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Young Men and Drugs in Manhattan: A Causal Analysis

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Young Men and Drugs in Manhattan: A Causal Analysis

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Young Men and Drugs in Manhattan:

A Causal Analysis

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Foreword

Young Men and Drugs in Manhattan: A Causal Analysis examines the etiology and natural history of drug use with a special focus on heroin. This study required a sample distinctly different from those used in nationwide surveys, which yield relatively small percentages of heroin users. To enhance the probability of selecting men who had used heroin, New York City was chosen, in part because its Narcotics Register could be used to plot high opiate use areas. The sample was selected from those areas.

A Lifetime Drug Use Index (see chapter 5) is one outstanding element of the study. The authors believe that this index and the procedures used in its construction meet all of the essential criteria for a composite index of illicit drug use that reflects the extent and frequency of use of various substances. In addition, it is easy to construct and is based on the type of information that is usually obtained in surveys of drug use.

The present report form a companion piece to NIDA Research Monograph 5, Young Men and Drugs--A Nationwide Survey, by John O'Donnell and his associates (including Richard Clayton and Harwin Voss), published in 1976. In the foreword, Robert DuPont described that report as a "landmark study" and an "important piece of social history." He said that the study "captured the right group at the right time." These descriptions are still valid. The National Institute on Drug Abuse is fortunate to be able to add anew dimension to that report with this monograph, both a complement and a compliment to the earlier work.

Marvin Snyder, Ph.D.
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In Memoriam

John A. O'Donnell

In the fall of 1981 ten years will have passed since the serviceman studied by Lee Robins (1973) left Vietnam for home. During that time our knowledge of the epidemiological parameters and psychosocial correlates and predictors of drug use and abuse has expanded geometrically. As the drug field has expanded it has also matured. There are numerous indices of that maturity. First, there now exists a series of on-going national surveys designed to chart trends in the use of various drugs. Second, a number of prospective longitudinal studies have been/are being conducted that shed light on the factors that influence the initiation, progression, continuation, and cessation of drug use. Third, then methodological rigor and statistical sophistication exhibited. in many recent studies reflect a substantive specialty that is at the cutting edge of the scientific investigation of human behavior. Fourth, increasing attention is being given to the development and testing of theoretical models to account for drug use. Perhaps the most important sign that the drug field has come of age is the attempt by Lettieri et al. (1980) to "synthesize" the extant theories on drug abuse.

The Young Men and Drugs studies span this period of phenomenal growth and, in many ways, represent a unique chapter in the maturation process that has occurred in the study of drug use and abuse. The nationwide study provided unambiguos evidence of the drug epidemic that occurred in the United States fran the mid-1960s to the early 1970s. The Manhattan study provided an objectively derived composite index of illicit drug use and has shed new light on the factors that account for the use of illicit drugs among men who grew up in areas of the city known to be high in drug use.

The uniqueness of the Young Men and Drugs studies and more than a few of the insights gleaned from them can be attributed to a truly remarkable and unique human being, John A. O'Donnell. Jack died on 17 October 1979. He was a distinguished colleague, a fellow researcher, and a dear friend who has left an indelible mark on the drug field and on our personal and professional lives. Without John A. O'Donnell, the Young Men and Drugs studies would not have been possible.

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Summary of Major Findings

1. In the national study reported in Young Men and Drugs and in the Manhattan study of young men, data were obtained regarding 9 drugs or drug classes. The 3 drugs for which there are sizable differences between the samples in lifetime prevalence are: marijuana (55 percent in the national and 75 percent in the Manhattan sample), heroin (6 percent in the national and 26 percent in Manhattan), and cocaine (14 percent in the national and 37 percent in Manhattan).

2. In the national and Manhattan samples, blacks were more likely than whites or others to have used marijuana, heroin, and cocaine. In the Manhattan sample, the lifetime prevalence of use of these drugs for blacks, whites and others, respectively, are: marijuana, 82, 74, and 53 percent; heroin, 39, 11, and 21 percent; and cocaine, 56, 26, and 30 percent.

3. In the Manhattan sample, there are major differences in educational attainment by race. The distribution in percentages for blacks and whites, respectively, are: high school dropout, 31 and 9 percent; high school graduate, 31 and 12 percent; some college, 27 and 32 percent; college graduate, 9 and 47 percent. Some 60 percent of the black high school dropouts had used heroin, but only one of the 11 black college graduates reported use of heroin.

4. Among whites in the Manhattan study, for each drug class, the highest percentage of users is found among the unemployed men. Students rank second or are tied for second for all illicit drugs other than heroin. In contrast with the findings regarding drug use and the occupational prestige of the respondents' fathers, the highest percentages of illicit drug use are found among the men in the occupations with the least prestige, and the lowest percentages are found among the men with the most prestigious occupations. The patterns of drug use by occupational prestige among blacks in the Manhattan study are not as clear as those for whites.

5. In 1966, all of the men in the oldest age group, those born between 1944-46, had reached the age of twenty, and 27 percent of them had used opiates by that time. For the group born in 1947-49, some 35 percent had used opiates by 1969, when they had attained the age of twenty. The comparable figures for the two youngest age groups (born in 1950-52 or 1953-54) are 40 and 35 percent, respectively. Thus, a higher, not a lower, proportion of the men in the younger age groups had used opiates by the age of 20. The age at first use

of opiates, as well as marijuana,was lower in the younger cohorts and produced a peaking of cases. The data suggest that there was an epidemic of drug use in Manhattan in the late 1960s and early 1970s. However, the epidemic appeared about 2 years earlier in Manhattan than in the nation as a whole.

6. In the national sample, the annual prevalence of heroin use never exceeded 2 percent, and the annual prevalence for opiates other than heroin reached 10 percent in only one year, 1974. In contrast, the annual prevalence of heroin-opiate use in Manhattan reached a peak of 20 percent in 1970. Thus, in the late 1960s and early 1970s, the annual prevalence of heroin-opiate use was substantially higher in Manhattan than in the rest of the country.

7. In 1968 in Manhattan, 59 percent of the opiate users reported using opiates (including heroin) daily or several times a day, whereas, in 1973, only 37 percent of the users reported daily use. Similarly, in 1968, only 20 percent of the users said they used opiates once or twice a month or less than once a month, but in 1973, 41 percent of the users selected these categories to describe their use of opiates.

8. Almost two-fifths of the nonusers of marijuana reported that more than a few of their friends currently used marijuana, and almost one-half of the men who had used marijuana most frequently reported that they had friends who were currently using cocaine. The rather widespread use of illicit drugs on the part of the respondents' friends means that transnission of the drug use through friendship networks is likely to continue in Manhattan.

9. Marijuana may be the key gateway drug for understanding multiple drug use. Some 37 percent of the men who had used marijuana had also used psychedelics, while none of the nonusers of marijuana reported using psychedelics. The comparable figures for stimulants, sedatives, heroin, and other opiates are 34 to 36 percent for the users of marijuana in comparison with 1 to 5 percent for the nonusers. Forty-nine percent of the marijuana users in the Manhattan sample reported having used cocaine in comparison with none of the men who had not used marijuana.

10. The marijuana users in the Manhattan sample were more likely to have used heroin and cocaine than their counterparts in the national sample. Thirty-four percent of the men in the Manhattan sample who had used marijuana reported use of heroin in comparison with only 11 percent in the national sample. In Manhattan, 49 percent of the marijuana users had used cocaine. The comparable figure for the national sample is 25 percent.

11. Use of heroin is strongly correlated with the extent of use of marijuana. In the national sample, only 1 man (0.1 percent) who had not used marijuana had used heroin. The percentages who had used heroin increase progressively to 33 percent among the men who had

used marijuana 1000 times or more. The same type of progression occurs in the Manhattan sample. The percentage of heroin users ranges from 1 percent among men who had never used marijuana to 56 percent of those who had used marijuana 1000 times or more.

12. A composite index of illicit drug use was constructed on the basis Of 7 national data sets. Weights for each drug according to extent of use were established. On this measure,the overall mean for the national sample is 105 in comparison with 470 in Manhattan. There are sizable differences by race. In Manhattan, the mean for whites is 223 and for blacks it is 737.

13. Seventeen percent of the national sample had sold drugs at some time. Projected to the 19 million men born in the years 1944-54 represented by the national sample, about 3.2 million of these men have distributed drugs illegally. Of those who had sold drugs, 54 percent had only sold one drug, and this was usually marijuana. In the Manhattan sample, 33 percent of the respondents had sold drugs.

14. The most dramatic differences in drug sales occur for heroin and cocaine. Only 2 percent of the men in the national sample report the sale of heroin, and 10 percent of the sellers had dealt in heroin. In Manhattan, 8 to 9 percent of the men had sold heroin. Among the drug sellers, the figures are: sale of heroin as a favor, 24 percent; sale of heroin to purchase one's own supply, 27 percent; and sale of heroin for profit, 28 percent.

15. The technique of path analysis was used to test causal models of illicit drug use that were derived from theories of deviance. The key variable in the explanation of illicit drug use is selling drugs.

Chapter 1

Introduction

In response to the unprecedented epidemic of drug use that began in the late 1960s (DuPont and Greene 1973), the Special Action Office for Drug Abuse Prevention (SAODAP) was established. The agency concentrated primarily on expansion of treatment facilities across the nation. However, reports that many soldiers in Vietnam were using opium and heroin led to concern that existing treatment facilities in the United States might be inadequate. This idea arose because follow-up studies of persons treated for addiction to heroin and other opiates showed that nearly all of them relapsed within a short period of time (O'Donnell 1965). As a result, SAODAP funded Robins to study a sample of Vietnam veterans who were returning to the United States in September of 1971. She found that 29 percent of her sample of enlisted men had used opium or heroin more than 10 times and more than once a week; further, 20 percent of the men reported that they had been addicted to narcotics in Vietnam. However, in interviews conducted eight to twelve months after their return to the United States, only 1 percent of then men indicated that they had been readdicted to opiates. Robins' (1973, 1974) investigation showed that relapse was not inevitable.

The earlier follow-up studies were based on samples of treated addicts, and one explanation for the discordant findings was that persons who sought treatment or were placed in treatment programs by the courts were not a representative sample of opiate users. Apparently they were a residue of that population and excluded those persons who quit using opiates rather easily. While the Vietnam veterans did not constitute a random sample of young American men, they ware more representative of young persons than any sample of treated heroin addicts. One implication was that the widely held belief about the high probability of relapse was not necessarily true for heroin users in general.

Young Men and Drugs: A Nationwide Survey

Robins' findings suggested that a study of drug use in the general population might increase knowledge appreciably. Such a study was discussed by the staff of SAODAP and sociologists in the Department

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Of Sociology, University of Kentucky, and the School of Public Health, University of California, Berkeley. In June 1973, a grant was awarded to the University of Kentucky in which the late John A. O'Donnell was Principal Investigator. A contract was established with the University of California at Berkeley to share in the design and execution of the study, and later, the Institute for Survey Research at Temple University was selected to collect and to edit the data.

The primary goal of the study was to obtain national estimates of the incidence and prevalence of use of illicit drugs among young men, but four areas of focus were listed in the grant application: (1) the natural history of nonmedical drug use; (2) the incidence and prevalence of illicit drug use; (3) evidence concerning the belief that an epidemic of drug use occurred in the 1960s; and (4) the correlates and determinants of drug use. Each of these areas implied different and, to some extent, contradictory considerations in the research design. A national sample of men born in the years 1944 through 1954 was obtained from Selective Service records, and data pertaining to the incidence, prevalence, and correlates of drug use, as well as the drug epidemic, were obtained in the national survey (O'Donnell et al. 1976).[1]

Young Men and Drugs: The Manhattan Study

It was recognized that the national sample would produce too few heroin users to provide adequate information about the natural history of heroin use. To examine the etiology and natural history of drug use with a special focus on heroin required a distinctly different sample. A sample of young men who lived in areas in which the rate of drug use was known to be high was needed to enhance the probability of selecting men who had used heroin.

While high drug use areas might be found in any major metropolitan center, attention was focused on New York City because the city maintains a Narcotics Register in which opiate users--primarily heroin users--are listed on the basis of reports from the police and treatment agencies (Fishman et al. 1971). The register does not include all heroin users, but it is the most extensive listing available.

The information in the register was used to compute rates of opiate use for the years 1964 through 1967 for the 347 health areas in New York City (Koval 1969).[2] Of the five boroughs, Manhattan had the highest rate of users, and within the 82 health areas in Manhattan, regular opiate users were even more concentrated. For example, five health areas in Harlem including only 1.5 percent of New York's 15-44-year-old population contained almost 12 percent Of the regular opiate users. These five health areas had rates of opiate use some seven to ten times the rate for the city as a whole. Although some health areas on the West Side and other health areas in the borough had relatively high rates, the health areas with the highest rates werel located in Harlem, East Harlem, and other nearby areas.

A target sample of 540 men was chosen randomly from Selective Service Boards serving health areas in Manhattan that had high rates of opiate users to represent the men born in the years 1944 through 1954. (See appendix A for a detailed discussion of sampling procedures.)

The interviews with men in the Manhattan sample were initiated early in 1975. It was more difficult to locate the men in the Manhattan sample than in the national sample. Many of the prospective respondents had moved, and many of the men had moved several times. In some cases, entire neighborhoods in which the men had resided had been demolished in urban renewal projects; consequently, former neighbors and storekeepers were not available to provide information to help trace them. In addition, priority, both in terms of effort and expenditures, was given to the national sample because the researchers wanted to achieve the highest possible rate of completed interviews. As a result, when field work had to be terminated in May of 1975, only 294 of the 540 men had been interviewed, for a completion rate of 54 percent.

While the target sample was a probability sample or a collection of eleven probability samples of birth cohorts, a claim of representativeness cannot be made on the basis of a completion rate of 54 percent. However, it should be noted that such a claim would be of dubious value had the completion rate approached 100 percent because it is not at all clear what group of people the sample could be viewed as representing. The geographical areas fran which the sample was drawn are not contiguous and do not correspond to any meaningful geopolitical unit. Further, a few of the respondents had not resided in New York City from birth to the age of eighteen (see appendix A). Most, but not all, of the respondents were raised in or near high drug use areas, and almost all of the men lived in large metropolitan areas during most of their childhood. An accurate description of the original target sample would be that it was a sample of men who registered with Selective Service Boards serving moderate or high drug use areas in Manhattan.

It is important to repeat the purpose for which the Manhattan sample was selected--to study the etiology and natural history of drug use, especially use of heroin. A random sample is essential for an accurate description of the incidence and prevalence of drug use. To test causal models, adequate measurenent of the relevant variables is more important than random sampling (Camillieri 1962). The Manhattan sample is valuable because it was drawn from the general population of young men, most of whom resided in moderate or high drug use areas. It is not a sample selected from a treatment population or from those who have been arrested for drug use or other criminal behavior; yet, it is one in which use of illicit drugs is likely to be extensive. It cannot be claimed that the sample is representative of any population. The primary source of bias is the failure to locate many of the men in the target sample. It is generally assumed that the more deviant individuals are the more difficult to locate. To some extent, this is counterbalanced by the fact that the most deviant individuals are likely to have

prison or treatment records which make it easier to locate them. On the whole, then, the sample is one that should permit comparison of users and nonusers of drugs and a search for possible causal factors.

The Interview Schedule

It was anticipated that an adequate number of drug users, especially heroin users, would be identified so that it might be possible to ascertain the early stages in the natural history of drug use and to determine why some men had and some men had not become drug users. A sufficient number of questions from the national interview schedulewere retained to permit comparison of the Manhattan and national samples. The major change in the interview schedule involved the detailed questions about drug use; specifically, the questions from the national interview about the quantity and frequency of use of each of nine drugs or drug classes on a year-by-year basis were deleted. These were replaced by items suggested by several sociological and social psychological theories--differential association, anomie, differential opportunity, social control, and labeling. This does not mean that there is a formal test of any of these theories; none of the theories is, as yet, sufficiently specific to be tested formally. Because each theory suggests the importance of some early experiences in the family or with peers and legal authorities that might be relevant to drug use, items ware designed to tap these concepts.

There was a question as to how the items should be phrased. Because the interviews were to be conducted with 20-to 30-year-old men, it was believed that more recent experiences would be remembered more accurately than early childhood experiences. Also, for some relationships, such as those with peers and others outside the family, the early teen years are likely to be the most important ones. Therefore, the items concerning early influences were generally phrased as of the time "when you were 13 to 15." In two short, self-administered questionnaires, there were some double items that asked about experiences at age 13 and age 16. Other items, referring only to the family, were phrased in terms of "when you were growing up."

In the following chapters, attention is focused on a comparison of the national and Manhattan samples. After the similarities and differences have been described, the data obtained in Manhattan are examined from an etiological perspective.

FOOTNOTES

[1]Of the 2,981 potential interviewees, 2,510 men (84 percent) were interviewed. The sample was a multistage stratified random sample. Technically, there were eleven random samples of men born from 1944 through 1954 who registered with the Selective Service System when they reached the age of eighteen. Residents of Alaska and Hawaii excluded from the target population.

[2]A health area is an aggregation of contiguous census tracts that are fairly homogeneous in terms of socioeconomic characteristics; each health area in New York contains approximately 22,000 persons.

Chapter 2

Lifetime Prevalence and Correlates

Measures of lifetime prevalence (defined as any use in the person's lifetime) are crude, and they are presented only as an initial way of describing the respondents experiences with drugs. In chapter 5, a composite measure of drug use is presented, and extent of use is taken into account in development of the index. For each of the drugs or drug classes, experimental use (less than 10 times) is included in the data on lifetime prevalence. In some of the tables, data obtained in the national survey are shown for comparative purposes. In the first table, the data are presented separately for blacks, whites, and others because these groups differ according to a number of important variables. In subsequent tables, the others are excluded. While there are a sufficient number of blacks and whites in each sample to permit meaningful comparisons, there are only 71 men classified as other in the Manhattan sample, and these men are not comparable with the others in the national sample. In Manhattan, most of the men in the other category are Puerto Rican. In the national sample, only 48 of the 104 others are Spanish, and many of these men are Mexican or Cuban rather than Puerto Rican. For this reason, the analysis is essentially restricted to blacks and whites.

Lifetime Prevalence

The data on lifetime prevalence obtained in the Manhattan and national samples are presented in table 2.1. With the exception of tobacco, the figures for lifetime prevalence are higher in the Manhattan sample than in the national sample. In both samples, 88 percent of the men reported that they had used tobacco. There are negligible differences for alcohol and stimulants, and moderate differences for psychedelics, sedatives, and opiates. These differences do not result from uniformly higher rates of use of these drugs in the three racial groups. The prevalence of psychedelics in the two samples is almost identical among blacks; the others and particularly the whites contribute substantially to the higher rate of psychedelic use in Manhattan. In Manhattan, one-third of the whites reported use of psychedelic drugs. The higher figure for sedatives in Manhattan is accounted for by more extensive use of this class of drugs by whites, while each group contributes to the higher figure for opiates. The three drugs for which there are sizable differences are marijuana, heroin, and cocaine. For these drugs, lifetime prevalence is 20 to 23 percentage points higher in Manhattan than in the national population of young men. The lifetime

TABLE 2.1 Lifetime Prevalence of Drug Use By Race in the Manhattan and National Samples (Percentages)

	Total		Black		white		Other	
	National	Manhattan	National	Manhattan	National	Manhattan	National	Manhattan
Tobacco	88	88	87	89	88	92	86	82
Alcohol	97	99	94	100	97	98	96	99
Marijuana	55	75	65	82	54	74	51	63
Psychedelics	22	28	25	26	22	33	19	25
Stimulants	27	28	25	19	28	42	25	25
Sedatives	20	27	24	25	20	35	17	18
Heroin	6	26	14	39	5	11	5	21
Opiates	31	37	34	42	31	38	23	27
Cocaine	14	37	24	50	13	26	11	30
N	2,510	294	303	125	2,103	98	104	71

prevalence of these drugs in the national sample is highest among blacks, and this is also the case in Manhattan. However, the whites and others also contribute to the higher prevalence figures for these drugs in Manhattan.

In 1975-76, Brunswick (1979) studied a sample of 277 black males who were 18 to 23 years old. Her data on lifetime prevalence among these residentsof Harlem maybe compared with the data obtained in Manhattan. Use of heroin and sedatives is more extensive in the Manhattan sample than in Brunswick's Harlem sample. Otherwise, the figures are similar, and the differences may be attributed to the younger age range in her sample (see table 2.2).

Among the men who had ever used illicit drugs, the respondents in the Manhattan sample had used these drugs more extensively than was the case in the national sample, with the sole exception of the psychedelics. In the national sample, sizable proportions of the men who had used a drug experimental users in that they had used it less than 10 times. The comparable proportions are smaller in the Manhattan sample. For example, 31 percent of the marijuana users in the national sample had used it less than 10 tines, but this was true for only 19 percent of the marijuana users in Manhattan. In Manhattan, 15 percent of the blacks and 19 percent of the whites had only used marijuana experimentally, but this was true of 25 and 32 percent, respectively, of the blacks and whites in the national sample. Almost 50 percent of the men in the national sample who had used heroin had done so only experimentally in comparison with 21 percent of the users in the Manhattan sample. Again, there are differences among the racial groups in Manhattan; percent of the blacks, 55 percent of the whites, and 20 percent of the others were experimental users of heroin. In the national sample, 64 percent of the users of cocaine had used it less than 10 times in comparison with 40 percent in Manhattan. The percentages for experimental use of cocaine in the three racial groups are: blacks, 29; whites, 64; and others, 43. The whites do not differ from the natiohal figure for whites (64 percent), while blacks differ considerably (29 versus 47 percent). In contrast, the percentage of experimental users of psychedelics is slightly lower in Manhattan than in the national sample, but the difference is minimal--53 and 56 percent, respectively. For the other drugs, there are no notable differences.

Age. In the national sample there is a strong inverse relationship between age and lifetime prevalence of use for all drugs except tobacco and alcohol. The percentage of users is generally higher in the younger than in the older cohorts. However, this is accounted for primarily by the whites, who constitute 84 percent of the sample. This can be seen in table 2.3, in which the percentage of users of each drug is shown for whites and blacks by age group. In the national sample, the percentages are consistently higher as one moves from the older to the younger age groups, with the exception of a few minor reversals in the youngest age category.

TABLE 2.2 Lifetime Prevalence of Drug Use Among Black Males in the New York Sample and Black Males in Brunswick's Harlem Sample (Percentages)

	Brunswick Sample[1]	Manhattan Sample
Alcohol	88	100
Marijuana	86	82
Psycehdelics	25	26
Stimulants	12	19
Sedatives	11	25
Heroin	18	39
Cocaine	42	50
N	277	125

[1]Brunswick (1979:449)

TABLE 2.3 Lifetime Prevalence of Drug Use by Race and Age in the Manhattan and National Samples (Percentages)

	Born in 1944-1946		Born in 1947-1949		Born in 1950-1952		Born in 1953-1954	
	National	Manhattan	National	Manhattan	National	Manhattan	National	Manhattan
				White				
Tobacco	93	96	88	91	88	91	83	90
Alcohol	98	100	98	100	97	91	96	100
Marijuana	38	71	52	75	63	77	60	70
Psychedelics	9	17	16	34	29	36	33	45
Stimulants	18	50	27	28	35	46	31	50
Sedatives	13	29	17	34	23	36	27	40
Heroin	2	12	3	9	7	14	7	10
Opiates	25	38	27	28	35	46	38	45
Cocaine	5	21	9	25	18	27	19	30
N	467	24	581	32	503	22	452	20
				Black				
Tobacco	94	100	91	100	84	84	83	77
Alcohol	98	100	92	100	93	100	95	100
Marijuana	47	82	69	94	72	84	60	71
Psychedelics	12	18	34	29	27	32	19	20
Stimulants	10	4	33	29	29	27	21	11
Sedatives	14	18	29	29	26	35	21	14
Heroin	12	32	16	42	20	43	2	34
Opiates	16	41	42	61	33	38	37	29
Cocaine	16	46	30	58	28	60	17	34
N	49	22	86	31	105	37	63	35

The highest percentages of lifetime use of marijuana, heroin, and cocaine are found among blacks in the national sample. This is also the case in the Manhattan sample, and percentages are higher than in the national sample. However, the pattern across the age groups is different in Manhattan. In the national sample, the percentage of users of marijuana, heroin, and cocaine is lower for blacks among the men born in 1953-1954 than among the men born in 1950 to 1952. While it did not constitute overwhelming evidence, this suggested that nationally the rates of drug use for blacks might be declining while the rates for whites increasing. In the youngest age group in Manhattan, the figures for lifetime prevalence of use of marijuana and cocaine are similar for blacks and whites, but for heroin the figure is higher for blacks than whites. On the other hand, the figures for psychedelics, stimulants, sedatives, and opiates are higher for whites than for blacks. Data from a more recent survey show that the rates of drug use are similar among black and white youth (12 to 17 years old), but for young adults, the rates are lower among blacks than whites (Fishburne et al. 1980:45-47, 85-87). Fishburne and her co-workers present data for lifetime prevalence by age and race for only five drugs--marijuana/hashish, stimulants, sedatives, tranquilizers, and analgesics. Except for analgesics, the percentage of users is lower among blacks than whites in the category of young adults (18 to 25 years old). Among the respondents who were 26 years of age or older, the figure for marijuana is higher for blacks than for whites; for the other drugs, there are only minimal differences between whites and blacks.

In Manhattan, the pattern among whites is similar to the one observed in the national sample, but this is not the case for blacks. Among whites, the increase in the percentage of drug users from the older to the younger age groups is observed for psychedelics, sedatives, and, to a lesser extent, cocaine. The percentage of users of marijuana and heroin is similar in the four age groups, and this is also the case for stimulants with the exception of the lower figure for the 1947-1949 age group. There are only 20 to 32 men in the four age groups for whites; consequently, sizable differences are not statistically significant. There are only 22 men in the 1944-1946 age group for blacks, but with this exception there are a sufficient number of respondents in each age group to permit comparisons among the blacks. If one ignores tobacco and alcohol, there is a definite pattern for use of the other drugs among blacks. In both samples, the pattern resembles a U-shaped curve; the percentages are higher in the two middle age groups than in the oldest or youngest age group. The only exception in the national sample is the figure for the opiates in the youngest age group; in Manhattan the only exception is for the opiates in the oldest age group. The similarity in the pattern across age groups in the two samples is remarkable in view of the fact that the lifetime prevalence of drug use is considerably higher in the Manhattan sample than in the national sample. It would appear that a general decline in drug use among blacks was even reflected in an area in which illicit drug use was extensive. This suggests that some--or all--of the factors that accounted for

the decrease in drug use among blacks were influential in the areas of highest drug use. This is a tentative suggestion because the decrease between the last two age groups is statistically significant in the Manhattan sample for only three drugs--stimulants, sedatives, and cocaine. Finally, it must be emphasized that the apparent decline involves only the youngest blacks in the two samples. Overall, the lifetime prevalence of illicit drug use among blacks is higher than among whites. This is true for most drugs and especially for three illicit drugs--marijuana, heroin, and cocaine. In the national sample, the lifetime prevalence figures are higher for whites than blacks only for stimulants. The comparable figures are higher for whites than blacks in the Manhattan sample for psychedelics, stimulants, and sedatives (see table 2.1).

Education. In the interviews, the respondents were asked to indicate the last year of school they had completed. As in the national study, the responses were classified as: less than high school, high school graduate, some college, and college graduate. However, it should be noted that there are only 9 white high school dropouts and only 11 blacks who are college graduates (table 2.4). The percentage of blacks who had attended college is similar in the Manhattan and national samples: Manhattan, 36 percent and natiohal, 31 percent. This is not the case among the whites. In the Manhattan sample, 79 percent of the whites had attended college and 47 percent of thewhites are college graduates. The comparable percentages in the national sample for whites are 50 and 21. In view of the natureof the areas from which the Manhattan respondents were selected, these figures were totally unexpected. They undoubtedly reflect the ease of access to higher education in New York City which has an extensive system of college campuses. The disparity in educational attainment between the whites and blacks suggests the importance of analyzing the data separately rather than without a control for race. With respect to education, the only clear trend is for heroin; among whites and blacks this drug was used less frequently by the man with nwre education. There is a strong linear relationship between level of education and use of heroin. Some 60 percent of the black high school dropouts had used heroin, but only one (9 percent) of the 11 black college graduates reported any use of heroin. In general, the lowest percentages of use are found among the college graduates. The only exceptions are psychedelics and stimulants in which the lowest figure is found among blacks who did not complete high school, and the latter are differences of only 3 to 5 percentage points. among the whites, the men who had completed some college have the highest lifetime prevalence figures for psychedelics, sedatives, and opiates, whereas the high school dropouts, who are few in number, have the highest prevalence of marijuana, stimulants, and cocaine. The high school graduates have the highest figure for heroin. Among the blacks, the high school graduates are more likely to have used every illicit drug except heroin than the men in the other categories.

Occupational Prestige. In its first report, the Marihuana Commission stated that: "Use (of marijuana) is found in all socioeconomic groups

TABLE 2.4 Lifetime Prevalence of Drug Use by Race and Education in the Manhattan Sample (Percentages)

	Less than High School	High School Graduate	Some College	College Graduate
		White		
Tobacco	89	83	94	94
Alcohol	100	92	97	100
Marijuana	89	58	77	72
Psychedelics	33	33	52	20
Stimulants	56	42	52	33
Sedatives	44	33	48	24
Heroin	22	25	13	4
Opiates	44	33	52	28
Cocaine	44	25	36	15
N	9	12	31	46
		Black		
Tobacco	92	92	88	64
Alcohol	100	100	100	100
Marijuana	80	88	85	64
Psychedelics	22	28	26	27
Stimulants	15	22	21	18
Sedatives	25	28	24	18
Heroin	60	40	21	9
Opiates	38	48	44	27
Cocaine	58	60	38	18
N	40	40	34	11

and occupations, though slightly more predominant among persons with above-average incomes" (National Commission on Marihuana and Drug Abuse 1972:39). Citing a New York survey, the Commission concluded that the prevalence of marijuana, whether measured in terms of ever use or regular use, is similar across occupational categories. In its second report, the Marihuana commission asserted that "the drug problem of the 1950s was clearly identified with the children of the middle and upper classes" (National Commission on Marihuana and Drug Abuse 1973:17). This assertion suggests that use not only of marijuana but of all illicit drugs was more extensive among middle and upper class yeah. This may be the case, but it has never been documented adequately. In fact, in the national studies conducted for the Marihuana Commission, the only possible indicator of social class is education. One looks in vain for a measure of occupational prestige or a more complex measure of social class (Fishburne et al. 1980). This is also true of the Johnston et al. (1980) survey of high school seniors.

In the national study, no data pertaining to occupational prestige were analyzed. The occupational data were initially coded with the three-digit census codes to preserve as much detail as possible. This meant that extensive recoding of the data was required for translation into the Duncan Socioeconomic Index (see Voss 1981). Four levels of occupational prestige were created with approximately equal numbers of respondents in each category.[1]

In table 2.5, the national data on lifetime prevalence of drug use are presented according to the occupational prestige of the respondents' fathers. The men who provided insufficient information about their father's occupation for coding are categorized separately. Among whites, the highest figures for use of illicit drugs other than marijuana are found among these men. The only exception occurs for sedatives. If these men are excluded, some slight but nevertheless discernible patterns emerged. First, the percentages for heroin are unique as there is little or no difference among the prestige categories. For the other illicit drugs, the lowest percentages are consistently found among the men whose fathers had jobs with the lowest occupational prestige, and the men whose fathers had jobs with the most prestige consistently show the highest percentages. For each of the drugs other than marijuana and heroin, the percentage of users in the highest prestige category is 9 to 12 percentage points higher than the figures for the men in the lowest category. For marijuana the difference is 24 percentage points. There is also a discernible trend in the percentages as one moves from the lowest to the highest level of occupational prestige. There is one minor reversal for opiates.

The pattern is somewhat different among blacks. First, the men who provided insufficient information about their father's occupation show lower percentages of users than is the case for men in the highest three categories. The pattern for all of the illicit drugs, including heroin, is similar, but stronger than the one for whites. The

TABLE 2.5 Lifetime Prevalence of Drug Use by Race and Father's Occupation, National Sample (Percentages)

	No Info.	1 (low)	2	3	4 (high)
			White		
Tobacco	92	89	90	89	85
Alcohol	96	96	97	98	98
Marijuana	62	39	51	59	63
Psychedelics	35	16	18	23	27
Stimulants	38	23	24	28	35
Sedatives	23	15	16	21	26
Heroin	6	5	5	5	4
Opiates	38	26	32	30	35
Cocaine	19	8	9	13	18
N	48	469	487	546	553
			Black		
Tobacco	95	83	88	88	95
Alcohol	100	94	90	91	100
Marijuana	68	58	65	73	90
Psychedelics	22	14	31	39	47
Stimulants	24	19	30	30	37
Sedatives	10	20	28	36	42
Heroin	15	6	22	18	21
Opiates	29	28	39	36	58
Cocaine	17	14	40	30	32
N	41	127	83	33	19

highest percentages are found among the men whose fathers had the most prestigious jobs, and the differences between the high and low categories range from 15 to 32 percentage points.

Comparable data for the Manhattan sample are shown in table 2.6. The cutting points established for the national sample are again utilized to permit comparison of tables 2.5 and 2.6. As a result, the number of whites in the lower categories are limited. Except for heroin and opiates the white males in the lowest occupational prestige category had the lowest percentages of users, as was the case in the national sample. However, comparable upward trends are not apparent. In fact, except for heroin, the highest percentages are found in categories 2 and 3. Among blacks, the lowest figures for stimulants and sedatives are found among the 24 men who did not describe their fathers' occupations. In contrast with the national sample, the highest percentages for marijuana, psychedelics, opiates, and cocaine are found in category 3. The most impressive numbers in the table pertain to heroin. One-third of the black males who did not describe their father's occupation or whose father had a low prestige job had used heroin, whereas almost one-half of the men in the other prestige categories had tried heroin.

In table 2.7, the national data pertaining to prevalence of drug use are shown in relation to the prestige of the respondent's current occupation. Among whites, for each drug or drug class, the highest percentage of users is found among the unemployed men. Students rank second or are tied for second for all illicit drugs other than heroin. In contrast with the findings regarding drug use and the occupational prestige of the respondents' fathers, the highest percentages of illicit drug use are found among the men in the occupations with the least prestige, and the lowest percentages are found among the men with the most prestigious occupations. Except for a few minor reversals, there is a slight downward trend in illicit drug use as one moves from the low to the high prestige categories. The greatest difference--12 percentage points--between the lowest and highest prestige categories involves use of psychedelics. These data suggest that men who enter the most prestigious occupations are somewhat less likely to report any use of illicit drugs, particularly heroin. On the other hand, illicit drug use is moderately higher among the unemployed men than among those in any of the occupational prestige categories.

Among blacks, the highest figures for sedatives and cocaine are observed among the 55 unemployed men (table 2.7). For heroin, the highest figure is found among the students. For the other illicit drugs, the blacks in category 3 have the highest figures. As a result, there are no clear trends comparable to those for whites.

The pattern for whites in Manhattan is similar to the one observed in the national sample (table 2.8). The numbers are limited and may be unstable, but there appears to be an inverse relationship between drug use and occupational prestige. Again, among blacks, the unemployed men do not have the highest percentages except for heroin.

TABLE 2.6 Lifetime Prevalence of Drug Use by Race and Father's Occupation, Manhattan Sample (Percentages)

	No Info.	1 (low)	2	3	4 (high)
			White		
Tobacco	100	85	90	91	94
Alcohol	100	100	100	96	98
Marijuana	100	46	80	73	78
Psychedelics	75	15	40	32	33
Stimulants	50	23	30	68	37
Sedatives	25	23	40	41	35
Heroin	0	15	20	14	8
Opiates	50	31	50	50	31
Cocaine	50	15	30	36	20
N	4	13	10	22	49
			Black		
Tobacco	92	90	87	88	87
Alcohol	100	100	100	100	100
Marijuana	83	84	84	88	67
Psychedelics	21	18	29	35	33
Stimulants	12	16	16	29	33
Sedatives	17	18	32	29	33
Heroin	33	32	45	47	47
Opiates	46	34	36	65	47
Cocaine	54	42	52	59	47
N	24	38	31	17	15

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TABLE 2.7 Lifetime Prevalence of Drug Use by Race and Respondent's Occupation, National Sample (Percentages)

	Unemployed	Student	1 (low)	2	3	4 (high)
			White			
Tobacco	93	83	91	88	88	86
Alcohol	96	98	96	98	97	99
Marijuana	74	63	55	54	51	46
Psychedelics	46	28	24	22	19	12
Stimulants	44	30	30	28	24	24
Sedatives	36	21	20	19	20	16
Heroin	17	5	7	4	4	1
Opiates	48	33	30	32	31	26
Cocaine	30	15	15	12	11	7
N	149	145	433	451	442	483
			Black			
Tobacco	87	70	88	91	88	89
Alcohol	94	80	96	95	95	94
Marijuana	69	55	60	61	78	69
Psychedelics	27	30	20	21	35	26
Stimulants	29	20	21	23	38	23
Sedatives	33	20	16	20	28	23
Heroin	20	25	10	9	22	6
Opiates	36	30	31	30	40	37
Cocaine	33	30	16	25	30	23
N	55	20	97	56	40	36

TABLE 2.8 Lifetime Prevalence of Drug Use by Race and Respondent's Occupation, Manhattan Sample (Percentages)

	Unemployed	Student	1 (low)	2	3	4 (high)
			White			
Tobacco	89	88	88	100	88	93
Alcohol	100	100	100	100	88	100
Marijuana	72	76	88	100	71	70
Psychedelics	56	18	50	100	41	19
Stimulants	50	53	50	100	59	22
Sedatives	61	35	50	100	35	16
Heroin	17	6	25	100	18	3
Opiates	50	29	50	100	47	27
Cocaine	50	12	50	100	29	11
N	18	17	8	1	17	37
			Black			
Tobacco	100	80	72	85	92	81
Alcohol	100	100	100	100	100	100
Marijuana	84	80	83	85	79	81
Psychedelics	20	40	39	23	12	38
Stimulants	14	30	39	15	8	25
Sedatives	25	30	28	23	17	31
Heroin	59	30	44	38	17	19
Opiates	46	50	56	46	21	44
Cocaine	61	40	56	62	25	44
N	44	10	18	13	24	16

That three-fifths of the unemployed blacks had used heroin is, however, a notable finding. Among blacks, the only apparent downward trend involves heroin. In fact, for psychedelics and sedatives the percentages for categories 1 and 4 are uite similar.

Family Status. Another variable that was found to be related to lifetime prevalence of drug use in the national study was current family status. Family status was categorized as: married, coupled, living in parental home, and living independently. Coupled is the term employed for men who were living with a woman to whom they were not married (see Clayton and Voss 1977). For current family status, the pattern in Manhattan is comparable to the one found in the national study (table 2.9). Among the whites, the highest percentage is found among the men who were coupled for each drug except heroin. The white males who were still living in their parental home have the highest prevalence of heroin. The next highest percentage was reported by the men living independently. It may be noted that 24 percent of the men in Manhattan were living with their parents in comparison with 11 percent of the respondents in the national study. by race, the percentages in Manhattan are: white, 20; black, 26. among whites, the lowest percentage of users is found among the married men for six of the seven illicit drugs. For stimulants, the lowest percentage of users is observed among the men still living with their parents. Among blacks, the highest percentage for each drug is found among the men who were coupled. The men who were living independently rank second on psychedelics and opiates. In contrast with the whites, the blacks who were married rank second on marijuana and stimulants.

