Of the 200 young men who are in strongest disagreement, about two-thirds use marijuana (one-third use it on a regular basis), one-third use hallucinogens, and nearly one-third use amphetamines in the year after high school. For all three of these drugs, there is an accelerating curve which rises with increasing dissent. There is no interpretable relationship between dissent and heroin use or use of the two "conventional" drugs--alcohol and cigarettes. Barbiturates show only a slight relationship.

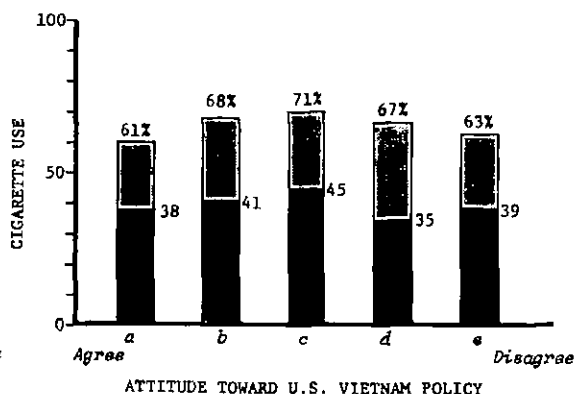
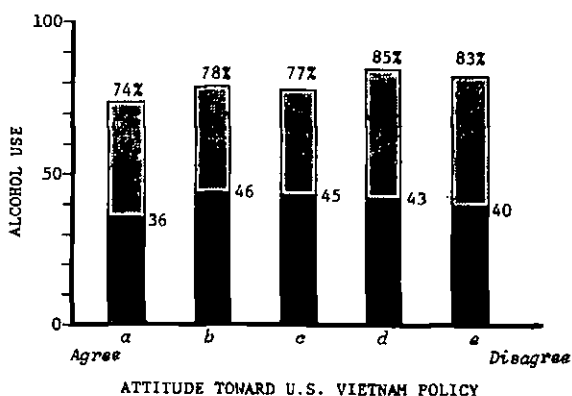
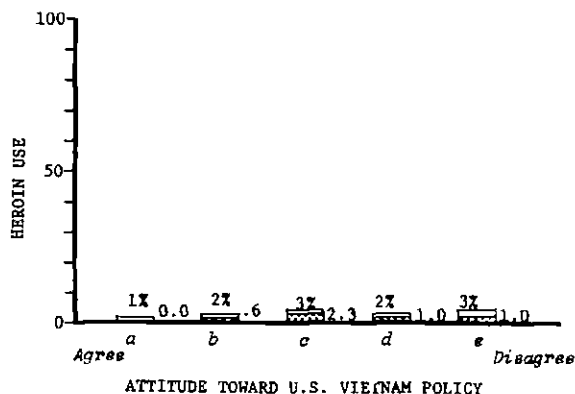
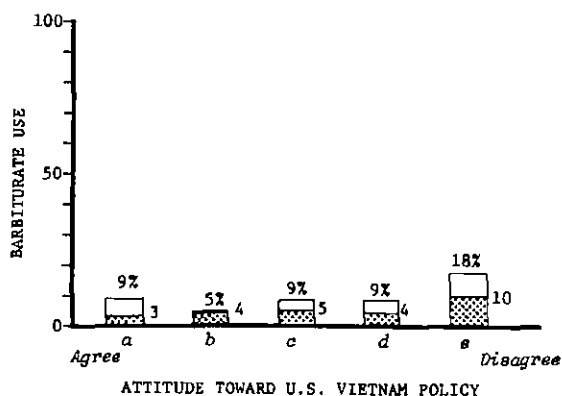
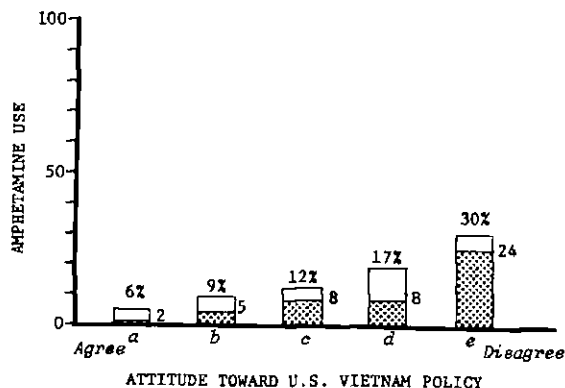
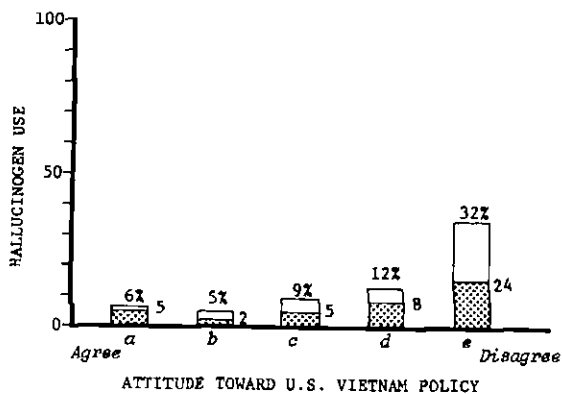
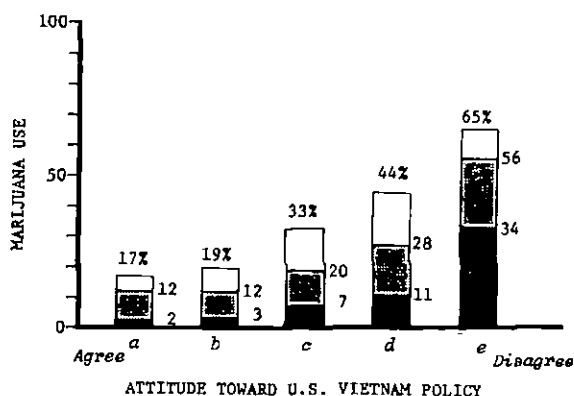
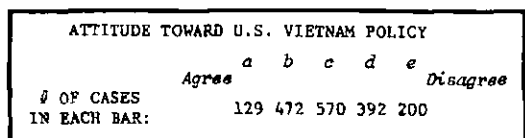
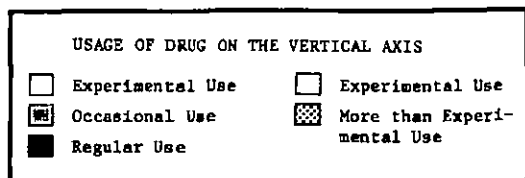
So far, then, we have found some tentative evidence of a "counter-culture syndrome." Other variables which we might expect to relate would surely include alienation from government, which we examine next.

Trust in Government (Political Alienation)

Disagreement with one policy of one administration does not necessarily amount to alienation from government in general. A

*A more direct measure of policy preference was given in the form of a question asked by Gallup. It relates to the use of drugs in a way which is quite parallel to the way the Vietnam Dissent Index relates.

FIGURE 7-3 ATTITUDES ABOUT U.S. VIETNAM POLICY RELATED TO DRUG USE AFTER HIGH SCHOOL



broader attitude toward "government" was assessed by a three-item index. The questions, administered in a paper and pencil questionnaire, ask about how much tax money is wasted by government, how often "you can trust the government in Washington to do what is right," and whether "the people running the government are smart people who usually know what they are doing." Answers to these three questions are given on a five-point Likert scale and condensed into an index using equal weighting.

A set of figures relating this variable (measured a year after normal graduation from high school) to the seven drug-use variables will not be presented here, primarily because the relationships are extremely parallel to those found for Vietnam Dissent (with which Political Alienation correlates .46). Its product-moment correlations are: .24 with marijuana use (vs .36 for Vietnam Dissent), .20 with hallucinogen use (vs .22), .17 with amphetamine use (vs .18), .10 with barbiturate use (vs .07), .02 with heroin use (vs .03), .02 with alcohol use (vs .03), and -.01 with cigarette use (vs .01). This finding adds one more important piece of evidence of a counter-culture syndrome, and the fact that certain drugs are a part of it.

The question naturally arises as to whether delinquency is a part of this counter-culture syndrome, since it relates so strongly to drug use. The answer pretty clearly is no. Delinquency in senior year correlates .07 with the Vietnam Dissent and -.10 with the Political Alienation measures discussed here. Recall, also, that delinquency bore a strong relationship to the use of barbiturates, heroin, alcohol, and cigarettes. Vietnam Dissent and Trust in Government do not. Taken together, these facts suggest that there may be at least two quite different syndromes involved in drug use.

Since Vietnam dissent and political alienation are so often associated with the college student population, it seemed appropriate to test for the presence of the counter-culture syndrome using only the non-college population. A correlation matrix was run in which all respondents in college or trade school in the year after high school were excluded from the analyses, leaving about 730 unweighted cases. The correlations which emerge between Political Alienation and the use of marijuana, hallucinogens, and amphetamines are practically identical to those reported for the entire population. Therefore, we can say with assurance that the "counter-culture" syndrome involving, among other things, political alienation and the use of certain drugs is by no means confined to the campuses.

Rock Music Preference

Robinson (1972) recently reported another finding from the Youth in Transition study which is related to our testing of the idea of a counter-culture syndrome. As a part of his continuing research on the media and their impact, he included a question in the Time 4 data collection which asked respondents to identify their three favorite records. Their selections were then classified according to types of music, and the number of choices in the "hard rock" or "protest" category determined. Robinson found that use of four of the five illegal drugs varied substantially and directly as a function of preference for rock music. (Heroin was the exception.) Those with three "hard rock" choices (unweighted N=291) reported a 56 percent incidence of marijuana use after high school, whereas those with no hard rock favorite among their three choices reported only 22 percent. Similar findings emerged for hallucinogens, amphetamines, and barbiturates. Thus, we have one more confirming bit of evidence in this study of a counter-culture syndrome being strongly related to the use of certain drugs.

Other Related Studies

Before leaving the subject of drugs and the counter-culture, it is worth taking note of two related studies conducted elsewhere, albeit on considerably more limited populations. Suchman (1970) conducted a sample survey of a fairly large West Coast university in 1967. He was particularly interested in whether marijuana smoking was part of the "hang-loose" ethic as it was defined by Simmons and Winograd (1966):

One of the fundamental characteristics of the hang-loose ethic is that it is irreverent. It repudiates, or at least questions, such cornerstones of conventional society, as Christianity, 'my country right or wrong,' the sanctity of marriage and pre-marital chastity, civil disobedience, the accumulation of wealth, the right and even competence of parents, the schools, and the government to head and make decisions for everyone--in sum, the Establishment.

Suchman did, indeed, find a rather strong relationship between marijuana use and these other characteristics of the hang-loose ethic. The one which we have replicated here on a much broader sample was the relationship between marijuana use and opposition to the Vietnam War. However, he also found marijuana use to be associated quite strongly with participation in "happenings" and mass protests, reading underground newspapers, negative reactions to the school experience, the desire for more student control in decision making, opposition to military service and to war in general, respect for the "hippie" way of life, the expectation of getting the most satisfaction in life from recreational activities, the belief that parents do not respect their opinions, approval of getting around the law without breaking it, and approving of pre-marital intercourse.

Clarke and Levine (1971) cite fairly comparable findings on a somewhat different group--a statewide random sample of high school

seniors in the state of Florida. They find that marijuana users more often than average describe themselves as: dissatisfied with their education, non-religious, opposed to the use of more force by police to control crime, in favor of a lower voting age, convinced that their parents are opposed or indifferent to their political views, and politically alienated.

These studies are cited not only to point out the consistencies with our current findings, but also to show the wealth of beliefs, behaviors, and attitudes not investigated in the present volume which seem to go with drug use in the counter-culture syndrome. These beliefs, behaviors, and attitudes are by no means unique to marijuana users; such a conclusion would be very much in error. They are, however, systematically more prevalent among marijuana users, suggesting that for a number of users, at least, drug use ties into a larger psychological structure.

In summary, we find that the use of *certain* drugs--marijuana, hallucinogens, amphetamines, and to a lesser extent barbiturates--seems to be associated with an ideologically alienated subculture, often referred to as the counter-culture. Quite independent of that phenomenon is another--the unusually frequent incidence of use of *all* of the drugs, legal and illegal, among those with a persistent pattern of delinquency. Certainly not all drug use is concentrated among these two types of individuals, but identification of these two separate syndromes adds to our general understanding of the drug phenomenon and of its considerable complexity.

Chapter 8

Summary and Policy Implications

This book has focused on the incidence and distribution of drug use in a national sample of males in the high school class of 1969. Because it was drawn from that population when they were at the beginning of tenth grade (in the fall of 1966), it includes both young men who completed high school and those who dropped out. Further, while it includes young men who went on to college in the year after high school--a population in which drug use has frequently been studied--it also includes a substantial number who went on to civilian employment, military service, and trade school. These latter groups generally have not been the subjects of systematic research.