Employment. In the national study, employment was related to lifetime prevalence of drug use. The lowest percentage of users was found among the men who were employed, and drug use was most extensive among the unemployed. The following categories were used for employment: working full-time, working part-time, student, and unemployed. Full-time was defined as working 30 hours or more per week. This variable was constructed from items in which questions were asked about current employment. Because there are so few part-time workers and students in the Manhattan sample, these categories were combined. Another important difference between the samples involves the extent of unemployment. Only 8 percent of the men in the national sample were unemployed, whereas 35 percent of the white respondents and 43 percent of the black respondents in Manhattan were not currently employed. The data on lifetime prevalence and current employment status are presented in table 2.10. Among whites, the percentage of respondents in Manhattan who had used marijuana, stimulants, and sedatives is highest among the unemployed. It is noteworthy that the lifetime prevalence of heroin use among the men employed full-tine is essentially the same as the figure for the men without jobs. These figures are, however, substantially lower than the comparable ones for blacks. The highest prevalence for sedatives, heroin, opiates, and cocaine is observed. among the unemployed blacks, but the highest figure for marijuana is found among the men employed

TABLE 2.9 Lifetime Prevalence of Drug Use by Race and Current Family Status, Manhattan Sample (Percentages)

	Married	Coupled	Parental Home	Independent
		White		
Tobacco	93	100	80	95
Alcohol	97	100	95	100
Marijuana	62	100	70	78
Psychedelics	14	56	30	42
Stimulants	38	56	35	45
Sedatives	17	56	35	42
Heroin	3	11	20	12
Opiates	28	56	35	42
Cocaine	10	56	25	30
N	29	9	20	40
		Black		
Tobacco	78	100	85	93
Alcohol	100	100	100	100
Marijuana	87	100	76	81
Psychedelics	13	50	21	28
Stimulants	22	50	15	14
Sedatives	22	50	24	21
Heroin	26	58	48	35
Opiates	35	75	36	42
Cocaine	35	75	52	49
N	23	12	33	57

TABLE 2.10 Lifetime Prevalence of Drug Use by Race and Current Employment Status, Manhattan Sample (Percentages)

	Full-time	Part-time and Student	Unemployed
		White	
Tobacco	93	75	91
Alcohol	97	100	100
Marijuana	72	75	76
Psychedelics	27	75	38
stimulants	35	50	53
Sedatives	28	25	47
Heroin	10	25	12
Opiates	33	75	41
Cocaine	20	50	32
N	60	4	34
		Black	
Tobacco	85	70	96
Alcohol	100	100	100
Marijuana	85	60	83
Psychedelics	25	40	24
Stimulants	21	20	17
Sedatives	25	20	26
Heroin	30	20	54
Opiates	41	30	44
Cocaine	44	40	57
N	61	10	54

full-time. There is a sizable difference between the employed and unemployed men in the prevalence of heroin, and, to a lesser extent, cocaine, but there are only limited. or negligible differences for the other drugs.

Summary Comparison of the Manhattan and national samples reveals that the lifetime prevalence of drug use is higher in Manhattan for every drug or drug class other than tobacco. The differences are most extensive for marijuana, heroin, and cocaine. For blacks and whites, at least twice as many men in Manhattan had used heroin and cocaine than was the case in the national sample. For the others, the comparable figures are three to four times higher in Manhattan than in the national sample. Among the men who had ever used. illicit drugs, the respondents in the Manhattan sample had used these drugs more extensively than was the case in the national sample, with the sole exception of psychedelics.

In the national sample there is a strong inverse relationship between age and lifetime prevalence for all drugs, except tobacco and alcohol. For whites, the pattern across age groups in Manhattan is similar to the one observed in the national sample--the percentage of drug users increases from the older to the younger age groups for psychedelics, sedatives, and, to a lesser extent, cocaine. However, among blacks there is a U-shaped curve in both the Manhattan and national samples; the percentages are higher in the two middle age groups than in the oldest or youngest age group. In Manhattan, tobacco and heroin were used less frequently by the men with more education. There are no consistent patterns for the other drugs, but except for minimal differences for psychedelics and stimulants, the lowest percentages of use are found among the college graduates.

There is little difference in lifetime prevalence of heroin in the national sample according to the occupational prestige of the respondents' fathers. For the other illicit drugs, the lowest percentages are found among the men whose fathers had jobs with the lowest occupational prestige, and the men whose fathers had jobs with the most prestige consistently show the highest percentages. This pattern is found among both whites and blacks. Among whites in the Manhattan sample, the lowest prevalence of illicit drugs other than heroin and opiates was found in the lowest prestige category but upward trends comparable to those in the national sample were not observed. A notable finding for blacks was that almost one-half of the men whose fathers did not have a low prestige occupation had used heroin. In contrast with the findings regarding drug use and the occupational prestige of the respondents' fathers, in the national sample the highest percentages of illicit drug use are found among the men in the occupations with the least prestige, and the lowest percentages are found among the men with the most prestigious occupations.

The pattern for whites in Manhattan is similar to the one observed in the national sample. Among blacks the percentages across the

occupational prestige categories are similar. A notable finding is that three-fifths of the unemployed blacks had used heroin.

The findings regarding family status are similar in the two studies. With the exception of heroin use among whites, the men who were coupled have the highest lifetime prevalence of all illicit drugs. For whites, the lifetime prevalence of heroin use among the men employed full-time is essentially the same as the figure for the men without jobs. Among blacks, there are notable differences between the employed and unemployed men in the prevalence of heroin and cocaine,

FOOTNOTE

[1]The SEI scores for the respondents' fathers were divided as follows: (1) under 16; (2) 16 to 31; (3) 32 to 61; and (4) 62 to 96. For the respondents, the groupings were: (1) under 18; (2) 18 to 33; (3) 34 to 61; and (4) 62 to 96. The respondents who were in the armed forces presented a problem. They were coded as (1) armed forces, unspecified (N = 48); (2) armed forces, enlisted (N = 65); and (3) armed forces, officers (N = 17). The men in the first two categories were assigned a score of 15, while the officers were assigned a score of 44. These categories were selected on the basis of our distributions for the entire national sample. Thus, differences among whites, blacks, and others were not considered.

Chapter 3

Incidence and the Drug Epidemic

In the report on the national Young Men and Drugs study, a chapter was devoted to the issue of whether or not the United States had experienced a heroin epidemic, as had been suggested by knowledgeable individuals (Jaffe 1973; DuPont and Greene 1973). It was noted that the question of an epidemic of drug use refers to an historical issue, not one of the respondents' maturation. As in the national study, both historical and maturational changes are reflected in the Manhattan data, because the sample also includes eleven birth cohorts. In this chapter, data are analyzed to assess the incidence and prevalence of drug use and the timing of changes within the sample of men interviewed in the Manhattan study. While the national data suggested that there was an epidemic of drug use in the latter part of the 1960s it was anticipated that the New York data might reflect endemic drug use rather than providing additional evidence of the occurrence of a drug epidemic.

Incidence of Drug Use

Thedataon the incidence of new users are presented in the first two tables in this section. The number of new users appearing in each year from 1956 or earlier to 1975 is shown separately for the drug classes in table 3.1. It may be seen that three men reported use of tobacco in 1956 or earlier, and two more did so in 1957. These data are presented as percentages in table 3.2; the base for the percentages in each column is the total number of who reported any use of the drug or drug class in their lifetime.

The zero entries in these tables do not mean that these drugs were not being used in New York. Nor do the low figures for the early years mean that use of these drugs was restricted in Manhattan in those years. Rather, the zeros and the low incidence figures reflect the restricted age range in the sample. Thus, the increases in the number of new users of tobacco and alcohol in the 1960s occurs primarily because this was the time period when the men were reaching the age at which use of these drugs is common in American society.

For the reader's convenience, the largest figure in each column is underlined in table 3.1. with the exception of tobacco and alcohol, these figures are found in the four-year period, 1967 to 1970. The peak year for psychedelics, sedatives, and opiates was 1969; for marijuana the number of new cases peaked in 1968. The peak years for these drugs occurred approximately two years later in the national

TABLE 3.1 Number of New Cases of Use by Drug and First Year of Use

	Tobacco	Alcohol	Marijuana	Psychedelics	Stimulants	Sedatives	Opiates	Cocaine
1956 or earlier	7	15	2	0	0	0	3	0
57	5	6	1	0	0	0	0	0
58	8	4	3	0	1	1	1	0
59	8	20	3	0	0	0	5	1
1960	5	22	6	0	0	1	0	1
61	10	10	10	1	0	2	2	1
62	8	28	3	1	2	1	2	2
63	12	29	12	3	3	1	2	2
64	23	26	17	0	3	2	6	0
65	16	23	17	4	10	5	9	5
66	25	24	24	0	10	5	8	12
67	18	26	20	10	12	10	13	8
68	8	22	31	14	10	9	16	10
69	14	20	19	17	6	11	23	14
1970	13	6	24	11	11	9	13	15
71	5	3	15	7	6	2	7	13
72	6	0	5	7	2	6	7	7
73	5	4	5	3	5	8	7	8
1974 (or 1975)	5	1	3	3	2	4	3	9
Unknown	16	2	0	1	0	1	0	0
TOTAL	217	291	220	83	83	78	127	108

TABLE 3.2 New Cases of Use by Drug and First Year of Use in Percentages

Year of First Use	Tobacco (271)	Alcohol (291)	Marijuana (83)	Psychedelics (83)	Stimulants (83)	Sedatives (78)	Opiates (127)	Cocaine (108)
1956 or earlier	3	5	1	0	0	0	2	0
57	2	2	*	0	0	0	0	0
58	4	1	1	0	1	1	1	0
59	4	7	1	0	0	0	4	1
1960	2	8	3	0	0	1	0	1
61	5	3	5	1	0	3	2	1
62	4	10	1	1	2	1	2	2
63	6	10	5	4	4	1	2	2
64	11	9	8	0	4	3	5	0
65	7	8	8	5	12	6	7	5
66	12	8	11	0	12	6	6	11
67	8	9	9	12	15	13	10	7
68	4	8	14	17	12	12	13	9
69	6	7	9	20	7	14	18	13
1970	6	2	11	13	13	12	10	14
71	2	1	7	8	7	3	6	12
72	3	0	2	8	2	8	6	6
73	2	1	2	4	6	10	6	7
1974 (or 1975)	2	*	1	4	2	5	2	8
Unknown	7	1	0	1	0	0	0	0
TOTAL	100%	100%	99%	98%	99%	99%	102%	99%

*Less than 1 percent

sample. This apparently reflects an earlier introduction of illicit drugs in Manhattan than was the case nationally. The difference is not a function of different age distributions in the national and Manhattan samples; in fact, when the respondents are grouped into four age categories, there is a remarkable similarity in the percentage distributions in the two samples.

The five consecutive years in which the largest percentage of new users appeared in each drug category are bracketed in table 3.2. Of the men who ever used tobacco, 44 percent are included in these peak years, 1963-1967. For alcohol, the peak years are 1962-1966, and 45 percent of the new cases appeared in this period. The comparable figures for cigarettes and alcohol in the national sample are both 45 percent. Therefore, for the legal drugs, there is striking consistency in the findings of the two studies. Between 54 and 70 percent of the new users of the other drug classes are found in the peak five-year periods in Manhattan. These peak years are essentially the same--1966 to 1970 or 1967 to 1971--for all of these drugs. The new users of marijuana, stimulants, and sedatives are concentrated in the years 1966-1970, and the peak period was 1967-1971 for the psychedelics, opiates, and cocaine. A somewhat greater concentration in the peak periods appeared approximately two years later--in 1968-1972 or 1969-1973--in the national sample.

In all of the drug categories, there is a decline in the number of new users in the four or five years following the peak year, as may be seen in table 3.1. However, the number of new users of tobacco was the same in 1973 and 1974, and one more man tried cocaine in 1974 than the number who had done so in the previous year. Few new users of alcohol can be anticipated because nearly all of the men had used it. For the other drugs, including tobacco, some additional users might be expected in the years after the interviews were completed.

The median age at first use of each drug or drug class is shown in table 3.3 for each birth cohort. There is little variation in the median age at which tobacco and alcohol were first used. In each cohort, one-half of the men who ever used alcohol did so for the first time between the ages of 14 and 16. The comparable medians in the national sample were 15 or 16, or within the range in the Manhattan sample. There is some variation among the cohorts in the median age at first use of tobacco, but with the exception of the 1945 birth cohort, the range is restricted to the ages of 15 to 17. In the national sample, the comparable question was restricted to cigarettes, but the range of medians was identical. While the median age at which initial use of tobacco and alcohol occurred is remarkably similar for the eleven birth cohorts, this does not appear to be the case for the other drugs or drug classes. Rather, there appears to be a marked downward trend in the medians from the oldest to the youngest man, but it should be noted that some of these medians are based on a small number of cases. To provide a more adequate basis for comparison, four age groups were defined by birth year. As may

TABLE 3.3 Median Age at First Use of Drug Among Users by Year of Birth

Year of Birth	Tobacco	Alcohol	Marijuana	Psychedelics	stimulants	Sedatives	Heroin/Opiates	Cocaine
1944	15	15	17	23*	21*	24*	20*	22*
45	13	14	18	26**	21*	21**	18*	22*
46	17	16	21	17*	20*	22**	23	22
47	17	16	20	22	21*	21	19	23
48	17	14	18	21*	18	18*	17	21
49	17	15	18	19	18	20	17	20
1950	15	14	16	20*	18	17*	20*	18
51	15	15	17	18*	17*	17*	17	20
52	15	15	16	18	18	18	17	18
53	15	14	16	17	17	16	16	18
54	15	14	16	16	18	19*	15	18

**These medians are based on 2 to 4 cases and may, therefore, be unstable.

*These medians are based on 5 to 7 cases and may, therefore, be unstable.

be seen in table 3.4, the medians are similar for tobacco and alcohol, but for the other drugs, there is a clear downward trend in the medians from the oldest to the youngest age groups. A similar trend was observed in the national study.

The data in tables 3.3 and 3.4 cannot be taken as proof of an earlier age of onset of drug use in the younger cohorts because limits are set on median age by the age of the cohorts. The men born in 1954 were 20 years old when they were interviewed in 1974; consequently, the median age for them could not exceed 20. The higher median ages in the older age groups may reflect only the fact that at the time they were interviewed, these men were older, and this permitted higher medians to appear. The data in table 3.4 are relevant to this point. For most of the drugs, the percentages of users in the two oldest age categories are similar. In contrast, a lower percentage of the men in the youngest age group had used each of the drugs, other than the opiates, than was the case for the other age categories. If, by the age of 30, the percentage of users, for example, of marijuana, increases to the level observed in the other age categories, the median age at first use for the youngest men will necessarily be higher. While somewhat higher medians may be anticipated for marijuana, psychedelics , stimulants, and sedatives, the percentage of users in the four age groups was similar for opiates and cocaine. For these drugs, the median age at first use is lower among the younger men. Thus, the median age at first use among the younger age groups would match the medians for the older men only if higher proportions of the younger men subsequently use opiates and cocaine.

In table 3.5, the men who had used a drug only experimentally, that is, less than 10 times, are excluded. Among the nonexperimental users, there is no evidence of a decline in the age at first use of tobacco, alcohol, or marijuana. The medians for psychedelics and sedatives are based on limited numbers, and this may account for the apparent decline. For the opiates and cocaine, the medians clearly are lower in the younger age groups, but, again, this may be due to differences in years at risk, as previously noted. It is only for cocaine in the oldest age group that one finds a higher median in table 3.5 than in table 3.4. This means that men who used a drug experinentally did so at a somewhat later age than the men who used it more extensively.

As was indicated in the report on the national study (O'Donnell et al. 1976), the peaking of new cases, as seen in table 3.1, could occur in a number of ways which are not mutually exclusive:

1. An increase in new cases could be produced by higher proportions of users in the younger cohorts, even if the size of the cohorts remained constant. As was shown in table 3.4, this factor is not present in the Manhattan sample. The increase observed in table 3.1 is <u>not</u> the result of higher percentages of drug users in the younger cohorts than in the older cohorts.

TABLE 3.4 Median Age at First Use and Lifetime Prevalence of Use of 8 Drugs By Age Group

Drugs	Age Group n	Median Age at First Use of 8 Drugs				Percentage Who Ever Used 8 Drugs			
		1944-46 (62)	1947-49 (79)	1950-52 (81)	1953-54 (72)	1944-46 (62)	1957-59 (79)	1950-52 (81)	1953-54 (72)
Tobacco		15	17	15	16	74	76	67	57
Alcohol		14	15	14	14	98	100	99	96
Marijuana		20	19	16	16	76	78	76	69
Psychedelics		23	21	18	17	35	35	27	27
Stimulants		21	19	17	17	32	32	27	27
Sedatives		20	20	17	17	30	34	24	24
Opiates		19	20	18	16	29	39	28	30
cocaine		22	21	18	18	33	43	38	30

TABLE 3.5 Median Age at First Use of Drug Among Nonexperimental Users By Age Group

Age Group	Tobacco	Alcohol	Marijuana	Psychedelics	Sedatives	Stimulants	Opiates	Cocaine
1944-46	15	15	16	21*	16*	20*	19	23
1947-49	17	15	18	19	20	18	19	19
1950-52	15	14	16	17*	16	16	17	20
1953-54	15	14	16	16*	18*	16	16	18

*Median is based on only 9 or fewer cases.

2. An increase in new cases could be produced if succeeding cohorts were larger in number, even if the age at first use of a drug did not change from one cohort to another and the proportion of users in the cohorts remained constant. As may be noted in table 3.4, the number of men in the oldest age group is somewhat smaller, but overall the numbers of men in the age categories are quite similar.

3. If the number of persons in successive cohorts is identical and the proportion using drugs remains the same, but the age at first use drops between succeeding cohorts, there will be an increasing number of men entering the ranks of users in a given year or at least within a brief span of years. If, for example, each cohort usually produces a given number of new users by the age of 16, but then in a subsequent cohort that number is produced by age 15, there will be a year or a span of a few years in which many more new users appear; in one brief period the persons who used a drug by the age of 15 in one cohort would be added to those who used it by the age of 16 in the previous cohort. The data in tables 3.3 and 3.5 suggest, but do not demonstrate, that this factor may have been operating for some drugs.

4. The same peaking could be produced if the age at first use increased between succeeding cohorts, with the peak occurring later than in the first case. There is no evidence to suggest that this is the case in the Manhattan sample.

5. The first four possibilities involve differences among cohorts. Regardless of such differences, an increase in new cases could be produced by historical changes that have a similar effect on all persons who are living at the time such changes occur, or at least for all persons who have entered the age of risk and have not as yet left it.

There are, then, five possibilities insofar as explanation of the observed increase in new cases of drug use in this sample is concerned. In the national study, only the fourth possibility could be discounted. In this sample, the first and second possibilities could also be eliminated. The data on median age suggest that the third factor (a drop in the age at first use between succeeding cohorts) was influential, and the possibility of historical change cannot be discounted. The occurrence of riots in the ghettos of many large cities, the Vietnam War, and anti-war protests on college campuses all suggest that historical changes had an important impact on young men. It is not possible to assess the relative importance of these historical influences and the changing age at onset of drug use. However, the effect of the changing age at onset can be clarified by comparing and contrasting the year of onset of use for alcohol and marijuana.

The cumulative percentages for cases of alcohol use, based on the total number of men in the sample, are presented in table 3.6. Comparable percentages for new cases of marijuana use are shown in table 3.7. The tables may be compared with each other. Within each

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TABLE 3.6 Year of First Use of Alcohol by Birth Cohorts (Cumulative Percentages of Total Sample)

		Year of Birth										
Year of First Use	n	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
		23	15	24	25	31	23	31	23	27	35	37
1953		4	7	4	--	3	--	--	--	4	--	--
54		4	20	4	4	3	--	--	--	4	--	--
55		9	20	4	4	3	--	--	--	4	--	--
56		26	20	8	4	3	4	--	--	4	--	--
57		44	27	12	4	3	4	--	--	4	--	--
58		44	33	17	8	6	4	--	--	4	--	--
59		56	60	38	16	13	4	3	--	4	3	3
1960		74	73	58	28	23	9	3	9	8	3	8
61		78	73	67	36	32	13	3	9	12	3	8
62		87	87	83	40	55	30	6	22	12	9	14
63		87	93	96	60	64	48	26	30	23	14	14
64		87	93	100	68	74	65	52	48	27	20	16
65		100	93	100	84	81	83	71	48	35	20	22
66		100	93	100	84	84	87	81	70	50	29	40
67		100	100	100	92	84	100	87	74	65	60	46
68		100	100	100	96	90	100	94	83	85	69	65
69		100	100	100	100	94	100	94	100	96	80	89
1970		100	100	100	100	97	100	94	100	96	89	90
71		100	100	100	100	97	100	97	100	96	91	92
72		100	100	100	100	97	100	97	100	96	91	92
73		100	100	100	100	100	100	97	100	96	94	97
74		100	100	100	100	100	100	97	100	100	94	97

TABLE 3.7 Year of First Use of Marijuana by Birth Cohorts (Cumulative Percentages of Total Sample)

Year of First Use	n	Year of Birth 1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
		23	15	24	25	31	23	31	23	27	35	37
1956	9	--	--	--	--	--	--	--	--	--	--	--
57	13	--	--	--	--	--	--	--	--	--	--	--
58	17	--	8	--	--	--	--	--	--	--	--	--
59	22	13	8	--	--	--	--	--	--	--	--	--
1960	35	20	12	4	--	--						
61	39	27	25	8	10	4				--	--	--
62	39	27	29	8	13	4	--	--	4	--	--	
63	44	40	38	16	19	4	3	4	4	--	3	
64	44	60	38	28	26	4	26	9	7	--	3	
65	52	67	38	28	32	4	36	9	18	6	8	
66	52	73	42	36	42	30	52	22	22	9	11	
67	61	73	42	48	42	52	58	35	37	11	11	
68	61	73	67	64	48	65	64	56	44	29	14	
69	61	73	67	72	52	70	68	65	56	43	24	
1970	61	73	83	84	61	74	68	65	63	51	46	
71	70	73	83	84	61	74	74	74	67	66	54	
72	70	73	83	88	64	74	74	74	67	69	60	
73	70	73	83	88	64	78	74	74	70	71	65	
74	70	73	83	88	64	78	77	78	74	71	65	

table, either cohorts or years of first use can be compared, and it should be noted that comparisons of diagonals are legitimate and useful. To illustrate, the diagonals for age 17 are underlined in each table. This enables one to compare the cohorts in terms of the percentage who had used alcohol or marijuana at or before that age. Similar comparisons can be made for other ages; one simply has to subtract the year of birth from the year of first use. In table 3.6, adjacent columns should be compared. If one allows for sampling fluctuation, any two adjacent columns are essentially similar, except that the one on the right has been displaced one space down-Ward. In other words, if each cell in a column is compared with the cell immediately below and to the right of it, the percentages are approximately equal. This means that the cohorts are similar to each other with respect to first use of alcohol. By age 10, from 3 to 20 percent of the men in each cohort had used alcohol, and the percentages increase fairly regularly in the succeeding years. By the age of 17, which is highlighted by the underlined diagonal in the table, the percentages of men in each cohort who had used alcohol range between 68 and 96.

The peak year for new cases of alcohol use in table 3.1 was 1963. If the row for 1963 is examined in table 3.6, it will be observed that men in the 1945 and 1946 cohorts furnished a few new cases, at ages 17 and 18, and that the other cohorts were contributing sizable numbers, as evidenced by the fact that the percentages for 1963 average about 10 points higher than for 1962. Table 3.7 is not subject to the potential weakness of the tables in which median ages are presented, because comparisons can be made in term of ages that all of the cohorts have reached. In each column in table 3.6, the first cell that shows 50 percent marks the age at which one-half of the cohort, not merely one-half of the users, had begun alcohol use. These cells fall roughly on a diagonal. For the youngest cohorts, these cells are slightly above the diagonal suggested by the oldest cohorts. This indicates that first use of alcohol occurred somewhat earlier in the younger cohorts. As in the national sample, the peaking of new cases of alcohol use in table 3.1 is, to a slight extent, due to the earlier use of alcohol in the younger cohorts. There is no hint of any historical change that affected all cohorts.

Since there is no question of an epidemic of alcohol use, the similarity across cohorts establishes that the increase in new cases of alcohol use observed earlier in table 3.1 is almost entirely a maturational effect. A certain proportion of new cases could be anticipated at each age, and as each cohort moved through that age, it contributed its expected number of new cases. The same maturational effect, then, can be expected to account at least partially for the increases observed in table 3.1 for the other drugs.

New cases of marijuana use by cohort are shown in table 3.7, and it is apparent that the maturational effect, which applies to all cohorts, was not the only cause of the increase in marijuana use noted in table 3.1, If the underlined. figures for the age of 17 are examined,

one finds two distinctive patterns. In the 1944 through 1949 cohorts, one finds that from 27 to 39 percent of the men had used marijuana by the age of 17. The comparable figures for the 1950 through 1954 cohorts range from 51 to 58 percent. In view of the data on median age in tables 3.4 and 3.5, it wouuld appear that in the older cohorts experimental use of marijuana occurred rather late, because there was little difference between the age groups when the median age at first use was examined among the nonexperimental users. If one examines the location of the cells in which at least one-half of the men in each cohort had used marijuana, it is apparent that these figures would lie on a diagonal, comparable to the one for alcohol, if the 50 percent figure for the 1944, 1946, 1947, and 1948 cohorts would be four cells higher in their respective columns. In other words, experimental users in these cohorts tried marijuana at a later age than their counterparts in the younger cohorts.

In the national study, the peak year for new cases of marijuana use was 1969, and men from each of the eleven cohorts contributed to the peak. The peak year for the appearance of new users of marijuana occurred a year earlier in Manhattan. However, the men in the two oldest cohorts did not contribute to this peak (table 3.7). On the other hand, a few new cases of marijuana use did occur in these older cohorts after the peak year. The men in the two youngest cohorts contributed to the peak in 1968, although they were only 14 and 15 years of age at that time. The increase in marijuana use in the late 1960s partly resembles the increase in alcohol use in that it reflects maturational effects. However, an additional factor is observed for marijuana--a higher proportion of the men in the younger cohorts had used marijuana by the age of 17. Thus, the figures in table 3.3 on median age of onset are not misleading, but reflect a real change.

The peak year for new cases of opiate use was 1969, or the middle year in the peak five-year period of 1967-1971 (table 3.1). As the number of opiate users in each cohort varies fran 30 to 52 percent and provides too few cases for analysis on a cohort-by-cohort basis, the year of first opiate use is shown for four age groups in table 3.8. It is apparent that the men in each age group contributed to this peak period, although few of the youngest men used opiates prior to 1969. These data reflect the lower age of onset of opiate use among the younger men (table 3.3).

The lower cumulative percentages in the two younger age groups undoubtedly reflect their shorter period of risk. A crude control for the greater period of risk in the older age groups can be made by examining the percentages when the men in each age group reached twenty years of age. In 1966, all of the men in the oldest age group had reached the age of twenty, and 27 percent of them had used opiates by that time. For the 1947-49 group, 35 percent had used opiates by 1969, when they had all attained the age of twenty. The comparable figures for the two younger age groups are 40 and 35 percent, respectively. Thus, a higher, not a lower, proportion of the men in the younger age groups had used opiates by the age of twenty.

TABLE 3.8 Year of First Use of Opiates by Age Groups
(Cumulative Percentages)

Year of First Use	n	Age Groups 1944-46 (62)	1947-49 (79)	1950-52 (81)	1953-54 (72)
1958 or earlier		3	1	--	1
59		10	2	--	1
1960		10	2	--	1
61		13	2	--	1
62		14	4	--	1
63		14	6	--	1
64		21	8	1	1
65		24	14	4	1
66		27	16	7	3
67		29	23	15	4
68		34	32	21	6
69		39	35	28	21
1970		42	40	32	26
71		42	44	35	29
72		42	44	40	33
73		45	44	43	36
74		45	46	43	39

In terms of the different ways that a peaking of cases could occur, as noted earlier in this chapter, the data suggest that the third possibility occurred in Manhattan. That is, the age at first use of opiates, as well as marijuana, declined in the younger cohorts and produced a peaking of new cases. The data suggest that there was a drug epidemic in Manhattan in the late 1960s and early 1970s. However a caveat is in order. The data do not permit assessment of the fifth possibility, which involves historical changes. Further, to this point, the analysis has been based on the number of new users appearing in each calendar year. Yet, this is only part of the issue regarding the existence of an epidemic; other relevant questions concern the length of time those who used a drug continued to use it, as well as the extent of their use.

Annual Prevalence

In the national study, data on annual prevalence--the percentage of the total sample who used each drug in each calendar year--were obtained for the years 1957 through 1974, and heroin and other opiates were differentiated. In the Manhattan study, comparable questions were posed only about opiates, and use of heroin was not distinguished from use of other opiates. Although the questions were phrased in terms of use "on your own," or nonmedical use, a few of the men may have reported medical use in response to the questions. One indication that this may be the case is the fact that three of the 127 men who had used opiates reported their use at the age of eight or earlier. There is little difference across age groups in the percentage of users of opiates (table 3.8).

The data pertaining to the annual prevalence of heroin-opiate use are presented in table 3.9 for the years 1957 through 1974. In addition to annual prevalence for the entire sample, the percentage of men in each age group who reported heroin-opiate use each year is shown. A man is counted in a given year if he used opiates at least once in that year. Experimental use of heroin-opiates is not reflected in these data because the question pertaining to pattern of use year-by-year was posed only to nonexperimental users. For comparative purpose, the lifetime prevalence of opiate use, or the percentage of men in each age category who ever used opiates, is also presented. The experimental users are included in the figures for lifetime prevalence. For the four age categories, the percentages for lifetime prevalence are one and one-half to two times higher than the figures shown in table 3.9 for annual prevalence. In the national sample, the annual prevalence of heroin never exceeded 2 percent, and the annual prevalence of other opiates reached 10 percent in only one year, 1974. In contrast, the annual prevalence of heroin-opiate use in Manhattan reached a peak of 20 percent in 1970. Thus, in the late 1960s and early 197Os, the annual prevalence of heroin-opiate use was substantially higher in Manhattan than in the rest of the country.

The peak five-year period in terms of annual prevalence is bracketed in table 3.9; it spans the years 1969-1973, and men in each of the four age categories contributed to this peak period. Also bracketed

TABLE 3.9 Annual Prevalence of Heroin-Opiate Use by Age Groups (Percentages)

	Age Groups				
n	1944-46 (62)	1947-49 (79)	1950-52 (81)	1953-54 (72)	Total (294)
1957		1			*
58	2	1			1
59	6	1			2
1960	6	1			2
61	10	1			2
62	11	1			3
63	11	3			3
64	13	4			4
65	15	8	2		6
66	15	10	6	1	8
67	16	15	11	3	11
68	23	19	17	4	16
69	23	22	19	15	19
1970	21	25	16	18	20
71	18	25	14	21	19
72	15	19	21	19	19
73	15	18	21	15	17
74	10	14	16	12	13
Lifetime Prevalence	45	46	43	39	44

are the peak periods within each age group. These periods show considerable overlap. In fact, they are identical for the two younger age groups. Again, this shows how the lower age of onset of heroin-opiate use in the younger age categories contributed to the peaking of heroin-opiate use in a restricted span of time.

In the interivews, a man who reported use of heroin-opiates more than ten times as was given a card showing eight statements describing different frequencies of heroin-opiate use. The respondent was asked to select the statement that best described his use of opiates during each of the years he used them. The resulting data, shown in table 3.10, reveal a definite shift in the frequency of heroin-opiate use from daily use to use once or twice a month or less than once a month. For example, in 1968, 59 percent of the users reported use at least daily or several times a day, whereas in 1973, only 37 percent of the users reported daily use. Similarly, in 1968, only 20 percent of the users said they used opiates once or twice a month or less than once a month, but in 1973, 41 percent of the users selected these categories to describe their use of opiates.

The data in tables 3.9 and 3.10 show not only a substantial decline in the annual prevalence of heroin-opiate use in Manhattan, but also a shift from daily use to occasional use of heroin-opiates. In the national study, the only evidence of a decline in annual prevalence involved psychedelics and stimulants. While speculative, this difference in the findings may be a reflection of the fact that illicit drug use flourished in Manhattan several years before the drug epidemic became a nationwide phenomenon. If the trend nationally follows the one in Manhattan, then the findings in the national study would have been different had the study been conducted two or three years later. In other words, 1974 was too early to detect a decline in the annual prevalence of heroin or other opiates.

The Future

In the analysis of the data in the national study, it was suggested that marijuana was the key drug in the drug epidemic of the 1960s (O'Donnell et al. 1976:59; O'Donnell and Clayton 1981). The arguments concerning the importance of marijuana in the drug epidemic will not be reviewed in this chapter. Rather, the presumed importance of marijuana is noted to explain the presentation of the data in table 3.11 in terms of the extent of marijuana use.

It is generally recognized that drug use is transmitted largely through friendship networks, and it may be seen in table 3.11 that use of marijuana by at least a few of the respondent's friends was almost universal when the men in the Manhattan sample first used marijuana.

The respondents were also asked: "What would you say the chances are that you will be using each drug, even occasionally, three years from now? Would you say there was no chance, a slight chance, a good

TABLE 3.10 Frequency of Heroin-Opiate Use by Year, Manhattan Sample

Year	Number Who Used in Year	Percentage Using in Year	Frequency of Heroin-Opiate Use					
			Several Times Daily	At Least Daily	Almost Every Day	Once or Twice a Week	Once or Twice a Month	Less than Once a Month
1957	1	*	0	1	0	0	0	0
58	2	1	1	0	0	0	0	1
59	5	2	1	2	0	1	0	1
1960	5	2	2	0	0	2	0	1
61	7	2	3	0	0	3	0	1
62	8	3	4	1	0	2	0	1
63	9	3	5	0	2	2	0	0
64	11	4	4	3	0	2	1	1
65	17	6	5	4	1	3	3	1
66	23	8	6	6	2	4	3	2
67	33[a]	11	7	9	5	4	4	3
68	46	16	15	12	4	6	4	5
69	57	19	20	10	8	9	5	5
1970	59	20	21	10	8	8	9	3
71	57	19	18	11	5	6	9	8
72	55	19	14	12	4	9	8	8
73	51	17	12	7	4	7	10	11
74	39	13	5	3	1	8	11	11

[a]One respondent did not indicate how frequently he used opiates in 1967.

TABLE 3.11 Use by Friends, Availability, and Chance of Future Use of Drugs by Extent of Marijuana Use (Percentages)

				Extent of Marijuana Use			
	Total (294)	No Use (74)	Under 10 (42)	10-99 (54)	100-999 (56)	1000+ (68)
At least a few friends were using when R started	--	--	98	100	98	99
More than a few friends are now using: Marijuana	69	38	55	72	91	91
Psychedelics	16	8	10	11	18	32
Stimulants	18	14	10	17	22	28
Sedatives	15	12	10	15	14	22
Heroin	12	6	7	17	14	18
Opiates	11	4	10	4	12	25
Cocaine	25	11	7	26	27	48
Would find it easy to get: Marijuana	75	46	60	83	86	99
Psychedelics	38	24	29	50	36	52
Stimulants	41	27	36	50	41	53
Sedatives	44	31	43	44	43	57
Heroin	42	22	36	43	43	68
Opiates	36	20	31	41	30	56
Cocaine	45	23	36	50	48	69
At least some chance that in three years R will be using: Marijuana	64	16	43	76	91	96
Psychedelics	15	1	5	9	25	32
Stimulants	20	1	14	17	29	41
Sedatives	18	5	14	15	18	37
Heroin	8	0	5	9	14	15
Opiates	19	4	7	15	25	40
Cocaine	25	0	7	20	39	56

chance, or a very good chance? How about (Drug)?" While these are subjective estimates of future use, 64 percent of the men indicated that there was at least a slight chance they would be using marijuana three years later. The respondents' estimate of the likelihood of future use of each drug or drug class is directly related to the extent of their marijuana use. This is particularly noticeable for marijuana; 16 percent of the nonusers said there was some chance of use in three years, but the figures increase rapidly with extent of use to 96 percent for the men who had used marijuana most frequently. In table 3.11, those who indicated there was even a slight chance of using are included as possible future users. If only those who reported the chance of marijuana use as "good" or "very good" are counted, the percentages in terms of extent of marijuana use would be non-users, 1; used less than 10 tines, 2; used less than 100 times, 30; used 100 to 999 times, 61; and used 1,000 or more times, 78. Therefore, one can infer that a sizable proportion of the men who have used marijuana intend to continue or resume use, and even 1 percent of the men who have never used it recognize some chance of future use. The findings in the national study were similar. The implication is that there will continue to be a large reservoir of marijuana users, and nonusers may learn to use the drug from them. The possibility of such learning is apparent in the responses to the question: "How" many of your current friends and acquaintances use each drug?" (table 3.11). Again, it may be observed that the extent of prior use of marijuana is related to the likelihood that a man will report having friends who currently use marijuana. In general, this holds true for the other drugs, although there are some minor reversals. Almost two-fifths of the nonusers reported that more than a few of their friends currently used marijuana, and almost one-half of the men who had used marijuana most often reported that they had friends who were currently using cocaine. The rather widespread use of illicit drugs on the part of the respondents' friends means that transmission of drug use through friendship networks is likely to occur.

The men were also asked. how difficult it would be for them to obtain each of the drugs within a day if they wanted to do so and had sufficient funds. Overall, 75 percent of the men reported it would be easy to obtain marijuana, and approximately 40 percent of the respondents indicated that they could easily obtain the other drugs.

It must be remembered that the increased drug use in Manhattan, as well as in the nation, has necessarily changed the social climate surrounding drug use. In the years when few people were using marijuana, one had to overcome numerous obstacles prior to trying the drug. Today, a man who knows that more than one-third of this friends are currently using marijuana can readily justify experimenting with the drug. This is also true, to a lesser extent, for the other drugs. The only data in table 3.11 that suggest drug use will not be more widespread in this sample in the future are the figures for chances of use in three years for nonusers and experimental users of marijuana. However, the men who had used marijuana more then experimentally indicated that they might well try the other illicit drugs in the

future. At least some of the conditions conductive to the spread of drug use existed at the time the men in the Manhattan sample were interviewed. Whether the existence of these conditions did, in fact, lead to more widespread use is not known. It is evident that the data do not provide any basis for an optimistic prediction that the prevalence of drug use in Manhattan will decline in subsequent years.

Chapter 4

Multiple Drug Use

The purpose of this chapter is to compare patterns of multiple drug use in the national and Manhattan samples. While multiple drug use can be defined in many different ways, in this chapter it will be defined simply and broadly as the use of two or more drugs at any tine in an individual's lifetime. Use of such abroad definition will allow us to examine an idea that has received considerable attention in the drug field. This is the hypothesis that drug use is patterned and that individuals pass through developmental stages as they become more involved with drugs. Kandel (1975) has identified these stages as use of (1) beer or wine, (2) cigarettes or hard liquor, (3) marijuana, and (4) other illicit drugs. A number of measurement strategies and techniques have been utilized to study the form, content, and significance of the stages of drug involvement. Regardless of the strategy one selects, an analysis aimed at identification of developmental stages requires examination of multiple drug use.

Patterns of Drug Use

One technique that has been used. to study multiple drug use is Guttman scaling (Kandel and Faust 1975; Single et al. 1974). It offers a way to discover patterns of use across drug classes. Use of this technique is based on the assumption that drug use may be conceptualized along a single dimension. The order of the drug classes along that dimension is established by the proportion of respondents who report use of each of them. Relevant data are shown in table 4.1 and indicate several important differences between the Manhattan and national samples. First, a larger proportion of the men in the Manhattan sample reported use of each drug class. This is particularly true for cocaine, heroin, and marijuana with 23, 19, and 20 percentage point differences, respectively, between the two samples. Second, the prevalence rates for stimulants, sedatives, and other opiates in the national sample were surprisingly high. Therefore, criteria were developed to differentiate quasi-medical use from use that was exclusively nonmedical in nature (see O'Donnell et al. 1976:135-37). As the data in column 1 of table 4.1 show, the lifetime prevalence rates for stimulants, sedatives, and other opiates in the national sample are substantially lower when quasi-medical use is counted as nonuse. When similar criteria were applied to the Manhattan sample the percent who could be classified as quasi-medical users was negligible. Therefore, nonmedical use of opiates and sedatives is substsantially higher in

TABLE 4.1 Item Marginals for Manhattan and National Samples

Drug Class	National Percent Used	National Rank	Manhattan Percent Used	Manhattan Rank	Percentage Point Differences
Alcohol	97	1	99	1	+ 2
Marijuana	55	2	75	2	+20
*Stmulants	23 (27)	3	28	5.5	+ 5 (+1)
Psychedelics	22	4	28	5.5	+ 6
*Other Opiates	20 (31)	5	36	4	+15 (+5)
*Sedatives	16 (20)	6	26	7	+10 (+6)
Cocaine	14	7	37	3	+23
Heroin	6	8	25	8	+19

*For stimulants, sedatives, and other opiates, criteria were applied to determine whether use was quasi-medical or nonmedical. The figures in parentheses in column 1 indicate the percent who had used the three drugs with "quasi-medical use counted as use." The figures not in parentheses represent quasi-medical use counted as no use. In the Manhattan sample the percent who met the criteria of quasi-medical use was negligible.

the Manhattan sample than in the national sample. Third, the order of the drugs, according to lifetime prevalence, is different in the two samples. Only alcohol, marijuana, and heroin occupy comparable ranks. Cocaine (37 percent) is ranked third in the Manhattan sample, but it is seventh in the national sample (14 percent).

The data on patterns of nonmedical use across the drug classes are shown in table 4.2 in a Guttman scaling format. Several conclusions can be drawn from these data. First, a majority of the men, 62 percent in the Manhattan and 78 percent in the national sample, fall intooneof the nine pure scale type patterns. This is especially interesting because there are 256 possible patterns of use with eight drugs, and the order of the drugs in table 4.1 differs in the two samples. Hence, the clustering into the nine pure scale types demonstrates clearly the existence of nodal patterns of progression across drug classes. A second conclusion is that multiple drug use is more prevalent in the Manhattan sample. In both samples, 22 percent of the men had used only alcohol and marijuana. On the other hand, 40 percent of the men in the national sample had only used alcohol in comparison with 21 percent in the Manhattan sample. This difference, as well as the more extensive use of the illicit drugs in the Manhattan sample, reflects in part the selection criterion for the Manhattan sample, namely, registration with a Selective Service Board serving an area with a high rate of drug use. Third, twice as many men in the Manhattan sample (9 percent) reported use of all eight drug classes than was the case in the national sample (4 percent). These findings demonstrate that multiple illicit drug use is more prevalent in Manhattan than in the national population.

Use of Pairs of Drugs

A second tactic that has bean used to study multiple druguseis to examine the percentage of persons who report use or nonuse of one drug in terms of reported use of another drug. However, before a detailed analysis of the data in table 4.3 is presented, it is appropriate to offer a general interpretation. An examination of the pairs of columns for each drug, in which users of the drug are compared with nonusers, confirms that use of any drug is associated with use of all other drugs. This can be illustrated by examining the data for users and nonusers of tobacco and alcohol and tobacco and marijuana. Nearly all of the tobacco users have used alcohol but so have most of the nonusers; hence, knowledge of tobacco use or nonuse does not help predict use or nonuse of alcohol. However, 81 percent of the tobacco users report having used marijuana, in comparison with only 26 percent of those who never used tobacco. This finding is interesting from two perspectives. First, use of tobacco is correlated with marijuana use, and it may be noted that the percentage of tobacco users who have used marijuana (81 percent) is higher in the Manhattan sample than was the case in the national sample (59 percent). Second, as was found in the national study, approximately one-fourth of those who have never used tobacco report

TABLE 4.2 Guttman Scale Patterns, Manhattan and National Samples

Number in Each Pure Category	Percent in Each Pure Category	MANHATTAN STUDY Drug Classes and Percent Who Have Used							
		99%	74%	37%	36%	28%	28%	26%	25%
3	1	No Use							
62	21	Alcohol							
66	22	Alcohol	Marijuana						
7	2	Alcohol	Marijuana	Cocaine					
2	1	Alcohol	Marijuana	Cocaine	Opiates				
1	*	Alcohol	Marijuana	Cocaine	Opiates	Stimulants			
2	1	Alcohol	Marijuana	Cocaine	Opiates	Stimulants	Psychedelics		
13	4	Alcohol	Marijuana	Cocaine	Opiates	Stimulants	Psychedelics	Sedatives	
26	9	Alcohol	Marijuana	Cocaine	Opiates	Stimulants	Psychedelics	Sedatives	Heroin
TOTAL 182	62								

		NATIONAL STUDY Drug Classes and Percent Who Have Used							
		97%	55%	23%	22%	20%	16%	14%	6%
45	2	No Use							
994	40	Alcohol							
551	22	Alcohol	Marijuana						
84	3	Alcohol	Marijuana	Stimulants					
37	1	Alcohol	Marijuana	Stimulants	Psychedelics				
20	1	Alcohol	Marijuana	Stimulants	Psychedelics	Opiates			
33	1	Alcohol	Marijuana	Stimulants	Psychedelics	Opiates	Sedatives		
92	4	Alcohol	Marijuana	Stimulants	Psychedelics	Opiates	Sedatives	Cocaine	
99	4	Alcohol	Marijuana	Stimulants	Psychedelics	Opiates	Sedatives	Cocaine	Heroin
TOTAL 1955	78								

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TABLE 4.3 Use and Nonuse Patterns for Pairs of Drugs: Manhattan Sample (Percentage)

	Tobacco		Alcohol		Marijuana		Psychedelics		Stimulants		Sedatives		Heroin		Opiates		Cocaine	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
n	259	35	291	3	220	74	82	212	83	211	78	216	74	220	108	186	108	186
Tobacco	--	--	89	33	96	65	99	84	96	85	97	85	97	85	98	82	98	82
Alcohol	99*	94	--	--	100	96	100	99	100	99	100	99	100	98	100	98	100	98
Marijuana	81	26	76	0	--	--	100	65	96	65	97	67	99	66	96	62	100	60
Psychedelics	31	3	28	0	37	0	--	--	67	12	71	13	57	19	62	8	61	9
Stimulants	31	9	29	0	36	4	68	13	--	--	76	11	51	20	57	12	54	13
Sedatives	29	6	27	0	35	3	67	11	71	9	--	--	55	17	58	8	56	10
Heroin	28	6	26	0	34	1	51	16	45	18	53	16	--	--	53	9	63	3
Opiates	41	6	37	0	36	5	82	19	75	22	81	21	77	24	--	--	75	15
Cocaine	41	6	37	0	49	0	80	20	70	24	77	23	92	18	74	15	--	--

*All but one person who had used tobacco had also used alcohol.

having used marijuana. This is contradictory to what would be predicted by Kandel's (1975) model of developmental stages of drug use. In these two samples, prior use of tobacco is not a necessary condition for use of marijuana.

Two points should be mentioned about the users and nonusers of alcohol: almost all of the respondents have used alcohol and use of alcohol is associated with use of the other drugs. some one-fourth to one-third of the users of alcohol have used other drugs. In contrast, only one of the three nonusers of alcohol had used tobacco, and no use of other drugs was reported by these abstainers.

An important inference that can be made on the basis of the data in table 4.3 is that marijuana may be the key gateway drug for understanding multiple illicit drug use. Evidence for this can be found in two places in the table. The first is in the column indicating the percentages of users and nonusers of marijuana who reported using other drugs. The second location is in the third row in which the percentages of users and nonusers of the other drugs who had also used marijuana are shown. Some 37 percent of the men who had used marijuana had also used psychedelics while none of the nonusers reported psychedelic use. The comparable figures for stimulants, sedatives, heroin, and. opiates are 34 to 36 percent for the users of marijuana in comparison with 1 to 5 percent for the nonusers. Finally, 49 percent of the marijuana users reported having used cocaine in comparison with none of the men who had not used marijuana. If, in the next section of this chapter, it is established that use of marijuana predates use of the other drugs, a plausible hypothesis would be that use of marijuana, in conjunction with other factors, greatly facilitates a parson's progression into use of other illicit substances.

An examination of the figures in row 3 of table 4.3 also suggests this conclusion, though from a slightly different perspective. Of those who had ever used psychedelics or cocaine, 100 percent had also used marijuana; this was also true for 96 to 99 percent of the men who had used stimulants, sedatives, heroin, or other opiates. Among the nonusers of these drugs, the percentages reporting use of marijuana ranged from 60 to 66 percent. The findings in the national study were almost identical, except that lower percentages of the nonusers of stimulants, sedatives, heroin, and other opiates reported use of marijuana (see O'Donnell et al. 1976:100).

There are several reasons for suggesting marijuana rather than alcohol as a key to the understanding of multiple drug use. First, all of the users of marijuana used alcohol, and almost all of them used tobacco. Thus, to know that a man has used marijuana is to know that he has used at least alcohol and probably has used tobacco. If tobacco and alcohol are defined as drugs, marijuana use almost automatically implies multiple drug use. Second, the associations between marijuana use and use of other drugs are stronger than the comparable associations for alcohol. Third, marijuana use is a better predictor of use of other illicit drugs than is the licit

drug alcohol. For nonusers of either drug, one can predict with a high probability of being correct that they will not have used other illicit drugs. However, with respect to nonusers of alcohol, one is making a prediction about 1 percent of the sample, but with respect to marijuana, 25 percent of the men in the Manhattan sample and 45 percent in the national sample are involved. Finally, some of the differences between users and nonusers are larger for drugs other than marijuana. For example, the difference between users and nonusers of psychedelics is 60 percentage points for cocaine use, and for heroin use, this difference is a dramatic 75 percent age points. It should be noted that higher percentages of the nonusers of psychedelics and heroin had used cocaine than was the case for men who had not used marijuana, but this is not the reason marijuana use is emphasized. Rather, it will be shown that in terms of temporal order, use of alcohol and marijuana generally preceded use of other drugs. Because of the temporal order, it is appropriate to predict from marijuana use to use of the other illicit drugs, but it is only in a statistical sense that one can predict marijuana use from use of drugs such as the psychedelics.

To facilitate comparison, data from the Manhattan and national samples are shown in table 4.4. With respect to use and nonuse of marijuana by use of the other illicit drugs, there are clear differences between the samples. Thirty-four percent of the men in the Manhattan sample who had used marijuana reported use of heroin, in comparison with only 11 percent in the national sample. In Manhattan, 49 percent of the marijuana users indicated that they had used cocaine. The comparable figure for the national sample is 25 percent. In the columns pertaining to heroin use, there are substantial differences in the use of psychedelics, stimulants, sedatives, and other opiates. In each case, a higher percentage of the men in the national sample who reported use of heroin had used these four classes of drugs than was the case in the Manhattan sample. In the analysis of the national data, it was concluded that heroin use represents the deepest possible involvement in the drug milieu (O'Donnell et al. 1976:101). Heroin use was also relatively rare, as only 6 percent of the respondents had used the drug. On the other hand, two-thirds of the heroin users had used all eight classes of drugs. In contrast, in Manhattan, 25 percent of the men had used heroin. Their use of heroin undoubtedly reflects extensive involvement in the drug milieu, but it is important to recognize that heroin use is not as rare an occurrence in Manhattan. As previously noted., a larger proportion of the men in Manhattan reported experience with all of the classes of drugs than was the case in the national study. In contrast, the data on use and nonuse of heroin and use of psychedelics, stimulants, sedatives, and opiates suggest- that these drugs were either less readily available or the Manhattan subjects were more selective in the drugs they used. While marijuana use means multiple drug use in the sense that it reflects use of tobacco and alcohol, these data suggest that use of psychedelics, stimulants, and sedatives may be more extensive nationally than it is in so-called "high drug use" areas. On the other hand, multiple drug use

TABLE 4.4 Pair-Wise Relationships of Marijuana, Heroin, and Cocaine and Other Drugs: Manhattan and National Samples Compared (Percentages)

Drug Classes	MARIJUANA				HEROIN				COCAINE			
	National		Manhattan		National		Manhattan		National		Manhattan	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
n	1382	1128	220	74	148	2362	74	220	352	2158	108	186
Tobacco	94	81	96	65	99	87	97	85	96	87	98	82
Alcohol	100	94	100	96	100	97	100	98	100	96	100	98
Marijuana	--	--	--	--	99	52	99	66	100	48	100	60
Psychedelics	40	*	37	0	92	18	57	19	89	11	61	9
Stimulants	41	1	36	4	86	19	51	20	86	13	54	13
Sedatives	29	1	35	3	80	12	55	17	72	7	56	10
Heroin	11	*	34	1	--	--	--	--	38	1	63	3
Opiates	33	4	36	5	91	15	77	24	79	10	75	15
Cocaine	25	*	49	0	90	9	92	18	--	--	--	--

* Less than one percent.

in such areas may involve marijuana, heroin, and cocaine to a greater extent than is true in other parts of the country. At least this is the case in the area from which the Manhattan sample was selected.

Evidence in support of the latter point can be found in the last four columns in table 4.4. The men in the national sample who had used cocaine were more likely to report use of psychedelics, stimulants, sedatives, and, to a limited extent, opiates, than their counterparts in the Manhattan sample. However, the reverse was true for heroin. Nationally, 38 percent of the cocaine users reported use of heroin in comparison with 63 percent of the men in Manhattan. There is thus a much stronger linkage between use of heroin and cocaine among the men who grew up in high drug use areas than among men in the general population, who presumably were raised in areas in which illicit drugs were less commonly used.

Two precautionary comments are appropriate at this point. First, the data in tables 4.1 through 4.4 are based on crude measurements of drug use and thus must be interpreted cautiously. Second, the data in these tables do not shw nor are they intended to suggest that use of any one drug is a necessary condition for progression to use of other drugs. The concept of necessary conditions is less useful in an examination of the issue of progression through stages of drug use than is the probabilistic conception of causality. The probabilistic conception of causality employs criteria such as found in the Surgeon General's Smoking and Health reports (statistical association, the consistency, strength, specificity, coherence, and time-order of the association, and tests of the association for spuriousness). These criteria are quite similar to those articulated for the social sciences by Hirschi and Selvin (1967). According to Hirschi and Selvin, three criteria must be met to establish a causal relationship: (1) the presumed cause and presumed effect must be statistically correlated; (2) the presumed cause must occur temporally prior to the presumed effect; and (3) the relationship must not be spurious (i.e., the observed statistical relationship between the indicators of the cause and effect must not be the product of factors antecedent to both of them).

Year of Onset

one of the most interesting problems in the drug field concerns the temporal order of onset of use of various classes of drugs. The problem is interesting because (1) it relates to the issue of progression through stages of drug use and (2) it is one of the criteria that must be met in the exploration of cause-effect relationships between use of one drug and use of other drugs. The problem of temporal order is difficult to establish from a methodological standpoint because most studies are cross-sectional in nature and rely on retrospective data to determine the year of onset. Even in longitudinal studies, the order of events is, to some extent, based on retrospective reconstruction. In the initial measurement the respondent is asked to reconstruct the order of events in his or

her life to that point in time. The problem of retrospective reconstruction can be minimized in a longitudinal study by anchoring the data collection points to a calendar year or to a shorter time span (Elliott and Ageton 1976). The problem of temporal order is also a complex one conceptually because involevement in deviant behavior, including drug use, is usually embedded in a number of related life-events. For example, the initial onset of marijuana use may be less salient than the movement of the initiator from membership in a conventional peer group to one in which many of the members are actively involved not only in drug use, but in other forms of deviance as well. In addition, initial use of an illicit substance such as marijuana may be less salient an event in one's life than onset of regular or daily use. In other words, it is possible that initial use may be almost a chance event, fostered less by rational and deliberate choice than by situationally-based opportunity. In contrast, regular use of a substance may involve an explicit decision and my be the event that is most important in explaining progression to other drugs.

In the Manhattan study, data on the order of onset of drug use were obtained in two ways. First, specific questions were posed regarding alcohol. The question on alcohol use was: "In what year did you have your first drink of wine, beer, or liquor on your own, or with friends?" For the other drugs or drug classes, questions about year of onset were asked only of persons who had previously indicated that they had used a class of drugs on at least 10 separate occasions. For marijuana or hashish, psychedelics, stimulants, sedatives, the opiates (including heroin), and cocaine, the question was phrased: "In what year did you first try_____?"

The data in table 4.5 show, for each pair of drugs, the order in which they were used in the Manhattan and national samples. As noted previously, quasi-medical use of stimulants, sedatives, and opiates was treated as nonuse in the national sample. Quasi-medical use of these substances was negligible in the Manhattan sample and was not included. Therefore, these data essentially reflect onset of nonmedical use. In the national study, when a respondent indicated that he had first used two drugs in the same year, the order of use of these drugs could usually be established by reference to the month of onset for the pair of drugs. The month in which a drug was first used was not obtained in the Manhattan study, and ties on year of onset could not be resolved. As shown in table 4.5, there are more men listed as using a pair of drugs in the same year in the Manhattan sample than in the national sample. Consequently, only percentage differences in the third set of columns that are greater than 10 points will be noted.

Alcohol use is clearly antecedent to use of the other drugs in both samples. The only notable difference in the first part of table 4.5 is that 15 percent of the Manhattan respondents who had used both alcohol and marijuana reported that their initial use of these drugs occurred in the same year. However, this must be viewed in light of the comments in the previous paragraph.

TABLE 4.5 Time-Order of Onset of Use Among Pair of Drugs, Manhattan and National Sample Compared

	Number Who Have Used Each Pair		Percent Who Used Drug in Capital Letters at Left, FIRST		Percent Who Used Other Drugs at Left, FIRST		Percent Who Used Both Drugs in Same Year (Manhattan) or Same Month (National)	
	Manhattan (n=294)	National (n=2510)	Manhattan	National	Manhattan	National	Manhattan	National
ALCOHOL and								
Marijuana	178	1377	80	93	5	5	15	1
Psychedelics	35	548	97	98	0	2	3	*
Stimulants	48	578	92	98	2	2	6	0
Sedatives	40	407	95	97	3	2	3	0
Heroin	--	147	--	97	--	3	--	0
Opiates+	76	491	96	94	1	6	3	0
Cocaine	63	351	98	99	0	1	2	*
MARIJUANA and								
Pyschedelics	35	546	80	80	6	14	14	5
Stimulants	47	562	74	73	11	21	15	6
Sedatives	40	394	78	84	10	12	13	4
Heroin	--	146	--	90	--	7	--	3
Opiates+	76	449	79	77	13	20	8	3
Cocaine	62	350	92	96	2	1	6	2
PSYCHEDELICS and								
Stimulants	26	409	27	36	31	46	42	17
Sedatives	22	326	36	48	36	34	27	16
Heroin	--	134	--	66	--	26	--	7
Opiates+	25	353	48	50	36	33	16	16
Cocaine	20	314	55	77	30	13	15	9

TABLE 4.5 (cont.)

STIMULANTS and								
Sedatives	31	334	32	50	16	29	52	19
Heroin	--	125	--	73	--	21	--	5
Opiates+	30	345	47	56	30	34	23	10
Cocaine	28	301	50	75	29	17	21	7
SEDATIVES and								
Heroin	--	166	--	63	--	27	--	9
Opiates+	32	296	25	45	38	38	38	14
Cocaine	24	254	46	67	33	22	21	10
OPIATES+ and								
Heroin	--	133	--	50	--	29	--	19
Cocaine	56	276	41	63	25	20	34	16
HEROIN and++								
Cocaine	--	132	--	52	--	32	--	14

+In the Manhattan study, the question on year of first use for opiates included heroin. In the National study opiates are treated separately from heroin.

++The data for onset of the heroin-cocaine pair were available only in the National study.

*Less than one percent.

If one ignores alcohol, it is apparent that marijuana is a key gateway drug for use of other drugs. For at least three-fourths of the men in both samples who reported use of marijuana and one of the other drugs, marijuana use occurred first. For more than 90 percent of the men who had used both marijuana and cocaine, use of marijuana cccurred first.

Several key differences between the two samples are apparent when the onset of psychedelics is examined in relation to onset of other drugs, excluding alcohol and marijuana. First, more of the Manhattan respondents report initial use of psychedelics and stimulants in the same year, but there does not appear to be a consistent temporal order of onset of these drugs in either sample. The same conclusion is appropriate for psychedelics and sedatives as well as for psychedelics and opiates. Second, psychedelic use is clearly antecedent to the use of cocaine in the national sample, while the order of onset for these drugs is not as clear in the Manhattan sample.

In the national sample, 73 percent of the men who had used stimulants and heroin, as well as 75 percent of the respondents who had used stimulants and cocaine, used stimulants first. Again, the time order for stimulants and cocaine is not nearly as clear in the Manhattan sample. Some 52 percent of the men in the Manhattan sample who reported use of stimulants and sedatives indicated that their first use of both drugs occurred in the same year. Nor is there a clear pattern of onset for stimulants and opiates.

Use of sedatives generally preceded use of cocaine and heroin among the men in the national sample who reported use of both pairs of drugs. The time order of onset is less clear in the Manhattan sample; 38 percent of the men reported the same year of onset for sedatives and opiates and 21 percentof the users of sedatives and cocaine initially used both drugs in the same year. Use of opiates is generally antecedent to the use of cocaine in the national sample, but not in manhattan. In fact, one-third of the men who reported use of opiates and. cocaine indicated that they initially used these drugs in the same year.

The second way in which the time order of onset of drug use was measured in the Manhattan study was straightforward. For the drug classes the respondent had ever used, he was asked: "Which of the drugs did you use first? Which was second?" As many as eight drugs or drug classes were ranked; the number depended upon the number of drugs the respondent had ever used. This question was not asked in the national survey. These data are presented separately for whites, blacks, and others in table 4.6 because there are some differences among these groups.

For at least one-half of the respondents, the first drug used was tobacco. A majority of the men in each of the three racial groups who had used two or more of the drug classes indicated that alcohol was the second drug they had used. While 20 percent of the blacks and 7 percent of the whites and others named marijuana as the first

TABLE 4.6 Time-Order of Onset of Drug Use by Race in the Manhattan sample

	FIRST DRUG			SECOND DRUG			THIRD DRUG		
	Black	White	Other	Black	White	Other	Black	White	Other
No Use (n)	0	1	1	8	4	12	23	26	24
Use (n)	125	97	70	117	94	59	102	72	47
Tobacco	63.2	51.5	52.9	18.8	37.2	30.5	3.9	6.9	4.3
Alcohol	30.4	42.3	44.3	60.7	53.2	59.3	8.9	5.6	2.1
Marijuana	3.2	2.1	1.4	17.1	5.3	5.1	70.6	75.0	76.6
Psychedelics	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Stimulants	0.0	1.0	0.0	1.7	3.2	1.7	1.0	5.6	4.3
Sedatives	0.0	2.1	0.0	0.0	0.0	0.0	2.0	2.8	4.3
Opiates	3.2	1.0	1.4	1.7	0.0	3.4	7.8	4.2	6.4
Cocaine	0.0	0.0	0.0	0.0	0.0	0.0	4.9	0.0	2.1

	FOURTH DRUG			FIFTH DRUG			SIXTH DRUG		
	Black	White	Other	Black	White	Other	Black	White	Other
No Use (n)	54	49	42	72	61	51	89	69	55
Use (n)	71	49	29	53	37	20	36	29	16
Tobacco	1.4	2.0	0.0	3.8	0.0	0.0	5.6	0.0	6.3
Alcohol	1.4	0.0	3.4	3.8	0.0	10.0	2.8	0.0	0.0
Marijuana	8.5	20.4	13.8	0.0	0.0	5.0	2.8	3.4	0.0
Psychedelics	9.9	28.6	17.2	9.4	13.5	15.0	16.7	6.9	31.3
Stimulants	5.6	26.5	20.7	11.3	37.8	15.0	11.1	10.3	12.5
Sedatives	7.0	10.2	6.9	9.4	21.6	10.0	30.6	44.8	31.3
Opiates	38.0	8.2	10.3	18.9	21.6	20.0	8.3	17.2	12.5
cocaine	28.2	4.1	27.6	43.4	5.4	20.0	22.2	17.2	6.3

or second drug used, more than 70 percent of the men each group who had used three or more of the drugs named marijuana as the third drug used.

These findings are not surprising in that they essentially replicate the findings in the national study. Tobacco, alcohol, and marijuana are clearly the drugs that are most widely used by youth and young adults in this society, and the order in which they are used reflects a general movement from licit to illicit drugs. This confirm the domain assumption in Kandel's (1975) model of developmental stages. Because there is a rather consistent order of onset, tobacco, alcohol, and marijuana are often labeled "gateway," drugs.

The order of onset differs by race for the men who used four, five, and six drugs. Among blacks, the most commonly used fourth drug or drug class is the opiates (including heroin), the fifth is cocaine, and the sixth is sedatives. Among whites, the most commonly used fourth drug or drug class is the psychedelics, the fifth is stimulants, and the sixth is sedatives. Among the others, the fourth drug used is most often cocaine, the fifth drug is either opiates or cocaine, and the sixth drug or drug class is the sedatives.

Overall, the data on tine order of onset of drug use in the Manhattan study coincide with the findings in the national study for tobacco, alcohol, and marijuana. There are differences by race in the order of onset beyond these gateway drugs, but the order of onset forwhites in the Manhattan sample is quite similar to the one found in the national study.

Extent of use

To this point, measurement of drug use has involved a crude distinction between use and nonuse. However, a five-category ordinal-level measure is available in both the national and Manhattan studies. The respondents were asked to indicate how often they had used each drug in terms of the following categories: never, under 10 times; under 100 times; under 1000 times; 1000 times or more. Cross-tabulation of these data provides another perspective on multiple drug use. Shown in table 4.7 are the percentages of men who had used the other drugs in terms of the extent to which they had used the three gateway drugs, tobacco, alcohol, and marijuana. The value of gamma, a nonparametric correlation coefficient, was calculated on the basis of 5x5 tables showing the extent of use of each pair of drugs.

As expected, the relationship between extent of use of the gateway drugs and use of the other drugs is usually linear. Stated differently, there is a stairstep increase in the percentage figures as one moves from left to right and the gamma values are moderately strong. For example, while only 28 percent of the men in the Manhattan study had ever used psychedelics, 52 percent of the men who had used marijuana between 100 and 999 times had used psychedelics.

TABLE 4.7 Extent of Use of Three Gateway Drugs (Tobacco, Alcohol, and Marijuana) by Use of Other Drugs (Percentages and Correlation)

	EXTENT OF USE					Value
	No use	1-9 times	10-99 times	100-999 times	1000+ times	of Gamma
Tobacco n =	(35)	(42)	(20)	(33)	(164)	
Percent Alcohol Users	94.3	100.0	100.0	100.0	99.4	.528
Percent Marijuana Users	25.7	66.7	75.0	81.8	86.0	.491
Percent Psychedelic Users	2.9	26.2	15.0	18.2	37.2	.459
Percent Stimulant Users	8.6	14.3	10.0	21.2	39.6	.553
Percent Sedative Users	5.7	14.3	10.0	18.2	37.8	.584
Percent Heroin Users	5.7	9.5	0.0	21.2	37.8	.643
Percent Opiate Users	5.7	38.1	15.0	27.3	48.2	.444
Percent Cocaine Users	5.7	26.2	5.0	39.4	49.4	.561
ALCOHOL n =	(3)	(18)	(50)	(99)	(124)	
Percent Marijuana Users	0.0	27.8	66.0	71.7	89.5	.523
Percent Psychedelic Users	0.0	5.6	16.0	28.3	36.3	.366
Percent Stmulant Users	0.0	0.0	14.0	26.3	40.3	.490
Percent Sedative Users	0.0	0.0	18.0	27.3	33.9	.335
Percent Heroin Users	0.0	11.1	18.0	23.2	33.1	.267
Percent Opiate Users	0.0	5.6	24.0	36.4	48.4	.398
Percent Cocaine Users	0.0	11.1	32.0	30.3	48.4	.353
MARIJUANA n =	(74)	(42)	(54)	(56)	(68)	
Percent Psychedelic Users	0.0	4.8	14.8	51.8	63.2	.811
Percent stimulant users	4.1	14.3	13.0	46.4	60.3	.703
Percent Sedative Users	2.7	11.9	13.0	42.9	58.8	.709
Percent Heroin Users	1.4	16.7	20.4	32.1	55.9	.632
Percent Opiate Users	5.4	21.4	29.6	53.6	73.5	.683
Percent Cocaine Users	0.0	14.3	24.1	58.9	82.4	.805

For men who had used. marijuana 1000 times or more 63 percent had used psychedelics. A similar pattern is found for use of marijuana and the other drugs. Although only 36 percent of the men in the total sample had used cocaine, the percentages for use of cocaine in terms of extent of marijuana use are, respectively, zero, 14.3, 24.1, 58.9, and 82.4. At least one-half of the men who had used marijuana 1000 or more times had used each of the other illicit drugs. These data suggest that extensive use of marijuana is strongly predictive of other illicit drug use.

Historically, much of the controversy about marijuana use and subsequest use of other illicit drugs has focused on heroin. The so-called steppingstone hypothesis suggests a link between marijuana and heroin. For this reason, the data on the extent of use of marijuana and heroin in both studies are shown in table 4.8.

The association between use of marijuana and use of heroin is apparent by mere visual inspection of table 4.8. In the national sample, 147 (10.6 percent) of the 1,382 marijuana users had used heroin. Of the 1,128 men who had not used marijuana, only 1 man (less than 0.1 percent) had used heroin. Examination of the percentage of heroin users within each category of marijuana use reveals the linearity of the relationship. The range is from 0.1 percent to 33.2 percent. The value of gamma is .876 and the value of Pearson's r is .342.

A similar relationship is apparent in the Manhattan sample. Only 1 (1.4 percent) of the 74 men who had not used marijuana had used heroin in comparison with 74 (33.6 percent) of the 220 marijuana users who reported use of heroin. Again, the relationship is linear across the categories of marijuana use. The range is from 1.4 percent among nonusers to 55.9 percent among the men who used marijuana 1000 or more times. The value of gamma is .634, and the value of Pearson's r is .408.

The temporal order of onset of use is equally clear. Among the 147 men in the national sample who had used marijuana and heroin, 90 percent used marijuana first, 7 percent used heroin first, and the time order was indeterminate for 3 percent. In the Manhattan sample, 76 of the men had used both marijuana and opiates (including heroin). Of these 76 men, 79 percent used marijuana first, 13 percent used the opiates first, and for 9 percent it was not possible to determine the time order of onset. According to Hirschi and Selvin (1973), the criterion of temporal order is satisfied if, in a clear majority of the cases, the presumed cause is antecedent to the presumed effect.

The data presented in table 4.8 show that two of the three criteria of causality outlined by Hirschi and Selvin (1973), association and temporal order, are met with regard to the marijuana-heroin relationship. The third criterion, lack of spuriousness, is considerably more difficult to establish (see O'Donnell and Clayton 1979, 1981).

TABLE 4.8 Lifetime Extent of Use of Marijuana and Heroin, National and Manhattan Samples

NATIONAL SAMPLE

Extent of Heroin Use	Extent of Marijuana Use: Zero	1-9 times	10-99 times	100-999 times	1000 or more times	TOTAL
Zero	1127	418	346	296	117	2362
1-9 times	1	4	6	22	39	72
10-99 times	0	0	2	14	25	42
100-999 times	0	0	4	4	9	17
1000 times or more	0	0	1	2	15	18
TOTAL	1128	423	356	338	265	2510
Percent Heroin Users	0.1	0.9	3.7	12.4	33.2	5.9

MANHATTAN SAMPLE

Extent of Heroin Use	Zero	1-9 times	10-99 times	100-999 times	1000 or more times	TOTAL
Zero	73	35	43	38	30	219
1-9 times	0	2	1	5	8	16
10-99 times	0	1	3	7	4	15
100-999 times	1	3	4	3	9	20
1000 times or more	0	1	3	3	17	24
TOTAL	74	42	54	56	68	294
Percent Heroin Users	1.4	16.7	20.4	32.1	55.9	25.5

Conclusions

In this chapter the purpose has been to compare patterns of multiple drug use in the national and Manhattan studies. This has been accomplished by an exmaination of Guttman scale patterns, use of pairs of drugs, order of onset of use of pairs of drugs and onset patterns for use of up to six drugs, and by an examination of the percent of men reporting use of other drugs within 5 categories of the extent of use of tobacco, alcohol, and marijuana. It is clear that: (1) use of any drug is strongly related. to use of other drugs, and (2) extent of use of marijuana is a strong predictor of use of other illicit drugs.

These two conclusions suggest a number of steps that should be taken in subsequent analyses of these data. First, a composite index is needed to measure multiple drug use, and an effort to construct a logically consistent index is discussed in the next chapter. Second, there is a need to identify and measure variables that might intervene between the use of marijuana and use of other illicit drugs. The sale of illicit drugs may be such an intervening variable, and an index of drug sales has been constructed and tested (chapter 6). Third, the development and testing of causal models is also needed. In Chapter 8 causal models are tested in which the drug sales index and the composite index are used. Data from the Manhattan study have already been used to develop and test theoretical models designed to predict early marijuana use (O'Donnell and Clayton 1979).

Chapter 5

A Composite Index of Illicit Drug Use

In a recent comprehensive review of the literature, Kandel (1980) suggests that researchers in the drug field should assign a high priority to the development of a composite index of illicit drug wuse. An index that reflects not just the use, but the extent or frequency of use of various substances, has been needed for a long time. Unfortunately, the conceptual and methodological problems associated with constructing such an index have been formidable. Lacking a logically consistent and empirically sound method of combining all of a person's drug use into a single score, researchers generally examine each drug class separately, analyzing patterns of use within, rather than across, drug classes.

The purpose of this chapter is to describe the procedures used in developing a composite index of illicit drug use and to illustrate its utility by applying it to the Manhattan sample. Seven drugs or drug classes are included in the index--marijuana, psychedelics, stimulants, sedatives, heroin, other opiates, and cocaine. The weights assigned according to the extent of use of each drug or drug class were derived from analyses of data from seven different sources:

(1) The national survey (Abelson et al. 1977) of drug use in the general population sponsored by the National Institute on Drug Abuse(NIDA);

(2) Admissions to treatment in federally funded drug programs that are part of the Client Oriented Data Acquisition Process (CODAP 1977);

(3) Mentions of drug-related emergency room visits recorded by the Drug Abuse Warning Network (DAWN 1977);

(4) Drug-related deaths according to information provided to DAWN by medical examiners (1977);

(5) The evaluation of the national Supported Work study of samples of ex-addicts, ex-offenders, AFDC mothers, and unemployed minority youth (Mathematica Policy Research, Inc. 1978);

(6) Data fran the Drug Enforcement Administration (DEA 1978) regarding the prices paidbyagents inpurchasing illegal drugs to obtain evidence;

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(7) The nationwide survey of drug use among young men (O'Donnell et al. 1976).

Actually, after the weights were derived for each drug class, several alternative indices of illicit drug use were constructed for the national sample of young men. Then, one of these indices, the Lifetime Drug Use Index, was applied to the smaller parallel sample of young men from Manhattan. Use of this independent sample overcomes a major limitation of earlier efforts to develop such an index in which the data set from which weights are derived is used to test the index.

PREVIOUS EFFORTS

Ordinal Scales

There have been several attempts to develop a composite drug use index, but each of the available indices has only limited utility. For example, in their longitudinal study of predominantly white, middle-class students in the Boston suburbs, Smith and Fogg (1975) created a simple ordinal scale. The categories and the percentage of the sample included in each category were: (1) no illicit drug use, 41 percent: (2) marijuana only, 40 percent; and (3) use of one or more of the other illicit drugs, 19 percent. With similar data from a large, nationally representative sample of high school seniors, Johnston, O'Malley, and Eveland (1978) constructed an ordinal scale consisting of five categories: (1) no use of illicit drugs: (2) use of marijuana only; (3) experimental use of one, two or three pills; (4) more than experimental use of one or two pills; and (5) more than experimental use of three pills or any use of heroin. Such simple classifications may be satisfactory for a study of young persons who are not heavily involved in drug use. However, a simple ordinal scale is inadequate if one's subjects report use of a large number of drugs or diverse patterns of use.

Expert Judges

Another way to construct a composite drug index is to have a panel of judges assign a weight to each drug class. Bucky and his coworkers (1974) asked twenty physicians to "rate the severity of the major psychotropic drugs." A similar approach was used by Hoffman and his colleagues (1975) who asked four drug experts to rate eight drugs on a scale from 0 to 100 with respect to the "hazard of each for users." The weights obtained in these two studies are:

Bucky et al. (1974)		Hoffman et al. (1975)			
marijuana	1.8	marijuana	35.0	methamphetamines	75.8
LSD	3.7	cigarettes	41.5	hallucinogens	83.8
amphetamines	4.7	alcohol	51.3	narcotics	91.3
barbiturates	6.5	stimulants	52.5		
heroin	7.4	depressants	70.8		

The obvious limitation of this approach is lack of reliability, as the weights reflect the arbitrary judgment of the experts, and different panels of experts will produce different weights. For example, LSD is ranked lower than amphetamines in the study by Bucky and his co-wrokers, while hallucinogens are ranked much higher than stimulants and somewhat higher than methamphetamines in the study conducted by Hoffman and his colleagues. In Bucky's study, the weight for barbiturates is almost four tines larger than the weight for marijuana. In Hoffman's study, the weight for depressants is only twice as large as the weight for marijuana. Another problem with reliance on a panel of experts is that many researchers would object to any set of weights suggested by experts.

Distribution of Use in a Sample

Recently, there have been several attempts to develop interval-level, composite indices of drug use on the basis of the frequency or extent of use of various drugs in a sample. Douglass and Khavari (1978) obtained information on 19 drugs or drug classes. For each class, a score of 0 to 7 was assigned to the responses of having never used it, using none now, using it less than monthly, and so on to using it several times a day. The responses were treated as if they constituted an interval scale. The mean and standard deviation were computed for each drug, and a normal score was computed for each level of use. The difference between levels for each drug is a constant, and it is used as a weight for that drug. For each drug a person had used, the level was multiplied by the weight, and the sum of these products formed the drug use index.

There are several problem with this approach. First, the scores for levels are treated as if the intervals between them are equal, but it is clear that they are not. For example, if one were to estimate the number of times a drug was used in a month on the basis of the following response categories--about once a month, about once a week, several times a week, daily, several tines a day--the result would be something like 1, 4, 10, 30, 75 or more, not the numbers 1 through 7 that were actually used. With a wider range of numbers, the men and standard deviation, and therefore the drug weights, would be quite different. Second, it is questionable whether the standard deviation should be used to measure dispersion for skewed data. Data on drug use are frequently skewed because a majority of the respondents fall in the categories reflecting no use or infrequent use. With the exception of marijuana in studies of the general population, relatively few subjects will have used a drug a sufficient number of times to be classified in the higher levels. The writers of a standard text suggest: "As a measure of dispersion, the standard deviation has meaning only insofar as the pattern of variation is normal" (Mueller et a1.1977:169). A more serious criticism of Douglass and Khavari's approach is that, even if the compoite index ware satisfactory, it could only be used with the single sample on which it was based. Therefore, the weights could not be used in other samples.

Lu (1974) constructed his index by assigning weights to the categories of extent of use of each drug. These weights are not assigned arbitrarily; rather, they are determined by the proportion of cases in the total sample that are found in the various categories. Essentially, the weights reflect the frequency or rarity of a given level of drug use in a sample. In Lu's approach, a distinctive weight is produced for each level of use of each drug. Although Lu incorrectly states that the variance is always .083, the mean for each drug class as well as the composite index is always .5.