Two traditionally legal drugs (alcohol and cigarettes) have been considered here, along with five illicit drugs: marijuana, hallucinogens, amphetamines, barbiturates, and heroin. The frequency with which each of these drugs has been used during the high school years, as well as in the year following graduation, has been one major focus of concern. A second has been to determine the relationships between the use of each drug and use of any of the others. Still a third focus of the study has been to explore the

attitudes of contemporary youth toward drug use generally; and finally--and perhaps most importantly--we have attempted to identify characteristics of young people or their major social environments which seem to be associated with drug use.

DRUGS DURING HIGH SCHOOL

Quite a number of rather surprising findings have emerged from these explorations--particularly some having to do with the common assumptions about the causes and effects of drug use--but the first concerned the sheer prevalence of drug use in high schools during the period in question.

Illegal Drugs

We found that incidence of illegal drug use up to the point of normal high school graduation was considerably less than reports in the press had led us to expect. *Less than a quarter of these males (22.5%) report having made any use of any of these illegal drugs before leaving high school in 1969; and nearly half of those used nothing more serious than marijuana (10.2% of the sample). Of the 12.3% of the sample using more serious illegal drugs one-third did so on an experimental basis only.*

Marijuana was by far the most popular illegal drug, with roughly one in five having smoked either it or its derivative, hashish. One out of every ten had tried amphetamines; one out of every fifteen hallucinogens; one out of sixteen barbiturates; and one out of sixty had at least tried heroin. However, roughly a third of those using each drug could be classified as experimental users, since their usage was no higher than once or twice in a year.

At the extreme, if we consider weekly intake as constituting regular use of any of the illegal drugs, we can say that none of these drugs had been used regularly by more than two percent of the sample, with the single exception of marijuana. About 6 percent reported smoking marijuana regularly at some time during high school, but less than 2 percent had ever used it on a daily basis.

The question arises as to why there was such a discrepancy between media reports of drug use and actual levels as determined in this study. Undoubtedly, the answer lies in part with the selective nature of the research in this area, most of which has been limited to specific localities or institutions. Very likely locations which did have an exceptional "drug problem" were most often chosen as the sites for such surveys precisely *because* they were seen as having a problem. Thus the picture drawn by such selective research was a distortion of the true picture nationwide.

Another part of the answer undoubtedly lies with selective coverage by the media. Dramatic stories make good copy; so no matter how small or unrepresentative a sample, a startling incidence of drug use in some locality or school commanded widespread media attention. The legal drugs, on the other hand, are not generally viewed as constituting a social problem, so their widespread use among young people has received rather little attention.

Legal Drugs

The two traditionally acceptable drugs, although they often cannot be legally purchased by minors, clearly remain the favorite of this younger generation. *Roughly a third had used alcoholic beverages on a weekly basis (or more often) during the high school years and a little over a third smoked cigarettes daily.* The exceptional situation clearly was for a student *not* to have used cigarettes and alcoholic beverages at some time prior to leaving high school.

THE HIGH SCHOOL EXPERIENCE

Some characteristics of the respondent's high school and his experience in it were examined in relation to his use of the seven drugs. Included among the variables of interest were length of schooling, course of study, school size, average grades, and extra-curricular participation.

Illegal Drugs

Generally speaking, a higher incidence of illegal drug use during the high school years was found among those who dropped out, those who received low grades, and those who attended larger high schools. There were no substantial differences in drug use among the various curricula (or programs of study), although those in the general studies program did show slightly higher than average illegal drug use.

Drugs and the Marginally Involved. One hypothesis which was tested was the popular conception that drug users are more marginally involved in the academic and social life of the school. The finding that drug use is more prevalent among those with low grades and among dropouts turned out to be consistent with that notion, though it leaves open the question of which causes which. *The results concerning extracurricular participation, however, suggest that there is rather little relationship between illegal drug use and participation in the non-academic life in the school.* Those participating in less than three extracurriculars in their senior year used illegal drugs slightly more frequently than those participating in three or more, but the differences were not large. Further, they were explainable in terms of related background characteristics, leaving little evidence that drug use is particularly associated with or caused by marginal involvement in the social life of the school.

Effects on Grades. The relationship between illegal drug use and poor academic performance was explored further to determine whether, as many contend, the use of drugs do seem to be the cause of the low grades. The answer seems to emerge rather clearly: *drug use (short of addiction) does not seem to cause a deterioration in academic performance.* What we find is that young people who use drugs during high school had lower grades on the average as far back as ninth grade. (Those who tried something more serious than marijuana had lower grades than those who went no further than marijuana, though none of the average differences are very large.) However, there does not seem to be any serious decrement over time in the grades of the "user groups." It seems either that the poor academic performance had something to do with these young people becoming involved with drugs in the first place, or some prior third factors were the cause of both the low grades *and* the drug use.*

The Importance of School Size. Another noteworthy finding concerned the importance of the size of the school in relation to drug use. The usage rates of all illegal drugs except heroin were found to be highest in the very large schools and lowest in the very small schools. Within the broad middle range of school size though, there did not seem to be many differences.

But when urbanicity (which is highly correlated with school size) was controlled in a multivariate analysis, school size demonstrated itself to be a *more* important factor, not less important as would have been expected. *Within any given category of urbanicity (e.g., small town, small city, or suburb) being in a*

*This finding is reminiscent of the one reported by Bachman *et al.* (1971) that dropping out of high school appeared to be more a symptom of other (prior) problems, rather than a cause of them.

larger school appears to be associated with a higher incidence of marijuana and hallucinogen use. In fact, school size was credited by MCA with more explanatory power than any other background or school experience variable in predicting to marijuana and hallucinogen use during high school.

In light of the trend of recent decades to enlarge and consolidate schools, this finding gives some basis for pause. Could it be that social control--either of the authority or peer system, or both--declines with enlargement of the school; or that students face greater social or psychological strain as schools become larger and more impersonal? If any of these hypotheses are true, it would have important implications for the planning of our educational institutions of the future.

Legal Drugs

Regular use of alcohol and of cigarettes by these young men during their high school years related to schooling experiences in a slightly different way. Like the illegal drugs, regular cigarette smoking was high among those with low grades and among dropouts; but unlike the illegal drugs, cigarette smoking did decline with increasing extracurricular participation. That relationship was greatly reduced when other factors were controlled, however.

Smoking was dramatically lower among those in college preparatory curricula, and bore no relationship to the size of the high school attended. As we shall see below, the college group continued to report a substantially lower incidence of smoking during the first year of college in comparison to their peers.

Regular (weekly) use of alcoholic beverages occurred most frequently among those with low grades in high school, those attending

smaller high schools (in contrast to the findings for illegal drugs), and those who dropped out. Extracurricular participation bore no relationship to the incidence of regular alcohol use, which implies that, at least during their off-seasons, fully as many athletes drink as non-athletes.

DRUGS AFTER HIGH SCHOOL

The number of users of all drugs jumped substantially in the year following graduation, though the increases did not represent very sizeable proportions of the total population. *Over a third (36%) reported using some illegal drug at least once during the year after high school. The largest increases in terms of a percent of the sample reporting use of a drug were found for marijuana--up from 21% during high school to 34% after--and the regular use of alcohol, up from 22% during high school to 33% reporting regular use afterward.* A more detailed exploration of changes in the rate of drug use in the year after high school revealed that most people who changed their rate of use did so in an upward direction, either starting or increasing use of a drug; but that the great majority of young men maintained the same rate of use or, for the most part, non-use.

High Usage in Military Service

The greatest increase in the use of almost all drugs in the year after high school--in terms of the "net-conversion rate" described in Chapter 6--occurred in that sub-sample which went on to domestic military service in that year.* During the high school

*Drug use data were not gathered from the 48 respondents in military service who were stationed overseas.

years that group (comprised of 144 weighted cases) had a very similar profile of drug use to the one found for those who would enter civilian employment. However, the military group showed one of the highest rates of conversion while the civilian employed group showed one of the lowest, making their profiles on both legal and illegal drug use quite different by the year after high school.

The Campus Versus Other Sectors: Some Surprising Results

Perhaps one of the more surprising findings from this study concerns the incidence of drug use on campus versus other sectors of the society. Certainly the popular conception has been that colleges and universities contain a disproportionate concentration of the illicit drug activity in the nation, particularly marijuana and hallucinogen use. However, our data tend to directly refute that conception. *In the year after high school the college sample showed an incidence of 37% using some illegal drug at least once during the year, a virtually identical rate to that for the entire sample, 36%. About 35% of those in college used marijuana and 10% used some hallucinogen, versus 34% and 11% respectively for the whole sample: again, virtually identical rates. The college group used amphetamines, barbiturates and heroin at somewhat lower rates than did their non-college peers, indicating (at least for those of freshman age) that, taken overall, illicit drug use is slightly less intense on the campuses than it is in the other sectors of the society taken together. Further, the regular use of alcohol and cigarettes was substantially lower on campus.*

One must hasten to add, however, that this near parity in marijuana and hallucinogen use may not hold true in the later college years. We find that the group of young men who went into college in the year after high school showed a relatively high rate of increase in illegal drug use--particularly when compared to the

group entering civilian employment. However, because the college-bound had substantially lower than average rates of drug use *during* high school, their high rate of increase only resulted in their "catching up" with their peers in the use of marijuana and hallucinogens in the year following high school.* If the college group continues to show a high rate of increase in succeeding years, they *could* attain a usage rate which *would* justify popularly held conceptions. We hope to resolve the question definitively by means of a later follow-up at the end of the college years.

Grades and Type of College. Two characteristics of the college experience were examined to determine whether they bore any systematic relationship to drug use: academic grades and type of college attended. Grades were of interest, of course, because of the strong negative relationship found between high school grades and the use of all drugs during high school. Surprisingly, a comparable relationship was not found for college grades. Those with low grades did report heavier use of alcohol and cigarettes, as was true during high school, but use of the illegal drugs bore no interpretable relationship to grades.

*Our finding that those headed for college used less marijuana and other drugs during high school than did their peers, is contradictory to findings reported by Mauss (1969). He concluded that there are anticipatory socialization effects among high school students related to college plans: that among those high on his scale of Anticipatory Socialization Toward College, there was a considerably higher rate of marijuana use (18% vs. 8%). However, his findings were based on only three high schools. Further, to get a high score on the index, the respondent had to have three or more of his five closest friends actually in college. Since these high schools appear to be near to campuses (in the East Bay Area of California), it is questionable whether the observed effects can be called *anticipatory* socialization or rather straightforward socialization into a college peer group to which students were exposed while still in high school.

Neither were any substantial differences in drug use found between students attending three basic types of institutions--universities, liberal arts colleges, or junior/community colleges. Those attending trade schools (which have not been included here in our references to "colleges") did show somewhat lower usage rates of all of the illegal drugs than did the college students. Interestingly enough, they also reported higher usage rates on alcohol and cigarettes.

BACKGROUND AND ABILITY RELATED TO DRUG USE

Chapter 4 contains an exploration of the relationship between the use of each of the seven drugs and selected demographic, background, and ability characteristics. More specifically, region of the country, community size, socioeconomic level, race, intactness of family, stability of residence, and intelligence were all examined in relation to drug use both during and after high school.

Region and Urbanicity: Some Important Differences

The use of all illegal drugs (except heroin) was found to be heavier by a considerable margin in the Western and Northeastern regions of the country than in the South or North Central regions. There were no substantial regional differences for heroin or alcohol, but cigarette use was markedly lower in the West and North Central than in other areas. The finding that cigarette smoking is low in the West is particularly interesting since comparable data on the adult population indicate smoking among adults is highest there, indicating that a generational shift is occurring in that region.

The use of all illegal drugs (again including heroin) also tended to be highest in large cities and lowest in rural areas, but there was little variation in the broad middle-band of communities stretching from small towns to medium-sized cities. Surprisingly, heroin use did not systematically relate to community size in this sample, nor did cigarette use. Alcohol consumption, on the other hand, showed a negative relationship with the most use being reported in rural areas. As was mentioned earlier, multivariate analyses suggest that some of the differences in illegal drug use associated with urbanicity may be explainable in terms of differences in the size of high schools found in the communities.

Socioeconomic Level and Intelligence

Socioeconomic level (SEL) and intelligence, as measured by the Ammons' Quick Test (QT) related in a fairly similar manner to most of the drug-use variables; not a surprising finding since SEL and QT are strongly related to each other. Both are positively correlated with marijuana and hallucinogen use and negatively correlated with cigarette smoking. That is, those young men coming from the most advantaged background and having the highest measured intelligence also have the highest incidence of marijuana and hallucinogen use and the lowest incidence of cigarette smoking, both during and after high school. Amphetamine use shows a curvilinear pattern in relation to SEL and QT, particularly during the high school years, with the highest and lowest groups showing heaviest usage. However, the relationship becomes more positive in the year after high school as the top SEL and QT groups increase their use of amphetamines the most.

SEL related somewhat differently than did intelligence to the use of the remaining three drugs: barbiturates, heroin, and alcohol. Barbiturate and heroin use is high in the lowest intelligence group,

all other groups being about the same. SEL on the other hand, seemed not to bear an interpretable relationship to heroin use. Its relationship to barbiturate use was erratic, but indicated that the highest SEL respondents used barbiturates most frequently.

The last drug in the set, alcohol, was negatively related to SEL and QT during the high school years: that is, the most advantaged students drank the least. However, the relationship with SEL completely disappeared in the year after high school, and was substantially reduced for QT, indicating that increases in alcohol use were greatest among the more advantaged. The net effect was to offset previous differences.

Racial Patterns: A Diminishing of Differences

Racial differences in drug use also showed changing patterns across time. (The findings are highly tentative since they were based on a fairly small number of blacks (N=167), many of whom were clustered in five or six high schools.) The black respondents reported a higher incidence of marijuana and amphetamine use during the high school years than did whites, and a considerably higher level of barbiturate and heroin use. Their use of hallucinogens was about the same as for whites.

However, in the year after high school blacks maintained relatively stable usage patterns, while whites increased their usage. The net result was that whites became heavier users of hallucinogens, caught up with blacks in amphetamine use, almost caught up in marijuana use, and narrowed the gap on barbiturates and heroin. *Thus there was a rather substantial shift in one year, resulting in fewer racial differences at the end than many observers may have thought existed.*

Intactness and Mobility of the Family

Two other conditions of family background, intactness of the family and stability of residence, were included for analysis in this volume. It was hypothesized that because they cause psychological stress for the individual, they might relate to drug-taking behavior. As predicted, those coming from homes broken by death or divorce reported slightly higher usage rates of most illegal drugs than those coming from intact homes, and the differences remained after other background variables were controlled in a multivariate analysis. Interestingly enough, those from homes broken by death did not differ from the main sample until the year after high school. The hypothesis was advanced that those from divorced families have been in a disrupted family situation for a longer time, on the average, than those who lost parents through death; therefore, drug use differences are observable earlier. Heroin, alcohol, and cigarette use was about average for young men from both types of broken homes.

Transience was associated with somewhat higher than average use of all seven drugs, both legal and illegal. The variable is an admittedly crude one, based on whether or not the respondent moved his place of residence at any time during high school. Nevertheless, it extracts differences which are not explainable in terms of the other background variables in the set. We hope eventually to establish whether intervening variables such as anxiety or depression help to explain these links between exposure to stressful conditions (i.e., loss of a parent or loss of residence and friends) and higher than average drug use.

PATTERNS OF MULTIPLE DRUG USE

In addition to being related to various characteristics of the young men and their major social environments, the seven drug-use variables were also examined in relation to one another. Whether or not there is any connection between the use of different drugs, and what the nature of such connections might be, have been the subjects of intensified debate in recent years. Does marijuana lead to narcotics use? Is alcohol being replaced as the drug of choice among younger Americans? A number of findings in the present study bear on such questions.

Alcohol versus Pot: Little Sign of Displacement

As we have already seen, a fair proportion of young people *are* trying marijuana, certainly a larger proportion than in previous generations; but we do not find particularly convincing evidence that any displacement is occurring. We find instead that *the use of alcohol is still very widespread in this age group and that marijuana users report higher than average use of alcohol, not lower.*

Evidence for a General Disposition to Use Psychoactive Substances

A positive association was, in fact, found between the usage rates of all of the drugs investigated here--both legal and illegal. We find that regular cigarette smokers report a considerably higher incidence of using *all* of the illegal drugs than do non-smokers. The same can be said for regular drinkers. In other words, there appears to be a general factor derivable from the drug-use data--a "general disposition" toward the use of psychoactive substances. This finding replicates an earlier one by Blum (1970b).

Patterns of Illegal Drug Use: Some Important Asymmetries

There are also stronger degrees of association between particular drugs than one could explain with a "general disposition" factor. *There is, for example, a strong positive association among the usage rates of hallucinogens, amphetamines, and barbiturates. Users of any one of these drugs are much more likely to be users of each of the other two than non-users. The usage rates of all three of these drugs are also positively associated with the use of heroin, but the relationships are very asymmetric. That is, almost all heroin users (as represented by the small number of self-reported users in this sample) are users of amphetamines, barbiturates, and/or hallucinogens; but most of the people who use any of the latter three drugs do not use heroin.**

The connection between marijuana use and the use of the other more serious illegal drugs has been a topic of particularly vigorous debate in recent years. In this study it was found that marijuana use is positively associated with use of all of the more serious illegal drugs, but again the relationship is asymmetric. *While most users of hallucinogens also smoke some marijuana, only a small fraction of marijuana smokers use hallucinogens. The same type of asymmetric relationship exists between marijuana smoking and the use of amphetamines, barbiturates, and heroin.***

Sequential Patterns of Multiple Drug Use

An examination of sequential patterns of drug use across the two time intervals studied here revealed that those who smoke

*It should be emphasized that the term "use" reflects use at any intensity level--even experimental use.

**All findings regarding heroin use are extremely tentative due to the small number of admitted users in this sample.

cigarettes during high school are a little more likely to begin to use other drugs after high school than those who had not smoked. The same was true for those who had used alcoholic beverages in high school.

Marijuana use in high school related considerably more strongly to subsequent use of the more serious illegal drugs than earlier use of them related to the subsequent use of marijuana, which suggests that marijuana tends to come first in the sequence insofar as there is any typical sequence. There is also evidence that amphetamine use precedes the use of barbiturates or heroin more often than the reverse. Similarly, the use of barbiturates or hallucinogens more often precedes the use of heroin than vice-versa.

It must be added that these patterns do not necessarily imply any causal connections or fixed sequence. In fact, this study is simply not well equipped to investigate the possibility of such connection among the different drugs. Marijuana, for example, is used by the vast majority of those who try any of the more serious illegal drugs. However, roughly half of those who tried marijuana did not use any of the more serious illegal drugs. Therefore, the most damning statement which might be made about marijuana, and still be consistent with our data, is that marijuana use is a necessary but by no means sufficient condition to result in the use of more serious drugs. But it is obviously not a necessary condition either, since no one seriously expects that there would be no new users of other drugs if marijuana suddenly disappeared.

Involvement with marijuana, of course, *may* play a subtle role in involving young people with more serious drugs. Some may accept society's definition of it as a first step into illegal drugs, making the second and third step psychologically easier; and it is generally conceded that the sale and distribution system for marijuana is frequently used to push other illegal drugs. But, if such

dynamics do exist, there is nothing fixed or mechanistic about them; they are subject to alteration by societal institutions. For example, the meaning of marijuana smoking could be redefined by making the activity legal, in which case the substantial proportion of young people who are going to use marijuana in any case would not feel that, in so doing, they had already crossed the line into illegal activities. Similarly, public control of the distribution system could be brought about by creating a legal, regulated industry, thus greatly reducing the amount of contact young people have with illicit drug dealers. The sheer size of the illicit distribution system which now exists will be demonstrated below by some of the findings about the availability of illegal drugs to young people.

THE WIDESPREAD AVAILABILITY OF DRUGS

Fully seven out of every ten of the respondents in this study said they thought marijuana would be "very easy" or "fairly easy" for them to secure, if they wanted some. One out of three said the same for heroin.

Both drugs were felt to be most accessible by those in domestic military service.* Marijuana was also considered to be more accessible by those in college than by those in civilian employment. However, the large majority of non-users in *all* post-high school environments still felt that they could secure marijuana if they wanted it, and a majority in all sectors had at least a few personal friends who used it.

*Marijuana was also found to be most available to young men (non-users) from the Western and Northeastern regions of the country, from the more urban areas, and from families of higher socioeconomic level.

One must conclude from this information in combination with actual usage rates that a considerable proportion of young people must refrain from marijuana use by choice, not because they lack access. The findings summarized below regarding prevailing attitudes toward marijuana use suggest one major reason for the choice--personal disapproval of the activity. Another, of course, may be the fear of being caught.

ATTITUDES ABOUT DRUG USE: A BASIC CONSERVATISM

The attitudes prevailing among this broad sample from "the younger generation" were considerably more conservative than might have been expected. *The great majority disapproved of using any of the more serious illegal drugs, even on an experimental basis.* In fact, over 55% of the sample said they *strongly* disapproved of even experimental use of each. Only 1.5% explicitly approved of experimenting with heroin.

Marijuana Attitudes: More Liberal and More Polarized

Attitudes about marijuana, however, were in sharp contrast to those about the more serious drugs. *Exactly the same number of respondents "approved of" or "felt 'neutral about" the experimental use of marijuana as disapproved of it.* The two most frequently chosen answers were "strongly disapprove" and "feel neutral." The fact that these are non-adjacent answer categories on the attitude scale suggests that this sample of young men is more polarized on the ethics of marijuana use than on the use of any other drug. (Incidentally, *regular* use of marijuana received the disapproval of a considerably larger proportion of the sample.)

The findings on marijuana taken together with the very limited popularity of the more serious illegal drugs indicates that a substantial proportion of these young people approve of some use of marijuana but still disapprove of the use of the more serious illicit drugs. This finding may have important implications regarding any possible legalization of marijuana; namely, that most young people who would be apt to consider using marijuana already make a distinction between that drug and the more serious ones.

Alcohol and Tobacco

Of the two legal drugs investigated, cigarettes received the most disapproval. In fact, a higher proportion of these young people disapproved of regular cigarette smoking (nearly 60%) than disapproved of the occasional use of marijuana. On the other hand, alcohol--the most universally used of the drugs--received the disapproval of a minority of respondents. Only about a third disapproved of even regular use of alcoholic beverages. It certainly does not appear from these results that there has been any substantial generational shift in mores concerning alcohol use.

Use Versus Attitudes

Attitudes toward a drug were found to be strongly related in a positive direction to the actual use of that drug. They were also found to be related to the use of the other drugs in the set, legal and illegal, suggesting that there is a general orientation toward psychoactive substances which is reflected in the attitudes and behaviors related to each specific drug.

Attitudes in Different Sectors

In Chapter 6, the attitudes of young men in college, civilian employment, and the military were compared. Contrary to popular belief, the differences between the populations in terms of their attitudes toward the various drugs were very small. Once differences in actual usage rates in those environments were controlled, the small differences that existed had virtually disappeared. *We can conclude from this information that there is not any important difference in the moral climate of these different sectors regarding the use of illegal drugs, at least not among the nineteen year-olds in them.*

How, then, do we reconcile this finding with the earlier one that conversion to drug use seems to be higher among those in military service and college than among the civilian employed? One possible answer is that young people comprise most of the occupants of some sectors but not others; therefore, the collective attitudes of the young people in a sector do not necessarily reflect the dominant moral climate in that sector. Presumably the civilian employed spend a considerably larger proportion of their time in the company of older adults (at work and at home) and thus have proportionally less exposure to people who use drugs or approve of their use. Put another way, they are less totally immersed in a youth culture than those in college or military service. As a result they may have greater social constraints working against their becoming users of illegal drugs, and fewer positive incentives.

Exposure to Drugs Through Friends. The number of young men having exposure to "users" was examined to test this hypothesis, with the prediction being that less of those in civilian employment would have exposure to drugs through friends than those in college or military service. The data, presented in Table 8-1, come out as predicted. *Fewer young men in the civilian work sector have friends*

TABLE 8-1
Exposure to Drugs Through Friends

	Percent Having Any Friends Who Use Drug					Percent Reporting Most or All of their Friends Using Drug	
	Marijuana	Hallucinogens	Amphetamines	Barbiturates	Heroin	Alcohol	Cigarettes
Civilian Employed	56%	29%	43%	35%	17%	67%	61%
Military	69	44	56	50	21	76	66
Trade School	70	34	52	43	17	68	58
College	73	39	51	40	13	72	37
Other	67	37	52	47	27	61	64
TOTAL SAMPLE	66	36	49	40	16	70	51

who use marijuana than in any other sector. The same also holds true for nearly all of the other illegal drugs. This finding provides at least inferential evidence that adults, who are seldom users themselves, make up a larger proportion of the set of "friends" held by a young man in a job than by a young man in school or the military.

ATTITUDES ABOUT DRUG HELP

A short section of the original drug questionnaire dealt with the sources of help to which these young men would likely turn in the event they found themselves "hooked" or otherwise in trouble with drugs. Table 8-2 shows the percent of respondents saying they would go to each of the types of individuals listed. The findings are not at all ambiguous. *Nearly two-thirds of the sample said they would turn to doctors, drug clinics, and friends their age for help. No other potential helpgiving sources were chosen nearly as frequently as these three.* Parents and siblings were the next most popular sources of assistance, but only a little over a third of the respondents said they would go to them. It is clear that agents of the church, school, or work organizations are not attractive as sources of help--not even counselors, who ostensibly are help-giving agents. These data, taken together, suggest that representatives of "the establishment" are not trusted when it comes to drugs--a not surprising fact in view of prevailing laws and public attitudes. Friends obviously do not represent the establishment nor, perhaps, do medical people--likely because they are assumed to offer a certain doctor-patient confidentiality and concern.