Lu's composite index has been used in two large-scale studies. In the national sample of young men, (O'Donnell et al.1976), weights were assigned according to categories of lifetime extent of use for three drugs (psychedelics, heroin, and cocaine) and to the categories of constructed typologies for five drugs (alcohol, marijuana, stimulants, sedatives, and opiates). These weights are shown in table 5.1. Pandina et al. (1981) decided to avoid evaluative labels such as light, moderate, and heavy. They constructed the weights for their sample on the basis of self-reported extent, frequency, and recencyof use. The index weights for the three dimensions for each drug (wine, beer, liquor, marijuana, amphetamines, barbiturates, hallucinogens, cocaine, inhalants, opiates) were added and averaged to produce the composite index score. Their weights for extent of use are shown in table 5.2.

The Lu index has several advantages. First, the weights are based on the distribution of responses for each drug, and they are normalized to produce a mean score of .5. Second, the weights are lower for drugs that are used most frequently and higher for drugs that are rarely used. Third, for drugs that are widely used, such as alcohol and marijuana, the differences in the weights for different levels of use appear to be reasonable (see tables 5.1 and 5.2).

On the other hand, the Lu index has serious deficiencies. A major limitation of the Lu index involves the weights assigned to drugs that are not widely used; the weights for minimum and maximum use are quite similar. For example, in the O'Donnell study, use of heroin less than 10 times was assigned a score of .955 in comparison with a score of .996 for use of heroin 1,000 times or more (table 5.1). Comparable results were obtained in Pandina's study in which use of opiates one or two times received a score of .961 and use of opiates more than 50 times was scored .999. Similarly, it is difficult to justify a weight of .471 for non-use of heroin; this weight is almost as high as the one for heavy alcohol use, .509 (table 5.1). Further, construction of the Lu index entails extensive computations. However, this effort does not appear to be justified as a subject's score on the index is highly correlated with the number of different drugs the person ever used. In the O'Donnell study, the Pearsonian correlation between the Lu index and a simple count of the number of drugs ever used is .971. Finally, the Lu index can only be used with the single sample on which it is based because the drug weights reflect the variations in use of each drug

TABLE 5.1 Lu Index Weights for Each Category of Extent of Use in the National Study of Young Men[1]

	No Use	Experimental	Light	Moderate	Heavy	Heaviest
Alcohol	.015 (76)	.049 (93)	.165 (491)	.326 (318)	.509 (599)	.814 (933)
Marijuana	.225 (1128)	.534 (423)	.664 (231)	.755 (227)	.900 (501)	
	No Use	Quasi-Medical	Experimental	Light	Heavy	
Stimulants	.363 (1821)	.747 (108)	.810 (207)	.899 (242)	.974 (132)	
Sedatives	.399 (2002)	.817 (99)	.872 (177)	.939 (158)	.985 (74)	
Opiates	.345 (1731)	.747 (286)	.863 (300)	.952 (145)	.990 (48)	
	No Use	Under 10 Times	Under 100 Times	Under 1000 Times	1000 Times or More	
Psychedelics	.390 (1960)	.839 (219)	.935 (192)	.985 (57)	.998 (10)	
Heroin	.471 (2362)	.955 (72)	.978 (41)	.989 (17)	.996 (18)	
Cocaine	.430 (2158)	.902 (214)	.966 (103)	.991 (24)	.998 (11)	

[1]Numbers in parentheses represent the number of persons in that category of extent of use.

Source: John A. O'Donnell et al. Young Men and Drugs: A Nationwide Survey, Rockville, MD: National Institute on Drug Abuse, 1976, p. 106.

TABLE 5.2 Lu Index Weights for Extent of Use in the Study by Pandina, White, and Yorke

Drugs	Never used	Number of Times Ever Used					Percent Ever used
		1-2	3-9	10-19	20-50	50+	
Wine	.052	.210	.409	.588	.758	.921	89.6
Beer	.059	.212	.379	.506	.641	.858	88.2
Liquor	.082	.277	.477	.640	.795	.936	83.4
Marijuana	.255	.548	.622	.687	.752	.824	49.0
Amphetamines	.381	.800	.871	.923	.955	.985	23.8
Barbiturates	.388	.820	.897	.945	.972	.993	22.4
Hallucinogens	.408	.856	.929	.967	.985	.996	18.4
Cocaine	.448	.925	.968	.988	.996	.999	10.4
Inhalants	.451	.929	.970	.987	.993	.998	9.8
Opiates	.471	.961	.986	.994	.997	.999	5.8

Source: Adapted from Robert J. Pandina, Helene Raskin White and Joseph Yorke. Estimation of substance use involvement: Theoretical considerations and empirical findings. The International Journal of the Addictions, 16(1):1-24, 1981. © 1981, Marcel Dekker.

in that sample; therefore, the weights cannot be used in other samples. For example, if the Lu index was used in a sample of long-term heroin addicts, heroin would have one of the lowest weights, and it would contribute the least to the total index. Nor would the unique weight for heroin that was derived from a sample of addicts be useful in a study involving a sample of high school or college students.

In effect, previous efforts to develop a composite index of drug use have been largely unsuccessful. In some cases simple ordinal scales have been used to represent the complex reality of multiple drug use. In other instances, the opinions of experts about the relative danger associated with use of various drug classes have served as the source of weights for the drugs. Finally, several researchers have developed seemingly complex computational schemes to derive weights for each level of use of various drugs and for combining these weights into a single score. As noted above, these efforts have been inadequate because the procedures utilized to derive weights are too elementary, based on unreliable judgments, or mathematically or substantively flawed.

RATIONALE AND CRITERIA

In each of the efforts to develop a composite index, it may be inferred that the researchers accepted the assumptions that (1) the different drugs or drug classes should be assigned different weights, and (2) within each drug or drug class, the weights should vary according to some common dimension such as the frequency or extent of use. Another appropriate assumption is that use of heroin is more serious than use of marijuana, and use of other illicit drugs, such as sedatives or psychedelics, falls somewhere between these two boundary drugs. Regardless of how seriousness is defined, this assumption is consistent with the perceptions of researchers, policy makers, and the general public regarding the social costs of drug use at both the individual and societal levels. At the individual level, costs include such things as effects on health, including the possibility of death; effects on employment and job performance; and effects on freedom, including the possibility of arrest, conviction, and confinement in a correctional institution. In each of these areas--health, employment, and contacts with criminal justice agencies--negative effects may occur. The latter area deserves an additional comment. Although the research to date has not firmly established the causal order, there are available an impressive number of studies that clearly demonstrate that drug use and crime are highly correlated (Research Triangle Institute 1976; Inciardi 1979; Ball et al. 1980, 1981; Gandossy et al. 1980). At the societal level, costs include such things as expenditures for medical care that may be attributed to drug use; direct economic costs stemming from absenteeism, lowered productivity, and job-related accidents; and the processing, service delivery, and systemic costs in the drug treatment and criminal justice arenas. The provision of treatment services for drug users involves the expenditure of millions of dollars annually. While the presumed ill effects on drug users which caused them to seek or to be forced into treatment

are difficult to measure quantitatively, it is inherently easier to calculate these costs at the individual level than at the societal level. This is the case because cost-units are more manageable, and consequences or effects can be traced more directly to specific drugs or drug-using episodes. At the societal level, it would be difficult, if not impossible, to estimate the amount of money expended annually in response to illicit drug use, and it would Clearly be impossible to allocate these expenditures to the various drug classes.

Consequently, one criterion employed in the construction of a composite index of drug use was that the index should, at least in a general way, reflect the different social costs involved in use of the various drug classes. In addition, a composite index of drug use should be comprehensive in that it must include the major classes, and it must be sensitive to the dimensions that differentiate patterns of use of these major classes of drugs. Some of the relevant dimensions are quantity, frequency, dosage, route of administration, price, and context of use. A composite index should also be composed of weights derived objectively, rather than by arbitrary judgment. Finally, a composite index should be developed on the basis of more than a single sample, and it should be easy to construct and utilize.

DERIVATION OF WEIGHTS

An important criterion for the development of a composite index of drug use is comprehensiveness. Therefore, a decision was made to focus on seven drugs or drug classes, including marijuana, psychedelics, stimulants, sedatives, heroin, other opiates, and cocaine. In the development of weights for each drug or drug class, seven data sets were used.

1. NIDA National Survey, 1977. A key ingredient in the construction of a composite drug use index is an estimate of how many persons have used each of the drug classes. The rates of use in table 5.3 constitute the denominators for each drug class and are drawn from the NIDA National Survey (Abelson et al. 1977).

2. CODAP Admissions, 1977. Included. in CODAP are data on admissions and discharges, as well as other characteristics of all clients in federally funded drug treatment programs. In 1977, there were approximately 1,600 clinics in the CODAP system. The clients in these clinics represented approximately one-half of all persons in treatment for drug abuse in the United States. Technically, CODAP does not provide random sample of all patients in treatment for drug abuse, but it certainly is the largest set of data available regarding persons in treatment programs. In practical terms, it is clearly the most important data set for the derivation of weights for a composite index of drug use, because treatment is a major cost of drug use, both at the individual and the societal levels.

TABLE 5.3 Estimated Number of Users of Drugs

	Percentage Who Used in the Past Year		Users,
	Age 12-17	Age 18+	to nearest thousand[1]
Marijuana	21.8	12.8	24,357,OOO
Psychedelics	3.1	1.5	2,990,000
Stimulants	3.7	2.7	4,914,000
Sedatives	2.0	2.0	3,455,000
Heroin	0.6	0.42	741,000
Opiates	3.4	1.2	2,622,000
Cocaine	2.6	2.8	4,787,000

[1]These estimates are to the nearest thousand. The estimated populations represented by the sample segments are 24,938,OOO for youth, between 12 and 17 years old, and 147,819,000 for persons 18 and older.

Source: Percentages are derived from tables 8 and 9 in Abelson et al. (1977).

While the CODAP system permits the recording of as many as three drugs, only the primary drug of abuse at admission is used in the construction of a composite drug use index. Shown in the first column in table 5.4 is the estimated number of admissions to CODAP in 1977 by the primary drug of abuse at admission. Estimates of the number of users of the seven drugs were derived from the NIDA National Survey: these figures are shown in the second column in table 5.4. Shown in column 3 is the ratio of CODAP admissions to the total number of users in the population. To reduce these ratios to a common scale, each ratio was divided by the highest ratio. These figures are shown in the column labeled "relative scale." In this scale, heroin has a value of 1.0, and for each of the other drug classes, the relative scale value is between zero and 1.0. In the last column in table 5.4, each drug class is ranked on the basis of the relative scale.

3. DAWN Emergency Room Mentions. DAWN is a reporting system, co-sponsored by the Drug Enforcement Administration and the National Institute on Drug Abuse, that is designed to gather data on drug abuse from selected locations within the United States. It serves to identify drugs that are currently being abused, changing patterns of abuse, relative hazards to health and the relative abuse potential of drugs, and data that are used for the control and scheduling of old and new drugs. For the period of May 1976 to April 1977, the DAWN system obtained reports from 456 emergency rooms in 21 Standard Metropolitan Statistical Areas, as well as 147 emergency rooms in Chicago, Los Angeles, and New York, and 193 in other cities. Each visit to an emergency room which involved any drug is reported, and as many as five drugs per contact are counted as a mention. It is not known whether the drug mentioned is the cause of the emergency room visit, but for the purpose of constructing an index, it will be assumed that each drug played some part in the visit. The procedures followed earlier with the CODAP data were repeated, and the results for the emergency room data obtained through DAWN are shown in table 5.5.

4. DAWN Medical Examiner Mentions. The Medical Examiner Mentions are drawn from the same locations as the DAWN Emergency Room Mentions. In these areas, the county medical examiners and coroners report all drug-involved deaths; in the remainder, the drug may be a contributing factor, but not the only factor, in causing death. in table 5.6, the data for Medical Examiner Mentions are presented; the raw data were manipulated according to the procedures used earlierwiththe CODAP and DAWN Emergency Room data.

5. Young Men and Drugs: A Nationwide Survey. Three types of variables were constructed with the national data to assess social costs. First, official criminal record was defined as an ordinal variable with four categories ranging from never arrested to served time. These categories were assigned scores from 0 to 3. Second, self-reported criminal involvement was defined on the basis of responses to questions about 12 separate offenses; on this measure,

TABLE 5.4 1977 CODAP Admissions by Primary Drug of Abuse

	Admissions	Users (Thousands)	Patio	Relative Scale	Rank
Marijuana[1]	13,389	24,357	.000550	.00521	6
Psychedelics[2]	5,228	2,990	.001748	.01655	4
Stimulants[1]	7,544	4,914	.001535	.01453	5
Sedatives[3]	9,813	3,455	.002840	.02689	2
Heroin[4]	78,259	741	.105613	1.00000	1
Opiates[4]	4,999	2,622	.001907	.01806	3
Cocaine[1]	2,398	4,787	.000501	.00474	7

[1]The figure for admissions is the sum of the figures shown in each table 2 of the Quarterly Reports. The CODAP figure for "Amphetamines" is used for the "Stimulants."

[2]No exact figure is given, but in table 5.1 the percentage for "Hallucinogens" is reported. This percentage was applied to total admissions to obtain the estimate for "Psychedelics."

[3]An exact figure for barbiturates is given in table 5.2. In table 5.1 a percentage for "Other Sedatives or Hypnotics" is provided. These figures were combined to produce the estimate for "Sedatives."

[4]In table 5.2 a figure for all opiates is given. In table 5.1 percentages for "Heroin" and "Other Opiates" are shown. The figure for opiates was divided between heroin and opiates proportionately according to the percentage for heroin and opiates.

TABLE 5.5 Emergency Room Mentions of Drugs in DAWN System, May 1976-April 1977

	Mentions	Users (Thousands)	Ratio	Relative Scale	Rank
Marijuana	3,602	24,357	.000148	.00860	7
Psychedelics	3,500	2,990	.001171	.06804	5
Stimulants[1]	8,012	4,914	.001630	.09471	3
Sedatives	27,982	3,455	.008099	.47057	2
Heroin[2]	12,753	741	.017211	1.00000	1
Other Opiates	6,633	2,622	.002530	.14700	3
Cocaine	1,420	4,787	.000297	.01726	6

[1]This is the sum of TC 11 (Psychostimulants) and TC 12A (Amphetamines). TC 13 (Antiobesity Preparations) are not separately listed and are not included.

[2]Heroin is metabolized to morphine; consequently it may be the metabolite that is detected. DAWN reports "Heroin/Morphine" as one drug, and some of the instances of use undoubtedly were morphine. It seems safe to assume that the vast majority of mentions represent heroin use, and all of them are counted as heroin.

Source: From table 2.1, DAWN Phase V Report, page 18.

TABLE 5.6 Medical Examiner Mentions of Drugs in DAWN System, May 1976-April 1977

	Mentions	(Thousands)	Rate per million	Relative Scale	Rank
Marijuana	4	24,357	0.164	.000096	7
Psychedelics	33	2,990	11.037	.006481	6
Stimulants[1]	455	4,914	92.598	.054367	4
Sedatives	1,693	3,455	490.014	.287718	2
Heroin[2]	2,262	741	1703.104	1.000000	1
Other Opiates	456	2,622	173.913	.102115	3
Cocaine	5 4	4,787	11.281	.006624	5

[1]See fn. 1, table 5.5.

[2]See fn. 2, table 5.5

Source: Fromn table 4.1, DAWN Phase V Report, page 50.

scores range from 0 to 34.[1] Third, unemployment was defined in terms of the number of months the respondent was not employed since his last job, or since attaining the age of 18, to the date of the interview. Any period in which a respondent was a student was excluded. In regression analyses these three measures of drug use were used for each of the seven drug classes: (a) number of years in which a drug was used; (b) maximum frequency of use in any given year; and (c) an ordinal measure of extent of lifetime use in which the categories were: none, under 10 times, 10-99 times, 100-999 times, and 1,000 times or more. The three sets of regression coefficients for each dependent variable were combined as simple averages, as shown in tables 5.7 and 5.8, to provide a single scale for the data derived from this survey. Essentially the same procedures as those employed earlier with the CODAP and DAWN data sets were used.

6. Illicit Drug Prices. Illicit drug prices are clearly relevant for a composite index. At a minimum, they represent cost to the user. Higher prices presumably create more pressure to commit crimes to obtain money to purchase drugs. Higher prices may also produce a temptation for sellers to adulterate drugs, and in doing so they may introduce substances that present health hazards. Price also has weaknesses as an indicator, particularly for those drugs that can be purchased legally. In table 5.9, data obtained from the Drug Enforcement Administration concerning illicit drug prices are presented. There is considerable error inthesedata because they are based largely on purchases made by agents to obtain evidence. They do not provide an adequate sampling of prices nationwide or for any specific location. Yet, even allowance for gross errors could not eliminate the differences in price per gram shown in table 5.9.

7. Supported Work Study. In this nationwide study, large samples of ex-addicts, ex-offenders, unemployed youth, and AFDC women were randomly assigned to a Supported Work program or to a control group. Baseline data were obtained from persons in both groups, and they were reinterviewed after 9 months, 18 months, 27 months, and 36 months. Data on arrests ware regressed against the seven drug variables for a sample in which ex-addicts and ex-offenders were combined, with sex, race, age, educational attainment, and marital status statistically controlled. The regression coefficients, relative scale, and rank are shown in table 5.10.

CONSTRUCTION OF A COMPOSITE INDEX

The figures in table 5.11 are the relative scale values shown in tables 5.4 through 5.10. The relative scale values for each drug class were averaged across the various data sets to produce an overall average value, and the drug classes were then ranked according to the overall mean values. A weighting system that reflects this relative scale is shown in the last column in table 5.11. Marijuana receives a might of 1, and the other drugs have proportionately larger weights. The maximum weight, 24, is for heroin.

TABLE 5.7 Regression Coefficients for Three Drug Indices and Three Dependent Variables: The Young Men and Drugs Nationwide Sample

	Years of Use	Maximum Frequency	Lifetime Use	Mean	Relative Scale	Rank
			A. Months Unemployed			
Marijuana	.268	.424	.411	.368	.143	4
Psychedelics	.000	.000	.000	.000	.000	6
Stimulants	.000	.000	.000	.000	.000	6
Sedatives	.726	1.420	.750	.965	.376	3
Heroin	2.316	2.220	3.165	2.567	1.000	1
Opiates	.000	.000	.000	.000	.000	6
Cocaine	.000	1.911	1.958	1.290	.503	2
			B. Official Criminal Record			
Marijuana	.045	.094	.088	.076	.633	3
Psychedelics	.033	.066	.067	.055	.458	4
Stimulants	.037	.050	.000	.029	.242	5
Sedatives	.000	.000	.000	.000	.000	6.5
Heroin	.129	.096	.135	.120	1.000	1
Opiates	.000	.000	.000	.000	.000	6.5
Cocaine	.000	.130	.107	.079	.658	2
			C. Self-Reported Crime			
Marijuana	.262	.806	.493	.520	.375	6
Psychedelics	1.023	1.402	1.047	1.157	.834	2
Stimulants	.499	.939	0.112	.850	.612	3
Sedatives	.274	.792	.940	.669	.482	5
Heroin	1.242	1.292	1.631	1.388	1.000	1
Opiates	.150	.474	.634	.419	.302	7
Cocaine	.000	1.106	1.013	.706	.509	4

TABLE 5.8 Combination of the Relative Scale Values for the Young Men and Drugs Nationwide Sample

	Mean of b coefficients from:					
	Months Unemployed	Official Criminal	Self-Reported Criminal	Mean	Relative Scale	Rank
Marijuana	.368	.076	.520	.321	.236	5
Psychedelics	.000	.055	1.157	.404	.298	4
Stimulants	.000	.029	.850	.293	.216	6
Sedatives	.965	.000	.669	.545	.401	3
Heroin	2.567	.120	1.388	1.358	1.000	1
Opiates	.000	.000	.419	.140	.103	7
Cocaine	2.290	.079	.706	.692	.510	2

TABLE 5.9 Retail Price of Illicit Drugs

Drug (unit)	Price	d.u.[1]	d.u./gm.	Price/gm.	Relative Scale	Rank
Marijuana (gm.)[2]	.80	--			0.0023	5
Hashish (gm.)[3]	9.23	--		3.70		
L.S.D. (d.u.)	2.07	0.25 mg.	4000	8280.00	4	--
Methamphetamine (d.u.)[3]	.98	10 mg.	100	79.53	0.0500	3
Amphetamine (d.u.)[4]	.67	10 mg.	100			
Barbiturates (d.u.)	1.28	100 mg.	10	12.80	0.0081	4
Heroin (mg.)	1.59			1590.00	1.0000	1
Cocaine (gm.)	650.00			650.00	.4088	2

[1]Estimates of dosage units were obtained from pharmacologists and pharmacists. These refer to medical usage and may be underestimates of dosage among drug abusers. The estimate for barbiturates is, in particular, dubious, as different preparations range from 15 to nearly 100 mg. LSD is manufactured illicitly and what is sold may not be LSD. Dosage cannot be ascertained.

[2]Since almost all studies group marijuana and hashish users, a single price is desirable. The estimate in the Price/gm column was obtained by weighting the marijuana price by 1372, the hashish price by 719. These are the proportions of users of these drugs found in the survey of young men.

[3]As methamphetamine and amphetamine are both included in the class of stimulants, a single estimate is desirable. Methamphetamine was given a weight of 245, amphetamine was given a weight of 361. These are the frequencies with which these drugs were reported in the survey of young men.

L.S.D. is not included in the scale, because its cost does not represent the cost of all psychedelics. However, this argument does not hold for marijuana, stimulants, sedatives and heroin, and they are given a relative scale value.

Source: Drug Enforcement Statistical Report: Statistics Compiled Through March 1978, pp.33, 35.

TABLE 5.10 Regression Coefficients for Drugs Based on Number of Arrests from the Supported Work National Sample

	Coefficient	Relative Scale	Rank
Marijuana	.00	.00	6.5
Psychedelics	.00	.00	6.5
Stimulants	1.36	.76	3
Sedatives	.49	.27	5
Heroin	1.79	1.00	1
Opiates	.54	.30	4
Cocaine	1.56	.87	2

Source: Personal communication from Mathematica Policy Research, Inc., 1978.

TABLE 5.11 Combination of the Relative Scales Into an Index

	CODAP	DAWN E.R.	DAWN M.E.	Illicit Price	Young Men	S.W.	Mean	Rank	Weight
Marijuana	.0052	.0086	.0001	.0023	.236	.00	.042	7	1
Psychedelics	.0166	.0680	.0065	----	.298	.00	.078	6	2
Stimulants	.0145	.0947	.0544	.0500	.216	.76	.198	4	5
Sedatives	.0269	.4705	.2877	.0081	.401	.27	.244	3	6
Heroin	1.0000	1.0000	1.0000	1.0000	1.000	1.00	1.000	1	24
Opiates	.0181	.1470	.1021	----	.103	.30	.134	5	3
Cocaine	.0047	.0173	.0066	.4088	.510	.87	.303	2	7

This implies that use of heroin is 24 times more serious than use of marijuana.

A question that deserves attention at this point is: How consistent is the ranking of the various drug classes across the six data sets? As may be seen in Section A, table 5.12, the ranks of the seven drugs on the basis of the data derived from CODAP,the two DAWN sources, the survey of youn men, and the Supported Work study are consistent. Kendal's Coefficient of Concordance, W, a measure of the association among k samples of ranks, is .619, which is significant at the .01 level. There is, then, a significant degree of agreement across the five data sets regarding the relative rank of the seven drug classes. The Illicit Price Index, which was derived from DEA data, includes only five drugs. Comparison of these drugs, ranked according to price, with ranks fran the other data sets produces a value of W of .645, which is significant at the .05 level.

While there is statistically significant concordance among the ranks for the drugs in the various data sets, it is also clear that there are some differences. The ranks for the three health-related data sets--CODAP, DAWN Emergency Room Mentions, and DAWN Medical Examiner Mentions--closely resemble each other and are somewhat different from the ranks obtained from the national survey of young men and the data from the Supported Work project. The latter two sets of data included measures of employment and criminality, not health. Cocaine provides a good illustration. In the Young Men and Supported Work samples, cocaine ranks second. This is also the case for the Illicit Price Index. This suggests the possibility of an association between use of cocaine and criminal behavior, perhaps, in part, as a result of the cost of the drug. In contrast, cocaine is ranked seventh in the CODAP data and fifth in the DAWN Emergency Room Mentions. This implies that at current levels and patterns of use, insufficient numbers of users of cocaine have sought treatment or emergency room assistance to give cocaine a higher rank in the CODAP and DAWN data sets. The differences in the ranking of the drugs, as illustrated by cocaine, suggest that these data sets may be tapping at least two distinct aspects of the social costs of drug use, the health-related costs and the costs associated with criminality or unemployment.

OTHER POSSIBILE INDICATORS OF SOCIAL COST

In the derivation of drug weights, two other potential indicators were considered, but rejected. The five drug schedules established by Congress were considered as possible indicators of social cost. According to Federal law, drugs in Schedule I and II have a high potential for abuse. Drugs in schedule I have no currently accepted medical usage in the United States, but the ones in Schedule II do. The other three schedules reflect decreasing potential for abuse. The inclusion of heroin, marijuana, LSD, mescaline, peyote, and psilocybin in Schedule I reduces the utility of the schedules, but for purposes of constructing an index, one might argue that their

TABLE 5.12 Concordance of Rankings on Scales Used in the Index

	CODAP	E.R. DAWN	M.E. DAWN	Young Men	Supported Work	Illicit Price
A. Rankings of All Seven Drugs						
Marijuana	6	7	7	5	6.5	
Psychedelics	4	5	6	4	6.5	
Stimulants	5	4	4	6	3	
Sedatives	2	2	2	3	5	
Heroin	1	1	1	1	1	
Opiates	3	3	3	7	4	
Cocaine	7	6	5	2	2	
W = .619 P .01						
B. Comparison With Illicit Price Scale						
Marijuana	4	5	4	4	5	5
Stimulants	3	3	5	5	3	3
Sedatives	2	2	3	3	4	4
Heroin	1	1	1	1	1	1
Cocaine	5	4	2	2	2	2
W = .645 P .05						

inclusion in the same schedule reflects the judgment of Congress that these drugs are, in some way, equivalent. However, the drug schedules present a practical problem in that drugs in the same pharmacological class are often found in several schedules. For example, various opiates are found in all five schedules. Consequently, the schedules cannot be used unless drugs are treated singly, rather than by class.

Another potential indicator was the penalty structure for illegal possession and sale of drugs. Levine (1974) provides a compilation of the state laws, as of 1970. At best, only four classes of drugs can be distinguished in most states, and these classes do not coincide with pharmacological classes. Sedatives and stimulants are often classified as "dangerous drugs." In all of the states except Wisconsin, cocaine is classified as a narcotic; in Wisconsin it is classified as a dangerous drug. Marijuana is usually classified as a narcotic, but in some states it is treated as a hallucinogen. A few states provide a separate classification for marijuana for purposes of penalties. Many states, but not all of them, distinguish among possession, possession with intent to sell, and the sale of drugs. Many states also specify different sentences for first, second, and subsequent offenses for each of these categories. Because of the differences in the classificatory schemes, it is difficult to make state-by-state comparisons. In those instances in which specific comparisons can be made, it is apparent that the penalties for the same offense differ widely from state to state. For example, for a first offense involving possession of marijuana, the penalties as of 1970 ranged from 7 days in Nebraska to 1-10 years in Arizona, and 2 years to life in Texas. In view of the wide variety of penalties attached to the same offense, any average that might be constructed would not reflect the actual penalties used in the 50 states. Consequently, the legal penalties for drug violations are not useful as indicators of social cost.

FIVE ALTERNATIVE INDICES OF ILLICIT DRUG USE

While a number of weighting schemes may be intuitively appealing, the goal was to create a composite index of illicit drug use that is comprehensive, sensitive to differences between drug classes, yet sensitive as well to patterns of use within drug classes, objectively and empirically sound, easy to construct and use, and able to discriminate between groups known to differ on illicit drug use. On the basis of the extensive data available for the national sample of young men, five alternative indices of drug use were constructed. These indices vary primarily in terms of the complexity of the information utilized in their construction.

1. Illicit Drug Use Index. In the national study of young men, the respondents provided information about their lifetime use of cigarettes, alcohol, marijuana, psychedelics, stimulants, sedatives, heroin; other opiates, and cocaine. Specifically, a respondent was asked to indicate the month and year in which he first used each drug, as well

as his most recent use by month and year He was then asked to indicate whether he had used the drug in the intervening years and the extent to which he used it. The interval covered was from 1956, when the oldest men in the study would have been 12 years old, to 1975, when the last interviews were conducted. For each year in which some use was reported, the respondent was asked how frequently he used the drug. The response categories were (1) less than once a month; (2) about once or twice a month; (3) about once or twice a week; and (4) almost every day or daily.

While these are not precise counts of the number of times a drug was used, it is apparent that to assign the numbers 0 to 4 to the responses would not adequately reflect the interval implicit in them. For convenience, weights are restricted to integers. A value of 1 is assigned to less than once a month, and 2 is appropriate for once or twice a month. Once or twice a week is assigned a value of 9, and almost every day, which often meant daily, is given a value of 40. At this point, then, two sets of weights are available:

Drugs		Frequency	
Marijuana	1	Less than once a month	1
Psychedelics	2	Once or twice a month	2
Opiates	3	Once or twice a week	9
Stimulants	5	Almost every day	40
Sedatives	6		
Cocaine	7		
Heroin	24		

For each year that a drug was used, the weight assigned to the drug was multiplied by the weight for frequency of use. The sum of these products for as many as 20 years and for as many as seven drugs constitutes the Illicit Drug Use Index. The scores could range from a low of zero to a maximum of 38,400. It was anticipated that the men score for this index would not be high for a sample drawn from the general population because the drugs with high weights are not widely used.

The Illicit Drug Use Index was constructed to utilize the maximum amount of the data available in the national study, and it includes data on the frequency of use of seven classes of drugs over a period covering twenty years. It is unlikely that such detail would be obtained in most studies, particularly those in which data on drug use are obtained by means of self-administered questionnaires. The Illicit Drug Use Index is the most comprehensive measure that could be constructed using the weights derived earlier, and it may be the most sensitive to variations in patterns of illicit drug use.

2. Extent of Drug Use Index. In a screening question, the men were asked to indicate how many times they had used each of the illicit

drug classes. The responses were: never; less than 10 times; 10-99 times; 100-999 times; and 1,000 times or more. In construc-tionof the Extent of Drug Use Index, these responses were assigned weights of 0 to 4 and ware summed across the seven drug classes. The possible range on this measure is 0 to 28.

3. Lifetime Drug Use Index. In this index, the sane response categories are used as in the Extent of Drug Use Index, but the numbers that are assigned reflect the probable number of times the drug was used. The numbers are not precise because the response categories lack precision, but they are more accurate than the simple weights of 0 to 4 employed in the Extent of Drug Use Index. The weights are based on assumptions about the average frequencies each response probably reflects.

Interview Response	Assumed Mean Number of Times for Response	Weight
Never Used	0	0
Less than 10 times	5	1
Under 100 times	40	8
Under 1,000 times	200	40
1,000 times or more	600	120

For the response of less than 10 tines, it was assumed that some men may have minimized their use, while other men may have only used the drug once or twice. Therefore, the average was set slightly above the midpoint of the interval. For the other responses, the average frequencies are assumed to be below the midpoints, and. as the amount of use reported increases, a lower mean was selected. on the assumption that the responses might reflect sane exaggeration. The weights were derived by division of the assumed mean by 5, the lowest mean other than zero. The Lifetime Drug Use Index, then, is the sum of seven products; each weight for extent of use was multiplied by the weights for the seven drug classes. The range for this measure is 0 to 5,760.

4. Number of Drugs Used Index. The final measure constructed for the national sample is a simple count of the number of illicit drug classes which the person reported ever using, and the range is from 0 to 7.

5. Total Drug Use Index (Lu Weights). With the exception of alcohol, the weights found in table 5.1 were applied to the national sample of young men to obtain scores for the Total Drug Use Index. This index reflects the weighting scheme devised by Lu (1974).

INTERCORRELATIONS AMONG THE FIVE INDICES

The question as to which of these five measures of drug use is preferable may be answered by examining the intercorrelations among them and by determining how sensitive the indices are to differences between groups known to differ in terms of their drug use. The

means, standard deviations, and intercorrelations among the five indices are shown in table 5.13. It is apparent that all of the indices are highly skewed measures of drug use. The standard deviations are considerably larger than the means. In fact, for the Illicit Drug Use Index, the standard deviation is almost four and one-half times larger than the mean. For each index, the mean is near the zero end of the scale. However, this is to be expected because only a minority of the young men in the national sample used any of the seven drugs, other than marijuana, and only a part of that minority used any of the drugs extensively. Therefore, the scores are necessarily clustered at the low end of each index, and this would be the case for any other index one might construct. A transformation could be used, but this does not appear to be essential or desirable.

All of the correlations in table 5.13 are significantly different fran zero at the .001 level. However, this is partially due to the number of cases, 2,510. All of the indices meet the criteria of comprehensiveness and objectivity. Because it is based on the most detailed information, the Illicit Drug Use Index may be most sensitive to other important dimensions of drug use such as number of years of use. On the other hand, this index may be of limited. utility in many surveys because it requires answers to a large number of specific questions. If the Illicit Drug Use Index is used as the benchmark because of its comprehensiveness, then the Lifetime Drug Use Index would be ranked second on the basis of its correlation of .767 with the Illicit Drug Use Index. If the requisite detailed data more available, it would not be reasonable to use the less adequate measure. Yet, in terms of ease of obtaining the required data, the Lifetime Drug Use Index is preferable to the Illicit Drug Use Index because it is based on responses to a single question about the number of times the person had used each drug. The item used to construct this measure, or a modification of it, has been asked in numerous surveys (see Elinson and Nurco 1975, for examples and recommendations; see Nehemkis et al. 1976, for various operationalizations of drug use).

Two indices, Extent of Drug Use Number of Drugs Used, are highly correlated with each other (r = .940), but have relatively low correlations with the Illicit Drug Use Index (r = .560 and .448, respectively) and the Lifetime Drug Use Index (r = .687 and .506, respectively). The significance of these relatively low correlations is apparent when one notes the high correlation of the Lu index with the Extent of Drug Use and Number of Drugs Used. Indices (r = .970 and .947, respectively). As one might expect, the Lu index is <u>not</u> strongly correlated with either the Illicit Drug Use Index (r = .452) or the Lifetime Drug Use Index (r = .530). It is apparent that the weighting scheme used in developing the Illicit Drug Use Index and the Lifetime Drug Use Index yields measures of drug use that are superior to: (1) a count of the number of drugs used: (2) an ordinal scale based on the extent of use; and (3) the Lu index.

TABLE 5.13 Correlations, Means, and Standard Deviations for the Five Alternative Indices of Illicit Drug Use

Indices	1	2	3	4	5	Mean	Standard Deviation
1. Illicit Drug Use Index	1.000	.767	.560	.448	.452	137.691	606.568
2. Lifetime Drug Use Index		1.000	.687	.506	.530	105.311	409.605
3. Extent of Drug Use Index			1.000	.940	.947	3.240	4.533
4. Number of Drugs Used Index				1.000	.970	1.757	2.054
5. Total Drug Use Index (Lu Weights)					1.000	500.008	155.646

APPLICATION OF THE LIFETIME DRUG USE INDEX TO THE MANHATTAN SAMPLE

To test the Lifetime Drug Use Index with the data obtain in the national sample of young men is problematic because the weights are derived, in part, from regression analyses performed on the data obtained from that sample. A satisfactory test of the utility and differentiating power of the index requires application of the index to a sample that was not used in the derivation of the weights used in the index. Therefore, a Lifetime Drug Use Index was constructed for the Manhattan sample. This measure was chosen because data regarding use of all of the drug classes on a year-by-year basis were not obtained in the Manhattan sample. In construction of the index, the drug weights (marijuana = 1, psychedelics = 2, opiates = 3, stimulants = 5, sedatives = 6, cocaine = 7, heroin = 24) were multiplied by the weights for the extent of lifetime use (never used = 0, used less than 10 times = 1, used less than 100 times = 8, used less than 1,000 times = 40, used 1,000 times or more = 120) and summed.

DIFFERENTIATING POWER OF THE LIFETIME DRUG USE INDEX

An analysis of variance was completed in which race and age group were the independent variables and the Lifetime Drug Use Index was the dependent variable. The data in table 5.14 indicate that there are statistically significant differences in illicit drug use by race in the Manhattan sample. The average score on the Lifetime Drug Use Index is 737.21 for blacks, in comparison with 339.80 for others and 223.20 for whites. These differences are, at least in part, a reflection of the ecology of drug use in Manhattan. Among the areas from which the respondents were chosen are Central Harlem and East Harlem, and residents of these areas have high levels of opiate use, according to data in the Narcotics Registry. The Registry data were used to classify the health areas in Manhattan in terms of rates of opiates use. The goal was to choose respondents who had spent all or most of their formative years in high drug use areas. Each respondent provided an address for each house or apartment in which he had lived from birth to the age of 18, and these were coded by health areas. In the overwhelming majority of cases, the health areas in which these men grew up were high in drug abuse in comparison with the rest of Manhattan and New York City, but there are significant and measurable differences among the health areas in Manhattan that are classified as high drug use areas. The men in the Manhattan study reflect these differences. The rates of opiate use within the health areas with high rates were classified on a three-point continuum of high, higher, and highest. For example, a higher proportion of the blacks, in comparison with the whites and others, had spent all or most of their formative years residing in areas known to have the very highest rates of opiate use. These are ecological areas that are saturated with drugs and drug abusers. In contrast, the whites in the Manhattan sample were clearly clustered at the lower end of the continuum, while the others were concentrated in the middle category (Ritter 1981).

TABLE 5.14 Analysis of Variance: Lifetime Drug Use Index by Race and Age Group for the Manhattan Sample

Independent Variables	n	Lifetime Drug Use Index Mean	Standard Deviation
TOTAL	(294)	469.90	1036.77
BLACK	(125)	737.21	1188.43
1944-46	22	594.14	1183.20
1947-49	31	942.55	1169.91
1950-52	37	733.30	1239.15
1953-54	35	649.40	1180.33
WHITE	(98)	233.20	789.46
1944-46	24	520.00	1512.68
1947-49	32	90.78	175.36
1950-52	22	216.82	410.86
1953-54	20	85.95	120.30
OTHER	(71)	339.80	950.61
1944-46	16	519.75	1092.19
1947-49	16	761.25	1551.91
1950-52	22	100.50	348.75
1953-54	17	83.47	243.16

F for Race	8.636	p. .001
F for Age Group	1.185	p. .316
F for Race-Age Group Interaction	1.173	p. .321

Although there were no statistically significant differences by age group, some of the differences in terms of age group by race are worthy of note (table 5.14). The mean scores on the Lifetime Drug Use Index were highest in the 1947-1949 age group for blacks and others, whereas the highest mean value on this index for whites occurred in the oldest (1944-1946) age group. The 1953-1954 age group had the lowest mean values on the Lifetime Drug Use Index for whites and others in comparison with blacks, among whom the lowest mean values on this measure occurred in the oldest age group (1944-1946).

In another analysis of variance (table 5.15) in which race and educational attainment served as the independent variables, statistically significant differences were observed for both of these variables. The relationship between education and illicit drug use is clearly linear for blacks and whites. In these groups, the men with less than a high school education have the highest scores. Among the others, who are primarily Puerto Rican, college graduates have the lowest scores on the Lifetime Drug Use Index, while the men with some college education have the highest scores.