Although the data in Table 8-2 are based on the entire sample of young men, most of whom are non-users of illicit drugs, the basic preferences for help-giving sources remain the same if we look at the answers of drug users separately.

TABLE 8-2

Preferred Sources of Drug Help

If you found yourself "hooked" on a drug or otherwise needed help related to drugs, would you be likely to turn to any of the following sources for help?	Percent of Sample*			% Missing Data
	Yes (1)	Maybe (2)	No (3)	
(a) Father or mother	37.5	33.1	29.4	1.9
(b) Sister or brother	35.1	29.6	35.3	2.8
(c) Other relative	15.3	29.3	55.3	2.5
(d) A friend your age	63.7	26.0	10.2	2.3
(e) Doctor	65.2	26.7	8.1	2.2
(f) A drug clinic	61.5	27.0	11.5	2.9
(g) Counselor where you work or go to school	15.9	28.4	55.7	2.6
(h) A teacher or supervisor	12.6	31.8	55.5	2.7
(i) Minister, priest, or rabbi	28.9	29.3	41.8	3.1
(j) Other (PLEASE WRITE IN) _____	71.1	8.9	20.0	95.0
(k) Other (PLEASE WRITE IN) _____	36.8	0.0	63.2	99.0

* Missing data have been excluded from these percentages.

The implications for social policy which we could draw from these findings are of two types. One is that if we want young people who are running into trouble with drugs to be able to go to more of these potential help-giving sources, we will undoubtedly have to change the legal and social meaning of drug taking from its present one (as an immoral behavior) to the class of unhealthy or maladaptive behavior. However, if we take the present legal and social definitions as given, it appears that the best way to get counseling and help to those young people who are addicted or otherwise in trouble with drugs is through a system of clinics and involved doctors. Although the majority of young people say they would go to a drug clinic, it is questionable how many actually have access to one at the present time.

DELINQUENCY AND ALIENATION: TWO IMPORTANT SYNDROMES

In a brief excursion into attitudes and behaviors which are related to drug taking, several important relationships were found.

Drugs and Criminal Behavior

The first such finding was that *self-reported delinquency during high school showed a strong positive relationship to the use of all seven drugs during high school, both illegal and legal drugs.* This finding is certainly consistent with popularly held conceptions, and it is not really surprising from the point of view that we have simply shown one class of illegal behavior (drug use) to be positively related to other classes of illegal behavior. (The relationship between delinquency and the use of the two legal drugs may have been less intuitively obvious.)

The more important finding, however, relates to likely cause and effect relationships involved here. The basic question is, of course, whether drug use leads to crime, as most Americans believe.* Naturally, the findings we have are relevant primarily to the non-addict population of drug users--the great majority. For that group we find that, although the user populations are substantially more delinquent than the non-user population by the end of high school, the differences were fully as large as early as ninth grade, a point prior to the beginning of drug use for the vast majority. Thus, the more delinquent are substantially more likely to become users, but the users do not appear to increase their levels of delinquency. Whether delinquency plays an important role in getting certain young people involved with drugs in the first place, or whether delinquency and drug use are both the result of other factors remains to be determined. However, we can state rather definitively from these data that becoming involved with marijuana--or the other illegal drugs, short of actual addiction--does not lead to noticeable increases in criminal behavior.

Alienation and the Counter-Culture

Another quite separate and powerful syndrome involving drug use was found in a set of positive relationships between an index of Vietnam Dissent, an index of Political Alienation, and the use of three drugs--marijuana, hallucinogens, and amphetamines. This syndrome appears to be uncorrelated with the delinquency syndrome, which suggests that a different set of motivations and/or friendship patterns may be involved. These findings, in combination with those of other investigators, are interpreted as evidence of a "counter-

*Geiger (1971) reported that 82% of the respondents polled in a nationwide telephone survey, conducted in August 1970, agreed that "using marijuana leads people to commit crimes and acts of violence."

culture" syndrome, which encompasses a wide array of related attitudes and behaviors, ranging from music preferences to political beliefs. The counter-culture syndrome is not unique to the college population, as one might at first expect, since the relationships among the variables examined in this study are fully as strong among the non-college group as they are for the entire sample.

Certainly illicit drug use does not occur exclusively among the most ideologically alienated and most delinquent; even those at the far opposite extremes on both dimensions report some illicit drug activities. But, there *is* a very strong and important relationship between each of these characteristics of young people and the incidence and intensity of illegal drug use.

THE PERVASIVENESS OF DRUG USE

At the outset of this book, it was stated that one of its purposes was a delineation of the contours of "the problem" of drug use in the normal population. We have examined the incidence and intensity of drug use in this national sample of young men from a recently graduating high school class. We have also examined drug use within the many sectors and subgroups just summarized. While the differences found between groups are both interesting and important, one has to be equally impressed with the similarities, with the sheer pervasiveness of the phenomenon. *One simply cannot say that illicit drug use (or the use of legal drugs for that matter) is totally concentrated in any one sector of our society. It has reached all sectors--rich and poor; rural, suburban, and urban; black and white; college and non-college. The only sector with which we can primarily associate illicit drug use is the young--*

*it is the phenomenon of a generation.** As we have discovered, this sector was not as involved in drugs as reports in the media had suggested--at least not by 1970. Nevertheless, substantial numbers were tolerant of and interested in experimental or occasional use of some drugs--in particular, marijuana.

New Generations, New Problems, New Life Styles

It is unfortunate in a way that this phenomenon arose when it did, for generational relations were already frayed over Vietnam, materialism, outer-directedness, and a host of other value issues. It came at a time when mutual sympathies had ebbed and with them a willingness to reason about the issues, including drugs. But it was probably also inevitable that the increased interest in drugs did coincide with these other problems, for those value strains have surely played some role in the etiology of contemporary drug use--they involve a desire for peace, mind above matter, and inner-directedness.

These may, of course, be lofty motives for actions which reflect little more than simple conformity for many teenagers, but the striking relationship between the use of certain drugs and a host of other attitudes and behaviors, including alienation from the government and the Vietnam war, suggest that a great deal more is involved here than sheer conformity with a superficial fad. The use of several illicit drugs--at least for the present--seems to be an integral part of the newly emerging life style associated with the counter-culture.

*Gallup (November 1969) reported that in a national sample of adults, only 4% reported ever having used marijuana, 6% of the men and 2% of the women. Among those 21 to 29 years of age 12% had used it, versus 3% for the 30 to 49 year old group and 1% for the 50 and over group.

Whether the use of such drugs will remain a part of that life style long term is another question; but with or without the blessings of the larger society, it is certainly part of it at present.

IMPLICATIONS FOR SOCIAL POLICY

As was stated at the outset of this volume, the phenomenon of drug use has risen so rapidly and sensationally into the public consciousness that there has been little time for the many myths which inevitably arise to be refuted, nor for people to understand all the complexities and distinctions which must be made in this tangled area. Just how misinformed most Americans are about drugs--particularly about their effects on the users--was amply demonstrated by the results of a national poll conducted by CBS concerning the effects of marijuana (Geiger, 1971). When asked about marijuana's consequences the great majority said it is an addictive drug (81% agreed); it changes the user's basic personality (90%); it weakens the user's will and self-discipline (89%); it is very dangerous to mental health (69%) and physical health (61%); it is harmful to the fetus of a pregnant woman (76%); and it "leads people to commit crimes and acts of violence" (82%). There is no convincing factual evidence to support any of these statements endorsed by the great majority of adult Americans; there is substantial evidence to refute some of them; and the first--labeling marijuana an addictive drug--is patently false.

If the general public is this seriously misinformed about drugs, it stands to reason that many legislators and members of the executive branch are, as well. Therefore, any movement to improve social policies must deal both with answering the unanswered questions *and* with communicating those answers to policy makers and the public at large.

Drugs and the Law

For the most part, the major social policy concerns in the drug field seem to center around the extent and methods of social control, particularly control through legal restrictions on the use, possession, and sale of various drugs. There are, of course, other policy relevant matters such as the value of preventative educational programs and the relative effectiveness of various programs for counseling and rehabilitating drug users; but issues related to existing drug laws will be the major focus of attention here.*

Certainly the presumed consequences of drugs have a great deal of relevance to the rational formulation of social policy and to the political feasibility of changing policy, so our findings regarding the effects of drug use will be treated first.

Effects of Drug Use

While the present study addresses some of the questions about drug effects which are of particular concern to the majority of Americans, it is worth remembering that there are some important ones which are not discussed in this volume; in particular, the consequences of drugs for the physical and psychological states of the user. Some of the important questions which *have* been addressed here include the consequences of drug use for delinquent behavior ("crimes and acts of violence") and academic performance (perhaps reflecting the user's "will and self-discipline").

*The topic of which counseling sources are the most trusted by young people has already been discussed earlier in this chapter, and the policy implications noted. The apparent importance of high school size as a factor in drug use has also been discussed above.

The results are fairly similar and straightforward concerning both types of effects, and they come out directly opposite to popular conception. *Involvement with illegal drugs (short of heroin addiction) does not seem to have any appreciable effects on a young person's level of delinquency or his academic performance.* Those who became drug users during high school rated worse than average in both areas, but they were doing about as poorly as early as ninth grade, presumably before most had any contact with drugs. The evidence indicates, then, that there was no appreciable decrement over time in either grades or delinquency as a result of becoming involved with illegal drugs. *Nor did the drug users appear to become marginal to the social life of the school.* Therefore, three popular conceptions, all of potential policy-relevance, have been shown to be misconceptions.

Assessing the Effects of Legalizing Marijuana Use

The possibility of legalizing the use of marijuana is currently being considered at various levels of government. In assessing the probable consequences of such a change, it is appropriate to ask not only how harmful the drug might be to new users (or to some proportion of new users), but *how many* new users are likely to result. The prevailing attitudes of young people toward marijuana provide some indication of the answer.

Nearly half of the young men in this sample said they did not approve of the use of marijuana. *This suggests that legalizing the use of the drug would probably not suddenly and drastically swell the ranks of users.* Whether there would be a substantial shift in young people's attitudes over a longer period of time is still open to question, however.

It is also clear from our attitudinal data that many young people who do approve of the use of marijuana only approve of its use on a limited basis. (Even the vast majority of "current users" use it on a relatively infrequent basis.) *It seems unlikely that legalization would suddenly lead to a large segment of young people who could be called heavy users.*

Perhaps of greater importance is that these young people make a considerable distinction between marijuana and any of the more serious drugs. *Thus, increased marijuana use, if it did occur, would not necessarily imply increased use of the more serious drugs.* In fact, it has been argued rather convincingly that decriminalization of the use of the drug would *weaken* the association between marijuana use and use of the more serious illegal drugs by creating a socially reinforced distinction between the two classes. Others would go still further to argue that decriminalization of all drug use, and its redefinition from being a moral-legal problem to being a health problem, might remove much of the glamour and excitement which they assume currently attract young people to drugs.

Legalizing the Sale and Promotion of Marijuana

Presumably, if the use and possession of a product is illegal, then it is consistent to also forbid its sale and promotion. However, if the use of a product *is* legal, the consistent position regarding its sale and promotion is somewhat less clear.

Some Policy Alternatives. If the use of marijuana were legalized, legislators might still try to limit its use by prohibiting the legal sale of the drug. Were they successful in attaining this end, they would, in effect, have taken away from the individual the freedom of choice to use the drug which they ostensibly gave him in the first place. However, if the sale *and* promotion of this

drug were to be legalized, then a great many more people would likely be drawn to its use. This is not a particularly desirable outcome either, since it has not yet been proven beyond reasonable doubt that the drug has no deleterious consequences for its users.

Perhaps a sensible middle position is to permit the sale of a drug but to forbid its promotion and advertising. In this way, individuals regain the freedom to use the product if they want (and the market for an illicit trade is dried up), yet the society prevents the powerful tool of advertising from giving momentum to the use of the product.***

As with so many issues of law, a proper balance must be struck between individual freedoms and public welfare. The above proposal may reflect a proper balance for some drugs, such as marijuana, but not for others such as heroin. Most people would be appalled at the idea of having heroin available to anyone wanting to buy it, in the belief that too great a price would be paid both by the public and would-be addicts to justify such a concession to individual

*Having grown up under constant seige from Madison Avenue, most Americans tend to think of the sale and promotion of a product as inextricably linked. However, it certainly is possible to allow a product to be sold legally but to ban its advertising and promotion. In fact, to a limited extent, cigarettes--for which television advertising is now illegal--are sold on such a basis.

**Sellers could also be required to inform buyers of any known or likely harmful consequences associated with use of the product, to be sure that purchasers are making an informed decision. It is also possible to publicly regulate and control the manufacturing and distribution systems, if that is deemed desirable.

freedoms.* But the price, if any, of having such a set of laws in regard to marijuana is surely much less.

Probable Effects of Legalizing Sale. Presumably the sale of marijuana would never be legalized until use of the drug was no longer prohibited by law. Therefore, the effects of legalizing sale *per se* are the marginal effects which would result *over and above* any impact legalizing its use might have.

It seems likely that legalized sale could potentially increase usage in two ways: by making the drug more generally available and by giving rise to an advertising and promotion campaign aimed at stimulating new demand. If we assume that advertising and promotion would be prohibited by law in an attempt to avoid the creation of new demand, the only remaining effect is that which would result from increased availability.

*Considering our earlier findings about the levels of availability which are already seen to exist, it does not seem likely that a very great increase in availability would result in this age group if the laws were changed. The great majority of young people of the age addressed in this study feel that they already have access to the drug.** Assuming that purchase and possession are*

*Legal, but controlled sale of heroin to *known addicts*, however, has been suggested as a means of reducing their desperation. In this author's opinion, such a policy should be given serious consideration since (a) it recognizes that many addicts cannot break their habit and will not use substitutes such as methadone, (b) it removes one of their primary incentives for recruiting new addicts, to support their own habit, and (c) it should reduce both the amount of crime and the seriousness of crime committed by addicts, by providing a non-criminal alternative to desperate people.

**Should the price of marijuana drop considerably once the drug were sold legally, and should the price prove to be an important determinant of usage levels, the government could always manipulate the price through taxation, just as it now does with cigarettes.

legal, there would be no remaining deterrent (except possibly inconvenience) to keep them from using those illegal sources if the drug were not available through legal channels. Therefore, it seems fairly likely that the legalization of the manufacture and sale (but not the promotion) of marijuana would not change usage rates much from what they would be, given that use and possession were already legalized. Whether it would affect usage levels in older age groups is a more difficult question, since they presumably do not have as widespread access to marijuana at the present time as do younger people.

One can think of several potential advantages of a legalized distribution system, although none of them derive directly from the data in this study. The first is that there would be a more consistent set of laws regarding the drug, instead of a rather schizophrenic division between the legality of use and the legality of sale. More important, however, is that it is likely to take the user of marijuana out of contact with the criminal elements now involved in the distribution system and, therefore, out of contact with people who are promoting the sale of more serious drugs. For example, one insidious promotional technique is to sell marijuana only in a package deal--along with five or ten dollars worth of heroin. To remove those who do want to use marijuana from exposure to such situations, and to dry up the market for the elaborate *sub rosa* distribution which now exists can only be seen as desirable ends.

Value Issues

In approaching this highly controversial topic, it is worth keeping in mind that there are two quite distinct kinds of questions which must be taken into account in the formulation of social policy--questions of values and questions of fact. While research of the

type reported here can do much to resolve the questions of fact, the value issues by their very nature are not subject to empirical resolution; and since they may well prove to be the more decisive for public policy, at least in the near future, it is worth considering briefly what some of those issues are.

Victimless Crime. The drug control laws raise some important questions of social and legal philosophy, perhaps the most fundamental of which is whether it is appropriate for a society to punish people for acts which are primarily of consequence to themselves, "victimless crimes." Many argue that drug use is a victimless crime (even in the cases where there are known detrimental effects for the user) and that criminalizing such behavior is an unreasonable and unnecessary abridgement of individual freedoms. They argue that citizens should be free to make an informed choice of whether or not to use drugs as they please. Presumably cigarette smoking is currently legally sanctioned under such a rationale. The same is true for alcohol use.

Although it is not immediately obvious, the "victimless crime" position is compatible with the argument presented above that promotion and advertising of drugs should be banned. The promotion of a product which might have deleterious effects on the user is not really a "victimless" act since the actor and the potentially injured are different parties; therefore, to prohibit the promotion and advertising of such a product is not to create a victimless crime.

Neither is the "victimless crime" position incompatible with a public policy of trying to *dissuade* people from using drugs, as long as the final decision remains with the individual. In Great Britain, for example, there has been a government funded anti-smoking campaign for some time, yet the sale and use of cigarettes still

remains legal. Such a campaign presumably enables individuals to make more informed decisions about their own use of such drugs.

Positions of Faith and Prejudice. A related value question, of at least apparent relevance to current controversy about drug laws, concerns whether the use of psychoactive drugs is intrinsically immoral *irrespective* of the consequences for the individual or the society. However, such a position is hard to defend with any logical consistency if its advocates find the use of selected psychoactive substances (e.g., alcohol, caffeine, tobacco) acceptable. To argue that the use of the drugs one personally disdains is intrinsically immoral, but that the use of other drugs is not, is more a statement of personal prejudice than of any consistent religious doctrine.

There are certain religious sects which universally condemn the use of all psychoactive substances (including caffeine and alcohol) on strictly religious grounds. However, their numbers are small, thus their political and religious influence on the nation as a whole have been minimal. Even were their numbers large, there would still be an ethical question of whether they should impose the proscriptions of their religion upon those of other faiths.

Consistency in the Law. Still another type of value issue related to drug laws concerns the motives behind the imposition of legal penalties for drug use. A number of observers feel that the American "establishment" has cracked down hard on the use of illicit drugs--particularly marijuana--not for the reasons publicly given but for other, less legitimate and less obvious ones. They find an inconsistency between the argument that the use of marijuana and other drugs should be legally proscribed for reasons of health and public safety, while alcohol and tobacco can be legally used, sold, and promoted despite their astonishing consequences for the health and safety of the population at large. These critics contend

that existing drug laws are really a way of striking back at individuals and groups who fail to conform to the traditional American values and life styles.*

The data presented in Chapter 7 of this volume, along with the other findings cited there, demonstrate beyond any reasonable doubt that for many young people, the use of certain drugs is a manifestation of their adherence to the "hang-loose ethic" or membership in the loosely-defined "counter-culture." Suchman (1970) stated rather eloquently the position that existing marijuana laws are really a disguised, punitive response to the emergence of that ethic or counter-culture.

...Our data would strongly suggest that use of marijuana is predominantly a social act favored by a subgroup in our society which happens to be disenchanted with the established order and for whom such use has become simply a normal preference for their own particular recreational drug (Simmons, 1967). To crack down on these youth with all of the powerful forces of law and order and to justify such a restriction of freedom in the name of preventing crime or disease seems more an uncontrolled expression of adult moral indignation and righteousness than of

*There is a related type of public hypocrisy suggested, as well. Currently over one-third of an age group is committing a "serious crime" in using and possessing illegal drugs, primarily marijuana. One must ask: would this society, if it could, put a third of a generation in jail? And if not, who gets to decide which of our young people get selected to pay for their "crimes"? If it is the police, is there any expectation that the law will be enforced equally and without prejudice, or would we not predict an overrepresentation among the convicted of people with long hair, unusual dress, particular political beliefs, or black skin? Such selective enforcement by those in authority is certain to result in greater alienation--not just of the "victims," but of those who care about the victims or simply about justice itself. Surely, Prohibition proved beyond any doubt that when large segments of the population disagree with the legitimacy of a constraining law, respect for the law in general is diminished, effective enforcement becomes practically impossible, and the law comes to be enforced selectively to achieve purposes other than those for which it was intended.

human concern or social justice--and, sadly, an ineffective and destructive expression at that (Lindesmith, 1965). While there can be little question that the "hang-loose" ethic is contrary to the Protestant ethic and the spirit of capitalism, and may be socially disapproved for that and other reasons, the issue, it seems to us, should be openly faced and debated as one of conflicting social values and not of crime or health. As formulated by Simmons (1967), 'It (the marijuana issue) seems to be the pivot around which far deeper conflicts and confrontations are raging--oldsters versus youngsters, hippies versus straight society, administered morality versus personal freedom.'

Surely, it should be possible to express one's disapproval of marijuana and to seek its control without making its use a crime against society. (pp. 39-40)

This basic argument has been advanced by others in addition to Suchman, most notably the President's Commission on Marijuana and Drug Abuse.* While it has a compelling quality and should certainly be given very serious consideration, it is undoubtedly an oversimplification of the issue. Most Americans probably *do* disapprove of the hang-loose ethic and may support restrictive drug laws at least in part for that reason; *but* they also appear to be genuinely concerned about the deleterious consequences of drugs (including marijuana) for both the individuals using them and the society at large. (Their concern about the effects of marijuana has already been dramatically illustrated in the results of the CBS survey cited at the beginning of this section.) Therefore, the problem is certainly not only one of conflicting values and life styles, though they undoubtedly do play a central role; but it is also one of conflicting beliefs about the effects of drug use. Both types of conflict must be acknowledged, and both must be addressed, before any type of general consensus about policy issues can be expected to emerge in this country.

*The report of the Commission is treated in the Epilogue to this volume.

A CLOSING NOTE

As the preceding section has attempted to demonstrate, the assessment and change of public policy in the area of drugs involves an extremely complex set of factors, ranging from value conflicts within the society, to issues of fact, to the degree to which policy makers and the public are informed about the issues and the facts. The present volume has attempted primarily to address factual questions, while reviewing only briefly some of the related value concerns.

All in all, it was found that the amount of non-addictive illegal drug use has been much less for American young people than the media had been suggesting and that its effects are far less serious than most Americans had assumed. Clearly there *has* been an important generational change in this area, with an increasing proportion of American youth being interested in (and tolerant of) the use of psychoactive drugs. However, as of mid-1970 the vast majority of the age group studied here were still cautious about illegal drugs and not deeply involved in them; and most of those who were involved made important distinctions between the different drugs and the different degrees of usage. In a phrase, contemporary American youth have been shown once again to be less radical (or more traditional) than their public image would indicate. In fact, their continuing adherence to certain *traditional* practices--namely, the widespread use of alcohol and cigarettes--may ultimately be the most important fact about youthful drug practices to emerge from this study, at least from the perspective of health and public safety.

Epilogue

Report of the Presidential Commission

Subsequent to the completion of most of the text of this volume, the Presidentially appointed National Commission on Marijuana and Drug Abuse issued the first of its two reports. It is a comprehensive treatment of the history of marijuana use in this country, the social and medical issues involved, and the body of related research. The Commission concluded that, weighing all of the relevant factors, the use and possession (but not the sale) of marijuana should be decriminalized. The Commission, considered by most observers to be fairly conservative in its composition, took the position that marijuana use should be discouraged, but that attaching criminal penalties is too inefficient and socially costly a method for doing it. As the title of the report--*Marijuana: A Signal of Misunderstanding*--indicates, they also concluded that the marijuana issue had become a symbol of a much wider array of cultural and moral divisions, and that the debate about marijuana per se had been greatly clouded and distorted as a result. They concluded that it would be highly desirable to "desymbolize" and "demythologize" the issue.

Just prior to the release of their report, President Nixon flatly rejected the Commission's primary policy recommendation, the

decriminalization of use and possession (in small quantities) of marijuana. Subsequent surveys have indicated that the majority of the American public agree with his position, a not very surprising fact in view of the massive public misinformation about the drug cited in Chapter 8.

Since the Commission sponsored a national survey on drug use and included the results dealing with marijuana in the first report, it is worth noting some of the points of convergence or relevance to the present study.

The Commission estimated that about 24 million Americans over the age of 11, or approximately one-ninth of the total population, had at least tried marijuana. Consistent with other surveys, they found the incidence of active use to be highest in the 18 to 21 year old group (40%) versus 12% or less for all ages above 30. They also found that sex differences, which have historically been about two to one, with males being heavier users, are diminishing. Virtually all of the Commission's findings regarding marijuana use in relation to demographic and background characteristics are consistent with the results of the present study. They reported that marijuana use does not differ substantially by race, is higher in the more urban areas, varies considerably by region (lowest rates in the South, highest in the West and Northeast), and is higher among the higher socioeconomic levels.

Regarding patterns of multiple drug use, the Commission found, as did the present study, that the use of all other illegal drugs was higher than average among marijuana smokers and that the consumption of cigarettes and alcoholic beverages was also positively associated with marijuana use. They further discovered that marijuana users tend also to be heavier users of a number of legal drugs not treated in the present study; namely, over-the-counter prescription pain relievers, tension relievers, sleeping pills, and

stimulants. This finding gives further support to the notion presented in Chapter 2 that there is a basic personality characteristic which can be described as a propensity to use (or avoid the use of) psychoactive substances.

The Commission not only attempted to desymbolize and demythologize the issue of marijuana, they suggested in conclusion that it be "deemphasized" as a social problem.

Considering the range of social concerns in contemporary America, marijuana does not, in our considered judgement, rank very high...The existing social and legal policy is out of proportion to the individual and social harm engendered by the use of the drug. To replace it, we have attempted to design a suitable social policy, which we believe is fair, cautious, and attuned to the social realities of our time. (pp. 210-211)

A second report from the Commission, dealing with a number of illegal drugs other than marijuana, is due for release in 1973.

Appendix A

Methodological Issues: Representativeness and Validity

This appendix treats in considerably more detail two important methodological issues already discussed in Chapter 1, namely the question of whether the panel retained from the original national sample is in fact still representative, and whether the responses provided by our respondents concerning their own drug use were honest and valid.