In addition to race, age, and educational attaimment, there are numerous variables that could be used to test the sensitivity of the Lifetime Drug Use Index with respect to group differences. For illustrative purposes, the results of only two of these tests will be presented--behavior exhibited by friends of the respondent when he was 13 years old and self-reported involvement in 13 criminal offenses.

A key assumption in the drug field is that an individual's use of drugs often reflects the forms of behavior, drug related and non-drug related, exhibited by his or her friends. In a self-administered questionnaire the Manhattan respondents were asked: Think about your friends, the people you spent time with and did things with. when you were 13, and them when you were 16, were at least some of your friends: (a) sometimes in trouble at school; (b) sometimes in trouble with the police; (c) arguing a lot with their parents; (d) drinking beer, wine, or liquor at times; (e) smoking marijuana; (f) using other drugs; and (g) people your parents didn't approve of?" To insure that this perceived peer behavior was temporally antecedent to illicit drug use for the bulk of the sample, only the responses for age 13 are included in table 5.16.

As expected, the average scores on the Lifetime Drug Use Index were higher for those respondents who reported at least some of their friends at age 13 were doing the things listed in table 5.16. While this was true for all seven items, differences between the average scores were not statistically significant for three of the items (arguing with parents; drinking beer, wine, or liquor; and people your parents didn't approve of). It is interesting that the highest scores on the Lifetime Drug Use Index occur for those men who, when they ware 13 years old, had at least some friends

TABLE 5.15 Analysis of Variance: Lifetime Drug Use Index by Race and Educational Attainment of the Manhattan Sample

Independent Variables	n	Lifetime Drug Use Index	
		Mean	Standard Deviation
TOTAL	(294)	469.90	1036.77
BLACK	(125)	737.21	1188.43
Less than high school	40	1176.80	1304.44
High school graduate	40	806.58	1325.09
Some college	34	352.03	823.32
College graduate	11	77.00	127.97
WHITE	(98)	223.20	789.46
Less than high school	9	1282.44	2342.60
High school graduate	12	249.00	480.58
Some college	31	151.16	231.57
College graduate	46	57.78	139.65
OTHER	(71)	339.80	950.61
Less than high school	18	418.11	908.82
High school graduate	25	234.40	964.34
Some college	22	477.09	1102.75
College graduate	6	40.67	62.84

F for Race	3.477	p. .032
F for Education	7.548	p. .001
F for Race-Education Interaction	1.593	p. .149

TABLE 5.16 Test of Difference Between Means: Lifetime Drug Use Index by Peer Behavior at Age 13 for the Manhattan Sample

At Age 13 At Least Some Friends Were:	n	Lifetime Drug Use Mean	Value of t	Significance Level
a) Sometimes in trouble at school				
YES	169	612.92	3.02	.003
NO	122	251.66		
b) Sometimes in trouble with the police				
YES	50	775.80	2.28	.023
NO	242	410.08		
c) Arguing with parents				
YES	63	588.22	.99	NS
NO	229	441.28		
d) Drinking beer, wine or liquor				
YES	123	543.63	1.01	NS
NO	170	419.32		
e) Smoking marijuana				
YES	70	831.20	3.35	.001
NO	221	360.70		
f) Using other drugs				
YES	26	1075.04	3.14	.002
NO	266	413.80		
g) People your parents didn't approve of				
YES	83	596.87	1.28	NS
NO	209	423.97		

using other drugs (mean = 1075.04). The next highest score occurred for the group having friends smoking marijuana (mean = 831.20). The data lend support for the proposition that the earlier an individual associates with peers who are involved in deviant activity, the greater is the likelihood that the person will subsequently exhibit deviant behavior, including use of illicit drugs (Jessor and Jessor 1977; O'Donnell and Clayton 1979, 1981).

A second test of the sensitivity of the Lifetime Drug Use Index to known group differences concerns self-reported involvement in 13 criminal activities. The positive relationship between illicit drug use and criminality has been thoroughly documented (Voss 1976; McGlothlin et al. 1978; Nurco and DuPont 1977; Ball et al. 1980, 1981; Clayton and Tuchfeld, unpublished). The data in table 5.17 confirm the relationship between drug use and crime. With the exception of public drunkenness and driving while intoxicated, the average score on the Lifetime Drug Use Index is markedly higher for the men in the Manhattan sample who reported criminal acts; the value of t is significant at the .001 level.

SUMMARY AND CONCLUSIONS

The purpose of this chapter was to describe the development of a composite index of illicit drug use and its application to a set of data that was not employed in the construction of the index. Creation of such an interval-level index has been assigned a high priority in the drug field. Previous attempts at construction of a composite drug use index have suffered from reliance on subjective evaluations, the generation of weights from a single sample, or scales that only meet the criterion of ordinality. A composite index of drug use must be sufficiently comprehensive to include the major drug classes, sensitive to differences in how various drugs are used, objectively constructed, and not limited to any one particular sample. It should also reflect the differential social costs associated with each drug and should be easy to use. The Lifetime Drug Use Index meets all of these criteria. It is based on data from (1) the 1977 NIDA National Survey, (2) CODAP admissions for 1977, (3) 1977 DAWN-Emergency Room drug mentions, (4) DAWN-Medical Examiner drug mentions for 1977, (5) DEA's Illicit Price data, (6) the Supported Work study, and (7) the national survey of young men. Through the procedures described in detail in this chapter, these data sets were used to derive (1) weights for seven major drug classes and (2) five separate composite indices of illicit drug use. All of these meet the essential criteria for a composite measure of drug use: each distinctive pattern of drug use is assigned a unique, single score. Correlations among the indices were examined and in terms of parsimony and ease of construction, the Lifetime Drug Use Index was selected as the most functional index. This index was then applied to the 294 men in the Manhattan sample. Analyses of differences in mean scores on the index according to race and age group, race and educational attainment, peer behavior when the respondent was 13 years old,

TABLE 5.17 Test of Difference Between Means: Lifetime Drug Use Index by 13 Self-Reported Criminal Activities for the Manhattan Sample

Criminal Activity	n	Lifetime Drug Use Mean	Value of t	Significance Level
1. Public Intoxication				
YES	153	472.37	.04	NS
NO	141	467.22		
2. Driving while intoxicated				
YES	76	222.50	-2.44	.015
NO	213	556.15		
3. Auto theft				
YES	16	1510.81	4.24	.001
NO	276	409.70		
4. Breaking and entering				
YES	41	1366.15	6.36	.001
NO	253	324.66		
5. Armed robbery				
YES	19	1991.37	7.16	.001
NO	275	364.78		
6. Shoplifting				
YES	127	758.67	4.29	.001
NO	167	250.30		
7. Stealing (face-to-face)				
YES	32	1572.84	6.86	.001
NO	262	335.19		
8. Illegal gambling				
YES	28	1215.50	4.11	.001
NO	266	391.42		
9. Bad checks				
YES	18	1379.83	3.94	.001
NO	276	410.56		
10. Forged prescriptions				
YES	3	2532.00	3.53	.001
NO	291	448.64		
11. Pimping				
YES	9	2598.44	5.71	.001
NO	285	402.68		
12. Breaking into automobiles				
YES	19	1859.42	6.44	.001
NO	275	373.90		
13. Running con games				
YES	25	1539.16	5.67	.001
NO	269	370.53		

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and 13 self-reported criminal activities demonstrated the sensitivity of the index to known group differences. In conclusion, the authors believe that the Lifetime Drug Use Index and the procedures used in its construction met all of the essential criteria for a composite index. In addition, the index is easy to construct and is based on the type of information that is usually obtained in a survey of drug use. In chapter 8 of this report, the Lifetime Drug Use Index will be used as a dependent variable in testing causal models concerning use of illicit drugs.

FOOTNOTE

[1]Ten questions about involvement in criminal activity were posed. At another point in the interview, each respondent was asked if he had ever sold drugs and, if so, what drugs. Positive responses were scored as follows: "Have you ever . . ."

1.	Been drunk in a public place	1
2.	Shoplifted something from a store	1
3.	Driven a car while drunk	2
4.	Stolen a car	2
5.	Run numbers, or had a job which involved illegal gambling	2
6.	Broken into a house, school, or place of business	3
7.	Forged, or passed bad checks	3
8.	Forged prescriptions or passed script	3
9.	Stolen anything from a person face-to-face	4
10.	Been armed with or used a weapon of any kind while committing a theft or robbery	5
	If ever sold marijuana	5
	If ever sold one or more of the following drugs: heroin, cocaine, barbiturates, amphetamines, psychedelics, or other opiates	5

Chapter 6

Drug Sales

Social research pertaining to drugs has been devoted almost exclusively to the following topics: (1) the incidence and prevalence of use of specific drugs; (2) the social and health consequences of drug use; (3) the causes and correlates of drug use; and (4) the association of drug use with other forms of deviance, particularly criminality. While the relationship between drug use and crime has received considerable attention, most of the research has focused on heroin addicts and their involvement in nondrug crime (McGlothlin et al. 1977, 1978; Demaree and Neman 1976; Johnston et al. 1979; Ball etal. 1980, 1981; Inciardi 1979). Only a few studies have dealt explicitly with the phenomenon of drug sales. For example, in Inciardi's (1979) study of 239 active male heroin users in Miami, 92 percent had been involved in drug sales in the preceding 12 months and drug sales accounted for 51 percent of the 80,644 criminal offenses committed by these men in 1978. Single and Kandel (1978) studied the relationship among marijuana use, drug sales, friends' use of drugs, and use of other illicit drugs; testing the subculture of drug use hypothesis posited by Johnson (1973). Of the 1617 adolescents they studied, 14 percent reported selling marijuana only, while 12 percent reported selling other illicit drugs. Drug sales was strongly correlated with the frequency of marijuana use (gamma = .93) and use of other illicit drugs (gamma = .91).

While these two studies underscore the significance of drug sales as an indicator of involvement in the drug subculture, they also reflect the dearth of descriptive information about this phenomenon. In this chapter, data will be presented from both the national and Manhattan samples concerning "patterns" of drug selling. After a presentation of these descriptive data, the development of an interval level measure of drugs sales is discussed.

Drug Sales

In the national study, the topic of drug selling was introduced by the following question: "have you ever sold any drugs illegally--even as a favor or just to pay for your own supply?" If the respondent answered positively, he was asked to indicate which drugs he had sold. Shown in table 6.1 are the number of drugs sold and the patterns of drug sales. A total of 427 young men, or 17 percent of the national sample, had sold drugs at some time. Projected to the 19,000,000 men born in the years 1944 through 1954, some 3,230,000 young men have distributed drugs illegally. Of the 427 men who had sold drugs, 232

TABLE 6.1 Number and Patterns of Drug Sales, National Study

		NATIONAL STUDY: Patterns of Drug Sales						
Number of Drugs Sold	n	Mari-juana	Psyche-delics	Stimu-lants	Seda-tives	Heroin	Opiates	Cocaine
1	196	+						
1	10		+					
1	12			+				
1	3				+			
1	a					+		
1	1						+	
1	2							+
TOTAL	232							
2	25	+	+					
2	40	+		+				
2	5	+			+			
2	a	+				+		
2	3	+					+	
2	5	+						+
2	3		+	+				
2	1			+	+			
2	2			+		+		
TOTAL	92							
3	21	+	+	+				
3	2	+	+		+			
3	1	+	+			+		
3	1	+	+				+	
3	3	+	+					+
3	9	+		+	+			
3	5	+		+			+	
3	1	+		+				+
3	1	+			+		+	
3	5	+				+		+
3	1	+					+	+
TOTAL	50							
4	11	+	+	+	+			
4	1	+	+	+			+	
4	5	+	+	+				+
4	2	+	+		+	+		
4	1	+	+		+			+
4	1	+	+				+	+
4	1	+		+	+	+		
TOTAL	22							

TABLE 6.1 (continued)

5	8	+	+	+	+	+		
5	8	+	+	+	+		+	
5	4	+	+	+	+			+
5	1	+	+	+		+	+	
5	1	+	+	+		+		+
5	1	+	+	+			+	+
5	1	+	+		+	+		+
5	1	+	+			+	+	+
5	2	+		+	+	+	+	
5	1	+		+	+	+		+
5	1	+		+	+		+	+
5	1	+		+		+	+	+
5	1		+	+	+		+	+
TOTAL	31							
GRAND TOTAL	427	384	113	141	51	41	30	36
Percent of Total Sample	17	15	5	6	2	2	1	1
Percent of Sellers		90	26	33	12	10	7	8

(54 percent) had sold only one drug, and this was usually marijuana; 92 men (22 percent) had sold two drugs; and 103 men (24 percent) had sold three or more drugs. Calculated on the basis of the total sample of 2510 men, the percentages are: one drug, 9 percent; two drugs, 4 percent; and three or more drugs, 4 percent. Of the men who had sold one drug, 84 percent of them had sold marijuana. Nearly all (96 percent) of the men who had sold two or more drugs had sold marijuana.

The figures in the last line in table 6.1 show that marijuana is the drug most commonly sold. Fifteen percent of the men in the entire sample had sold marijuana. While 5 and 6 percent, respectively, had sold psychedelics and stimulants, no more than 1 or 2 percent of the men had sold other illicit drugs.

The fact that a relatively large proportion of all young men in this country have violated the laws prohibiting the sale of illicit drugs is important from the perspective of policy. In President Carter's message to Congress in August 1977, he recommended the elimination of all Federal criminal penalties for the possession of up to one ounce of marijuana (Federal Strategy 1979:67). However, he advocated retention of Federal penalties for trafficking. While there has been a movement to decriminalize marijuana, the changes in State laws have pertained to possession for use. The laws regarding sales have not been altered in most of the States that have removed criminal penalties for possession. A few States exclude "casual transfers" fran the laws regarding sales. In conjunction with decriminalization of possession, a distinction needs to be made between sales to friends as a favor or simply to finance one's own supply, and sales to friends or strangers for profit. The line between sales as a favor and sales for a profit is not an easy one to draw.

In the Manhattan study, three questions about selling were asked: (1) "Have you ever sold drugs illegally, just as a favor to friends?" (2) "Have you ever sold drugs illegally, not for profit, but just to pay for your own supply of the drugs?" (3) "Have you ever sold any drugs illegally for profit?" If the respondent answered in the affirmative, he was asked to name the drugs he had sold for each purpose. Shown in table 6.2 are the patterns of drug sales among the Manhattan respondents. A total of 94 men, 33 percent of the sample, had sold drugs for one or more of the three purposes mentioned. In comparison, 17 percent of the men in the national sample had sold drugs. In New York, a slightly higher proportion of the men had sold drugs as a favor, rather than to pay for their own supply or for profit. Nevertheless, it is important to note that almost one-fifth of the entire Manhattan sample reported selling drugs for each of these purposes.

The number of drugs that were sold, as well as the specific drugs involved, is shown in table 6.3. Eleven percent of the respondents had sold one drug as a favor to a friend; 12 percent of the men had sold two or more drugs for this reason. The sale of one drug to pay

TABLE 6.2 Patterns of Drug sales, Manhattan Study

PATTERNS OF DRUG SALES					
As Favor to Friend	For Own Supply	For Profit	n	Percent
No	No	No	193	67.2
Yes	No	No	16	5.6
No	Yes	No	6	2.1
Yes	Yes	No	18	6.3
No	No	Yes	14	4.9
Yes	No	Yes	12	4.2
No	Yes	Yes	7	2.4
Yes	Yes	Yes	21	7.3
TOTAL Yes	67 (23.2)	52 (18.1)	54 (18.8)	94 (32.8)	
TOTAL No	220 (76.7	235 (81.9)	233 (81.2)	193 (67.2)	

TABLE 6.3 Patterns of Drug Sales in the Manhattan Study: Specific Drugs Sold

Number of Drugs Sold	PURPOSES OF DRUG SALES: As Favor, Friend	As Own Supply	For Profit	MANHATTAN STUDY, Patterns of Drug Sales: Marijuana	Psychedelics	Stimulants	Sedatives	Heroin	Opiates	Cocaine
1	26	17	19	+						
1	4	12	7					+		
1	1	1							+	
TOTAL	31	30	26							
2	1			+	+					
2	1	1	1	+			+			
2	7	4	6	+				+		
2	2	1		+					+	
2	3		4	+						+
2	1	2	1					+		+
2		1	1						+	+
TOTAL	15	9	13							
3	2	2	2	+	+	+				
3			1	+	+			+		
3		1	1	+	+				+	
3	3			+		+	+			
3	2			+			+	+		
3	1	1		+			+			+
3		1		+				+	+	
3	4	4	8	+				+		+
3	2	1		+					+	+
TOTAL	14	10	12							

TABLE 6.3 (continued)

4	1			+	+	+			+	
4		1		+	+				+	+
4	2	1	1	+		+		+		+
4	1	1	1	+				+	+	+
TOTAL	4	3	2							
5			1	+	+	+	+	+		
5	1			+	+			+	+	+
5	1			+		+	+	+	+	
TOTAL	2	—	1							

for one's own supply was reported by 10 percent of the men, and an additional 10 percent of the respondents sold two or more drugs for this purpose. Similarly, 9 percent of the men sold one drug for profit, and 9 percent of the sample had sold two or more drugs for profit.

The data in table 6.4 permit comparison of the national and Manhattan samples with regard to the specific drugs that were sold. overall, the two samples appear to be similar with respect to the sale of marijuana. In the national sample, 15 percent of the men had sold marijuana, and in the Manhattan sample, 20 percent of the respondents had sold marijuana as a favor; 12 percent of the men had sold it for profit. If the number of men in the Manhattan sample who had sold drugs is used as the base, the figures are: sold marijuana as a favor, 64 percent; sold marijuana to purchase one's own supply, 38 percent; and sold marijuana for profit, 48 percent. In comparison, in the national sample, 90 percent of the men who had sold drugs had sold marijuana. However, the apparent difference between the samples disappears when the data are examined according to the purpose for which drugs were sold. Of the men who sold drugs as a favor to a friend, 91 percent had sold marijuana. The comparable figures for the other two purposes are: sold marijuana to pay for one's own supply, 70 percent; and sold marijuana for profit, 83 percent. It appears that marijuana is an important commodity among those who sell drugs, whether one focuses on the national population of young men or young men who grew up in high drug use areas in Manhattan.

There is little difference between the samples in the sale of psychedelics, as only 5 percent of the men in the national sample and 2 percent of the Manhattan respondents had sold these drugs. There are, however, substantial differences in terms of the percentage of drug sellers who had sold psychedelics. In the national sample, 26 percent of these men had sold psychedelics. In comparison, 5, 4, and 5 percent, respectively, of the drug sellers in the Manhattan sample had sold psychedelics as a favor, for their own supply, or for profit. These differences are puzzling in view of the fact that extensive use of psychedelics, and presumably distribution of these drugs, has been reported among college students, and slightly higher proportions of the Manhattan respondents had attended or graduated from college than was the case in the national sample. Among whites, the difference in educational attainment is substantial; 21 and 47 percent, respectively, of the men in the national and Manhattan samples are college graduates.

In terms of the percentage of the total sample who reported sale of stimulants, sedatives, and opiates other than heroin, the differences between the national and Manhattan samples are not extensive. However, differences emerge for stimulants when attention is focused on drug sellers. In the national sample, 33 percent of the drug sellers had sold stimulants in comparison with 10 percent of them in the Manhattan sample who had sold drugs as a favor, 3 percent who had sold drugs to purchase their own supply, and 4 percent who had sold stimulants for profit.

TABLE 6.4 Drugs Sold in the National and Manhattan Studies: A Comparison

	MANHATTAN STUDY									NATIONAL STUDY		
	FAVOR TO FRIEND			FOR OWN SUPPLY			FOR PROFIT					
	n	Percent of Sample	Percent of all Sellers	n	Percent of Sample	Percent of all Sellers	n	Percent of Sample	Percent of all Sellers	n	Percent of Sample	Percent of all Sellers
Marijuana	60	20%	64%	36	12%	38%	45	15%	48%	384	15%	90%
Psychedelics	5	2	5	4	2	4	5	2	5	113	5	26
Stimulants	9	3	10	3	1	3	4	1	4	141	6	33
Sedatives	8	3	9	2	1	2	2	1	2	51	2	12
Heroin	23	8	24	25	9	27	26	9	28	41	2	10
Opiates	9	3	10	8	3	9	3	1	3	30	1	7
Cocaine	15	5	16	12	4	13	16	5	16	36	1	8

The most dramatic differences in drug sales occur for heroin and cocaine. Only 2 percent of the men in the national sample report the sale of heroin, and 10 percent of the sellers had dealt in heroin. In Manhattan, 8 to 9 percent of the men had sold heroin. Among the drug sellers, the figures are: sale of heroin as a favor, 24 percent; sale to purchase one's own supply, 27 percent; and sale for profit, 28 percent. Among the men who sold drugs as a favor, 36 percent report selling heroin, as do 52 percent of the men who sold drugs for other purposes. These figures are one indication of the importaut role that heroin plays in the economy in areas in which its use is endemic. Some four to five times as many of the Manhattan respondents had sold cocaine than was the case in the national sample, and approximately twice as many of the drug sellers in Manhattan had dealt in cocaine than was the case among their counterparts in the national sample.

An Index of Drug Sales

One of the key indicators of involvement in the drug subculture is participation in the drug distribution network through the sale of drugs (see Johnson 1973). Recognition of the important role of drug sales in the perpetuation of drug use is reflected in the drug laws. The sale of drugs outside of medical-pharmacological channels is illegal, regardless of the reason for which drugs are sold, and severe penalties may be imposed upon a person convicted of illicit drug sales.

In the interview schedules in both the national and Manhattan studies, questions about drug sales were designed to identify the specific drugs that a respondent had sold. On the other hand, questions about the number of sales, the number of customers, or the sales total in dollars were not posed. The questions were simply designed to measure whether or not a respondent had sold drugs and, if so, which drugs he had sold. In the national study, the names of as many as five specific drugs were obtained from the men who reported selling drugs. An Index of Drug Sales was constructed by summing the weights for the drugs the respondent had sold. The weights developed in chapter 5 in the construction of the Lifetime Drug Use Index were utilized for this purpose. The range on this measure is from 0 to 45. In the Manhattan study, as many as three drugs ware recorded for each of the three qeustions about selling drugs. Selling drugs as a favor was assigned a multiplier of 1, while weights of 2 and 3, respectively, were used for sales to purchase one's own supply and for selling drugs for profit. Combined with the weights for the drugs, the weights used in the construction of an Index of Drug Sales are:

	Favor	Supply	Profit
Marijuana	1	2	3
Psychedelics	2	4	6
Other Opiates	3	6	9
Stimulants	5	10	15
Sedatives	6	12	18
Cocaine	7	14	21
Heroin	24	48	72

Because the Indices of Drug Sales for the national and Manhattan studies are not directly comparable, some descriptive data regarding race-cohort differences within the two samples are presented. Correlations between the Drug Sales Index for the Manhattan sample and other pertinent indices are then examined.

The Drug Sales Index: Differences and Correlations

While few would reject the unidimensional and developmental assumptions upon which the Drug Sales Index is founded, a "good" index is one that (a) differentiates between groups that would be expected to differ on that phenomenon and (b) is correlated with, predicted from, and predictive of other phenomena-variables that are part of the same theoretical model. In the remainder of this chapter we will examine the differentiating and correlational power of the Drug Sales Index for the Manhattan sample. The location and salience of Drug Sales in causal models concerned with illicit drug use will be discussed in chapter 8.

The data in table 6.5 indicate differences between the three racial groups on Drug Sales that are statistically significant beyond the .001 level ($F = 7.97$ for race). These differences are in the direction that would be predicted from our knowledge of scores of the three groups on the Lifetime Drug Use Index--blacks highest with a Drug Sales score of 26.98, whites lowest with a score of 5.95, and the others in between with a score of 13.37 on the Drug Sales Index. The differences by cohort are <u>not</u> statistically significant. However, it should be noted that the relative sizes of scores on the Drug Sales Index by cohort parallel those found when the dependent variable was the Lifetime Drug Use Index.

The data in table 6.6 indicate that education is more efficacious as a differentiating factor for drug sales than is race; the F value is significant at the .01 level compared to the .04 level for race. For all three racial groups, those with less than a high school education, the dropouts, are highest on drug sales. among blacks, the dropouts and high school graduates are quite high on drug sales, whereas among whites, only the dropouts are high. Among the others there is not a great deal of visible difference in drug sales unless the respondents are college graduates.

The Drug Sales Index was examined for those who were or more not involved in 10 different criminal activities (see table 6.7). The t value was statistically significant for each criminal act except being drunk in public and driving while drunk. For the latter act, the mean scores were not in the predicted direction. What is important is the magnitude of the differences in drug sales for the other criminal acts, particularly those that one would expect to be associated with illicit drug use and involvement in the drug subculture.

The Drug Sales Index is correlated (table 6.8) strongly with the Lifetime Drug Use Index for all three racial groups, moderately with

TABLE 6.5 Drug Sales Index Scores by Race and Cohort

Independent Variables	n	Lifetime Drug Use Index Mean	Standard Deviation
TOTAL	(294)	16.68	41.38
BLACK	(125)	26.98	50.52
1944-46	22	17.23	44.59
1947-49	31	34.55	57.30
1950-52	37	28.14	54.25
1953-54	35	25.17	44.16
WHITE	(98)	5.95	22.77
1944-46	24	15.79	43.26
1947-49	32	3.53	9.88
1950-52	22	2.05	4.46
1953-54	20	2.30	6.06
OTHER	(71)	13.37	39.56
1944-46	16	13.94	30.09
1947-49	16	22.50	52.72
1950-52	22	9.59	35.22
1953-54	17	9.12	36.58

Main Effects	3.30	p. .007
F for Race	7.97	p. .000
F for Cohort	.40	p. .750
Interactions	.71	p. .639
Explained	1.89	p. .041

TABLE 6.6 Drug Sales Index Scores by Race and Educational Attainment

Independent Variables	n (%)	Lifetime Drug Use Index Mean	Lifetime Drug Use Index Standard Deviation
TOTAL	(294)	16.68	41.38
BLACK	(125)	26.98	50.52
Less than high school	40(32)	37.98	59.14
High school graduate	40(32)	32.15	53.10
Some college	34(27)	16.38	40.05
college graduate	11(8)	.91	2.07
WHITE	(98)	5.95	22.77
Less than high school	9(9)	34.89	63.43
High school graduate	12(12)	2.67	4.56
Sane college	31(31)	5.26	16.28
College graduate	46(46)	1.61	5.55
OTHER	(71)	13.37	39.56
Less than high school	18(25)	15.33	44.85
High school graduate	25(35)	12.48	34.98
Some college	22(30)	14.41	45.21
College graduate	6(8)	7.33	13.00

Main Effects	5.324	p. .000
F for Race	3.381	p. .035
F for Education	3.589	p. .014
Interactions	.927	p. .475
Explained	2.926	p. .001

TABLE 6.7 Drug Sales Index Scores by Participation in 10 Specific Criminal Acts

Criminal Activity		n	Lifetime Drug Use	Value of t	Significance Level
1. Drunk in public					
	YES	153	18.91	.96	.337
	NO	141	14.26		
2. Driven while drunk					
	YES	76	10.67	-1.47	.142
	NO	218	18.78		
3. Stolen a car					
	YES	16	65.50	5.04	.000
	NO	276	13.84		
4. Broken into a house, school or business					
	YES	41	58.26	6.25	.000
	NO	253	9.94		
5. Armed while committing a theft or robbery					
	YES	19	90.89	9.15	.000
	NO	275	11.55		
6. Shoplifted					
	YES	127	28.20	4.28	.000
	NO				
7. Stolen something face-to-face					
	YES	32	62.06	7.11	.000
	NO	262	11.14		
8. Run numbers or involved in illegal gambling					
	YES	28	48.25	4.37	.000
	NO	266	13.36		
9. Forged or passed bad checks					
	YES	18	67.83	5.70	.000
	NO	276	13.34		
10. Forged prescriptions or passed bad script					
	YES	3	95.67	3.38	.001
	No	291	15.87		

TABLE 6.8 Correlations (r) of Drug Sales Index With Age at First Use of Marijuana, Educational Attainment, and the Lifetime Index of Drug Use Within Racial Categories

	BLACKS	WHITES	OTHERS
Age at First Use of Marijuana	-.23	-.24	-.33
Education	-.32	-.32	-.03
Drug Index	.42	.84	.63

education for blacks and whites but negligibly for others, and moderately with age at onset of marijuana use for all three groups.

Conclusions

The data presented in this chapter are unique for two reasons. First, they concern the sale and distribution of drugs, a topic on which little systematic research has been conducted. Second, they allow us to compare the prevalence of drug sales for both a national representative sample and a sample from areas of Manhattan known to be high in drug use.

Several conclusions and implications can be drawn from these data. First, a relatively large proportion of the youth and young adults in this country have sold drugs. In the national sample the prevalence figure is 17 percent, representing over 3.2 million young men between the ages of 20 and 30. In the Manhattan study, 1 in 3 in the sample had sold drugs. Second, marijuana is a common medium of exchange among youth and young adults, whether in the national population or in the high drug use areas. Third, heroin and cocaine are popular mediums of exchange in the Manhattan study but are only rarely sold by young men in the national study.

While these data and conclusions are interesting and provocative, they underscore how little is known about a behavior that is central to the drug abuse problem in the United States. While there are many research questions about drug selling that deserve immediate attention, some of the more important ones are listed below.

1) What are the salient contextual and psychosocial mechanisms involved in a decision to sell drugs?
2) Are there thresholds of drug use that, once attained, virtually insure that a person will begin selling drugs?
3) At what point in the developmental sequence of drug use does one "usually" move into drug sales?
4) What role does fear of apprehension and certainty of detection play in the decision to sell or not sell drugs?
5) Given the prevalence of marijuana use and the evident propensity of users to sell drugs, particularly marijuana, what can be done from statutory and enforcement perspectives to reduce the sales of illicit drugs?

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Chapter 7

Predictors of Illicit Drug Use

The primary objective of the Manhattan study was to examine the natural history and etiology of illicit drug use. In this chapter, attention will be focused on the item and scales used to measure etiological factors that may be predictive of illicit drug use. Manhattan is an appropriate site for etiological research because it contains areas in which the rate of illicit drug use is high. Thus, one could expect to obtain a sizable number of regular opiate users in a small sample. Residence in Manhattan does not, however, imply that the subjects were necessarily exposed to the same sociocultural environment during their formative year.

Definitions of Sociocultural Environment

The concept of a sociocultural environment is a complex one that can be defined in various ways. Three definitions were utilized in the Manhattan study. First, the concept of a sociocultural environment traditionally has been linked to geographical criteria. This definition influenced the sampling design. The respondents were selected randomly fran the files of Selective Service boards located in whole or in part in health areas with high rates of opiate use. The second definition of the sociocultural environment also has a geographical connotation. In Manhattan, as in other large cities, there are cultural enclaves or neighborhoods, such as Spanish Harlem, that are identified by the ethnic composition of the population. The assmuption underlying definition of the sociocultural environment in terms of ethnicity is that blacks, whites, and Hispanics have different experiences in the process of growing up because they reside in different cultural settings. Thus, knowledge of a person's ethnic background and the area in which he was raised provides a researcher with valuable information about the kinds of influences that have affected his life. Consequently, in this report, ethnic status is used as a control variable. A third definition of sociocultural environment is based on a person's perception of the forces influencing him at various times in his life. It is assumed that the respondent's subjective perception of the environment may be as important in explaining his behavior as the objective characteristics of that environment.

Problems in Measuring Sociocultural Environment

Efforts to assess subjective perceptions of the sociocultural environment create numerous measurement problems. These problems were partially resolved by measuring experiences occurring in different periods of time. Because the objective of the study was to explain the use

of marijuana as well as use of other illicit drugs, it was crucial to obtan measurements of the respondent's perception of the environmental forces operative in his life at the time he was most vulnerable to begin use of illicit drugs. Herein lies the difficulty. The respondents were going to be 20 to 30 years old when they were to be interviewed and they were to be interviewed only once. Therefore, it was necessary to link the items designed to measure etiological variables to a specific time in each man's life that would be prior to his use of illicit drugs. Use of the qualifier, when you were 13 to 15 years old, and the phrasing of the questions with reference to the neighborhood in which the respondent was living in those years, was designed to focus on a period antecedent to his use of illicit drugs. The decision to link the predictive items to a specific age range and to the neighborhood in which the respondent was then living raises a general question about the validity of retrospective life history data. However, this is a question that critics of survey research are more likely to raise than are persons who have questioned drug users about their past experiences. Experience in the national survey, as well as the experience of researchers who have studied heroin addicts, suggests that most people accurately remember events that were salient in their lives, even if they occurred 10 or 15 years earlier (Ball 1967; Maddux and Desmond 1979; McGlothlin et al. 1978; Inciardi 1979). However, our goal was not simply to measure highly salient events such as graduation from high school or one's first arrest. Rather, many items in the interview schedule were relational in nature in that they pertained to what the respondent was doing, thinking, experiencing, or feeling with regard to significant others in his neighborhood when he was 13 to 15 years old. If subsequent experiences strongly influence one's recollection of earlier periods in one's life, then data obtained retrospectively may be distorted. The credibility of retrospective data can only be evaluated in terms of consistency and predictive power. To insure maximum consistency and credibility, the researchers conducted numerous pretest interviews with inmates at the Federal Correctional Institution in Lexington, Kentucky. Many of these inmates had grown up in ghettos in large metropolitan areas and they did not find it difficult to answer the questions. Once a reasonably complete interview schedule had been constructed, a member of the research team reviewed each item in the schedule with three ex-addict interviewers employed by the New York State Office of Drug Abuse Services. The purpose of this lengthy session was to insure that the item would be understood by the subjects in Manhattan. Changes in the wording of some items were made as a result. In addition, several of the early interviews with respondents were conducted by members of the research team.

Adequate measurement of the respondent's subjective perception of his sociocultural environment required identification of the etiological factors that might be predictive of illicit drug use. Our solution to this important problem was to rely on extant theories in the field of deviance. While a number of theoretical perspectives have been proposed, none of them has been shown to be superior to the others in terms of explanatory power. The task of selection of relevant variables

was minimized by the extensive conceptual overlap among the various theories. Unfortunately, there is little consensus regarding how these concepts should be operationalized. Further, none of these theoretical perspectives was developed specifically to explain drug use. Consequently, the investigators had to design items to measure the key concepts in the various theories in an effort to predict use of marijuana and other illicit drugs. The theories that were used to identify key concepts were Merton's (1957) theory of anomie, Sutherland's theory of differential association (Sutherland and Cressey 1974), Hirschi's (1969) social control theory, the labeling perspective (Decker 1963; Schur 1971), and the theory of deviant subcultures (Cohen 1955; Cloward and Ohlin 1960; Johnson 1973).

Etiological Factors in Illicit Drug Use

While the list of factors that might predict illicit drug use is extensive, seven key concepts were identified in the existing theories. Family influence and school adjustment were two factors that might insulate a person from use of illicit drugs. Two factors that may facilitate involvement with illicit drugs are the behavior exhibited by a person's peers when he was 13 to 15 years old (i.e., their involvement in deviant activities and their use of drugs) and the person's own early involvement in deviant behavior. Labeling may also be predictive of illicit drug use. This factor was measured in terms of the perception that significant others (parents, teachers, friends) believed the respondent was headed for trouble with the law. Finally, two factors measure involvement in the drug subculture: the availability of illicit drugs in the respondent's neighborhood, and the respondent's self-reported involvement in selling drugs.

Family Influence

The first--and perhaps the most enduring--source of influence on a person comes from the family in which he is raised. This is true regardless of where one grows up--a suburb in middle America, a small rural town, or a ghetto in Manhattan. In an overwhelming majority of cases, the individual family unit successfully carries out its primary function: nurturant socialization. There is little doubt that the family exerts a powerful influence on one's life; however, there is considerable debate concerning how the family influences the behavior of its members. Thus, the appropriate way to measure family influence is controversial. Some scholars argue that the crucial variable is structural. They emphasize the presence or absence of certain kinds of adults and a child's ordinal position within the family, regardless of its composition (Moynihan 1965; Kellam et al. 1977; Zajonc 1976). In contrast, others, such as Hirschi (1969) and Clayton (1979), argue from a social psychological perspective. They suggest that in order to understand how the family influences behavior, one must examine the affectional bonds between parents and the child. These bonds are not static. They change over time as the developmental needs of the child and the dynamics of family relationships change. Changes in the bond between parents and child can be seen most clearly in the

degree of parental control over the child's time and associates, the child's identification with his parents, the degree to which the child sees the parents as role models, and the amount and quality of parent-child communication. The early teen years are crucial ones not only because youth undergo marked physiological changes, but also because they are years in which youth may experiment with alcohol, tobacco, and marijuana, especially in neighborhoods in which drug use is extensive. As youth seek independence and autonomy, they are often caught between the demands from parents for conventional actions and fran peers for risk-taking behavior.

Family influence was initially defined in terms of five dimensions: family control, closeness to mother, closeness to father, use of the father as a role model, and communication with parents. There were 12 items in the interview schedule that ware designed to tap these dimensions. In testing the Family Influence scale for reliability or internal consistency, 3 item were eliminated to increase its reliability. Excluded from the scale were items regarding: (1) whether the parents set a definite time for the respondent to be home when he was 13 to 15 years old and whether he usually met it; (2) how close the respondent felt to his father; and (3) whether the respondent used his father as a role model. Table 7.1 contains a correlation matrix (Pearsons' r) for the 9 items in the Family Influence scale. The scale has a high degree of internal consistency or reliability as indicated by the Cronbach's (1951) alpha value of .81. A brief summary of the responses to the various items will give the reader an understanding of the distribution of the responses. Seventy-three percent of the men said their parents knew where they were when not at home and 38 percent said their mothers knew all of their friends. Fifty-six percent of the men said they felt very close and 30 percent described themselves as fairly close to their mother. The following percentages said that they often discussed with their parents things related to: school (54 percent); friends (32 percent); future plans (35 percent); leisure time activities (22 percent); girls (13 percent); and news or national events (29 percent). The range of possible scores on the Family Influence scale is 9 to 31. The overall men is 23.97 with a standard deviation of 4.71. In chapter 8, Family Influence is one of the variables in the causal model designed to predict illicit drug use. An inverse relationship between Family Influence and the use of illicit drugs is hypothesized. That is, high scores on Family Influence are associated with low scores on the measure of use of illicit drugs.

Early Deviance

While it is generally acknowledged that early involvement in delinqluent activities is predictive of later deviance, precocity is not included as a basic concept in any of the existing theories. There are at least two reasons why precocity has generally been ignored. First, inclusion of early deviance in a theoretical model as a predictor of later deviance would leave a theorist open to the criticism of circularity. Second, most of the theoretical models in the field of deviance do not refer to developmental processes. Nevertheless, study

TABLE 7.1 Inter-Item Correlations (Pearson's r) for the Family Influence Scale

	1	2	3	4	5	6	7	8	9
1. Parents know where you were	--								
2. No. of friends mother knew	.384	--							
3. Closeness to mother	.245	.250	--						
4. Discuss things related to school	.405	.309	.163	--					
5. Discuss your friends	.407	.351	.060	.507	--				
6. Discuss your future plans	.364	.217	.142	.545	.439	--			
7. Discuss how leisure time was spent	.382	.273	.067	.532	.522	.534	--		
8. Discuss girls	.152	.263	.105	.311	.359	.430	.445	--	
9. Discuss news or national events	.353	.159	.027	.455	.408	.493	.430	.320	--

Alpha = .81

Standardized Item Alpha = .81

after study of adults, whether criminals, drug users, or both, has noted the strong correlation between youthful involvement in delinquent activities and deviance in adulthood (Glaser 1960; Robins 1966).

The strength of this correlation and the consistency with which it occurs in the literature led to inclusion of items in the Manhattan interview schedule that would provide information regarding involvement in unconventional or deviant activities. The question was phrased: "Think now about how you spent your leisure time when you were 13 to 15 years old. For each of these activities, tell me if you spent a total of a couple of hours or more a week doing that activity." This question was followed by the inquiry, "Which of these would you say you spent the most time on?" Listed below are the activities and the marginal distribution of positive responses. The second set of figures reflects the number of men who indicated that a particular activity occupied the greatest amount of their time.

Unconventional Activities	YES Number	YES Percent	MOST Number
a. Hanging around street	202	69	67
b. Playing pool	89	30	7
c. Pitching pennies	90	31	0
d. Shooting craps	49	17	3
e. Playing con games or stealing	47	16	2

To construct a scale, each respondent was assigned a score of 1. Points were added to his score as follows: 1 pint for hanging around the street, playing pool, or pitching pennies; 2 points for shooting craps; and 3 points for running con games or stealing. If items a-c were named as the activity on which most of his leisure time was spent, 1 point was added: if items d or e were so named, 2 points were added. In addition, in a self-administered questionnaire, the respondents were asked if they had ever (a) run away from home, (b) been suspended or expelled from school, or (c) had sexual intercourse. Two points were added for each of these three activities if they occurred at age 14 or earlier.

Correlations among the items dealing with unconventional activities are moderate and range from .258 (playing con games or stealing with playing pool) to .436 (pitching pennies with shooting craps). The average inter-item correlation is .326. Because of the nature of the scale, an alpha value was not constructed. However, the range of scores on the Early Deviance scale is 1 to 17 with a mean of 3.39 and a standard deviation of 2.51.

School Adjustment

Like the family, the school attempts to instill societal norms and values in students. Not only does it foster skills that may be

useful in obtaining a job, but success in school is also the key that opens the gates to tracks that might otherwise be closed to youth from an urban ghetto. This is apparent in the Manhattan sample. Forty-seven percent of the whites in comparison with 9 percent of the blacks are college graduates. As noted previously, the high proportion of white collage graduates is remarkable in view of the fact that these men were raised in areas of Manhattan that rank high on most indicators of social pathology, particularly rates of opiate use (Inciardi 1981).

Several theorists have suggested that lack of success in school is related to involvement in unconventional or deviant activities. Cohen (1955) sees the school and its teachers as responsible for inculcating in youth societal norms and values and for providing youth with the skills necessary to achieve success as an adult. According to Hirschi (1969) and Elliott and Voss (1974), youth who are attached to school are less likely to be involved in delinquency than are youth with little attachment to school.

The concept of attachment to school implies positive affect, but only one item, which refers to how much the respondent liked school, clearly measures attachment. However, two other items (grades in school at ages 13 to 15 and the frequency with which the respondent got into trouble with teachers at age 13) are relevant to the respondent's school experiences. These three items were combined to form a scale which reflects School Adjustment.

Only 14 percent of the respondents indicated they disliked or really hated school when they were 13 to 15 years old, while another 15 percent said they did not really care, one way or another, about school at that age. Twenty-seven percent of the men indicated that their grades were either fair or poor at ages 13 to 15, while 21 percent described them as excellent and 51 percent said they were good. A total of 47 percent of the respondents said that they got into trouble with teachers and school officials all of the time when they were 13 and an additional 42 percent said they were in trouble quite often. The range of scores on the School Adjustment scale is 3 to 13 with a men of 10.03 and a standard deviation of 1.82 for the total sample. While the alpha value for the School Adjustment scale is quite low, .451, the scale is later used as an independent variable in explaining use of illicit drugs because of its salience in various theories of deviance.

Peer Influence

Peer influence is a key concept in nearly all theories of deviance, and it has proven to be a strong predictor of drug use among adolescents and young adults. The items used to construct the Peer Influence scale were formulated to measure the central ideas in Sutherland's (Sutherland and Cressey 1974) theory of differential association and the subcultural theories of Cohen (1955) and Johnson (1973). As youth seek independence from their parents, they become more

dependent on the norms of their friends and acquaintances for guidance as to how they should behave. Schcools and neighborhoods undoubtedly differ in the proportions of youth who are law-abiding or law-violating. Nevertheless, most youth are at least acquainted with peers who do and do not use alcohol, marijuana, and other illicit drugs, who are or are not sexually active, and who vary in the extent of their involvement in other kinds of delinquent behavior. The persons whom youth select as friends are influential with respect to the degree of their conformity with societal norms. According to the theory of differential association, one should predict delinquent behavior if in a youth's reference groups, the balance of definitions favorable to violation of the law outweighs the definitions favorable to conformity. Delinquent behavior is a function not only of priority but also of the frequency, duration, and intensity of involvement with groups holding definitions favorable or unfavorable to violation of the law.

Use of illicit drugs was sufficiently extensive in New York City in the late 1950s that Cloward and Ohlin (1960) identified one of their three types of subcultures as a retreatist, or drug-using subculture. Researchers have shown that friendship with persons who use drugs increases the probability that an individual will spend more and more tine with drug-using friends, and a youth's drug use will receive positive reinforcement. This is likely to increase the youth's involvement in the drug subculture. As this occurs, the probability that a person will begin to sell drugs increases, and involvement in the drug distribution network provides a person with opportunities to try other drugs.

The Peer Influence scale consists of five items. The first dealt with whether many of the adults in the neighborhood thought of the respondent's friends as delinquents. Twenty-six percent said yes. The second question asked whether the respondent's friends or the people he ran around with at age 13 to 15 got into trouble with the police, and how often this occurred. Of the total sample, 63 percent denied their friends ever got into such trouble. Ten percent of the sample said their friends got into trouble with the police very often or fairly often, 22 percent said this occurred only a few times, and 4 percent said it occurred only once. The third item dealt with the frequency of stealing or boosting among the respondent's friends when he was 13 to 15 years old. Fifty-eight percent claimed their friends never went out stealing or boosting. A similar question was asked about the frequency with which the respondent and his friends engaged in gang fights. Seventy-one percent of the men said this never occurred. The last item in the Peer Influence scale asked whether at least some of the respondent's friends were drinking beer, wine, or liquor (24 percent), smoking marijuana (24 percent), or using other drugs (9 percent), when he was 13 years old.

In constructing the Peer Influence scale a positive answer regarding whether adults in the neighborhood thought of the respondent's friends as delinquents received a score of 5, whereas a negative answer was

coded 1. The responses to the items on friends in trouble with the police, friends stealing or boosting, and friends involved in gang fights were coded: Yes, very often = 5; Yes, fairly often = 4; Yes, but only a few times = 3; Yes, but only once = 2; and No = 1. On the peer drug use item each respondent was given a score of 1. If he indicated that his friends were using alcohol when he was 13, 1 point was added; for use of marijuana, 2 points were added; and 4 points were added if his friends had used other illicit drugs. The range of possible scores for the Peer Influence scale is 5-28; the men for the sample is 9.84 with a standard deviation of 5.22. The data in table 7.2 show the inter-item correlations for the Peer Influence scale. The average is .31 and the scale is reasonably reliable with an alpha of .663.

Perception of Drug Availability

A unique feature of the Manhattan study is that it is based on a sample of young men from the normal population, but these men grew up in areas in which drug use is known to have been extensive. While the presence of large numbers of drug users is not sufficient to produce new users, it was anticipated that the respondents would be knowledgeable about persons who sold drugs or places where a wide range of drugs, including heroin, could be obtained. Perception of drug availability was initially measured according to four dimensions: (1) the number of persons in the neighborhood who were smoking marijuana; (2) the number of heroin users in the neighborhood; (3) knowledge of a particular person in the neighborhood who sold drugs; and (4) physical proximity to a heroin copping area.

More than 55 percent of the respondents said that at least a few people in their neighborhood were smoking marijuana, and 29 percent of the men knew at least a few people who were heroin users. Thirty-nine percent of the respondents knew someone in their neighborhood who sold drugs, and 37 percent of the men knew the location of a heroin copping area. For 14 percent of the men, the nearest copping area was on their block. In other words, when the men in this study were 13 to 15 years old, many of them were aware of the places in their neighborhood where drugs could be obtained.

The concept of perception of drug availability is derived from the theory of deviant subcultures in which emphasis is placed on the process whereby an individual is socialized into the drug subculture. A key part of the socialization process involves learning where and how to enter the group. It is also important to learn the rituals and proper language to signify to others that one is part of the in-group and is not an outsider. The items in the Perception of Drug Availability scale tap these components of the drug subculture indirectly. In testing the Perception of Drug Availability scale for internal consistency or reliability, it was necessary to eliminate the item on proximity to a heroin copping area in order to increase scale reliability. The resulting three item Drug Availability scale has a moderately strong alpha value of .762. The range of scores on this scale is 3-15 with an overall mean of 9.66 and a standard deviation of 5.18.

TABLE 7.2 Inter-Item Cm-relations (Pearson's r) for the Peer Influence Scale

	1	2	3	4	5
1. Adults think of friends as delinquents	--				
2. Frequency friends in trouble with police	.294	--			
3. Frequency friends steal-ing or boosting	.290	.391	--		
4. Frequency friends in gang fights	.399	.342	.216	--	
5. Drug use by friends	.307	.353	.224	.280	--

Alpha = .663

Standardized Item Alpha = .692

Labeling

In recent years, sociologists have developed the labeling perspective to emphasize the importance of the processes of making and applying rules. In contrast with other theories regarding crime and deviance in which attention is focused on acts that constitute violations of laws or social norms or on the characteristics of persons who violate such rules, the labeling perspective suggests that initial deviant acts are relatively unimportant and inconsequential unless there is some societal reaction to them. The central proposition in the labeling perspective is that deviance always involves social definition. Becker (1963:9) suggests: "Social groups create deviance by making the rules whose infraction constitutes deviance, and by applying these rules to particular people and labeling them as outsiders. From this point of view, deviance is not a quality of the act the person commits, but rather a consequence of the application by others of rules and sanctions to an 'offender.' The deviant is one to whom that label has successfully been applied; deviant behavior is behavior that people so label." While one's significant others can be parents, peers, or teachers, there is an emphasis in the labeling perspective on the importance of officials in the criminal justice system. One of the serious limitations of the labeling perspective is that it is difficult to define operationally its key concepts. In the Manhattan study, three items were included in the interview schedule to measure indirectly the process to which the labeling perspective has called attention. The format and response alternatives for these items were similar. "When you were 13 to 15 years old, suppose we had asked your (teachers/friends/parents-mother-father) if you were going to get into trouble with the law. Would they have said: definitely yes, probably, not sure, probably not, definitely not?" The respective percentages for "definitely yes" and "probably" are: teachers (2 and 6 percent), friends (4 and 10 percent), and parents (3 and 5 percent).

The three items in the Labeling scale were strongly related (teachers-friends, r = .61; teachers-parents, r = .51; friends-parents, r = .58). An alpha value of .794 indicates the scale is reliable. The range of scores on the Labeling scale is 3-15 with a mean of 5.36 and a standard deviation of 2.77. Higher scores on the Labeling scale indicate that teachers, friends, or parents thought the respondent was headed for trouble with the law when he was 13 to 15 years old.

Differentiating Power of the Six Scales

The six scales described in this chapter were developed to represent salient concepts from various theories of deviance that might shed light on the etiology of illicit drug use. In chapter 8 of this report, data will be presented to assess the power of these scales as well as the index of drug sales to predict scores on the Lifetime Drug Use Index. However, at this point attention is focused on differences in the men scores on these scales according to race and age group and race and educational attainment.

The results of a two-way analysis of variance in which race and age group are the independent variables and the six scales are the dependent variables are shown in table 7.3. The values of F indicate statistically significant differences by race on all of the scales except Family Influence. There are no significant differences by age group, and none of the F values for a two-way interaction effect are significant. Comparison of the mean scores by race shows that blacks have the second highest score on School Adjustment and the highest score on all of the other scales. Whites ranked second on the Family Influence, Peer Influence, and Labeling scales and third on the Early Deviance, School Adjustment, and Drug Availability scales. These findings demonstrate the importance of using race as a control variable in further analysis.

The data presented in table 7.4 show the mean scores on the six scales by race and educational attatinment. As expected, the values of F indicate statistically significant differences by race on all of the scales except Family Influence. There are also significant differences according to educational attainment on all of the scales except Drug Availability. None of the two-way interaction effects are statistically significant. Comparison of the relative size of the mean scores for whites and blacks in terms of educational attainment reveals that the men with less than a high school education score the highest on the Early Deviance, Peer Influence, Drug Availability, and Labeling scales, regardless of race. For both blacks and whites, those with less than a high school education have the lowest scores on the Family Influence scale and are quite low on the School Adjustment scale. Overall, there is a substantial degree of concordance between the ranks of blacks and whites on these six scales vis-a-vis educational attainment. Unfortunately, the sample is too small to permit simultaneous controls for race and educational attainment. One alternative would be to include education in the causal model, but its location is problematic. The correlation (gamma = -.67) between race and educational attainment is sufficiently high to justify a control for race and not for educational level. That is, a control for race is, to a considerable extent, a control for educational attainment as well.

Conclusion

In this chapter, the focus is shifted from comparison of the national and Manhattan samples to the construction of interval-level indices to measure several etiological factors--family influence, early deviance, school adjustment, peer influence, perception of drug availability, and labeling. Each of these indices is designed to measure concepts central to various sociological theories of deviance. The indices reflect an effort to measure the subjective perception the respondents had of their sociocultural environment when they were 13 to 15 years old. Two other dimensions of the sociocultural environment are also measured by use of race as a control in all of the analysis and by the sampling design in which it was specified that the respondents had to have resided in areas of Manhattan in

TABLE 7.3 Analysis of Variance: Mean Scores on the Six Scales by Race and Age Group

Race and Age Group	n	MEAN SCORES ON SIX SCALES: Family Influence	Early Deviance	School Adjustment	Peer Influence	Drug Availability	Labeling
BLACK	125	24.14	4.31	9.96	11.35	11.47	6.22
1944-46	22	25.39	4.45	9.59	13.14	10.95	6.41
1947-49	31	24.03	3.90	10.20	10.04	9.94	6.13
1950-52	37	23.59	4.78	10.11	12.30	13.00	6.24
1953-54	35	24.03	4.09	9.83	10.40	11.53	6.17
WHITE	98	23.94	2.63	9.66	9.04	7.43	4.86
1944-46	24	23.33	3.46	9.54	10.04	6.96	5.21
1947-49	32	24.44	2.47	9.56	8.53	6.38	4.84
1950-52	22	24.27	2.86	9.41	9.00	8.18	4.95
1953-54	20	23.50	1.65	10.25	8.70	8.85	4.39
OTHER	71	23.72	2.80	10.66	8.29	9.58	4.53
1944-46	16	23.19	3.13	10.95	8.50	8.94	4.34
1947-49	16	23.88	2.44	10.95	8.25	10.44	4.94
1950-52	22	24.00	2.68	10.77	8.00	7.91	4.23
1953-54	17	23.71	3.00	9.95	8.51	11.53	4.71
F for Race		.191 (NS)	16.89 (001)	6.54 (002)	10.58 (001)	17.13 (001)	11.56 (001)
F for Age Group		.090 (NS)	1.95 (NS)	.21 (NS)	1.85 (NS)	2.16 (093)	.12 (NS)
F for Interaction		.508 (NS)	.74 (NS)	1.29 (NS)	.55 (NS)	1.82 (096)	.27 (NS)

TABLE 7.4 Analysis of Variance: Mean Scores on the Six Scales by Race and Educational Attainment

Race and Educational Attainment	n	MEAN SCORES ON SIX SCALES: Family Influence	Early Deviance	School Adjustment	Peer Influence	Drug Availability	Labeling
BLACK	125	24.14	4.31	9.96	11.35	11.47	6.22
Less Than High School	40	22.88	5.48	9.72	12.75	12.65	7.70
High School Graduate	40	24.25	4.20	9.68	10.66	11.62	6.03
Some College	34	25.84	3.62	10.15	10.71	10.15	5.41
College Graduate	11	23.09	2.64	11.33	10.82	10.73	4.09
WHITE	98	23.94	2.63	9.66	9.04	7.43	4.86
Less Than High School	9	21.44	5.00	8.22	13.56	10.11	8.22
High School Graduate	12	22.00	3.75	8.50	12.58	7.58	5.58
Some College	31	23.23	2.55	9.61	9.32	9.06	4.93
College Graduate	46	25.41	1.93	10.28	7.04	5.76	3.98
OTHER	71	23.72	2.80	10.66	8.29	9.58	4.53
Less Than High School	18	24.39	3.00	10.24	7.70	8.78	4.47
High School Graduate	25	22.44	2.72	10.49	8.44	9.48	4.88
Some College	22	24.14	2.86	11.00	8.41	10.05	4.41
College Graduate	6	25.50	2.33	11.35	9.00	10.67	3.67
F for Race		1.46 (NS)	9.59 (001)	14.73 (001)	8.29 (001)	10.02 (001)	9.38 (001)
F for Education		3.59 (014)	10.09 (001)	9.10 (001)	4.44 (005)	2.68 (047)	13.22 (001)
F for Interaction		1.81 (097)	1.14 (NS)	.44 (NS)	2.24 (04)	1.70 (NS)	1.73 (NS)

which the rates of opiate use were high. Ideally, to explain drug use, one would use a longitudinal research design. Then measures of key variables could be obtained prior to use of illicit drugs. This option was not available to the researchers. Consequently, a retrospective life history approach was selected. The utility of this approach for the measurement of the predictors of illicit drug use will be assessed in the following chapter.

Chapter 8

Causal Models to Explain Illicit Drug Use

In the previous chapters, a number of comparisons were made between the results obtained in the national survey and in the parallel Manhattan study. While the former study was nationwide in scope, it was almost exclusively epidemiological in focus. As noted in chapter 7, the interview schedule for the Manhattan sample was developed on the basis of major concepts in extant theories of deviance. The purpose of this chapter is to explain the use of illicit drugs by the use of causal modeling. This chapter includes: (1) a brief discussion of path analysis, a technique used in causal modeling; (2) the rationale underlying the models in which illicit drug use is predicted; (3) a presentation of the results of those tests; and (4) an interpretation of the results from a substantive perspective--what they mean for understanding illicit drug use--and from a theoretical perspective--what they mean for understanding deviance. For the reader who is unfamiliar with path analysis, a brief description of this technique is provided, and the strengths and limitations of the data with regard to this technique are noted.

Path Analysis: An Introduction

Path analysis is a statistical technique that is widely used in causal modeling. It allows a researcher to assess how well empirical relationships among measured variables fit the relationships presumed to exist among concepts in a causal model. The causal model is derived from one or more theories. If the theory on which the model is based is logically sound and is rigorous from a conceptual perspective, the researcher would diagram the causal relationships that the theory suggests should exist among the various concepts. These relationships are called direct paths. In a specified model, some paths between what may be called predictor and effect concepts would not appear in the original model. Unfortunately, few theories in the social sciences are sufficiently rigorous to justify use of a specified model. Consequently, most researchers begin with a saturated model. In a saturated model every predictor concept has a direct path to every effect concept to the right of it in the model. In such a case, the most important decision a researcher must make concerns the appropriate temporal order of occurrence of the concepts in the model. Initially, measured variables or scales representing each of the concepts are constructed and, by means of path analysis, the fit between the saturated model and the data is examined.

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In path analysis, the Pearsonian correlation coefficient, r, is used to measure the strength of association among all variables in the model. Because Pearson's r is a parametric statistic, its use implies that all variables in the model are measured at the interval level. However, in practice, the minimum requirement is that all of the variables are measured at the ordinal level.

A matrix of the correlation coefficients of all of the variables in the model is developed. This matrix is then used in a stepwise multiple regression analysis to generate estimates of the direct effects of every predictor variable in the model on every variable to the right of it. In a stepwise procedure, two types of regression coefficients are produced. The first, the B values, are unstandardized, and reflect the number of unit changes in the dependent variable produced by a one unit change in each independent or predictor variable in the regression equation. Because they are unstandardized, the B values can be larger than 1.0. The second type of regression coefficient that is produced is a beta weight, b. It is standardized, and its value is always between .000 and 1.000. The beta weight is called a path coefficient; it represents the slope produced when a dependent variable is regressed against a predictor variable, while simultaneously controlling all of the other variables in the model. Because the effects of the other variables are statistically controlled, a path coefficient is most accurately described as a standardized partial regression coefficient.

The stepwise procedure is used to identify the predictor variables that have statistically significant direct effects on the dependent variables in the model. The predictor variables are entered, one by one, into the regression equation. The first variable to enter the regression is the one accounting for the largest amount of variance in the dependent variable. The second variable that enters the equation is the one accounting for the largest amount of variance in the dependent variable that is left unexplained by the first variable, and so on, until all of the predictor variables have entered the equation.

Determination of which predictor variables have a statistically significant direct effect on a dependent variable is made in two ways. First, stepwise multiple regression yields an F score for each independent variable. This score can be assessed for significance by the use of standard F tables. A second test for significance involves application of a rule-of-thumb. If the B value is at least two times the size of the standard error of B, the direct effect of that predictor variable is considered to be statistically significant.

At this point, the model is revised, and only the direct paths that are statistically significant are retained. However, the researcher must determine whether there is justification for deletion of some direct paths from the original model. This is accomplished by the use of partial correlation techniques. For each direct path to be deleted, the researcher computes two partial correlation coefficients. The first is a partial r in which all variables intervening between

the predictor and effect variables in the model are controlled simultaneously. To delete the path, the partial r value should be considerably lower than the simple r value between the predictor and effect variables, and it should not be statistically significant. The second partial r value for the path involves simultaneous controls for all variables that occur prior to the predictor variable in the model. This partial r value should also be substantially lower than the simple r and should not be statistically significant. If both of the partial r values meet these criteria, then the researcher is justified in deleting the direct path from the model. Through examination of the partial correlations, a number of direct paths can be deleted.

After the model has been revised by the elimination of some direct paths, the dependent variables are regressed against the remaining predictor variables that have a direct and significant effect. A simple multiple regression, not a stepwise regression, is used. The resulting coefficients provide a means to test the fit between the data and the model.

Assumptions Underlying Path Analysis

There are a number of assumptions that should be met before path analysis is used to test causal models. One of these is related to measurement. The variables in the model should be measured at the interval level. As mentioned previously, this assumption is often violated in practice by the use of variables measured at the ordinal level. There are at least three other assumptions underlying path analysis that deserve mention before this technique is applied to the data obtained from the Manhattan sample.

Causal Model Derived From Theory. A key assumption in path analysis is that the model is derived from an existing theory or theories. Sociology as a discipline and deviance as a specialty within the discipline can best be described as having only a few theoretical perspectives that are sufficiently developed to be tested (see Elliott et al. 1979). As noted in chapter 7, the items used in constructing the scales were developed to represent major concepts in the following theories of deviance: (a) Sutherland's theory of differential association (Sutherland and Cressey 1978); (b) Hirschi's (1969) theory of social control; (c) Merton's (1957) theory of anomie; (d) Reckless' (1956) theory of containment; (e) Cloward and Ohlin's (1960) opportunity theory, and (f) the labeling perspective exemplified by the work of Lemert (1951) and Becker (1963). None of these theories dominates the field of deviance, yet all share some of the same concepts. In this sense, the models developed in this chapter do not constitute either a fully adequate test of any one theory or a test of all of the theories. Rather, the central concepts of these theories have been operationalized specifically for this study and its central purpose, to explain illicit drug use among young men who grew up in areas of Manhattan in which the rate of opiate use was high.

Specification of Temporal Order. Another important assumption in path analysis is that the temporal order of the variables in the model is either known or the relative time-order of occurrence can be established on logical grounds. For this reason, path analysis is most appropriate for data obtained in a longitudinal study. However, the data in the Manhattan study are cross-sectional in that the respondents were interviewed at only one point in time: 1975. Therefore, the time-order of occurrence among the variables in the models will, of necessity, be justified by assumption. Further, the data used to construct the independent and dependent variables are based on retrospective recall. It is impossible to assess fully the degree to which the variables reflect faulty memory or a retrospective reconstruction of events in which each respondent tried to achieve cognitive consistency and to reduce cognitive dissonance. However, thorough analysis of the retrospective life history data obtained in the national and Manhattan samples suggests that dissumulation by individual respondents was minimal and does not affect the major findings. The data are internally consistent and consistent with comparable studies. Studies of the validity of retrospective self-report data on drug use and other forms of deviance indicate that such data can generally be trusted (see Ball 1967; Bonito et al. 1976). In addition, the interviewers were well trained. Independent follow-up checks with the respondents on key variables indicated that virtually all of the respondents were acting in good faith when they were interviewed.

The Concept of Cause. The final assumption in path analysis is that the model reflects causal relationships among the variables. In this chapter, the concept of cause is defined in probabilistic and statistical terms. In sociology there is a long and distinguished tradition behind the use of this kind of definition in searching for causal relationships among variables in models (Stouffer 1950; Lazarsfeld 1955; Hymn 1955; Coleman 1964; Rosenberg 1968; Davis 1971; Duncan 1975; Heise 1975). The analysis reported in this chapter rests upon this tradition.

The conception of causality utilized in this chapter has been clearly articulated by Hirschi and Selvin (1967). They listed three criteria of causality: (1) the independent and dependent variables must be statistically correlated; (2) the independent variables must be temporally antecedent to the dependent variables; and (3) the relationships between the independent (X) and dependent (Y) variables must not be spurious; that is, the relationship must not be the result of both X and Y being caused by a factor of factors antecedent to them.

It is relatively easy to meet the first criterion. The statistical correlation among the variables in a model is obtained by the calculation of simple r values. If one's data are cross-sectional, the second criterion, time-order of occurrence among the variables, may be established by: (1) examination of the way in which the variables are operationalized and a determination of what each variable means conceptually; (2) reliance on the theoretical-epistemic meanings of

each variable vis-a-vis all other variables (see the section in this chapter on rationale for the model and placement of the variables in the model); and (3) examination of the strength of the path coefficients (i.e., direct paths) among the variables if the temporal order is not apparent. For example, if there is some question about the ordering of two variables in a model, A and B, and little doubt that three other variables (X, Y, Z) are antecedent to the two variables in question, one can regress B against X, Y, Z and A. This procedure would then be repeated after exchanging the positions of A and B. Then, by examining the relative strengths of the path coefficients one can often obtain relatively unambiguous clues as to the proper relative location of the two variables in question.

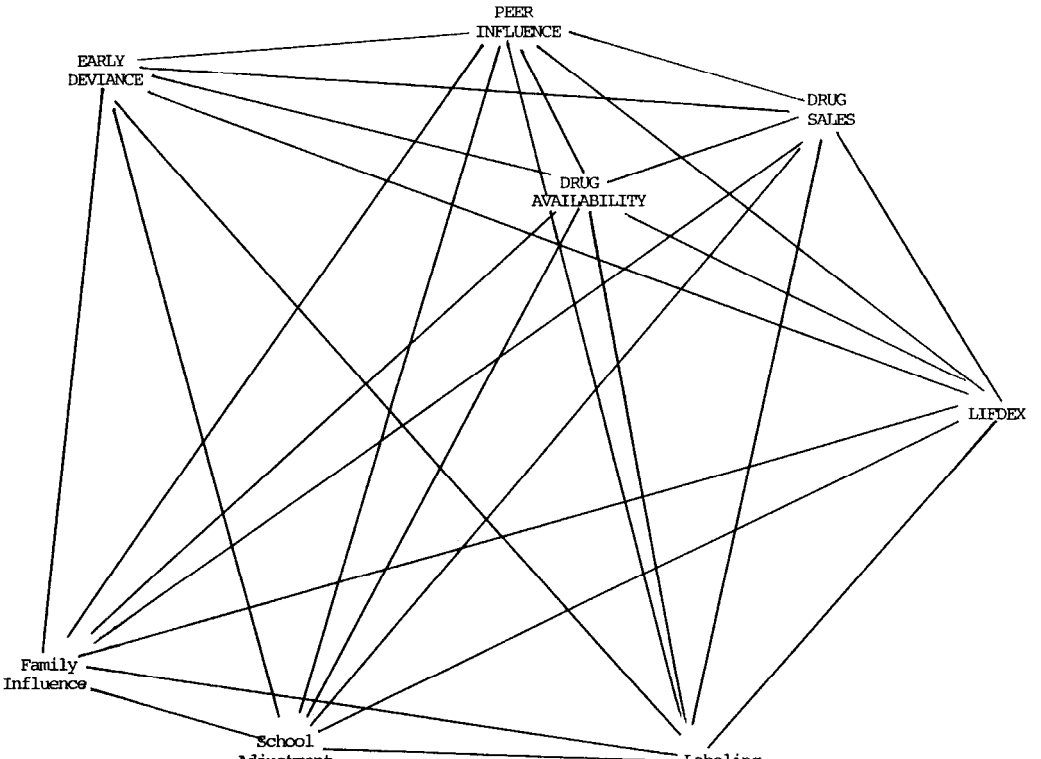
The testing of relationships for spuriousness is difficult, but not impossible. It requires comparison of the correlation between an independent (X) and a dependent variable (Y) with the partial correlation between X and Y when statistical controls are introduced for all variables antecedent to both X and Y. If the partial r value is not substantially lower or remains statistically different from zero, it can be assumed that the original XY relationship is not spurious. Path analysis provides another way to test for spuriousness. This involves an examination of the direct paths in the model that are not significant. The partial correlations for the nonsignificant paths should be zero; at a minimum, they must not be significantly different from zero. In this chapter, the partial correlation coefficients are computed while controlling for all of the antecedent variables.

Illicit Drug Use: Model I

Because the model is not derived from a single, rigorously specified theory and the data are cross-sectional, the location of the variables in the model must be established. Development of the rationale for the placement of the eight variables in model I, the saturated model of illicit drug use, was facilitated by an earlier analysis of the data from the Manhattan study in which path analysis was used. O'Donnell and Clayton (1979) tested a model in which age at onset of marijuana use was the principal dependent variable. Three of the predictor variables in model I are exactly the same as those used in the earlier analysis--School Adjustment, Peer Influence, and Labeling; further, only slight modifications have been made in the Family Influence, Early Deviance, and Drug Availability scales for this analysis.

An important finding in the earlier analysis was that different models had to be used for blacks and whites (O'Donnell and Clayton 1979). A few examples of the differences between whites and blacks will show the need for separate models. First, two variables--School Adjustment and Labeling--were deleted from the model for whites because they did not have significant effects on variables subsequent to them. In contrast, only School Adjustment could be deleted from the model for blacks. Second, three variables--Drug Availability, Peer Influence, and Labeling--had a significant influence on age at onset

MODEL I: The Saturated Model



of marijuana use among blacks. For whites, only Drug Availability and Family Influence had a significant effect on the age at which marijuana use began. Third, among whites there was a direct path from Peer Influence to Drug Availability, while this path was not present for the blacks.

In addition to the minor modifications in the measures of Family Influence, Drug Availability, and Early Deviance, there are three other differences between the model tested by O'Donnell and Clayton (1979) and model I. First, in model I, age at onset of marijuana use is deleted because marijuana use is part of the Index of Lifetime Use of Illicit Drugs. Second, Drug Sales has been added as a predictor variable. Third, the new dependent variable is the Illicit Drug Use Index. Thus, the eight variables included in model I are: Family Influence (FI); Early Deviance (SD); School Adjustment (SA); Peer Influence (PI); Drug Availability (DA); Labeling (IA); Drug Sales (SELL); and the Index of Lifetime Use of Illicit Drugs (LIFDEX).

Variable Location

Family Influence was measured retrospectively in terms of relationships when the respondent was 13 to 15 years old. It is assumed that this measure reflects parent-child relationships that evolved over an extended period of time, beginning at birth. While school adjustment and involvement in deviant activities may influence the relationship between parents and a child, it is assumed that, in general, Family Influence precedes Early Deviance, School Adjustment, and Peer Influence. Therefore, Family Influence is located at the far left sife of the model.

School Adjustment was included in model I primarily because of the role it plays in Hirschi's theory of social control. Like Family Influence, it represents a factor that may serve to insulate a youth from involvement in drug use. School Adjustment is placed after Early Deviance because of the relative predictive power of these measures. It is placed prior to Peer Influence because School Adjustment should be less predictive of illicit drug use than the behavior exhibited by peers when the respondent was 13 to 15 years old.

Cohen (1955) suggests that status frustration resulting from competition in school leads to involvement in deliquent subcultures. Similarly, Hirschi (1969) proposes that lack of attachment to school is related to involvement in delinquency. However, in model I, Early Deviance is placed after Family Influence, but prior to School Adjustment and Peer Influence. This location is contrary to the theorists' suggestions, but it is appropriate on the basis of the relative predictive power of these variables.

The measure of Peer Influence is based on items concerning the involvement of the respondent's friends and acquaintances in delinquency and drug use when he was 13 to 15 years old. The literature suggests that there is a high correlation between one's involvement in deviance, poor adjustment in school, and association with peers who are

delinquent. Peer Influence occupies the fourth position in model I because it is assumed that scores on this measure would be predicted by Family Influence, Early Deviance, and School Adjustment.

Drug Availability and Labeling occupy the fifth and sixth positions, respectively, in model I. Their relative location is based on the fact that the items in the Drug Availability scale referred specifically to the neighborhood in which the respondent lived when he was 13 to 15 years old, whereas the items in the Labeling scale may be affected by the respondent's knowledge as to whether his parents, teachers, and friends had been accurate in predicting his future trouble with the law.

The Drug Sales scale occupies the seventh position in model I. As noted in chapter 5, marijuana is the drug that men in Manhattan sold most frequently. Drug Sales should, therefore, be a predictor of involvement in the use of illicit drugs, the terminal variable in model.

Correlations Among the Eight Variables in the Model

Path analysis builds upon the correlations (Pearson's r) that exist among the variables in the model to be tested. Thus, one initially examines these correlational values. With 8 variables in the model, there are 28 r values for each racial group. The values presented above the diagonal in table 8.1 are for the 125 blacks in the sample, while those below the diagonal are for the 98 whites. There are three observations about table 8.1 that deserve mention. First, the sign of the r value (positive or negative) is in the predicted direction for each of the 28 correlations for both racial groups. Second, it is apparent that the strength of the association among the variables is considerably higher among the whites than among the blacks. In fact, the average correlation for whites is .434, while for blacks it is only .245. In only one instance was a correlational value higher for blacks than for whites; this was the correlation between Drug Sales and Labeling, with a value of .464 for blacks and .436 for whites. Third., for whites, the range of correlations is from -.167 (LIFDEX with School Adjustment) to .847 (LIFDEX with Drug Sales); 9 of the 28 r values are above .5. In contrast, there is only one correlation above .5 for blacks (Labeling with Peer Influence = .543), while the lowest correlation, -.007, occurs for Early Deviance and Family Influence. In fact, 6 of the 28 correlations for blacks are below .10. Therefore, these data suggest that there are marked racial differences in the strength of the interrelationships among these variables. While this is true, it is possible that the structure of these correlations is similar in the two groups. To check the validity of this observation, the 28 correlations were ranked from largest to smallest for each race. A Spearman's rho computed for the two sets of ranks was .726; this indicates a statistically significant consistency among them. While the strength of the associations among the variables is lower among blacks, the structure of the interrelationships among these 8 variables is quite similar for blacks and whites.

TABLE 8.1 Correlations (Pearson's r) among the 8 variables in the Model: Blacks Above the Diagonal and Whites Below the Diagonal

	Family Influence	Early Deviance	School Adjustment	Peer Influence	Drug Availability	Labeling	Drug Sales	Index	BLACKS Mean	BLACKS Standard Deviation
Family Influence	*****	-.007	.097	-.184	-.133	-.154	-.055	-.036	24.14	5.89
Early Deviance	-.325	*****	-.319	.485	.498	.442	.266	.120	4.31	2.79
School Adjustment	.394	-.390	*****	-.255	-.106	-.379	-.113	-.045	9.96	1.89
Peer Influence	-.398	.655	-.268	*****	.476	.543	.377	.202	11.35	5.35
Drug Availability	-.221	.499	-.276	.745	*****	.416	.207	.211	11.47	5.10
Labeling	-.420	.578	-.548	.645	.505	*****	.464	.331	6.22	3.14
Drug Sales	-.309	.470	-.179	.439	.281	.436	*****	.478	26.98	50.52
Index	-.267	.558	-.167	.513	.334	.481	.847	*****	737.21	1188.43
Mean (WHITES)	23.94	2.63	9.66	9.04	7.43	4.86	5.95	223.20		
Standard (WHITES) Deviation	3.65	2.10	1.86	5.26	4.50	2.36	22.77	789.46		

Test of Model I

Shown in tables 8.2 and 8.3 for blacks and whites, respectively, are (a) the predictor variables and the order in which they entered the regression equation at each stage of model I, as one moves from right to left; (b) the unstandardized B values and the standardized partial betas, or path coefficients; (c) the standard error of B and the F value for each variable in the equation; (d) the incremental amount of variance explained by each variable; and (e) the simple correlation (r) between each dependent variable and the predictor variables. While the information in tables 8.2 and 8.3 is presented separately for blacks and whites, the two tables my be described at the same time because the same procedures were used to test model I for blacks and whites.

Lifetime Use of Illicit Drugs

Among the blacks, only one variable, Drug Sales, has a direct and statistically significant effect on use of illicit drugs. Evidence of this is found in the amount of variance--23 percent--in LIFDEX attributable to Drug Sales, the size of the F value for Drug Sales, and the fact that the standard error of the B value is approximately one-fourth the size of the B value. None of the other variables meet any of these criteria for the blacks. Among the whites, two of the variables have direct and statistically signficant effects on illicit drug use, but the predictive value of Drug Sales is overwhelming. It accounts for 72 percent of the variance in the Lifetime Use of Illicit Drugs Index. The B value indicates that a one unit change in the sales index produces a 25 unit change in LIFDEX for whites. In view of the statistical and substantive significance of involvement in selling drugs for whites, it is impressive that the Early Deviance scale also has a direct effect on illicit drug use. Drug Sales accounts for most of the variance, but Early Deviance explains an additional 3 percent.

These findings provide strong support for the idea that selling drugs may be a key to understanding involvement in the drug subculture. In fact, knowledge that a white in this sample has sold drugs allows one to predict with a high degree of accuracy that he has also used illicit drugs. However, one might question whether Drug Sales and LIFDEX are measuring the same phenomenon, especially among whites, as the correlation between the two scales is .847. In addition, use of marijuana is included in the LIFDEX measure and marijuana dominates the Drug Sales scale. To check this, the LIFDEX measure was recomputed, with use of marijuana deleted, and then regressed against Drug Sales and the other predictor variables in the model. The results were essentially identical to those reported above. Involvement in the sale of drugs is a key predictor of use of illicit drugs for blacks as well as whites.

The direct effect of Early Deviance on LIFDEX for whites was unexpected, in view of its location in model I. The value of B indicates that a one unit change in the Early Deviance scale produces a change of almost 63 units in the Index of Lifetime Use of Illicit Drugs.