REPRESENTATIVENESS OF THE SAMPLE

Because all of the data discussed in this book are based on members of the sample who remained in the study through the fourth data collection, it is reasonable to ask just how representative the retained sample is. As Table A-1 indicates, 71% of the original panel were still participating in the study some three and one-half years after the initial data collection. This represents an excellent retention rate for a panel study and, it might be added, even compares favorably to many one-time cross-sectional surveys. Nevertheless, there had still been a loss of 29%.

TABLE A-1
Panel Retention Across Time

	<u>Number of Respondents</u>	<u>% of Original Sample (N=2277)</u>	<u>% of Time 1 Panel (N=2213)</u>
Time 1 (Fall, 1966)	2213	97.2%	100%
Time 2 (Spring, 1968)	1886	82.8%	85.2%
Time 3 (Spring, 1969)	1799	79.0%	81.3%
Time 4 (Summer, 1970)	1571*	69.0%	71.0%

* This number excludes 49 respondents who were contacted via mail and were, therefore, not asked to provide drug information although they did provide other data. All were in military service overseas.

Reasons for Loss from the Time 4 Panel

	<u>Number of cases</u>	<u>% of Loss</u>
Too far from Interviewer	187	29%
Could Not Locate Address	83	13%
Could Not Contact or Did Not Show Up	155	24%
Refused (at Time 4 or earlier)	205	32%
Deceased	10	2%
Reason Undetermined	2	-
	<hr/> 642	<hr/> 100%

Causes of Panel Attrition

To evaluate the importance of that loss, it is necessary to understand the reasons for panel attrition. Respondents who move present the most serious problem for panel studies. In this study, our policy was to seek the continued participation of a respondent as long as he resided within a fifty mile radius of any of our interviewers. Those who moved farther were lost to the study. Altogether 42% of those lost from the panel either moved out of range or could not be tracked down at new addresses.

While a number of respondents left the study of their own choosing, either by directly withdrawing from the study at some point or simply not showing up for a scheduled interview, a number in the latter group were undoubtedly lost due to other reasons. Sickness, hospitalization, imprisonment, and travel accounted for some. Nevertheless, moving out of range was probably the single most important factor, particularly in the year after high school when a number of young men were in military service overseas or in remote areas of the United States.

Overall, it is the impression of the investigators that no major group has been so massively underrepresented in the retained sample that it would seriously affect most population estimates. Table A-2, for example, compares the composition of the original panel with the composition of the retained panel along a number of important dimensions which are discussed later in this book. One can readily see that, with the exception of dropouts, the major subgroups on each variable continue to comprise very similar proportions of the sample. Dropouts do decline from an estimated 18% of the original sample to 10% of the retained group.

TABLE A-2
Comparison of the Retained Sample with the Original Sample*

	<i>Percentage Composition</i>	
	<u>Original Sample</u> (N = 2213 ^{**})	<u>Retained Sample</u> (N = 1571)
<u>Region of the Country</u>		
West	15%	15%
North Central	31	31
Northeast	23	23
South	31	31
<u>Community Size</u>		
Rural	24%	25%
Small Town	19	19
Small City	15	14
Medium City	11	11
Suburb	20	20
Large City	11	11
<u>Socioeconomic Level</u>		
a. Low	22%	20%
b.	27	27
c.	26	27
d.	15	16
e. High	7	8
Missing Data	3	3
<u>Intelligence (Quick Test)</u>		
a. Low	9%	8%
b.	19	18
c.	37	37
d.	27	28
e. High	8	9

* The retained sample on the fourth data collection contained 73% of the original responding sample, which in turn was comprised of 97% of the individuals initially asked to participate.

** The weighted number of cases for the original and retained samples respectively are 2519 and 1798.

<u>Intactness of Family</u>		
Intact	80%	82%
Broken by Death	8	7
Broken by Divorce	13	11
<u>Race</u>		
Whites	87%	88%
Blacks (Integrated Schl.)	3	3
Blacks (Segregated-North)	3	3
Blacks (Segregated-South)	6	6
Others	2	1
<u>Delinquency (Self-Reported in Tenth Grade)</u>		
a. Low	22%	22%
b. Medium	56	56
c. High	22	22
<u>High School Completion</u>		
Stay-ins	82%	90%
Dropouts	18+	10

⁺Based on detailed estimates presented in Bachman (1971, p. 22).

Effects of Reweighting on Population Estimates

An extensive investigation was made to determine the effects of differential loss rates for various subgroups, such as dropouts. By reweighting the respondents in each subgroup on a variable to achieve representation proportionate to that observed in the original panel, we were able to calculate adjusted estimates of drug use in the whole sample. The adjustments all turned out to be extremely minor. For example, when we reestimated the percent using marijuana during high school by reweighting the subgroups according to level of education achieved (dropouts, high school graduates, and college entrants), we derived a 22% usage rate for the entire sample instead of the 21% uncorrected value.

Table A-3 gives the corrected and uncorrected usage levels on several drugs for which corrections were calculated using 27 subgroups.* The 27 subgroups are those which result when the sample is trichotomized on three different variables simultaneously (a 3 x 3 x 3 table results). The particular variables were chosen because they were known to relate both to drug usage rates and to non-participation rates; therefore, they would show the greatest main effects and perhaps be good candidates for any important interaction effects resulting from the corrections. As Table A-3 indicates, the corrections in sample usage rates emerging from this complex correction procedure are very small.**

*I would like to thank my colleague, Patrick O'Malley, for conceptualizing and running the analyses presented in Table A-3.

**One important assumption which underlies the inferences made from Appendix A should be stated explicitly. We used the data from the comparable participants who stayed in the study to estimate the drug use data we *would* have received from those who left the study. However, if drug use is itself somehow related to leaving the study, independently of its relationship to correction variables, then the data from respondents would not accurately represent the non-respondents. In this appendix I have made the

TABLE A-3

Reweighting Respondent Data to
Correct for Differential Non-Participation
Rates on Grades, Delinquency, and School Size

	Percent Using*		
	<u>Corrected</u>	<u>Uncorrected</u>	<u>Difference</u>
Marijuana Use After High School	19.3%	18.9%	.4%
Amphetamine Use During High School	10.4%	9.6%	.8%
Amphetamine Use After High School	14.5%	13.6%	.9%
Use of Any Serious Drug After High School	18.3%	17.2%	1.1%
Cigarette Use During High School	36.6%	34.7%	1.9%
Cigarette Use After High School	41.1%	39.3%	1.8%

Note: To create this table, the sample was divided into 27 subgroups by trichotomizing it in each of three variables: academic grades at Time 1, total delinquency at Time 1, and size of high school attended. The Time 4 participants from each cell were reweighted to achieve the number of Time 1 respondents in that cell; then new drug usage rates for the sample were calculated using the corrected cell n's and the observed usage rate in each cell.

* Unlike most of the statistics presented in this volume, these numbers are based on unweighted data. There were 1521 respondents at Time 4 from whom we had data on all three independent variables.

Estimating Relationships

Two different types of error or false conclusions are of concern as we try to assess the effects of panel mortality on the representativeness of a sample. The first, which was just addressed, involves estimates of population statistics such as the percent using a drug. The second involves the accuracy with which we assess *relationships* between variables.

For instance, there is a sharp negative relationship between academic grades in high school and marijuana smoking, i.e., those with low grades use more. Those with low grades are also more likely to drop out of the study. The question, then, is whether systematically underrepresenting such people at Time 4 affects the shape (direction and severity) of the relationship between marijuana and grades as determined by figures of the type used in this volume. The answer is that it does not, as long as the participants from each grade category are reasonably representative of the non-participants from the same categories--an assumption we do make. Only if there were an interaction between grades and marijuana use--such as a *disproportionate* number of marijuana smokers with low grades who left the study--would the observed relationship between grades and marijuana be altered.* If this latter situation is

assumption that drug use is not itself a cause of non-participation. I believe this is a reasonable assumption for all drug users except those who are actually addicted to drugs. Since it seems likely that actual addicts constitute an extremely small proportion of all drug users, estimates of user populations should not be changed substantially by the under-representation of such individuals, if it did occur.

*Estimates of the explanatory power of a variable in any given population (e.g., percent of variance explained) could be affected in such a case, in proportion to the strength of the relationship between the variables and the degree of underrepresentation. However, not a great deal of emphasis is given to such statistics in this volume.

rather rare, and we are assuming that it is, we can conclude that the basic shape of most relationships between pairs of variables will not be changed by differential attrition in the various sub-groups.

Conclusion

In summary, then, all of the inferential data that we can bring to bear on the question of representativeness suggests that the sample upon which this book is based is adequate to yield quite good estimates of population statistics and the shapes of basic relationships. Estimates of proportions of variance explained by particular variables in the general population may be somewhat biased; but primarily for variables like dropping out, where the people in one classification of the variable are severely under-represented. Of the variables examined in this book, dropping out is the only one having very severe underrepresentation in particular categories.

VALIDITY OF THE SELF-REPORTED DRUG-USE DATA

The representativeness of the sample is but one potential source of inaccuracy in survey data. Another is the validity of the information secured from respondents, irrespective of whether or not they constitute a representative sample.

Probably the major question to be raised about the validity of the drug data is whether the respondents have honestly reported their own use of illegal drugs.. Since no special validity study was built into this survey, we again have to make inferences from the situation, the data themselves, and relevant findings from other studies.

The Situation

The situation in which questions about drug use were to be presented to the respondents was a matter of some concern to the investigators, and a very conscious effort was made to facilitate honest responding. Recall that all questions specifically concerning drugs were gathered at the fourth data collection at a location affording maximum privacy. The respondent first received a personal interview which covered a wide range of subjects, from his feelings about national problems to his personal plans for a career and marriage. He then completed a lengthy questionnaire dealing with a wide array of attitudes, values, and affective states, at the end of which he received the special Confidential Information Questionnaire containing the questions on drugs.

Respondents were familiar with this instrument because they had filled out a Confidential Information Questionnaire on three previous occasions. At those times it contained a standard set of about twenty-five questions on delinquency. This time it began with the same set of delinquency questions which were then followed by four pages of questions on drugs. The full questionnaire is presented in Appendix B.

It did not contain the respondent's name on it anywhere, only a code number which he knew had been assigned to him. The interviewer handed him the Confidential Information Questionnaire along with a small envelope containing the same code number. The respondent was asked to read the directions on the cover and, upon completion of the questionnaire, to seal it in the small envelope himself. He was then to place the sealed envelope in a larger mailing envelope along with his other materials. The mailing envelope was addressed to the Survey Research Center in Ann Arbor.

The interviewer's last statement before having the respondent begin the questionnaire was, "Let me remind you once again that your answers are *strictly private*." The interviewer was then instructed to sit where she could not see what the respondent was writing.

The respondent first read an introduction to the whole questionnaire which was intended to further assure him of the confidentiality of his information and of the importance of honest answers. (See Appendix B for the exact instructions.) After completing twenty-one questions on a wide variety of delinquent behaviors, he then received the short statement given below, which introduced him to the section dealing with drugs.

The rest of this questionnaire deals with drugs. There is a lot of talk, but very little accurate information about drugs. We need to learn much more about the actual experiences and attitudes of young men your age.

We hope you will answer all of these questions. However, if you find a question which you cannot answer honestly, we would prefer that you leave it blank.

Remember, your answers will never be connected with your name -- they are put into a form which cannot be traced back to you as an individual.

We encouraged respondents to omit answers rather than lie so that we could assess the number who were unwilling to answer such information and so that dishonest answers would not be confounded with honest ones. The reader must judge for himself whether he thinks the situation is one which would evoke honest answering, or at least a willingness to refrain from answering rather than lying.

Findings Relevant to the Validity of the Answers

One particularly important type of finding in light of the above instructions, is the non-response rate obtained on the questions concerning drug use. The results, fortunately, are very encouraging. For the ten questions asking about the respondent's own drug use, the average percentage of non-respondents is 1.55%. The average missing data for the four questions concerning the use of legal drugs (alcohol and cigarettes) about which there should be less motivation to lie, was also exactly 1.55%. Furthermore, this level of missing data is just about average for the whole drug questionnaire *and* for the other questionnaires dealing with entirely unrelated issues. Thus, we must conclude either that (a) the respondents as a group were being as cooperative in providing this sensitive information as they were in providing most other types, or that (b) *all* who felt they could not be honest were intentionally and totally ignoring the instructions to leave these questions blank. The fact that the missing data percentages are *so* typical, even given the special instructions, inclines me toward the former explanation.

Another finding which tends to bolster our confidence in the validity of these data is that a very substantial percent do admit to using at least one of the five illegal drugs at some time. Close to 40% admit using one of them at least once. If we assume that people who would admit to using one illegal drug would probably admit to all that they have tried, then we might reasonably deduce that at least this 40% have supplied valid data on all of their drug-use questions.

As indicated in Chapter 3, the attitudes of most of this population of young men toward illegal drugs turn out to be conservative enough that we would really not expect more than 40% to have used any of them. Assuming that the attitudinal data are

themselves valid (there would seem no incentive for respondents to intentionally bias them under non face-to-face conditions), we have one more piece of evidence that the drug-use data are also valid.

Another type of finding which reflects on the validity of the drug use measures concerns their relationship to other variables. A measure is said to have construct validity when it relates in expected ways to measures of other concepts. In chapters 4, 5, and 7, we show that our measures of drug use bear a strong relationship to a number of other variables and in ways that have been hypothesized or replicated by other investigators. Each drug-use measure also shows a very strong relationship to reported usage of the same drug by friends, as we would expect. (In fact, friends' usage has been used by some investigators as a surrogate for own usage, based on the assumption that it would elicit more honest responding.) Thus we have some rather impressive evidence of the construct validity of our measures.

Other Studies on Validity and Reliability

Although no study of validity was built into this survey, two other survey studies of a similar nature did have such components. The most relevant was reported by Josephson, Haberman, and Zanes (1971) and was conducted in preparation for the survey by Elinson, mentioned in Chapter 1.

Roughly 1,000 students in two metropolitan East Coast high schools were administered drug questionnaires with varying degrees of anonymity. One version was totally anonymous, one version contained a coded number based on the respondent's name and birth-date, and the third version contained the respondent's name. To the surprise of the investigators, the situation providing the greatest anonymity did not yield the most self-reported usage. If

anything, complete anonymity may have reduced the honesty of reporting, since that group reported the least usage of the three randomly chosen groups. In any case, it would appear from their findings that the absence of complete anonymity in our own study was not a handicap and, in fact, may have facilitated honesty in responding.*

Those investigators also reported some evidence for the reliability of this data, at least at the aggregated level. They re-interviewed 205 students at one school two weeks after the initial interview and found almost identical proportions reporting varying amounts of marijuana use.

Another study (Gold, 1970), which is described in more detail in Chapter 7, indicated that the large majority of adolescents who were identified as unapprehended juvenile offenders admitted such offenses to interviewers. While the questions were not specific to drug use, a wide range of other illegal activities was involved in the interview. Gold found little evidence of differential "truthtelling" by race or socioeconomic level.**

*One might conjecture from these findings that dishonesty in the direction of exaggerating drug use may be involved when the respondent is identified. However, a question asking about use of a fictitious drug was included to check for such a possibility; and it drew an affirmative response from less than 1% of the sample, yielding little evidence of exaggeration. Other studies have turned up similar findings using fictitious, but plausible sounding, drug names.

**Gold is now undertaking a second validity study on self-respect of delinquent behavior, and it will include drug-use among the validated variables.

Conclusion

The major conclusion we draw then, both from our own findings and from the most relevant findings of others, is that the information given by our respondents concerning drug use was probably quite honestly reported. Like most major studies on the subject, we cannot quantify the validity of the data nor say for certain that it is extremely accurate, but all inferential evidence we have brought to bear seems to be encouraging.

Appendix B

Confidential Information Questionnaire

Your code number: _____

PART J

CONFIDENTIAL INFORMATION QUESTIONNAIRE

The questions on the next three pages deal with a part of young men's lives we don't know very much about -- the things they do which may be against the rules or against the law. The questions here are about things other young men have told us they've done which could get them into trouble.

Some of these things may be difficult for you to answer; they may be things you've told very few people. But, if we're going to understand young men all across the country, then each person must answer as honestly as he can.

Just as before, no one outside the research staff will see your answers. This sheet will have only a number to identify it and your name will not be used with it. When these questionnaires are received, the information is put into a form which can never be traced back to you as an individual.

WHEN YOU HAVE FINISHED THIS QUESTIONNAIRE, PLACE IT IN THE SPECIAL ENVELOPE AND SEAL IT. REMEMBER, EVERYTHING YOU WRITE DOWN IS COMPLETELY CONFIDENTIAL -- NOT EVEN THE INTERVIEWER WILL SEE YOUR ANSWERS!

Here are a number of things which you might do that could get you into trouble. Please tell us how many times you have done these things in the last year. For each question, put a check in the box next to the answer that is true for you.

(CHECK ONE BOX ON EACH LINE)

In the last year, how often have you done this?

5 or more times
3 or 4 times
Twice
Once
Never

(1) (2) (3) (4) (5)

- (9:16) 1. Gotten into a serious fight in school or at work . . . ☐ ☐ ☐ ☐ ☐
- (9:17) 2. Taken something not belonging to you worth under \$50 . ☐ ☐ ☐ ☐ ☐
- (9:18) 3. Went onto someone's land or into some house or building when you weren't supposed to be there. ☐ ☐ ☐ ☐ ☐
- (9:19) 4. Set fire to someone else's property on purpose ☐ ☐ ☐ ☐ ☐
- (9:20) 5. Gotten something by telling a person something bad would happen to him if you didn't get what you wanted. ☐ ☐ ☐ ☐ ☐
- (9:21) 6. Argued or had a fight with either of your parents. . . ☐ ☐ ☐ ☐ ☐
- (9:22) 7. Run away from home ☐ ☐ ☐ ☐ ☐
- (9:23) 8. Gotten into trouble with police because of something you did. ☐ ☐ ☐ ☐ ☐
- (9:24) 9. Hurt someone badly enough to need bandages or a doctor ☐ ☐ ☐ ☐ ☐
- (9:25) 10. Damaged school property on purpose ☐ ☐ ☐ ☐ ☐
- (9:26) 11. Taken something from a store without paying for it . . ☐ ☐ ☐ ☐ ☐
- (9:27) 12. Hit an instructor or supervisor. ☐ ☐ ☐ ☐ ☐
- (9:28) 13. Drunk beer or liquor without parents' permission . . ☐ ☐ ☐ ☐ ☐
- (9:29) 14. Hit your father. ☐ ☐ ☐ ☐ ☐

In the last year, how
often have you done this?

		5 or more time	3 or 4 times	Twice	Once	Never
		(1)	(2)	(3)	(4)	(5)
(9:30)	15. Taken a car that didn't belong to someone in your family without permission of the owner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:31)	16. Taken an expensive part of a car without permission of the owner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:32)	17. Taken part in a fight where a bunch of your friends are against another bunch	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:33)	18. Hit your mother	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:34)	19. Taken something not belonging to you worth over \$50 .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:35)	20. Taken an inexpensive part of a car without permission of the owner.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:36)	21. Used a knife or gun or some other thing (like a club) to get something from a person.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The rest of this questionnaire deals with drugs. There is a lot of talk, but very little accurate information about drugs. We need to learn much more about the actual experiences and attitudes of young men your age.

We hope you will answer all of these questions. However, if you find a question which you cannot answer honestly, we would prefer that you leave it blank.

Remember, your answers will never be connected with your name -- they are put into a form which cannot be traced back to you as an individual.

(CHECK ONE BOX ON EACH LINE)

		All	Most	Some	A few	None
		(1)	(2)	(3)	(4)	(5)
22.	How many of your friends would you estimate:					
(9:37)	(a) Smoke cigarettes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:38)	(b) Smoke marijuana (pot, grass) or hashish.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:39)	(c) Take amphetamines (pep pills, bennies, speed, uppers).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:40)	(d) Take barbiturates (yellow jackets, red devils, downers)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:41)	(e) Take heroin (smack, horse, "H").	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:42)	(f) Take hallucinogens (LSD, mescaline, peyote, etc.).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:43)	(g) Drink alcoholic beverages (liquor, beer, wine) .	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

23. How often have you done this during part or all of the last year for other than medical reasons?

Nearly every day
Once or twice a week
Once or twice a month
3-10 times a year
Once or twice a year
Never

(1) (2) (3) (4) (5) (6)

- (9:44) (a) Smoked cigarettes ☐ ☐ ☐ ☐ ☐ ☐
- (9:45) (b) Smoked marijuana (pot, grass) or hashish. . . ☐ ☐ ☐ ☐ ☐ ☐
- (9:46) (c) Taken amphetamines (pep pills, bennies, speed, uppers). ☐ ☐ ☐ ☐ ☐ ☐
- (9:47) (d) Taken barbiturates (yellow jackets, red devils, downers). ☐ ☐ ☐ ☐ ☐ ☐
- (9:48) (e) Taken heroin (smack, horse, "H"). ☐ ☐ ☐ ☐ ☐ ☐
- (9:49) (f) Taken hallucinogens (LSD, mescaline, peyote, etc.) ☐ ☐ ☐ ☐ ☐ ☐
- (9:50) (g) Used alcoholic beverages (liquor, beer, wine) ☐ ☐ ☐ ☐ ☐ ☐

24. Previous to this past year (that is, before last summer), how often had you done this for other than medical reasons?

Nearly every day
Once or twice a week
Once or twice a month
3-10 times a year
Once or twice a year
Never

(1) (2) (3) (4) (5) (6)

- (9:51) (a) Smoked cigarettes ☐ ☐ ☐ ☐ ☐ ☐
- (9:52) (b) Smoked marijuana (pot, grass) or hashish. . . ☐ ☐ ☐ ☐ ☐ ☐
- (9:53) (c) Taken amphetamines (pep pill, bennies, speed, uppers). ☐ ☐ ☐ ☐ ☐ ☐
- (9:54) (d) Taken barbiturates (yellow jackets, red devils, downers). ☐ ☐ ☐ ☐ ☐ ☐
- (9:55) (e) Taken heroin (smack, horse, "H"). ☐ ☐ ☐ ☐ ☐ ☐
- (9:56) (f) Taken hallucinogens (LSD, mescaline, peyote, etc.) ☐ ☐ ☐ ☐ ☐ ☐
- (9:57) (g) Used alcoholic beverages (liquor, beer, wine) ☐ ☐ ☐ ☐ ☐ ☐

People differ in how they feel about individuals doing certain things. How do you feel about people your age doing each of the following things?

(CHECK ONE BOX ON EACH LINE)

		Strongly approve	Approve	I feel neutral	Disapprove	Strongly disapprove	I CAN'T SAY, UNFAMILIAR WITH DRUG
		(1)	(2)	(3)	(4)	(5)	(6)
(9:58)	25. Smoking one or more packs of cigarettes per day	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:59)	26. Trying marijuana (pot, grass) once or twice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:60)	27. Smoking marijuana occasionally.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:61)	28. Smoking marijuana regularly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:62)	29. Trying LSD once or twice.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:63)	30. Taking LSD regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:64)	31. Trying heroin (smack, horse, "H") once or twice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:65)	32. Taking heroin occasionally.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:66)	33. Taking heroin regularly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:67)	34. Trying a barbiturate (yellow jacket, red devil, downer) once or twice.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:68)	35. Taking barbiturates regularly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:69)	36. Trying an amphetamine (pep pill, bennie, speed, upper) once or twice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:70)	37. Taking amphetamines regularly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:71)	38. Trying alcoholic beverages (liquor, beer, wine) once or twice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(9:72)	39. Drinking alcoholic beverages regularly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(9:73) 40. How difficult do you think it would be for you to get marijuana (pot, grass) if you wanted some?

- ☐ (1) Probably impossible
☐ (2) Very difficult
☐ (3) Fairly difficult
☐ (4) Fairly easy
☐ (5) Very easy

(9:74) 41. How difficult do you think it would be for you to get heroin (horse, "H") if you wanted some?

- ☐ (1) Probably impossible
☐ (2) Very difficult
☐ (3) Fairly difficult
☐ (4) Fairly easy
☐ (5) Very easy

42. If you found yourself "hooked" on a drug or otherwise needed help related to drugs, would you be likely to turn to any of the following sources for help?

Yes
Maybe
No
(1) (2) (3)

(10:16)	(a) Father or mother	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(10:17)	(b) Sister or brother.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(10:18)	(c) Other relative	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(10:19)	(d) A friend your age.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(10:20)	(e) Doctor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(10:21)	(f) A drug clinic.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(10:22)	(g) Counselor where you work or go to school	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(10:23)	(h) A teacher or supervisor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(10:24)	(i) Minister, priest, or rabbi	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(10:25)	(j) Other (PLEASE WRITE IN) _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
(10:26)	(k) Other (PLEASE WRITE IN) _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- READ INSTRUCTIONS ON BACK COVER -

INSTRUCTIONS

Now place this questionnaire in the small envelope, seal it, and place it into the large mailing envelope. DO NOT SEAL the large mailing envelope yet. Tell the interviewer that you have finished and are now ready for the next step.

Appendix C

Multivariate Summary Statistics

The results of the Multiple Classification Analyses, in which the effects of each variable have been adjusted to estimate what they would have been "if other things were equal," have been discussed throughout Chapters 4, 5, and 6; and the adjusted subgroup usage levels resulting from those analyses have been indicated by carats (►) in the bar graphs.* The summary statistics resulting from the MCA runs reported in those chapters are presented here.

The tables in this appendix give (1) the percent of variance explained by each independent variable taken alone in predicting to the use of each drug (Eta^2), (2) an estimate of the percent of variance which would be explained by each independent variable taken alone if the other independent variables in the set were uncorrelated with it (Beta^2), and (3) the percent of variance accounted for by the whole set of independent variables predicting to each drug, after adjusting for degrees of freedom (R^2 , adjusted).