TABLE 8.2 Stepwise Multiple Regression: Model I for Blacks

Dependent/Independent Variable /Variable	Value of B	Beta Weight	Standard Error of B	Value of F	Incremental r^2	Simple r
LIFDEX-Sell	9.97	.424	2.16	21.368	.228	.478
LIFDEX-Labeling	62.90	.166	41.24	2.327	.015	.331
LIFDEX-Drug Avail.	31.05	.133	23.09	1.808	.005	.211
LIFDEX-Early Dev.	-41.01	-.096	43.45	.891	.009	.120
LIFDEX-Peer Influ.	-11.84	-.053	23.37	.257	.002	.202
LIFDEX-School Adj.	21.75	.035	55.85	.152	.001	-.045
LIFDEX-Fam. Influ.	3.47	.017	16.54	.044	.000	-.036
SELL-Labeling	6.47	.403	1.66	15.276	.216	.464
SELL-Peer Influ.	1.80	.191	.98	3.345	.022	.377
SELL-School Adj.	2.62	.098	2.37	1.222	.006	-.113
SELL-Drug Avail.	-0.67	-.068	.98	.470	.002	.207
SELL-Early Dev.	1.11	.061	1.85	.361	.003	.266
SELL-Fam. Influ.	0.21	.024	.71	.084	.001	-.055
LABELING-Peer Influ.	.19	.388	.05	14.982	.295	.543
LABELING-School Adj.	-.38	-.232	.13	9.284	.062	-.379
LABELING-Drug Avail.	.10	.163	.05	3.521	.034	.416
LABELING-Early Dev.	.14	.122	.10	1.838	.008	.442
LABELING-Fam. Influ.	-.02	-.047	.04	.407	.002	-.154
DRUG AVAIL.-Early Dev.	.70	.385	.16	19.108	.248	.498
DRUG AVAIL.-Peer Influ.	.29	.300	.08	11.738	.072	.476
DRUG AVAIL.-School Adj.	.27	.101	.21	1.619	.008	-.106
DRUG AVAIL.-Fam. Influ.	-.07	-.085	.07	1.244	.007	-.133
PEER INFLU.-Early Dev.	.87	.454	.16	30.892	.235	.485
PEER INFLU.-Fam. Influ.	-.16	-.172	.07	4.896	.033	-.184
PEER INFLU.-School Adj.	-.27	-.094	.23	1.311	.008	-.255
SCHOOL ADJ.-Early Dev.	-.22	-.318	.06	13.883	.102	-.319
SCHOOL ADJ.-Fam. Influ.	.03	.094	.03	1.224	.009	.097
EARLY DEV.-Fam. Influ.	-.003	-.007	.04	.005	.000	-.007

TABLE 8.3 Stepwise Multiple Regression: Model I for Whites

Dependent/Independent Variable/Variable	Value of B	Beta Weight	Standard Error of B	Value of F	Incremental r^2	Simple r
LIFDEX-Sell	25.27	.729	2.12	141.713	.718	.847
LIFDEX-Early Dev.	62.70	.167	27.90	5.050	.033	.558
LIFDEX-Peer Influ.	14.59	.097	15.00	.947	.004	.513
LIFDEX-School Adj.	29.27	.069	28.25	1.074	.003	-.167
LIFDEX-Labeling	27.43	.082	27.00	1.032	.002	.481
LIFDEX-Fam. Influ.	10.74	.050	13.16	.666	.001	-.267
LIFDEX-Drug Avail.	-6.68	-.038	13.85	.233	.OOl	.334
SELL-Early Dev.	3.16	.129	1.34	5.581	.221	.470
SELL-Labeling	2.28	.236	1.31	3.016	.041	.436
SELL-Fam. Influ.	-.80	-.129	.64	1.552	.012	-.309
SELL-School Adj.	1.60	.130	1.39	1.332	.016	-.179
SELL-Peer Influ.	.60	.140	.74	.671	.003	.439
SELL-Drug Avail.	-.40	-.080	.68	.350	.003	.281
LABELING-Peer Influ.	.18	.439	.04	22.582	.416	.645
LABELING-School Adj.	-.45	-.354	.10	21.250	.152	-.548
LABELING-Early Dev.	.15	.132	.10	2.020	.009	.578
LABELING-Fam. Influ.	-.04	-.062	.05	.646	.003	-.420
LABELING-Drug Avail.	DID NOT ENTER THE EQUATION					
DRUG AVAIL.-Peer Influ.	.66	.772	.08	69.140	.555	.745
DRUG AVAIL.-Fam Influ.	.16	.132	.10	2.881	.007	-.221
DRUG AVAIL.-School Adj.	-.31	-.126	.19	2.668	.013	-.276
DRUG AVAIL.-Early Dev.	.03	.013	.20	.019	.000	.499
PEER INFLU.-Early Dev.	1.51	.604	.21	52.603	.429	.655
PEER INFLU.-Fam. Influ.	-.32	-.224	.12	7.226	.039	-.398
PEER INFLU.-School Adj.	.16	.056	.24	.420	.002	-.268
SCHOOL ADJ.-Fam. Influ.	.15	.299	.05	9.896	.155	.394
SCHOOL ADJ.-Early Dev.	-.16	-.293	.08	9.477	.077	-.390
EARLY DEV.-Fam. Influ.	-.19	-.325	.06	11.308	.105	-.325

This suggests that a white from a high drug use area in Manhattan who becomes involved in deviant activities at an early age is moving toward involvement in the drug subculture. This finding lends support to Jessor and Jessor's (1977) problem behavior theory, at least for the whites in the sample. Yet, this is not the case for blacks. In fact, the beta and B values for the LIFDEX-Early Deviance path are not statistically significant, and the negative sign for this path is contrary to predictions (see table 8.2). This suggests that whatever impact early involvement in deviant activities has on illicit drug use among blacks must be indirect.

Drug Sales

Johnson (1973) identified two variables that facilitate a person's transition from involvement in the cannabis subculture to involvement in the heroin subculture. These variables are having heroin-using friends and selling drugs. In technical terms, these are intervening variables. Single and Kandel (1978) confirmed the role of drug selling as an intervening variable in the marijuana-heroin relationship. The data from the Manhattan study underscore the predictive value of involvement in drug sales for use of the entire range of illicit drugs, not simply use of heroin. However, what predicts involvement in drug sales? In model I, 6 variables could have a direct effect on the measure of drug sales, and the results are somewhat different for blacks and whites. The best predictor of Drug Sales for blacks is Labeling, which accounts for 22 percent of the variance. A change of one unit in Labeling produces a change of more than 6 units in the Drug Sales index. Peer Influence accounts for an additional 2 percent of the variance, but the beta weight is significant at only the .05 level. Among the whites the strongest predictor of involvement in Drug Sales is Early Deviance. It accounts for 22 percent of the variance. Early Deviance did not have a direct effect on Drug Sales for blacks. While Labeling did have a direct effect on Drug Sales for whites, as it did for blacks, the beta is significant at only the .05 level and accounts for an additional 4 percent of the variance in Drug Sales.

Labeling

According to the labeling perspective, the proper focus in the study of deviance is not the individuals who commit acts in violation of norms or the law, or the acts themselves, but rather the reaction of society and its sanctioning agents to such individuals and their acts. In other words, society creates deviance by defining certain acts as deviant and by assigning labels to persons who do them. operationalization of the process of labeling is difficult, especially in survey research. In this study the Labeling variable reflects responses to questions about whether, when he was 13 to 15 years old, the respondent's parents, teachers, and friends thought he was going to get into trouble with the law.

Among the whites, two variables have a direct effect on Labeling. The measure of Peer Influence, which is based on questions about the deviant activities and drug use of the respondent's friends when he was 13 to 15 years old, accounts for 42 percent of the variance in the Labeling variable, and School Adjustment accounts for an additional 15 percent of the variance. The sign of the School Adjustment-Labeling path coefficient is negative; thus indicates that the poorer his adjustment in school, the more likely a white respondent is to have said his parents, teachers, and friends thought he was headed for trouble with the law. The same two variables, Peer Influence and School Adjustment, have significant direct effects on Labeling among blacks. These variables account for 30 percent and 6 percent, respectively, of the variance explained. A third variable, perception of Drug Availability, accounts for an additional 3 percent of the variance in the Labeling variable for blacks.

Drug Availability

The sample was selected from areas of Manhattan that had the highest rates of opiate use in New York City, and possibly the highest in the entire United States. In terms of the availability of drugs in this setting, any respondent who wished to try an illicit drug would seem to be guaranteed the opportunity to do so. However, widespread use of drugs in an area does not mean that every respondent was aware of their existence and knew how to obtain them. The respondents' perception of the availability of drugs was measured in terms of knowledge about copping areas and acquaintance with known drug users or sellers in his neighborhood when he was 13 to 15 years old.

In an earlier paper, O'Donnell and Clayton (1979) found that perception of Drug Availability was a strong predictor of age at onset of marijuana use for blacks and especially for whites. However, the data for whites in table 8.3 indicate that Drug Availability does not have a significant effect on any of the variables subsequent to it in model I. In addition, only one variable, Peer Influence, has a direct path to Drug Availability, and it accounts for 56 percent of the variance in Drug Availability. This means that Drug Availability can and should be deleted from the model for whites because it is a terminal variable that is located in the middle of the model; it does not predict anything subsequent to it, and it is predicted by only one factor. On the other hand, Drug Availability does seem to be an important variable for blacks. Not only does it have a direct impact on Labeling; two variables have a direct effect on it. Early Deviance accounts for 25 percent of the variance in Drug Availability and Peer Influence accounts for an additional 7 percent.

Peer Influence

A substantial body of literature exists concerning the impact of the attitudes and behavior of one's peers on a person's own attitudes and behavior. As noted in chapter 7, the influence of the peer group is a central element in various theories of deviance, and research on

adolescent drug use also reflects the importance of peers. As Kandel notes:

> The data derived from longitudinal studies indicate that a socialization process takes place. Extent of perceived drug use in the peer group, self-reported drug use by peers, and perceived peer tolerance for drug use are all very strong predictors of a youth's subsequent initiation into various forms of use. These peer influences appear to be more important at certain pints of the process of involvement than at others. (Kandel 1978, p. 24)

In this study, the Peer Influence scale did not have a direct effect on the illicit drug use index for either blacks or whites. It did have a significant impact on Drug Availability, Labeling, and Drug Sales among blacks and on Drug Availability and Labeling among whites. The Peer Influence scale consists of items assessing how involved in various forms of deviance (e.g., boosting, gang fights, using alcohol, marijuana, and other drugs) the respondent's friends were when he was 13 to 15 years old. Early Deviance and Family Influence have significant direct effects on the Peer Influence measure for both races. Among the whites, Early Deviance accounts for 43 percent of the variance in Peer Influence. Family Influence, with a predicted negative sign, accounts for an additional 4 percent. Early Deviance accounts for only 24 percent of the variance in Peer Influence in blacks, and Family Influence accounts for another 3 percent. It is important to note that Early Deviance is antecedent to Peer Influence in model I. The relative location of these variables makes explicit the concept of deviance proneness articulated by Jessor and Jessor (1977). The data discussed above suggest that early involvement in deviance (i.e., deviance proneness) coupled with low family influence are predictive of having friends who are oriented toward deviance.

School Adjustment

Much of the research on adolescent drug use has focused on the effects of low grades and truancy on initiation into and involvement with marijuana use (Jessor and Jessor 1977; Kandel et al. 1978; Smith and Fogg 1978). According to Hirschi's (1969) social control theory, attachment to school and parents should operate as buffers against use of illicit drugs. In this study, School Adjustment has a direct effect on only one variable in the model, Labeling. However, it intervenes between Early Deviance and Labeling for blacks and Early Deviance, Family Influence, and Labeling for whites. Early Deviance accounts for 10 percent of the variance in School Adjustment for blacks Among whites, Family Influence accounts for 16 percent of the variance in School Adjustment, while Early Deviance accounts for an additional 8 percent.

Early Deviance

The only variable antecedent to Early Deviance in model I is Family Influence. Family Influence accounts for almost 11 percent of the variance in Early Deviance for whites. The story is different for blacks. Family Influence accounts for so little of the variance in Early Deviance for blacks that it will be necessary to place these two variables in the same relative location in the revised model.

Trimming Model II

The significant direct paths suggested by the data are presented separately for blacks and whites in model II (see tables 8.2 and 8.3). Visual inspection of the diagrams indicates that different variables explain illicit drug use for blacks and whites. Therefore, further steps taken to test these models will be discussed, first for blacks and then for whites. These steps include: (1) use of partial correlation techniques to justify deletion of direct paths in model II and (2) recomputation of the coefficients for the remaining direct paths by means of simple multiple regression rather than stepwise multiple regression. This two-step process is called trimming the model.

Model II: Blacks

In model I, the saturated model, there were 8 variables and 28 possible direct paths. To this point, the analysis suggests that only 11 direct paths are empirically justified, and these are found in model II for blacks. The next step is to determine whether deletion of 17 direct paths from the saturated model is appropriate. The partial correlation coefficients pertinent to model II for blacks are found in table 8.4. For 13 paths the prediction of a nonsignificant or zero partial r was correct. The four exceptions are marked by an asterisk and are:

1b. LIFDEX-Labeling: DA, PI, SA, ED, FI
3b. LIFDEX-Peer Influence: SA, ED, FI
9b. SELL-Early Deviance: FI
10b. LABELING-Early Deviance: FI

It should be noted that these four equations are tests for spuriousness in that the variables that are statistically controlled occur prior to the predictor variable in model II. In each case, the parallel test for the presence of an intervening variable (equations 1a, 3a, 9a, 10a) yielded a partial r value that is: (a) considerably lower than the simple r for that path and (b) statistically nonsignificant. If the partial r values for both the test for spuriousness and for intervening variables were statistically significant, this would suggest that the direct path should be retained in the model. Since only 4 of the partial r values used in testing for spuriousness are still significant, and there is evidence that the predictor variables in these relationships operate indirectly,

MODEL II for Blacks in the Manhattan Study

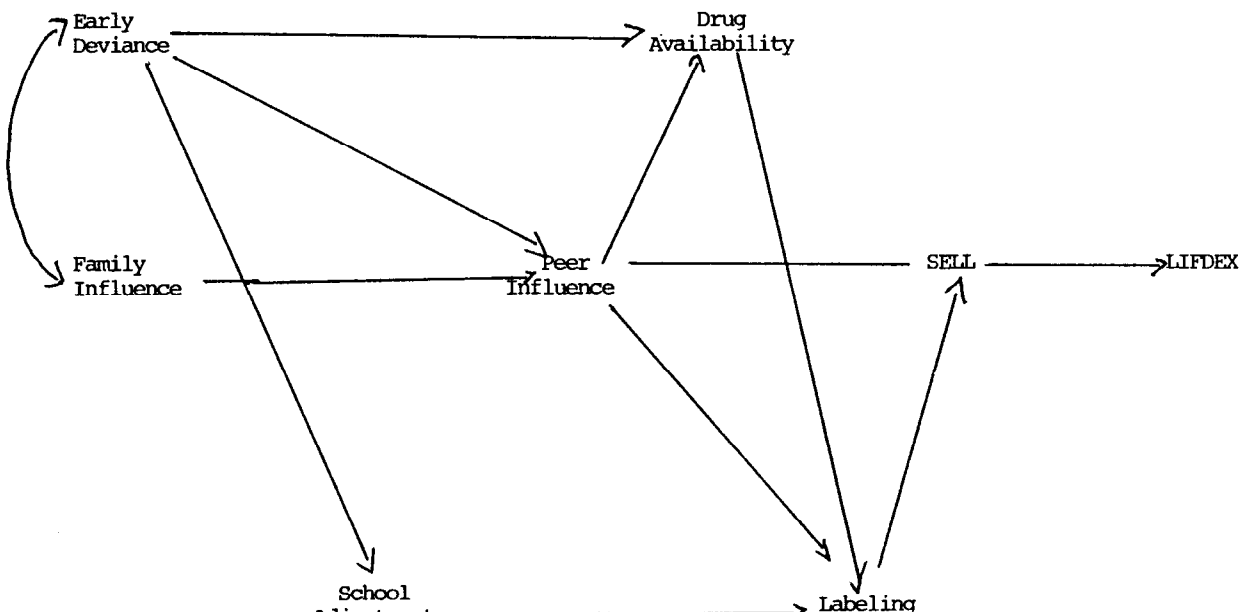


TABLE 8.4 Partial Correlation Equations: Paths to be Deleted from Model I for Blacks

	Dependent Variable	Independent Variable	Control Variables	Simple r	Predicted Partial r	Actual Partial r	Level of Significance Partial r
1a.	LIFDEX-Labeling:	SELL		.331	0	.141	.060
1b.	LIFDEX-Labeling:	DA, PI, SA, ED, FI,		.331	0	.269	.001*
2a.	LIFDEX-Drug Avail.:	LA, SELL		.211	0	.085	.175
2b.	LIFDEX-Drug Avail.:	PI, SA, ED, FI		.211	0	.133	.073
3a.	LIFDEX-Peer Influ.:	DA, LA, SELL		.202	0	-.074	.209
3b.	LIFDEX-Peer Influ.:	SA, ED, FI		.202	0	.162	.037*
4a.	LIFDEX-School Adj.:	PI, DA, LA, SELL		-.045	0	.057	.269
4b.	LIFDEX-School Adj.:	ED, FI		-.045	0	-.003	.485
5a.	LIFDEX-Early Dev.:	SA, PI, DA, LA, SELL		.120	0	-.085	.178
5b.	LIFDEX-Early Dev.:	FI		.120	0	.119	.093
6.	LIFDEX-Fam. Influ.:	ED, SA, PI, DA, LA, SELL		-.036	0	.019	.417
7a.	SELL-Drug Avail.:	LA		.207	0	.018	.423
7b.	SELL-Drug Avail.:	PI, SA, ED, FI		.207	0	-.002	.491
8a.	SELL-School Adj.:	PI, DA, LA		-.113	0	.093	.155
8b.	SELL-School Adj.:	ED, FI		-.113	0	-.026	.390
9a.	SELL-Early Dev.:	SA, PI, DA, LA		.267	0	.060	.258
9b.	SELL-Early Dev.:	FI		.267	0	.267	.001*
10a.	LABELING-Early Dev.:	SA, PI, DA		.442	0	.116	.101
10b.	LABELING-Early Dev.:	FI		.442	0	.446	.001*
11.	LABELING-Fam. Influ.:	ED, SA, PI, DA		-.154	0	-.058	.262
12a.	DRUG AVAILABILITY-School Adj.:	PI		-.106	0	.018	.189
12b.	DRUG AVAILABILITY-School Adj.:	ED, FI		-.106	0	.080	.127
13.	PEER INFLUENCE-School Adj.:	ED, FI		-.255	0	-.104	.127
14.	SCHOOL ADJUSTMENT-Fam. Influ.:	ED		.097	0	.100	.135

rather than directly, deletion of these direct paths from model II for blacks is appropriate.

Model II: Whites

The first step required to trim model II for whites is the elimination of Drug Availability. It is a terminal variable in that it appears in the middle section of the model and does not have a direct effect on any variables subsequent to it. In addition, only one variable, Peer Influence, has a direct and significant effect on Drug Availability. With the elimination of Drug Availability, model II for whites has 7 variables and 21 potential direct paths. Because 11 direct paths merged in the test of model I, the saturated model, it is necessary to justify the deletion of the other 9 paths from model II. The partial r values pertinent to these paths for whites are found in table 8.5. For 5 of the paths there is clear evidence to support their deletion. The pairs of equations that require additional comment are:

1a. LIFDEX-Labeling: SELL
1b. LIFDEX-Labeling: PI, SA, ED, FI
2a. LIFDEX-Peer Influence: LA, SELL
2b. LIFDEX-Peer Influence: SA, ED, FI
5a. SELL-Peer Influence: LA
5b. SELL-Peer Influence: SA, ED, FI
8a. LABELING-Early Deviance: SA, PI
8b. LABELING-Early Deviance: FI

The simple r among whites for the relationship between lifetime illicit drug use and Labeling is .481. As the data in table 8.5 indicate, a control for Drug Sales as an intervening variable produces a partial r of .233, which is still significant, but it is less than one-half the size of the original relationship. This means that Drug Sales intervenes between illicit drug use and Labeling and that there are also other unmeasured variables that could affect the relationship. A test of the relationship between LIFDEX and Labeling for spuriousness reveals a substantial reduction (i.e., over half) with 4 control variables in the equation (partial r of .205). These reductions, as well as the fact that the beta (.082, F = 1.032) for the LIFDEX-Labeling path is so low, provide support for the decision to eliminate this path from model II for whites (see table 8.5).

A similar argument can be made for deletion of the LIFDEX-Peer Influence path from model II for whites. In testing for the presence of intervening variables (Labeling and Drug Sales), the partial r value (.203) is statistically significant, but is only 40 percent the size of the simple r value of .513. There is also a substantial spurious element in the LIFDEX-Peer Influence relationship: this is revealed by the partial r value of .209 when School Adjustment, Early Deviance, and Family Influence are statistically controlled. The magnitude of these reductions and the F value of only .947 and beta = .097 for the LIFDEX-Peer Influence suggest that deletion of this path from model II is appropriate (table 8.4).

MODEL II for Whites in the Manhattan Study

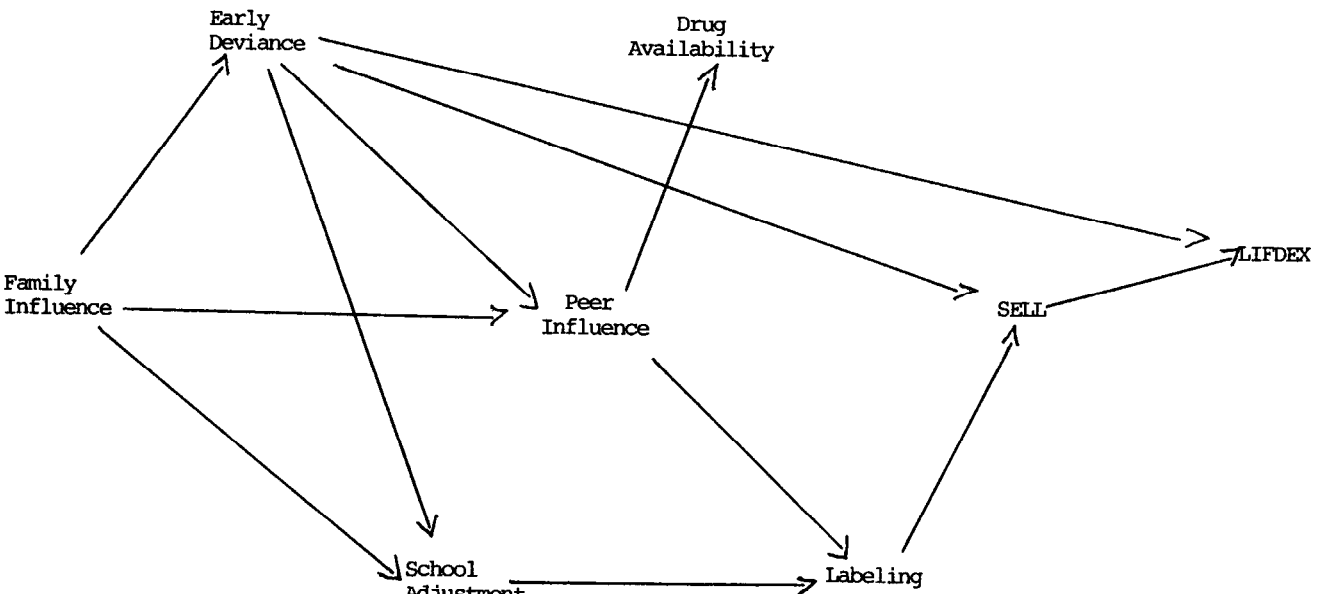


TABLE 8.5 Partial Correlation Equations: Paths to be Deleted from Model I for Whites

	Dependent Variable	Independent Variable	Control Variables	Simple r	Predicted Partial r	Actual Partial r	Level of Significance Partial r
1a.	LIFDEX-Labeling:	SELL		.481	0	.233	.011*
1b.	LIFDEX-Labeling:	PI, SA, ED, FI		.481	0	.205	.024*
2a.	LIFDEX-Peer Influence:	LA, SELL		.513	0	.203	.024*
2b.	LIFDEX-Peer Influence:	SA, ED, FI		.513	0	.209	.021*
3a.	LIFDEX-School Adjustment:	PI, LA, SELL		-.167	0	.092	.188
3b.	LIFDEX-School Adjustment:	ED, FI		-.167	0	.105	.154
4.	LIFDEX-Family Influence:	ED, SA, PI, LA, SELL		-.267	0	.078	.227
5a.	SELL-Peer Influence:	LA		.439	0	.229	.012*
5b.	SELL-Peer Influence:	SA, ED, FI		.439	0	.153	.070*
6a.	SELL-School Adjustment:	PI, LA		-.179	0	.052	.308
6b.	SELL-School Adjustment:	ED, FI		-.179	0	.068	.257
7.	SELL-Family Influence:	ED, SA, PI, LA		-.309	0	-.142	.086
8a.	LABELING-Early Deviance:	SA, PI		.578	0	.145	.079*
8b.	LABELING-Early Deviance:	FI		.578	0	.515	.001*
9.	PEER INFLUENCE-School Adjustment:	ED, FI		-.268	0	.067	.259

The third pair of partial r values in table 8.5 that deserves comment concerns the path between Drug Sales and Peer Influence. This path in model II is significant for blacks. With a control for Labeling as an intervening variable, the partial r (.229) is still statistically significant even though it is substantially lower than the simple r of .439. However, it appears that the relationship between Drug Sales and Peer Influence is spurious. Simultaneous controls on School Adjustment, Early Deviance, and Family Influence yield a partial r of only .153. This is sufficient evidence to permit deletion of the Drug Sales-Peer Influence path fran model II for whites.

There is also evidence to support deletion of the Early Deviance path from model II for whites. The simple r (.578) was reduced only slightly to .515 when Family Influence was statistically controlled. However, a simultaneous control on School Adjustment and Peer Influence yields a partial r (.145) that is not statistically significant. Therefore, the influence of Early Deviance on Labeling among whites is essentially indirect instead of direct.

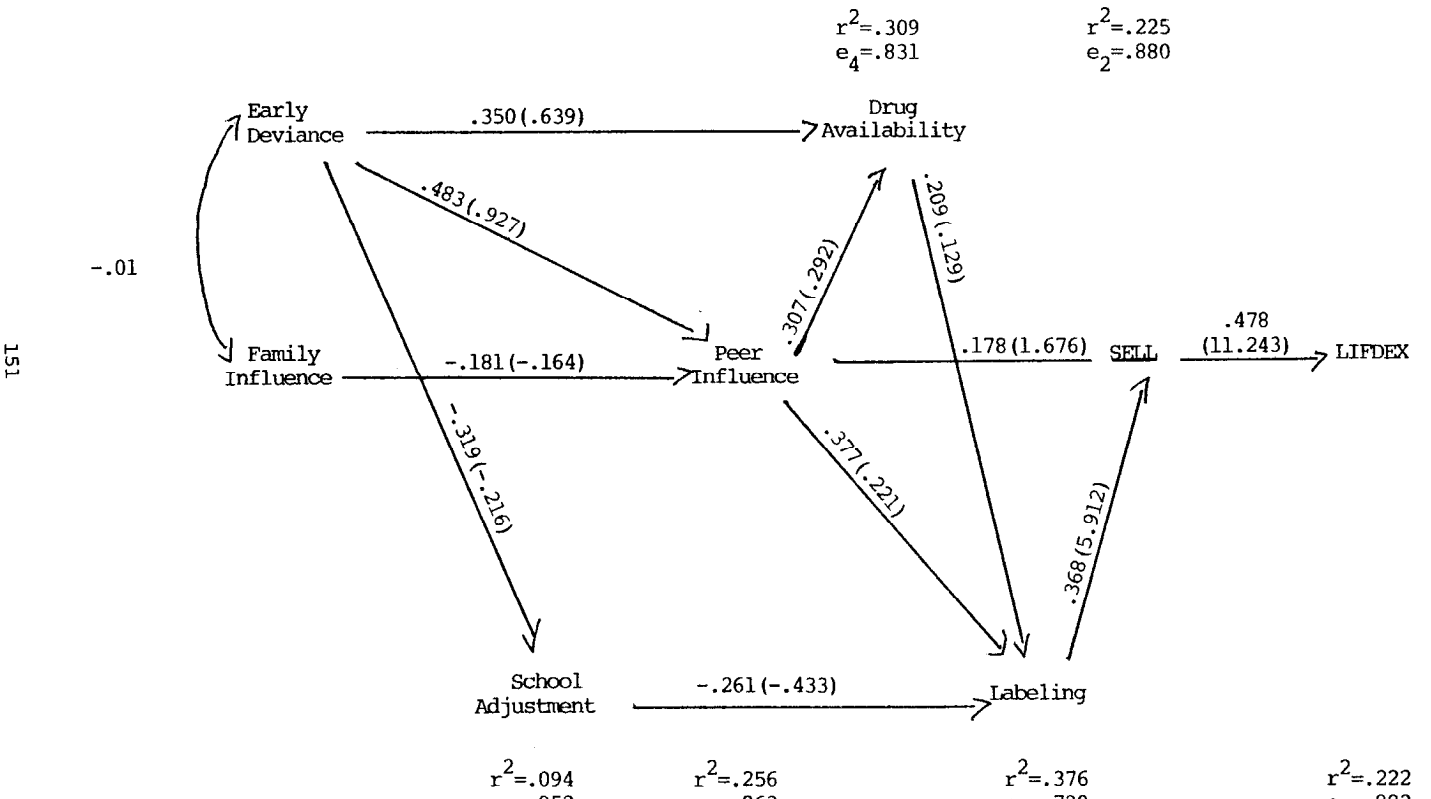
Model III: Blacks and Whites

At this point, the models for blacks and whites have been thoroughly trimmed. Therefore, model III represents the best fit between the data and the interrelationships among the variables suggested by the relevant theories. The separate diagrams in model III for blacks and whites contain beta weights or path coefficients for each of the direct paths that remain in the model; the unstandardized B values are shown in parentheses. These values are derived from simple multiple regression analyses in which a dependent variable is regressed against only those variables having a direct effect on it. The diagrams also contain the adjusted r-square values and the residual or error terms at each stage of the model from right to left. The error term is the square root of one minus the adjusted r-square value.

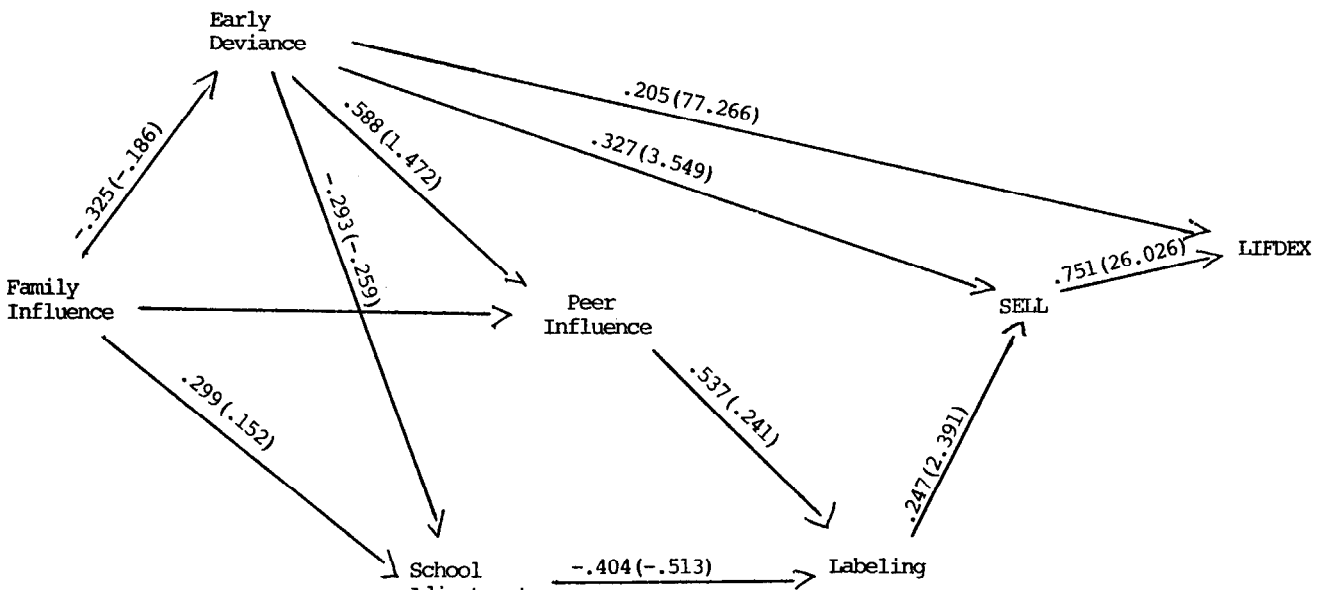
When one examines different models that include the same variables, it is appropriate to compare only the unstandardized B values for specific paths. This approach to model III produces several conclusions that deserve mention. First, involvement in drug sales is a much more powerful predictor of illicit drug use for whites than blacks. For whites, a one unit change in the Drug Sales index produces a 26 point change in the illicit drug use index. For blacks a one unit change in this variable produces only an eleven point change in the illicit drug use index. In addition, Early Deviance has a significant impact on illicit drug use for whites, in spite of the fact that Drug Sales accounts for such a large proportion of the variance in illicit drug use. Early Deviance does not have a direct path to illicit drug use for blacks.

The impact of Labeling on drug sales is twice as strong for blacks as for whites. A one unit change in Labeling produces 5.9 units of change in Drug Sales for blacks in comparison with only 2.39 units for

MODEL III for Blacks in the Manhattan Study



MODEL III for Whites in the Manhattan Study



r^2=.096 e_6=.951

r^2=.216 e_5=.885

r^2=.456 e_4=.738

r^2=.559 e_3=.664

r^2=.246 e_2=.868

r^2=.745 e_1=.505

whites. Peer Influence has a significant effect on Drug Sales for blacks, but not for whites, and Early Deviance predicts involvement in drug sales for whites, but not blacks. Peer Influence and School Adjustment have a significant effect on Labeling for both blacks and whites. The B values for these variables are relatively small and of approximately equal magnitude.

Family Influence and Early Deviance have direct paths to Peer Influence for both blacks and whites. While the differences between the races are not substantial, the impact of these variables on Peer Influence is greater among whites than blacks. School Adjustment is directly affected by Early Deviance at about the same level for both races. Among whites, Family Influence also has an impact on School Adjustment. Finally, there is a direct effect of Family Influence on Early Deviance for whites, but not for blacks. In fact, the simple correlation of Family Influence and Early Deviance among blacks is only -.01.

An examination of the adjusted r-square values at each stage of model III reveals that the predictor variables account for a larger percent of explained variance for whites than blacks. This suggests a better fit between the data for whites and the variables in the model than is true for blacks. Although not presented in tabular form, the data for the blacks were fitted to model III for whites and the data for the whites were fitted to model III for blacks. The results indicate that the models are unique. Wither model is sufficiently flexible to fit data fran the other racial group.

Model III: General Observations

It is relatively easy to describe the findings that emerge when causal models are tested by means of path analysis. It is considerably more difficult to describe the implications of these models for an understanding of the causes of illicit drug use. Nevertheless, three general observations about the use of illicit drugs can be derived from Model III. First, it is apparent that different combinations of factors explain illicit drug use among blacks and whites. The sample was designed to include men who grew up in health areas in Manhattan that had high rates of opiate use. It was assumed that the experience of living in such a sociocultural context would permit use of a single model to explain illicit drug use. However, high areas may exist more in the eyes of researchers and public officials than in the eyes of the young men who lived in these areas. Neighborhoods with high rates of use simply are not homogeneous on other factors. They undoubtedly differ in ways that are salient for an explanation of illicit drug use. While virtually all of the men in the Manhattan study, black and white, grew up in neighborhoods where opiate use was high by objective standards, it is clear from model III that the impact of this sociocultural context is mediated by other factors, including ecological variables which were not measured. Researchers should assess various facets of the sociocultural context at the neighborhood level. An objective macro-level index, such as

the rate of opiate use, must be supplemented by micro-level measures that assess the richness and diversity, as well as the order, that permeates urban neighborhoods (see Suttles 1968; Liebow 1967). Neighborhoods differ, for example, in the extent to which residents know each other and in the stability or transiency of the population. Another possible reason the models differ for blacks and whites is that race may influence the number of supportive resources that are available to young men. Race may also affect the range of opportunities available for achieving success in society. Although it is speculative, the blacks may have been assigned to tracks other than the college preparatory one. In our society, the ticket required for admission into higher status occupations and the higher incomes associated with them must be stamped: College Graduate! For a youth who grows up in a high drug use area in Manhattan, such a ticket may be the only route out of the ghetto. The whites in the Manhattan sample were obviously in the express lane for education tickets in comparison with the blacks. Forty-six percent of the whites were college graduates in contrast with only 8 percent of the blacks. On the other hand, only 9 percent of the whites did not finish high school, but 32 percent of the blacks were dropouts. Consequently, it is not surprising that the final models for blacks and whites differ in many respects. Given the apparent disparity between the races in access to educational success, perhaps the degree of similarity between the models, not the differences, should generate surprise.

A second general observation derived from model III concerns the importance of Drug Sales as a predictor of use of illicit drugs. The data presented in chapter 5 confirm that prior use of marijuana is almost a necessary condition for involvement in the marketing of illicit drugs, and marijuana is the common medium of exchange in that marketing system. However, the process of moving from using marijuana to selling drugs to using other illicit drugs has been virtually ignored by researchers (for an exception, see Sutter 1969). Most observers view initial use of marijuana as the key transition or rite-de-passage into the marijuana subculture (Kandel 1975; Jessor and Jessor 1977; O'Donnell and Clayton 1979) just as initial use of heroin or first intravenous injection has been viewed as evidence of entry into the heroin subculture (O'Donnell and Jones 1968).

The data in model III suggest that the events that occur subsequent to one's first use of marijuana but prior to use of other drugs deserve special attention. Sutter (1969) refers to young persons who purchase their own supply and deal in marijuana on a small-time basis as "pot heads." Some pot heads, attracted to the money that can be made by dealing, become "players" or the intermediaries for the flow of drugs and stolen merchandise from adult thieves to adolescents. Sutter suggests that a player on his way to a career in hustling will come in contact with heroin. While Sutter does not identify any specific stages, it is quite possible that there are clear-cut stages of involvement in selling drugs. Such stages may parallel the transition fran use of marijuana to use of other illicit

drugs. Identification of stages in the sale of drugs might specify Kandel's (1975) four stage model of drug use.

The difference by race in the predictive power of Drug Sales for illicit drug use is also intriguing. With knowledge that a white in this sample has sold drugs, one can predict with a high degree of accuracy that he has used illicit drugs. For blacks the accuracy of one's prediction is considerably lower. This may mean that selling drugs and using illicit drugs other than marijuana are roughly co-equal indicators of involvement in the drug subculture for whites. Among blacks, involvement in the drug subculture may be more differentiated; that is, there may be more stages in the process of becoming involved in and committed to illicit drug use and its attendant lifestyle.

Although some of the comments are speculative, model III provides a persuasive basis for the argument that more research should focus on the sale of drugs as an important key to understanding the etiology of illicit drug use. Three questions deserve immediate attention: (1) What is the average length of time between onset of marijuana use and the sale of drugs? (2) Is there a level of usage that, once attained, seems to thrust a person into the drug distribution system? (3) What are the factors that differentiate between those who use and do not sell, those who use and sell only marijuana, and those who branch out into using and selling a variety of drugs?

A third general observation derived from model III concerns the differential impact of Early Deviance on Drug Sales and illicit drug use for blacks and whites. Early involvement in deviant activities seems to propel whites toward involvment in more serious forms of deviance. This can be seen in the direct paths that exist between Early Deviance and both Drug Sales and the Index of Illicit Drug Use in model III. The only impact Early Deviance has on Drug Sales for blacks is indirect and operates through Peer Influence. There are at least two variables that intervene between Early Deviance and illicit drug use for blacks, regardless of which paths are followed. These findings from model III suggest that deviance proneness and transition proneness, concepts central to the problem behavior theory of Jessor and Jessor (1977), may operate differently for blacks and whites. For example, the items used in constructing the Early Deviance, Drug Sales, and LIFDEX measures reflect behavior that requires individual initiative. It is possible that the whites in the study who scored high on these measures were virtually all deviance-prone. On the other hand, for blacks involvement in the activities that make up the Early Deviance scale may be inconsequential in predicting later involvement in selling or using illicit drugs because a larger proportion of all black youth are involved in those activities. Therefore, these activities do not tend to single out the deviance-prone black youth because the activities are not viewed as deviant by black youth.