*For an overview of the rationale of the MCA procedure, see the section entitled "Introduction to a Multivariate Analysis Technique: MCA" at the beginning of Chapter 4.

Differences in usage between subgroups have been emphasized in the text, since they are more easily understood than summary statistics. With them, one cannot only know what the differences are, but can make an intuitive judgment as to their importance. Furthermore, summary statistics have the disadvantage that they are influenced heavily by the number of cases in subgroups and by the skewness of the variable in question.*

Nevertheless, these statistics do represent what they are intended to represent; namely, the percent of variance accounted for in a normal population of young men when predicting to a dichotomous drug use variable (e.g., use vs. non-use of marijuana). From them we can find evidence of reduction of effects due to controlling for other things (when the Beta^2 is substantially lower than Eta^2) and the augmentation (unmasking) of effects due to controlling for other things (when the Beta^2 is larger than the Eta^2). And, of course, they tell us the total variance we can account for with any particular set of independent variables, or the amount by which we can increase the explained variance by adding additional variables to the set.

Tables C-1 through C-3 give the summary statistics resulting from the MCA runs reported in Chapters 4 through 6 respectively. Note that Tables C-1 and C-3 deal with drug use *after* high school while C-2 involves drug use *during* high school. In Table C-3 the variables labeled "school size" and "urbanicity" are slightly less

*Thus, even if a group is highly deviant in drug use, it cannot explain much variance unless it has a substantial number of cases in it--even though one may judge the difference to be important in terms of increasing our understanding of the phenomenon. And with a highly skewed dichotomous variable (as are most of our drug-use variables) there is a theoretical limit on the percent of variance which can be accounted for using a more normally distributed predictor (as are most of our predictors).

TABLE C-1

Multivariate Analysis (MCA) Predicting to the Use
of Each Drug in the Year After High School
Using Background Variables

	Marijuana*		Hallucinogens*		Amphetamines*	
<i>Predictor Set</i>	<i>Eta²</i>	<i>Beta²</i>	<i>Eta²</i>	<i>Beta²</i>	<i>Eta²</i>	<i>Beta²</i>
Socioeconomic Level	.023	.012	.018	.008	.011	.008
Intelligence (QT)	.012	.006	.024	.016	.005	.005
Region	.040	.027	.016	.010	.014	.009
Urbanicity	.032	.013	.018	.013	.026	.024
Race/Region/Segregation	.008	.011	.003	.005	.002	.005
Broken Home	.008	.007	.002	.002	.002	.001
Mover at Some Time	.004	.001	.000	.001	.005	.003
R (adj.)	.279		.219		.200	
R ² (adj.)	.078		.048		.040	
Percent Variance Explained	.093		.064		.056	

Table C-1 Cont'd

<i>Predictor Set</i>	Barbiturates*		Heroin*		Alcohol**		Cigarettes**	
	Eta^2	Beta^2	Eta^2	Beta^2	Eta^2	Beta^2	Eta^2	Beta^2
Socioeconomic Level	.009	.008	.008	.008	.003	.003	.010	.009
Intelligence (QT)	.003	.002	.011	.006	.002	.002	.008	.006
Region	.008	.005	.001	.001	.001	.001	.013	.017
Urbanicity	.017	.016	.006	.004	.008	.009	.002	.005
Race/Region/Segregation	.009	.010	.019	.015	.005	.003	.008	.010
Broken Home	.004	.001	.000	.001	.000	.000	.001	.001
Mover at Some Time	.005	.002	.004	.003	.001	.002	.004	.003
R (adj.)	.174		.152		.047		.175	
R ² (adj.)	.030		.023		.002		.031	
Percent Variance Explained	.046		.039		.018		.046	

* The dependent variable is a dichotomy (any use vs. non-use).

** The dependent variable is a dichotomy (regular use vs. not regular use).

Eta^2 is the explained sum of squares unadjusted from a one-way analysis of variance.

Beta^2 is the explained sum of squares adjusted for effects of other variables.

R (adjusted) is the multiple correlation coefficient corrected for degrees of freedom.

R^2 (adjusted) indicates the proportion of variance in the dependent variable explained by all predictors together after correcting for degrees of freedom.

Percent Variance Explained is the percentage of variance in the dependent variable explained by all predictors together with no correction for degrees of freedom.

TABLE C-2

Multivariate Analysis (MCA) Predicting to the Use
of Each Drug During High School
Using Background and School Experience Variables

<u>Predictor Set</u>	Marijuana*		Hallucinogens*		Amphetamines*	
	Eta ²	Beta ²	Eta ²	Beta ²	Eta ²	Beta ²
Socioeconomic Level	.008	.007	.005	.003	.007	.005
Intelligence (QT)	.003	.004	.008	.006	.003	.001
Region	.031	.025	.011	.008	.017	.013
Urbanicity	.024	.025 ⁺	.012	.016 ⁺	.024	.011 ⁺
Race/Region/Segregation	.010	.014	.003	.004	.003	.006
Course of Study	.002	.004	.007	.009	.002	.002
Grades	.011	.012	.006	.009	.014	.013
School Size	.037	.073 ⁺	.013	.031	.018	.009
No. of Extracurriculars	.005	.001	.002	.001	.007	.001
R (adj.)	.274		.182		.206	
R ² (adj.)	.075		.033		.042	
Percent Variance Explained	.100		.059		.067	

TABLE C-2 (CONT'D)

<i>Predictor Set</i>	Barbiturates*		Heroin*		Alcohol**		Cigarettes**	
	Eta^2	$Beta^2$	Eta^2	$Beta^2$	Eta^2	$Beta^2$	Eta^2	$Beta^2$
Socioeconomic Level	.006	.002	.006	.003	.010	.003	.017	.006
Intelligence (QT)	.007	.001	.029	.007	.007	.003	.007	.005
Region	.012	.011	.004	.001	.002	.007	.015	.028
Urbanicity	.022	.015 ⁺	.009	.001 ⁺	.012	.024	.006	.014
Race/Region/Segregation	.019	.016	.061	.047	.001	.004	.004	.005
Course of Study	.005	.008	.002	.004	.019	.009	.039	.021
Grades	.017	.013	.009	.008	.021	.016	.056	.033
School Size	.013	.013	.006	.002	.010	.006	.002	.007
No. of Extracurriculars	.010	.004	.006	.003	.001	.001	.032	.006
R (adj.)	.239		.248		.176		.316	
R ² (adj.)	.057		.061		.031		.100	
Percent Variance Explained	.082		.086		.056		.124	

* The dependent variable is a dichotomy (any use vs. non-use).

** The dependent variable is a dichotomy (regular use vs. not regular use).

Eta^2 is the explained sum of squares unadjusted from a one-way analysis of variance.

$Beta^2$ is the explained sum of squares adjusted for effects of other variables.

R is the multiple correlation coefficient corrected for degrees of freedom.

R^2 indicates the proportion of variance in the dependent variable explained by all predictors together after correcting for degrees of freedom.

Percent Variance Explained is the percentage of variance in the dependent variable explained by all predictors together with no correction for degrees of freedom.

+ The shape of the relationship is changed.

TABLE C-3

Multivariate Analysis (MCA) Predicting to the Use
of Each Drug in the Year After High School
Using Background, School Experience,
and Post-High School Environment

<i>Predictor Set</i>	Marijuana*		Hallucinogens*		Amphetamines*	
	Eta ²	Beta ²	Eta ²	Beta ²	Eta ²	Beta ²
Socioeconomic Level	.021	.013	.021	.013	.015	.014
Intelligence (QT)	.009	.006	.023	.018	.005	.004
Region	.034	.036	.013	.010	.012	.010
Urbanicity	.022	.003	.013	.001	.014	.004
Race/Region/Segregation	.008	.016	.003	.004	.002	.003
Course of Study	.014	.011	.006	.004	.004	.003
Grades	.006	.011	.004	.004	.009	.009
School Size	.026	.017	.011	.003	.011	.002
No. of Extracurriculars	.000	.001	.003	.002	.005	.005
Environmental Status	.009	.007	.016	.018	.011	.013
R (adj.)	.285		.239		.205	
R ² (adj.)	.081		.057		.042	
Percent Variance Explained	.107		.084		.069	

TABLE C-3 (CONT'D)

<i>Predictor Set</i>	Barbiturates*		Heroin*		Alcohol**		Cigarettes**	
	Eta ²	Beta ²	Eta ²	Beta ²	Eta ²	Beta ²	Eta ²	Beta ²
Socioeconomic Level	.010	.009	.009	.010	.004	.006	.009	.007
Intelligence (QT)	.003	.002	.018	.006	.001	.001	.004	.004
Region	.009	.011	.002	.001	.001	.003	.016	.022
Urbanicity	.010	.008	.007	.002	.007	.013	.000	.002
Race/Region/Segregation	.006	.004	.027	.020	.005	.004	.005	.005
Course of Study	.007	.007	.006	.006	.003	.003	.027	.004
Grades	.021	.017	.018	.013	.014	.015	.043	.013
School Size	.013	.023	.004	.001	.006	.004	.003	.007
No. of Extracurriculars	.006	.004	.002	.001	.001	.006	.014	.001
Environmental Status	.015	.008	.011	.006	.013	.013	.086	.077
R (adj.)	.218		.207		.146		.336	
R ² (adj.)	.048		.043		.021		.113	
Percent Variance Explained	.075		.070		.049		.138	

* The dependent variable is a dichotomy (any use vs. non-use).

** The dependent variable is a dichotomy (regular use vs. not regular use).

Eta² is the explained sum of squares unadjusted from a one-way analysis of variance.

Beta² is the explained sum of squares adjusted for effects of other variables.

R is the multiple correlation coefficient corrected for degrees of freedom.

R² indicates the proportion of variance in the dependent variable explained by all predictors together after correcting for degrees of freedom.

Percent Variance Explained is the percentage of variance in the dependent variable explained by all predictors together with no correction for degrees of freedom.

refined versions of the variables of the same names discussed in Chapters 4 and 5. The more refined versions were used in Tables C-1 and C-2.

Appendix D

Estimates of Sampling Error*

As reported in Chapter 1, the sample for this study was selected in three stages. Stage one consisted of the Survey Research Center's national sample of counties and metropolitan areas selected from each of 88 strata. Stage two involved selecting one school from each such county or metropolitan area. (In one area several attempts were unsuccessful in locating a school willing to participate; therefore, it was necessary to omit this area and proceed with 87 schools.) Finally, stage three consisted of randomly selecting about 25 boys from each school.**

Given this type of clustered and stratified sample design, it is not appropriate to apply the standard, simple random sampling formulas to obtain estimates of sampling errors. The use of these formulas will almost always understate the actual sampling errors.

*This appendix is an adaptation of one written by Martin Frankel, Sampling Section, Survey Research Center, for Bachman, et al. (1971).

**We are grateful to Leslie Kish and Irene Hess for developing the sampling procedure used in this study.

One measure of this understatement is the design effect (DEFF). For each sample estimate, the design effect is the square of the ratio of actual standard error to the expected standard error of the estimate from a simple random sample of the same size.

$$\text{DEFF (sample estimate)} = \left(\frac{\text{actual standard error of the estimate}}{\text{expected standard error of the estimate if the sample were simple random of the same size}} \right)^2$$

For most of the *simple means* in this monograph, our estimates suggest that design effects will be under 3.

We recommend that an assumed value of $\text{DEFF} = 3.0$ be used in computing standard errors for the proportions (p) presented. Estimate $\text{s.e.}(p)$ by

$$\text{s.e.}(p) = \sqrt{\frac{\text{DEFF } p(1-p)}{N}} = 1.75 \sqrt{\frac{p(1-p)}{N}}$$

Although the clustered nature of the data collection (sampling) introduces correlation between observations, we feel that the sampling error of a difference between two proportions p_1 and p_2 , based on subclass sizes of N_1 and N_2 respectively, may be conservatively estimated as

$$\begin{aligned} \text{s.e.}(p_1 - p_2) &= \sqrt{\text{DEFF} \left[\frac{p_1(1-p_1)}{N_1} + \frac{p_2(1-p_2)}{N_2} \right]} = \\ &1.6 \sqrt{\frac{p_1(1-p_1)}{N_1} + \frac{p_2(1-p_2)}{N_2}} . \end{aligned}$$

Even when design effects for *simple means* are rather large, there exists a good deal of evidence to indicate that design effects for more *complex statistics* (e.g., regression and MCA coefficients, correlation coefficients, MCA Etas and Betas) are significantly lower (Kish and Frankel, 1970; Frankel, 1971).

The user is cautioned against using these standard errors for computing "exact" significance levels, confidence (or credible) intervals. These standard errors as well as the necessary normal distributional assumptions are approximations. For further discussion of some of the issues raised in this appendix, see Kish (1957), Kish and Frankel (1970), Frankel (1971).

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