In this section of chapter 8 three general observations have been derived from model III. This has been accomplished without straying

too far from either the model that has been tested or the substantive focus of the Manhattan study, illicit drug use. In the next chapter the findings from the Manhattan study are linked with findings from other studies of drug use and with the broader field of deviance. This will be accomplished by relating the findings from this study to broader concepts such as subculture, socialization, developmental transitions, and differential association.

Chapter 9

Toward Theoretical Synthesis

The purpose of this chapter is to assess the implications of the findings, and this can best be accomplished by placing the national and Manhattan studies in perspective. First, several of the historical and social conditions that led to initiation of the national survey are reviewed. Second, the findings in the Manhattan study, as reported in chapter 8, are linked to contemporary sociological theories.

Historical Context

In conducting research, investigators can become so involved in the search for answers to specific questions that they lose sight of the broader historical, political, and social conditions that led to the initial emphasis on those questions. Such a narrow focus can readily occur in research on social problems such as illicit drug use.

In the late 1960s and early 1970s use of illicit drugs became so widespread in the United States that some knowledgeable individuals suggested an epidemic had occured (Jaffe 1973; DuPont and Greene 1973). At the same time, high levels of opiate use on the part of soldiers in Vietnam were reported, and it was feared that existing treatment facilities would be inadequate to cope with addicted veterans upon their return to this country. This fear, it may be noted, was based to a considerable extent on the idea that a high proportion of individuals addicted to opiates would, after treatment, relapse.

The existence of these conditions led to recognition of the need for reliable data to answer basic epidemiological questions. A fundamental question was: Who was using what drugs? Related questions pertained to where, when, and how these drugs were being used. The Marihuana Commission (NCMDA, see, e.g., 1972) funded national surveys to obtain information relevant to these questions and the Special Action Office for Drug Abuse Prevention (SAODAP) commissioned two major studies to provide epidemiological data in subpopulations in which drug use was thought to be most extensive. The first was Robins' (1973) study of enlisted men who returned from Vietnam in September 1971. The second was the national study of youug men and drugs (O'Donnell et al. 1976). After SAODAP was phased out, the National Institute on Drug Abuse (NIDA) continued to chart the epidemiology of drug use by means of its national household surveys (Abelson et al. 1977; Fishburne et al. 1980) and the annual surveys (1975-80) of high school seniors conducted by Johnston and his associates (1980).

It is now only ten years from the time Robins began her study of drug use among Vietnam veterans. In this decade, the primary emphasis in the drug field has shifted from description to explanation. The two studies described in this report reflect this important recent change. While greater emphasis is now placed on explanation than was the case a decade ago, interest in etiological issues is apparent in the writings of Lindesmith (1938, 1947, 1968); O'Donnell and Jones (1968); Ausubel (1958); Chein et al. (1964); Martin and Fraser (1961); Robins and Murphy (1967); Wikler (1965, 1968), and others. These scholars focused almost exclusively on the opiates, and many of them were more concerned with the psychopharmcological than the psychosocial determinants of addiction. In contrast, a number of recent etiological efforts have been directed toward explanation of initiation into marijuana use (Jessor and Jessor 1977; Kandel 1975; Smith and Fogg 1978; O'Donnell and Clayton 1979).

Toward a Theoretical Synthesis

The major theoretical perspectives on drug use have been summarized (Lettieri et al. 1980; Kandel 1980). Lettieri's volume is comprehensive and both multidisciplinary and multidimensional in focus. In 43 chapters diverse theories are discussed in which the principal causative forces in drug abuse are identified as: (a) one's relationship to others; (b) one's relationship to society; and (c) one's relationship to nature. Stated differently, there are 12 theories dealing with psychological factors, 15 theories focusing on interactive factors, 8 theories concerning sociological factors, and 8 theories dealing with the biological factors that explain drug abuse. Then, what each theory has to say about the issues of (a) initiation, (b) continuation, (c) the transition fran use to abuse, (d) cessation, and (e) relapse is presented in separate sections. On the other hand, Kandel organized her review of the empirical literature in terms of four theoretical perspectives: (1) Jessor and Jessor's (1977) problem behavior-proneness theory: (2) Akers' (1977) social learning theory, which is a modification of Sutherland's (Sutherland and Cressey, 1974) theory of differential association in terms of Skinner's operant conditioning theory; (3) Kaplan's (1975, 1977, 1978) theory in which the key factor is self-derogation; and (4) Kandel's (1978) theory of socialization in which elements of reference group theory, subcultural theory, and symbolic interactionism are combined.

While Letteiri's volume is more comprehensive, the theories covered by Kandel closely parallel the ones relied upon to construct the interview schedule for the Manhattan study. It should be noted, however, that no attempt was made to test a specific theory in the field of deviance. Rather, questions were designed to measure some of the central concepts in the existing theories.

Drug Sales: An Indicator of Subcultural Involvement

Elaborating on the theories of differential association (Sutherland 1947) and anomie (Merton 1938), Cohen (1955) and Cloward and Ohlin

(1960) focused on deviant subcultures, and Yinger (1960) drew a useful distinction between subcultures and contracultures. The existence and importance of a drug subculture is also emphasized in the literature on addiction. O'Donnell observes:

> The concept of a drug subculture implies that addicts are in contact with each other. In this contact, learning takes place. The learning can be of facts and techniques. For example, the neophyte can learn from more experienced addicts that his withdrawal symptoms are the result of not having had his usual dose of narcotics, and will be relieved by a dose; that the intravenous route enhances the drug effect; how to obtain narcotics, or money for narcotics; new sources of narcotics; how to prepare narcotics for administration, and other knowledge of this kind. He will usually learn new attitudes too. He may learn to define himself as an addict, learn new justifications for his drug use, and new and negative attitudes toward the laws which try to prevent drug abuse. In his contact with other addicts he learns their argot, with the implicit value orientations built into it. As with other forms of deviant behavior, he is likely to feel more and more at home with other addicts, spend more time and invest more interest in those new contacts, and gradually withdraw from ties to family, friends, and old associations. This in turn means that his old values are no longer reinforced by the old ties, so that it becomes still easier to adopt the values of the addict subculture. Finally, he is perceived by himself and other addicts, by his family and other older associates, and often by police and health agencies as a member of a deviant subgroup, whose values and orientations are shared with them but are opposed to those of the wider culture. (O'Donnell 1969, pp. 84-85)

In O'Donnell's (1969:85) study of narcotic addicts in Kentucky, the sale of narcotics was employed as the most important indicator of involvement in the drug subculture. Similarly, in his study of Marijuana Users and Drug Subcultures, Johnson (1973) identified three subcultural variables--peer group marijuana use, buying and selling drugs, and having heroin-using friends--that helped propel marijuana users into a lifestyle dominated by the use of heroin and the intravenous injection of heroin (see Johnson 1980). Johnson suggested the existence of a causal chain in which extent of marijuana use is the independent variable, heroin use is the dependent variable,and the three subculture factors are intervening variables. Johnson's (1973:66, 78-79, 86, 108, 111, 116) hypotheses are:

1. "The respondent's own use of cannabis is a more important determinant of having heroin-using friends than vice versa...

2. College students engage in cannabis selling for one main, very rational reason: they need to obtain a supply of the drug that they

use regularly. In the process of gaining this supply, students most frequently buy a larger quantity than they can reasonably use and are likely to sell it to friends who want some...

3. Involvement in selling cannabis, not hard drug use, is the crucial factor in explaining hard drug sales...

4. In the sample population, cannabis use appears to be a prerequisite for the use, purchase and sale of hard drugs...

5. A student who becomes involved in selling drugs is likely to gain friends who use dangerous drugs and hence to be turned on by such friends...

6. Involvement in selling drugs is the crucial factor in understanding why students gain intimate heroin-using friends...

7. The most critical assumption made...is that the influence of an intimate friend who uses a particular drug is frequently the precipitating (immediately causal) factor in the respondent's use of that drug."

These seven hypotheses outline a simple causal chain in which (a) marijuana use leads to (b) selling marijuana which leads to (c) sales of hard drugs which leads to (d) having heroin-using friends which leads to (e) heroin use. Stated differently, this model depicts the three subcultural factors (i.e., selling marijuana, selling hard drugs, and having heroin-using friends) as intervening variables in the relationship between use of marijuana and heroin. In testing such a causal chain statistical controls on one or more of the intervening variables will cause the zero-order relationship between the first and last variables, marijuana and heroin, to vanish or be reduced substantially (Blalock 1964:68; Rosenberg 1968:54-83). Johnson's data confirmed the existence of the causal chain. When the intervening subcultural variables were statistically controlled, the relationship between marijuana use and heroin use was, as expected,reduced almost to zero. This signifies the importance of drug sales as a barometer of one's involvement in a drug subculture. Such a reduction should also strengthen the argument that marijuana use is causally related to heroin use via involvement in the subculture. Unfortunately, Johnson ignored this point and Goode, in the foreword to Johnson's book, completely misinterpreted this finding to mean that the relationship between use of marijuana and use of heroin is spurious (see O'Donnell and Clayton 1981).

The hypotheses developed by Johnson have recently been tested using data from Kandel's large-scale survey of adolescents.

> Marihuana users whose friends use illicit drugs, particularly drugs other than marihuana, are more likely to use these drugs themselves than adolescents whose friends do not use drugs. Marihuana users who are involved in drug "dealing"

> are the most likely to have friends who report other illicit drug use, and they themselves are also the most likely to use drugs other than marihuana. Controlling for both friends' use and illicit marketing reduces the relationship between one's marihuana use and the use of other illicit drugs. These factors, therefore, are two important reasons why marihuana users are more likely to use other drugs. (Single and Kandel 1978, p. 127)

Unlike Johnson, Single and Kandel found that the frequency of one's own marijuana use has a direct and independent effect on use of other illicit drugs, even when friends' use and drug sales are simultaneously controlled.

In the present study, it was assumed that growing up in areas of Manhattan known to have high rates of drug use would facilitate the use of illicit drugs. It was also assumed that a drug subculture existed in these areas. Involvement in the sale of illicit drugs was used as an indicator of involvement in a drug subculture.

It is clear from Model III in chapter 8 that involvement in drug sales is an important predictor of illicit drug use for both racial groups, but particularly for whites. Among the blacks, the standardized partial beta (i.e., path coefficient with all other variables controlled) for the relationship between drug sales and illicit drug use is .478. The comparable figure for whites is .751. The unstandardized betas for the relationship between drug sales and other illicit drug use are 11.24 for blacks and 26.03 for whites. This indicates that drug sales is at least twice as strong a predictor of illicit drug use for whites as it is for blacks.

The findings in the studies of Johnson (1973) and Single and Kandel (1978) are consistent with the data from the Manhattan study. They confirm the significance of drug selling as a predictor of other illicit drug use. In addition, these three studies provide empirical support for the theory of deviant subcultures. However, these studies also point to the need for further work. As Single and Kandel (1978: 127) indicate: "The subcultural model of drug escalation must be expanded to consider situational, social and psychological factors other than friends' use and involvement in marketing activities."

Deviance Proneness

The appearance of problem-behavior theory (Jessor and Jessor 1977) constitutes a significant development in the drug field. While the theory is a synthetic blend of assumptions, concepts, and variables from diverse sources, its roots are firmly anchored in the broader fields of developmental and social psychology. The key predictor variables used by Jessor and Jessor (1977) are organized within two social psychological categories. The first, the personality system, consists of: (1) the motivational-instigation structure (e.g., values placed on academic achievement-independence-affection;

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expectations for academic achievement-independence-affection; and independence-achievement value discrepancy); (2) the personal belief structure (e.g., social criticism, alienation, self-esteem, and internal-external locus of control); and (3) the personal control structure (e.g., attitudinal tolerance of deviance, religiosity, and what is called positive-negative functions discrepancy). The second broad category, the perceived environment system consists of: (1) distal structure (e.g., parental supports and controls; friends' supports and controls; parent-friends compatability, parent-friends influence) and (2) proximal structure (e.g., parental approval of problem behavior, friends' approval of problem behavior, and friends' models for problem behavior).

The variables in the personality system and the perceived environment system are conceptualized as having both direct and joint influences on the behavior system which consists of: (1) the problem behavior structure (e.g., marijuana use: sexual intercourse; activist protest; drinking: problem drinking; general deviant behavior such as stealing, lying, property destruction, disruptive behavior, and aggression: and what the Jessors label a multiple problem-behavior index) and (2) the conventional behavior structure (e.g., church attendance and academic achievement).

Problem-behavior theory is particularly interesting because it attempts to explain a number of substantively different kinds of behavior, both conventional and unconventional, and because it judiciously blends predictor variables that are psychological, sociological, and interactive in nature. Equally interesting are three of the assumptions on which the theory is based:

1. "The most obvious dynamic in the behavior system is the relation between the two structures that comprise the system, the problem-behavior and the conventional behavior structures, with engagement in either serving as a constraint upon or an alternative to engaging in the other" (Jessor and Jessor 1977:36). This is an important point often ignored in the deviance field. Individuals are seldom either all good or all bad. Delinquents often engage extensively in conventional activities while those who are generally conventional or "straight" are seldom completely free of involvement in delinquent behavior. As the Jessors (1977:36) note: "The extent of problem behavior, then, depends in part on its balance with involvement in conventional behavior."

2. "There is another kind of linkage between behavior that is likely to be of dynamic significance, the degree to which behaviors are linked in the social ecology so that the likelihood of occurrence of one is enhanced by the occurrence of the other" (Jessor and Jessor 1977: 36). An excellent example of this assumption was discussed earlier in terms of interrelationship of marijuana use, involvement in drug sales, and use of other illicit drugs.

3. "The theory has been organized to account for proneness to engage in behavior that departs from regulatory norms; insofar as the regulatory nom are age norms, and insofar as problem behaviors can serve to mark transitions in age-graded status, the theory yields an account of transition proneness" (Jessor and Jessor 1977:41).

Evidence supporting the Jessors' first two assumptions can be found in a study of crime-days among addicts in Baltimore in which it was found that there was a six-fold diminution of crime when addicts were not using drugs daily compared to when they were "on a run" (Ball et al. 1980, 1981). During abstinent periods, these addicts were occupied with conventional activities. However, when they were heavily involved in the use of heroin, they were also heavily involved in criminal behavior.

The focus on transition or deviance proneness highlights three general theses of developmental psychology. First, each individual has age-graded developmental tasks to perform and norms to follow, both prescriptive (boys your age should do this) and proscriptive (boys your age should not be doing that). Second, the ability to perform successfully developmental tasks occurring later in the life span is contingent upon successful completion of tasks at earlier stages of development. Third, precocity, or involvement in behavior before one's time, creates a situation in which a person is evaluated, by himself and by significant others, according to the disparity between what he is doing and what he should be doing at that age. Precocity is defined as deviant whether one is viewed positively as a child prodigy or negatively as a problem child. Therefore, involvement in an activity that is not appropriate for one's age produces developmental problems for that individual and often leads to negative evaluations of the person.

These assumptions yield three simple hypotheses: (1) To the extent that individuals are involved in conventional activities they will not be involved in deviant activities, and vice versa; (2) Involvement in one form of deviant behavior is predictive of and associated with involvement in other forms of deviance; and (3) The earlier the age at which one is involved in deviant behavior the greater is the likelihood of later, more extensive and more serious involvement in deviance. Stated differently, persons who make the transition into deviant behavior earlier than their peers are more likely to be involved in multiple forms of deviance and are more likely to be committed to a deviant lifestyle. While these are not new ideas, they are clearly expressed within a comprehensive model of problem behavior. The idea of deviance- or transition-proneness is particularly intriguing.

The Manhattan study was conducted prior to publication of the Jessors' theory. However, the early deviance variable in Model III in chapter 8 clearly reflects the idea of deviance proneness and transition into deviance. Among whites, early deviance has a direct effect on both illicit drug use (beta = .205, B = 77.266) and drug sales (beta =

.751, B = 26.026). Early deviance does not have a direct effect on these two variables among blacks. Instead, its effect on drug sales was indirect through peer influence and labeling.

While these findings are clear from a purely statistical viewpoint, at least two observations should be made from a theoretical perspective. First, an early involvement in general types of deviance (i.e., deviance or transition proneness) seems to thrust whites in the sample toward participation in the illicit drugs subculture. Second, although early deviance did not have a direct statistical effect on either drug sales or illicit drug use among blacks, they were more likely than whites to be involved in the drug subculture. For example, blacks were more likely to have grown up in the areas of Manhattan having the highest rates of opiate use and to have used heroin and cocaine. In addition, O'Donnell and Clayton (1979) found that the average age at onset of marijuana use was lower among blacks. For those who have used both drugs, the hiatus between onset of marijuana use and initiation into heroin use is shorter for blacks than whites.

problem-behavior theory was developed to explain relatively minor forms of deviance among whites in a western college town. Transition into deviance and proneness to deviance may have different meanings and reflect different processes according to the prevalence of deviance, homogeneity, or the type of social order in a community (see Suttles 1968; Liebow 1967). The whites in Manhattan who smoked marijuana at an early age or who engaged extensively in unconventional activities when they were 13 to 15 were less likely than blacks to make the transition to use of other illicit drugs. As a consequence, they were probably less involved in other kinds of deviance. Thus, for whites early involvement in deviance did not block their later opportunities for success in such areas as education and employment. The blacks who became involved in deviance at an early age were not as likely to shift back into conventional pursuits, in part because they quickly become involved in more serious kinds of deviant activities. The differential impact of early involvemeant in deviance on blacks and whites is an issue that deserves special attention in future research. It also must be considered in any attempt to develop a general theory of deviance applicable to youth from middle-class suburban communities as well as youth from lower-class ghetto communities.

The Relative Impact of Socialization Agents

Sociological theories of deviance differ with regard to the influences posited as having the greatest impact on behavior, but there is general agreement regarding the important role played by parents, peers, and experiences in school in determnining the paths, conventional or deviant, that an individual will take. Consensus exists because these theories share a common heritage, symbolic interactionism. Cooley (1918), Mead (1934), and Thomas (1927) emphasized that: (a) behavior is learned; (b) it is learned through a lifelong process of socialization: (c) socialization operates at each stage of development through taking the role of significant others and the generalized

other; (d) decisions about behavior are made through definition of the situation; and (e) enactment of a specific behavior entails planning or anticipating the act and its consequences, engaging in the act, and reviewing the act after it occurs, or what Mead calls the social act.

Over time a number of schools of thought have emerged from symbolic interactionism as scholars focused attention on one particular concept, process, or phenomenon. For example, distinctive schools developed around the concept of reference groups (Sherif and Sherif 1964) and the social comparison process (Thibaut and Kelley 1959). With regard to the concept of reference groups, Kemper (1968) identified two types; the comparison, consisting of others with whom an individual shares general characteristics (e.g., age, race, sex); and the normative, consisting of significant others with whom an individual shares beliefs, values, norms, and lifespaces.

Another line of thought that grew out of the symbolic interactionist tradition followed the lead of W. I. Thomas in focusing on how individuals rationalize and explain their involvement in deviant behavior. For example, Scott and Lyman (1968) suggested that parsons use excuses and justifications when they are called upon to account for untoward or deviant actions. Sykes and Matza (1957) said that techniques of neutralization, including denial of responsibility, denial of injury, denial of a victim, condemnation of the condemners, and appeal to high loyalties, permit an individual to rationalize norm violations.

Symbolic interactionism and the schools of thought emergent from it have had a significant impact on the study of drug use. This is evident in what Kandel (1980) calls socialization theory, and in studies of deviance that build upon Sutherland's theory of differential association (Sutherland and Cressey 1978). Kandel (1980) gives the social learning-reinforcement theory developed by Burgess and Akers (1966; see also Akers 1977; Akers et al. 1979) independent status, but it is best viewed as a restatement of the theory of differential association in behavioristic terms. Ideas found in symbolic interactionism also permeate the work of Jessor and Jessor (1977).

A key question in research on drug use, particularly among adolescents, concerns the relative impact of various socialization agents. With regard to the impact of peers, Kandel notes:

> The data derived from longitudinal studies indicate that a socialization process takes place. Extent of perceived drug use in the peer group, self-reported drug use by peers, and perceived tolerance for drug use are all very strong predictors of a youth's subsequent initiation into various forms of use. These peer influences appear to be more important at certain points of the process of involvement than at others. (Kandel 1978, p. 24)

With regard to the influence of parents on adolescent drug use, Kandel concludes:

> Parent models, in the form of use of hard liquor, predict adolescent initiation both to hard liquor and to other illicit drugs, although they do not predict marijuana use. Parental use of psychoactive drugs predicts initiation to other illicit drugs. Parents' specific rules against the use of drugs are ineffective, but parents' tolerance of marijuana use by their children or their belief in the harmlessness of various drugs favor subsequent drug use by their children. Lack of closeness between parents and children predicts subsequent initiation to marijuana and, especially, to other illicit drugs. Analyses of changes over time indicate that although parents appear to be able to shield their children from initial involvement in heavy drug use, they do not have the ability to help their children give up a habit of heavy use once it is formed. In this high school sample, parental influences were, however, of greatest importance in the third stage of drug involvement--the use of other illicit drugs. (Kandel 1978, p. 25)

These conclusions about the relative impact of parents and peers are based on an analysis of data obtained in a longitudinal study of adolescents in the State of New York (Kandel et al. 1978). The investigators predicted use of hard liquor, marijuana, and other illicit drugs at Time 2 from measurements taken six months earlier at Time 1. A broader implication of the study conducted by Kandel and her colleagues is that persons are socialized into drug use by means of modeling and reinforcement. These are processes directly linked to theoretical developments in symbolic interactionism.

A direct test of the relative impact of the modeling and reinforcement processes on alcohol and marijuana use was conducted in a study of adolescents in three midwestern states (Akers et al. 1979). Their analysis included fifteen types of variables that were grouped according to the following concepts: (1) imitation, or the number of admired models that the respondent reported having observed using the substance; (2) definitions favorable or unfavorable to use, consisting of a technique of neutralization scale, a scale of law-abiding or law-violating definitions, and the respondent's positive or negative definitions of use; (3) differential association, which focuses on significant adults' normative qualities (perception of approving-disapproving attitudes toward use), significant peers' normative qualities, and a differential peer association scale (three items that dealt with types of friends and whether they used the substance); (4) differential reinforcement-social, including praise for not using, friends' rewarding or punishing reactions, parents' rewarding or punishing reactions, informal parental deterrence, formal deterrence, and interference with other important activities; and (5) differential reinforcement combining social and nonsocial factors.

Akers and his co-workers found that the variables measuring differential association ranked first in relative effectiveness in explaining variance in both alcohol and marijuana use. The single most important variable was differential peer association, "a scale of three items measuring how many of respondents' best friends, friends with whom they associate most often, and friends whom they have known for the longest time use the substance" (Akers et al. 1979:655). It was followed by definitions, combined social and nonsocial differential reinforcement, differential reinforcement-social, and imitation, respectively.

While Akers' research team (1979) included explicit measures of the processes of modeling and reinforcement, which figure prominently in social learning theory, it is important to note that the study also reaffirmed the predictive value of the major concepts in Sutherland's theory of differential association. Specifically, the measures of definitions and differential association with drug-using friends were also significant predictors. This study reaffirms the value of the general concepts derived from symbolic interactionism such as significant others, taking the role of the other, and reference group.

In summary, recent studies clearly demonstrate that the best predictor of marijuana use among adolescents is peer influence, particularly the perceived or actual use of marijuana by friends. Akers and others (1979) claim that differential peer association is the most effective, but not the only, significant predictor of both alcohol and marijuana use. Kandel and her co--workers (1978) have concluded that: (1) the relative impact of parents and peers varies by stage of drug involvement (parents being particularly influential for use of other illicit drugs by adolescents) and (2) different factors are predictive of use at each stage of involvement.

Data relevant to these conclusions were obtained in the national and Manhattan studies of young man. Using data from the national study, Clayton and Lacy (1982) found that friends' use, wife or partner's use, and siblings' use were consistently ranked first, second, and third in predicting the extent of use of alcohol, marijuana, and psychedelics, stimulants, sedatives, heroin, other opiates, and cocaine. In other words, Kandel's conclusion that different factors are predictive of use at different stages is challenged by these findings. O'Donnell and Clayton (1979) employed path analysis to examine the determinants of age at first use of marijuana (AF). Among whites, family influence had a direct, as well as an indirect, effect on AF. While family influence had only an indirect effect on AF for blacks, the total effect of family influence on age at first use of marijuana was not appreciably different for the two racial groups. For peer influence on AF there was both a direct and indirect effect for blacks, while among whites the peer influence effect was only indirect. However, for both racial groups part of the effect of peer influence on age at first use of marijuana was spurious--that is, it was not causal. In other words, O'Donnell and Clayton (1979) suggest that the relative impact of family and peer influences on marijuana use appears to vary

according to racial background and hence cannot be summarized by any broad conclusion. In the analyses presented in chapter 8, neither family influence nor peer influence had a direct effect on use of illicit drugs. Peer influence did have a direct effect on drug sales for blacks. This finding points to the importance of focusing more attention on variables that may intervene between family and peer influence and use of other illicit drugs. Possible candidates are behavioral variables such as use of marijuana and involvement in drug sales, psychological changes including the effects of official or informal labeling as a drug user on one's self concept, changes in reference groups and significant others that make an individual more likely to receive positive reinforcement for drug use, and changes in personal definitions about the appropriateness and harmlessness of using drugs.

Drug use is a learned behavior. It is learned through a variety of processes and is affected by a wide range of significant and particular others. Use of different kinds of drugs seems to occur through a series of stages, but further attention must be devoted to relative impact of parents and peers on various kinds of drug use and to identification of relevant intervening variables. While there is a solid theoretical and empirical base from which to address these issues of socialization into drug use, future research must include indices of change over time that are more sensitive than the ones employed thus far.

Labeling or Social Reaction

Among the various conceptual frameworks in the field of deviance, none has eluded rigorous operationalization and quantitative testing as effectively as the societal reaction or labeling perspective. This perspective became popular in recent decades, though its intellectual roots can be traced to early symbolic interactionism and to phenomenology. Some of the ideas in the labeling perspective were suggested by Tannenbaum in 1938, but the importance of societal reaction in the formation of a deviant identity was most clearly enunciated in Lemert's (1951) Social Pathology. A link to phenomenology and ethnomethodology was effected in 1956 by means of Garfinkle's discussion of status degradation ceremonies. In the 1960s the labeling perspective received a great deal of attention through the writings of Becker (1963), Erikson (1962), Goffman (1961), Kitsuse (1962), and Kitsuse and Cicourel (1972). Since then there has been an explosion of articles attempting to expand, refine, explain, and modify the perspective itself or its component parts and underlying assumptions (Davis 1972; Gibbons and Jones 1971; Gibbs 1966; Kitsuse 1962; Lemert 1974; Matza 1969; Orcutt 1973; Prus 1975; Sagarin 1975; Schur 1969, 1971; Ward 1971; Warren and Johnson 1972). Gove (1975) has edited two volumes evaluating the labeling perspective. The societal reaction perspective has been used in studies dealing with crime and criminal careers (Downes and Rock 1971), disability (Friedson 1965; Haber and Smith 1971), mental illness (Gibbs 1962; Gove 1970; Scheff 1966, 1974) and alcoholism (Trice and Roman 1970). While the perspective has not

been applied to drug use or users in general, it has been applied to heroin addicts (see McAuliffe 1975).

The labeling perspective is readily distinguished from other theories of deviance in terms of its focus. The labeling perspective is neither concerned with explanation of initial deviant acts nor with the attributes of parsons who are likely to engage in these acts. As Erickson notes:

> Deviance is not a property inherent in certain forms of behavior; it is a property conferred upon these forms by the audiences which directly or indirectly witness them. The critical variable in the study of deviance, then, is the social audience rather than the individual actor, since it is the audience which eventually determines whether or not an episode of behavior or any class of episodes is labelled deviant. (Erickson 1962, p. 11)

The focus, then, is not on explaining why individuals do or do not commit rule-breaking acts or what Lemert calls primary deviation, but rather on the process leading to secondary deviation. Lemert (1967: 17) defines secondary deviation as "deviant behavior or social roles based upon it, which becomes a means of defense, attack or adaptation to the overt and covert problems created by the societal reaction to primary deviation."

Gove (1975:5) places in perspective the relevance of an individual's social characteristics in the labeling process: "What concern the societal reaction theorists have with an individual's personal and social attributes is focused on how these attributes affect the way others respond to an act of primary deviance. Thus, they are not concerned with whether a particular social attribute is related to the likelihood that an individual will commit a deviant act but with whether that societal attribute facilitates or impedes that individual's ability to avoid the imposition of a deviant label."

It is generally assumed that persons with minimal resources or power are most vulnerable to societal labeling, whereas individuals whose social attributes are similar to those exhibited by the audiences responsible for applying the labels are least likely to be labeled. Labeling, either formally through status degradation ceremonies or informally through consensus among members of a relevant audience, may leave the individual with no option other than acceptance of a deviant role and lifestyle. The deviant label becomes a master status. As Gove (1975:12) indicates: "The labeling perspective is primarily concerned with the transformation of the person's identity, role, and behavior. In contrast to the traditional formulation, the labeling theorists argue that reacting to persons as if they were deviants is the major cause of deviant identities and lifestyles."

In the Manhattan study, an effort was made to develop a scale measuring the labeling process. It was to serve as an independent variable to

predict the eventual adoption of a deviant identity or lifestyle involving use of illicit drugs other than marijuana. Since it was impossible to observe directly the reactions of salient audiences to the behavior of the men in the sample, the respondents were, in essence, asked to take the role of significant others in their formative years and to indicate if they believed these others had labeled them. Because a number of years had elapsed, no attempt was made to identify specific acts or incidents. Rather, the respondents were asked if they thought their parents, teachers, and friends thought they were "heading for trouble with the law" when they were 13 to 15 years old. By this age, significant others have a fairly good idea regarding the chances a young male has of succeeding in the realm of education. Thus, one social attribute that might impede or facilitate imposition of a deviant label is educational ability. Another social attribute that affects one's chances of success in society is race because race is correlated with educational attainment.

The importance of these social attributes in the labeling process can be seen in the findings reported earlier in table 7.4. The mean score on the labeling scale for blacks (6.22) was significantly higher than that for whites (4.86). Within both racial groups there was a strong, linear relationship between labeling and eventual educational attainment. These data seem to confirm the importance of certain social attributes in the imposition of deviant labels.

A related question is whether awareness of being labeled as a deviant is predictive of adoption of a deviant identity or lifestyle. In a study of the determinants of early marijuana use in the Manhattan sample, O'Donnell and Clayton (1979:93) found that "labeling has no effect on age at first use for whites; all of the correlations for that relationship are found to be spurious. For blacks, on the other hand, while it is true that more than half of the labeling-age at first use of marijuana correlation is spurious, there is a sizable direct effect from labeling to age at first use of marijuana."

In chapter 8, labeling was used as an independent variable in relation to drug sales and use of other illicit drugs. If the labeling perspective is correct, early labeling as a person who is "headed for trouble with the law" should be predictive of involvement in activities that are illegal, such as selling and using illicit drugs. However, labeling did not exhibit a direct and significant statistical effect on use of illicit drugs for either blacks or whites. Its direct and substantial effect on involvement in drug sales in both groups deserves comment. First, the measure of drug sales reflects, to a considerable extent, the sale of marijuana (see chapter 6). Thus, it is likely that the measure of labeling, keyed to when the respondents were 13 to 15 years old, and the drug sales index, are tapping events that are more closely linked temporally than is the case for the measures of labeling and use of illicit drugs. Another possibility is that drug selling may be a better indicator of adoption of a deviant lifestyle than the measure of use of illicit drugs. Labeling may be an important predictor of subsequent deviant behavior, but it is apparent that considerable work

is needed to identify appropriate ways to measure the labeling process and to link it temporally and causally to involvement in various forms of deviance.

Labeling can also be viewed as a dependent variable that may be explained by forces occurring antecedent to it in time and in the testing of models. As noted earlier, Erickson (1962:11) claims that deviance is a property conferred upon form of behavior by audiences, and the critical variable is the audience, not the individual actor. If this were the case, one would expect the measure of labeling to be directly and significantly affected by the audiences whose influence is assessed in the measures of the school adjustment, family influence, and peer influence. This was not the case in the Manhattan study. Only peer influence and school adjustment had a direct effect on labeling. Family influence had an indirect effect on labeling for both races but no direct effect. However, an examination of Model III in chapter 8 suggests that labeling may serve a crucial mediating function between the influence of family, peers, and school and involvement in deviance. This would appear to be particularly true for involvement in the drug subculture by means of drug sales. The strength, consistency, and logic of the relationships require further investigation before more is said about this finding.

To this point the measure of labeling has been discussed in terms of the assumption that it reflects societal reaction. However, the content and format of the three items used to construct the measure suggest an alternative interpretation that approximates Kaplan's (1975) notion of self-derogation. As noted in chapter 8, the respondents answered the questions about others' views when they were 13 to 15 years old, but they knew whether or not their parents, peers, and teachers had correctly identified them as headed for trouble with the law. If their answers were unduly influenced by knowledge of the accuracy of the perceptions of parents, peers, and teachers, the labeling variable may be a measure of negatively evaluated self-concept. According to Kaplan (1975), a person's sense of self-worth may be damaged by self-devaluating experiences in various membership groups. As a consequence, the person engages in deviant behavior to enhance his or her self-esteem through demonstration of competence in deviant activities or membership in the deviant subculture. If this line of reasoning is correct, the measure of labeling my, in fact, reflect a negatively evaluated self-concept and it would be predictive of drug sales, which reflects subcultural involvement. This line of reasoning is speculative at best. It is mentioned to underscore the possibility of contamination in the measurement of labeling and to indicate that from the individual's perspective, labeling is integrally linked to one's self-concept.

Appendix A: Sampling Procedures

To select the sample, the boundaries of the 17 Selective Service Boards in Manhattan were superimposed on a street map of the 347 health areas in the borough. Unfortunately, the geographical boundaries forthe Selective Service Boards did not coincide with the health area boundaries. While the primary consideration in setting boundaries forthe health areas was the creation of administrative units approximately equal in population size, the boundaries for the Selective Service Boards were defined according to cultural characteristics. Nevertheless, it was possible to exclude six of the Selective Service Boards because they covered health areas that had relatively low rates of opiate use. It was also apparent that five of the boards should be included because they served health areas with the highest rates of opiate use in Manhattan. Any and all names drawn from the files in these boards would be included in the sample. Listed below are pertinent data about these five Selective Service Boards.

1. Selective Service Boards 11 and 12:
   - Location: Central Harlem, 10 Health Areas
   - Total Rate: 145.7 regular opiate users per 1,000 population, 15-44 years old
   - Sex-Specific Rate: 231 regular opiate users per 1,000 males, 15-44 years old
   - Rank in City: First

2. Selective Service Boards 9 and 10:
   - Location: East Harlem, 9 Health Areas
   - Total Rate: 72.5 regular opiate users per 1,000 population, 15-44 years old
   - Sex-Specific Rate: 126.7 regular opiate users per 1,000 population, 15-44 years old
   - Rank in City: Second

3. Selective Service Board 14:
   - Location: Riverside, 11 Health Areas
   - Total Rate: 62.3 regular opiate users per 1,000 population, 15-44 years old
   - Sex-Specific Rate: 78.8 regular opiate users per 1,000 population, 15-44 years old
   - Rank in City: Third

Because the health districts and the areas served by the Selective Service Boards were not identical, the six remaining boards were problematic. Each covered a number of health areas, some of which were moderately high in opiate use and some of which were relatively law. Therefore, a decision was made to include in the Manhattan sample only those persons drawn from these boards whose street address, according to Selective Service files, was in one of the health areas with a moderately high rate of opiate use. This meant that blocks within the board's territory had to be identified as being in health areas with moderately high rates or in ones with relatively low rates. Twice the number of respondents needed to represent these six boards were chosen, and anyone whose street address was not in an area with a moderately high rate was excluded from the sample The rates of opiate use for the areas in which these six boards (numbers 3, 5, 8, 13, and 16) were located ranged from a low of 27 per 1,000 population 15-44 years old to a high of 60. The sex-specific rates were all above 50 per 1,000 males 15-44 years old.

The names of the men in the Manhattan sample were chosen randomly to be representative of the men born in the years 1944 through 1954, or eleven birth cohorts. All 273 men drawn from the five boards in the highest opiate use areas were included in the sample. Of 646 names drawn from the other six boards, 267 had street addresses that were located in areas with moderately high rates of opiate use. Thus, the final sample included the following number of potential respondents:

	n		n
Board 9	55	Board 3	20/106
Board 10	55	Board 5	45/106
Board 11	54	Board 8	46/109
Board 12	54	Board 13	69/107
Board 14	55	Board 15	53/110
Total	273	Board 16	34/108
		Total	267/646

Technically, the sample is a purposive one. Selective Service Boards in Manhattan were chosen according to rates of opiate use in the health areas in which the boards were located, and in five of the boards all of the men selected randomly were included in the sample. In the other six boards, an additional criterion for selection was residence in a block located in a health area with a moderately high rate of opiate use. Thus, the target sample included 540 men who registered with Selective Service Boards in Manhattan serving areas with moderate or high rates of opiate use.

In an initial analysis of the data, it became apparent that the sample could not even be said to represent residents of moderate or high drug use areas in Manhattan. In the interview, the respondent was asked to list each address at which he had lived from birth to his eighteenth birthday and the length of time he resided at each

place. It was found that some of the men had never lived in Manhattan, and 7 men had never lived in New York City before the age of 18. This was a surprise because Selective Service regulations specified that within a month of his eighteenth birthday, a male was to register with the board in the area where he lived. The actual distribution was as follows:

	Blacks	Whites	Others	Total
Lived in Manhattan at age 18	114	70	59	243
Living elsewhere, with previous residence in Manhattan	4	8	5	17
Living elsewhere, but in New York City at 18 or earlier	7	18	2	27
Living elsewhere, never in New York City before age 18	0	2	5	7
	125	98	71	294

At first glance, it would appear that as many as 51 of the respondents may have violated Selective Service regulations. However, the number is considerably smaller. Of the 17 men who had lived in Manhattan and were living elsewhere at the age of 18, it may be that most or all of them had maintained legal residence in New York and had properly registered at a Selective Service Board in the city. For example, a college student would register at home, not where he attended college. The 27 men who had previously lived in New York City seem, for the most part, to be life-long residents of Brooklyn, Queens, or the Bronx. In some cases, there may simply be an error in the response given to the interviewer. In other cases, changes of address when the young men first left home may have been forgotten. On the other hand, there may have been advantages, real or imagined, in registering at a board in another borough.

Among the 7 men who listed no address in New York City before the age of 18, several were residents of Puerto Rico. It was a common practice during the 1950s for Puerto Rican families to live in New York for periods of time and then return to Puerto Rico. It is conceivable that these young men were in Manhattan when they reached the age of 18 and perceived their residence in New York as only a visit, not a period of residence. If this speculative interpretation is correct, they would report themselves to be continuous residents of Puerto Rico. Also instructive is the man, born in South America, who moved to New York soon after his eighteenth birthday and then registered with his birth cohort, even if registration occurred when the man was in his twenties. In contrast, one respondent appears to be a professional criminal from Baltimore, who used a fictitious address to register in New York to comply with the law, but had little chance of receiving a draft notice.

Nevertheless, the sample does consist of men who were living in or near high drug use areas in Manhattan at the age of 18, when Selective Service registration usually occurred. Most of the respondents

were raised in or near high drug use areas, and almost all of the men lived in large metropolitan areas during most of their childhood. An accurate description of the original target sample would be that it was a sample of men who registered with Selective Service Boards in moderate or high drug use areas in Manhattan.

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